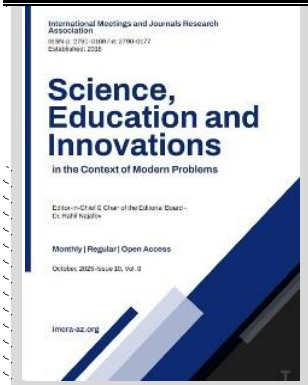

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RESEARCH ARTICLE

The Effect of the Spreading Activation Model on the Acquisition of Psychological Concepts among Fifth-Grade Literary Students

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Keywords Spreading Activation Model; Psychological Concepts; Concept Acquisition; Psychology Education; Secondary Education.

Abstract

The present study investigates the effect of the Spreading Activation Model as an instructional strategy on the acquisition of psychological concepts among fifth-grade female students in the literary stream. Psychological concepts are often characterized by abstraction and theoretical complexity, which poses significant challenges for secondary-level learners when taught through traditional, lecture-based methods. To address this issue, the researcher adopted an experimental approach using a quasi-experimental design with two equivalent groups: an experimental group and a control group. The research sample consisted of 64 female students drawn from a preparatory school, with 32 students assigned to each group. The experimental group was instructed using the Cognitive Spreading Activation Model, while the control group received instruction through conventional teaching methods. The two groups were statistically equated in key variables, including chronological age and intelligence level. A researcher-developed test measuring the acquisition of psychological concepts was administered as a post-test. Data were analyzed using the independent samples t-test. The results revealed a statistically significant difference in favor of the experimental group, indicating the effectiveness of the Spreading Activation Model in enhancing students' acquisition and understanding of psychological concepts. The study concludes that adopting cognitively oriented instructional models can substantially improve conceptual learning outcomes in psychology education at the secondary level.

Citation

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1. Introduction

Psychology is one of the core disciplines within the humanities and social sciences, as it focuses on the systematic study of human behavior and mental processes. Through its various branches—such as educational, developmental, social, and clinical psychology—it seeks to explain, interpret, predict, and, where possible, regulate human behavior across diverse life contexts. Teaching psychology at the secondary school level plays a crucial role in developing students' self-understanding, emotional awareness, and ability to interpret social behavior in a rational and informed manner.

Despite the importance of psychology as a subject, many secondary-level students—particularly those in the literary stream—experience considerable difficulty in acquiring psychological concepts. These difficulties stem primarily from the abstract nature of psychological terminology, theories, and models, which often lack direct and immediate connections to students' everyday experiences. When such concepts are presented in a purely theoretical or descriptive manner, students tend to rely on rote memorization rather than meaningful understanding, which negatively affects long-term retention and application.

2. Research Problem

Field observations and informal interviews with teachers of psychology at the preparatory level indicate that traditional teaching methods—largely based on lecturing, recitation, and memorization—remain dominant in classroom practice. These methods often position students as passive recipients of information and provide limited opportunities for interaction, discussion, or cognitive engagement. Consequently, students demonstrate low motivation toward learning psychology and encounter difficulties in understanding core concepts such as perception, attention, motivation, learning, and emotions.

Moreover, the abstraction of psychological concepts and their weak linkage to real-life situations exacerbate students' learning challenges. Instead of engaging in analytical thinking or applying concepts to new contexts, students frequently resort to mechanical memorization aimed solely at passing examinations. Previous educational studies have emphasized that poor concept acquisition in psychology is closely associated with the absence of modern instructional strategies that promote active learning, higher-order thinking, and meaningful knowledge construction.

In light of these challenges, there is an urgent need to adopt contemporary cognitive teaching models that enable learners to actively organize, link, and reconstruct knowledge. The Spreading Activation Model, which is grounded in cognitive psychology and semantic network theory, offers a promising alternative by encouraging learners to connect new concepts with prior knowledge through meaningful associations.

Accordingly, the research problem is formulated as the following question:

Does the Spreading Activation Model have a significant effect on the acquisition of psychological concepts among fifth-grade literary students?

3. Significance of the Study

The importance of this study stems from both its theoretical and practical dimensions. From a theoretical perspective, the study contributes to the growing body of research on cognitively oriented instructional models and their effectiveness in enhancing conceptual learning in psychology education. It highlights the relevance of the Spreading Activation Model as a framework that aligns with contemporary views of learning as an active, constructive, and interconnected cognitive process.

From a practical perspective, the findings of this study may provide curriculum designers, educational supervisors, and psychology teachers with empirical evidence supporting the adoption of modern teaching strategies that go beyond traditional memorization-based approaches. By demonstrating the effectiveness of the Spreading Activation Model, the study offers practical guidance for improving instructional practices and fostering deeper conceptual understanding among secondary-level students.

Furthermore, the study underscores the role of psychology education in preparing students to understand themselves and others, develop emotional intelligence, and respond thoughtfully to real-life situations. Enhancing students' acquisition of psychological concepts can therefore contribute not only to academic achievement but also to personal and social development.

Psychological Concepts and Their Role in Learning

Psychology is concerned with the systematic study of observable behavior that can be measured objectively, as well as internal mental processes that occur within the individual, such as thinking, memory, attention, perception, and problem solving. Psychologists seek to identify the laws and principles that govern the relationship between environmental stimuli and behavioral responses, with the aim of understanding how individuals interact with their physical, social, and cultural environments. Through this interactionist perspective, psychology explains how social norms, cultural contexts, and learning experiences shape human behavior and cognitive development (Anderson, 1995; Abdel Khaleq, 2005).

Psychological concepts constitute one of the fundamental pillars of human knowledge construction. They play a central role in organizing individual experiences and enabling learners to interpret phenomena in a coherent and systematic mental framework. A concept is not merely a term or definition; rather, it is the outcome of a higher-order cognitive process in which the learner abstracts shared characteristics among a set of objects, situations, or events. Through this abstraction process, learners form generalized mental representations that facilitate understanding, classification, explanation, and prediction of future events. Concepts therefore function as cognitive tools that connect isolated facts, reduce informational overload, and transform fragmented knowledge into integrated mental structures that support effective thinking and comprehension (Al-Najdi et al., 2003).

Raji (2012) emphasized that concept acquisition is a complex inferential mental process through which learners distinguish accurately between instances that belong to a given concept and those that do not. Mastery of concepts enables learners to transfer knowledge across contexts, link prior learning with new information, and apply cognitive skills flexibly in unfamiliar situations. From this perspective, concept acquisition is not limited to recall or recognition but extends to application, analysis, and generalization, thereby contributing to sustainable and meaningful learning outcomes.

Teaching concepts is therefore one of the most critical components of the instructional process. Effective concept teaching takes into account learners' cognitive abilities, prior experiences, and developmental readiness, and it aims to engage them actively in observation, interpretation, and reasoning. As learners progress in cognitive maturity, their ability to form

abstract concepts and establish complex relationships among them increases, leading to the development of advanced mental skills such as critical thinking, problem solving, and metacognitive awareness (Lahman, 1969; Bruner, 1966).
However, the acquisition of concepts remains one of the most significant challenges in contemporary education. This challenge arises from the need to move beyond the mere transmission of information toward enabling learners to construct concepts independently and apply them in novel situations. Traditional teaching approaches, which emphasize memorization and repetition, often fail to support deep conceptual understanding and instead promote surface learning that is quickly forgotten (Hamida et al., 2000; Bloom, 1971).

The Diffusion (Spreading) Activation Model in Education

The Diffusion (Spreading) Activation Model represents a cognitively grounded instructional framework that addresses many of the challenges associated with concept acquisition. Its importance in education lies in its ability to stimulate higher-order mental processes such as analytical thinking, reasoning, problem solving, and creative thinking. The model is based on the assumption that knowledge in human memory is stored in the form of interconnected semantic networks composed of nodes representing concepts, linked by meaningful relationships.
According to Collins and Loftus (1975), when a specific concept (node) in memory is activated, this activation spreads gradually to other semantically related nodes. The strength and speed of activation depend on the degree of semantic closeness between concepts. As a result, previously learned information becomes readily accessible, allowing learners to integrate new knowledge with existing cognitive structures. Learning, therefore, becomes an active and dynamic process of meaning construction rather than a passive reception of isolated facts.
This model contributes significantly to expanding learners' conceptual understanding by promoting the use of long-term memory processes and encouraging the formation of multiple cognitive links between concepts. Through these links, learners move from simple recall to deep comprehension, enabling them to reorganize knowledge, detect relationships, and apply concepts flexibly in diverse contexts. Such cognitive organization enhances learning efficiency and supports creative and reflective thinking (Nussbaum, 1989; Resnik, 1995).
In classroom practice, the application of the Diffusion Activation Model transforms the learning environment into an interactive space where students actively participate in constructing meaning. By using visual representations such as concept maps, semantic networks, and mind maps, learners can clearly visualize relationships among psychological concepts—such as cause–effect, general–specific, and sequential relationships. This visual and relational organization strengthens conceptual consolidation, deepens understanding, and facilitates the transfer of learning to real-life situations and other academic domains (Al-Najdi et al., 2003; Zaitoun, 1994).

Importance and Rationale of the Study

The significance of the present study stems from the pivotal role that psychological concept acquisition plays in achieving the educational objectives of teaching psychology at the preparatory stage. Well-established psychological concepts enable students to understand human behavior scientifically, interpret psychological phenomena systematically, and relate classroom learning to real-life experiences. A student who possesses coherent psychological concepts can analyze situations logically, think scientifically, and make informed judgments in personal and social contexts (Abdel Khaleq, 2005).
Moreover, contemporary educational research increasingly emphasizes learner-centered approaches that focus on interaction, active participation, and self-construction of knowledge. In this context, the Diffusion Activation Model provides an effective pedagogical alternative aligned with modern educational philosophies that prioritize understanding, meaning, and cognitive engagement over rote memorization and repetition.
Accordingly, the importance of this research lies in its attempt to empirically investigate the effect of the Diffusion Activation Model on the acquisition of psychological concepts among fifth-grade literary students. It seeks to offer a scientifically grounded teaching alternative that enhances learning quality, improves conceptual understanding, and responds to the needs of the Iraqi educational context by integrating modern cognitive theories and instructional strategies.

Research Objective

The present research aims to determine **the effect of the Diffusion Activation Model on the acquisition of psychological concepts among fifth-grade literary students**.

Research Hypothesis

To achieve the research objective, the following null hypothesis was formulated:
There is no statistically significant difference at the significance level ($\alpha = 0.05$) between the mean scores of the experimental group students who studied the Principles of Psychology using the Diffusion Activation Model and the mean scores of the control group students who studied the same subject using the traditional teaching method in the acquisition of psychological concepts.

Research Limitations

The present study was limited to:

1. A sample of fifth-grade literary female students from Al-Batool High School for Girls (morning study), affiliated with the General Directorate of Education of Wasit Governorate.
2. The second semester of the academic year 2024–2025.
3. Psychological concepts included in the second-semester units of the *Principles of Philosophy and Psychology* textbook prescribed by the Ministry of Education, Republic of Iraq.

Definition of Terms

Diffusion (Spreading) Activation Model

Theoretical Definition: Collins and Loftus (1975) defined the model as a cognitive representation of knowledge organized in semantic networks, where relationships between concepts are determined by their meaningful associations rather than hierarchical positions.

Operational Definition: In this study, the Diffusion Activation Model refers to an instructional approach in which psychological concepts are presented as interconnected networks illustrating relationships between major and sub-concepts. Teaching proceeds through organized steps that begin with defining learning objectives, organizing content using conceptual maps and semantic networks, and concluding with application and analysis activities that enable students to employ acquired concepts in new learning situations.

Acquisition of Psychological Concepts

Theoretical Definition: Al-Khalili et al. (1995) defined concept acquisition as a cognitive process involving mental abstraction and inference, through which learners identify common characteristics among stimuli and distinguish between essential and variable features.

Operational Definition: In the present research, acquisition of psychological concepts refers to the ability of fifth-grade literary students to define psychological concepts accurately, discriminate between examples and non-examples, and apply each concept appropriately within educational and real-life situations.

Teaching Procedures According to the Diffusion Activation Model

The Diffusion (Spreading) Activation Model is an instructional framework that promotes active, meaningful, and interactive learning. It enables learners to construct knowledge independently by establishing semantic links between concepts, thereby enhancing their abilities in deduction, analysis, generalization, and application. The model also contributes to the development of semantic memory, expands students' cognitive networks, and deepens learning by connecting new information with prior knowledge and real educational situations (Collins & Loftus, 1975; Anderson, 1995).

The procedural steps for applying this model in the instructional context are summarized as follows:

1. Identifying the Central Concept

The teacher introduces the lesson by asking students to identify and write down the main concept or topic (e.g., *behavior*). This concept is visually represented at the center of the page using a geometric shape (circle or rectangle), serving as the core node of the conceptual network. This step helps learners focus attention and activates relevant prior knowledge (Bruner, 1966).

2. Idea Generation and Semantic Linking

Students are encouraged to freely generate ideas related to the central concept in all directions. Key terms representing sub-concepts are recorded using different colors and shapes to distinguish conceptual branches. Arrows, lines, and symbols are used to illustrate relationships such as cause–effect, similarity, dependency, or hierarchy. This stage stimulates divergent thinking and supports the formation of semantic associations among concepts (Al-Najdi et al., 2003).

3. Construction of the Associative Network

Learners connect sub-concepts to the central idea through clear, meaningful links. Since cognitive processing operates through association and coherence, the number and quality of connections enhance comprehension and recall. This process enables students to identify causal, classificatory, and relational links between psychological concepts, resulting in a coherent and integrated understanding of the subject matter (Nussbaum, 1989).

4. Knowledge Representation and Cognitive Processing

Within the Diffusion Activation Model, concepts are represented as nodes in memory, while semantic relationships function as links. When a node is activated, cognitive activation spreads through the network to related nodes, facilitating recall, integration, and restructuring of knowledge. This dynamic process results in the construction of an organized cognitive structure that supports deep understanding and long-term retention (Anderson, 1995).

5. Evaluation and Feedback

After completing the conceptual network, the teacher evaluates the accuracy of relationships and identifies misconceptions or weak links. Students are guided to revise and correct their conceptual maps, reinforcing accurate semantic relationships and consolidating conceptual understanding. Continuous feedback at this stage enhances metacognitive awareness and conceptual precision (Bloom, 1971).

Benefits of the Diffusion Activation Model

The Diffusion Activation Model offers numerous educational advantages, including:

- Enhancing learners' higher-order thinking skills such as analysis, synthesis, and creativity.
- Facilitating retrieval of interconnected information from memory by activating semantic networks.
- Supporting meaningful recall by recognizing relationships among concepts within broader cognitive structures.
- Encouraging learners to generate guiding questions, thereby increasing motivation for exploration, problem solving, and discovery.
- Enabling comprehension of a greater volume of theoretical and practical information.
- Promoting individual and collaborative idea generation, thus supporting cooperative learning and teamwork skills.
- Assisting learners in organizing information through concept maps and semantic grouping, which strengthens cognitive integration (Mohammed & Abdel Azim, 2011).

Due to the abstract and interrelated nature of psychological concepts—such as cognition, attention, memory, thinking, and motivation—the Diffusion Activation Model is particularly suitable for teaching psychology. These concepts form an interconnected cognitive system and cannot be fully understood in isolation, making semantic network-based instruction highly effective (Collins & Loftus, 1975).

Acquisition of Psychological Concepts

Concepts are among the most essential educational tools in contemporary learning paradigms. Their role has expanded beyond the transmission of information to include the production and construction of knowledge through active learner–content interaction. Concept acquisition empowers learners to ask questions, organize and classify information, and clarify relationships, thereby making learning meaningful, personalized, and enduring (Saadeh & Al-Yousef, 1988).

In this context, a concept functions not merely as a unit of knowledge but as a cognitive instrument that regulates thinking, facilitates interpretation of phenomena, and enables learners to apply prior experiences to new situations (Nussbaum, 1989). Concepts also serve as foundational building blocks for higher-level knowledge structures, such as principles and theories, which form the core of scientific disciplines. However, acquiring concepts remains a major instructional challenge, as it requires shifting educational goals from rote memorization to fostering scientific thinking and independent knowledge construction (Nashwan, 1992).

Principles of Concept Acquisition

Concept acquisition is a gradual cognitive process that depends on linking new knowledge to learners' existing cognitive structures. Concepts become clearer and more stable as they are increasingly connected to relevant experiences and activities. This process involves progression from concrete to abstract understanding and from partial to holistic comprehension, in alignment with learners' cognitive development levels. Accordingly, teachers should consider the following principles when facilitating concept acquisition:

1. Concepts develop through direct engagement in meaningful activities and classroom experiences.
2. Concept clarity increases with learners' cognitive maturity and mental readiness.
3. Diverse instructional strategies and teaching aids enhance understanding and address individual learning differences.
4. Motivation and relevance play a critical role, as learners acquire concepts more effectively when they perceive their value in real-life and academic contexts (Raji, 2012).

Measuring the Acquisition of Psychological Concepts

Acquisition of psychological concepts reflects learners' ability to understand abstract ideas, analyze them, and apply them in real or novel situations. Measurement extends beyond memorizing definitions to assessing conceptual application and functional use. The process involves the following steps (Zaitoun, 1994):

1. Identifying Essential Attributes: Assessing learners' ability to distinguish defining characteristics and differentiate between examples and non-examples.
2. Verbal Definition: Evaluating learners' capacity to express the concept accurately using scientific terminology.
3. Concept Formulation: Training learners to reconstruct concepts independently through discussion, role-playing, and brainstorming.
4. Application in New Situations: Measuring learners' ability to apply concepts to unfamiliar contexts, demonstrating meaningful learning transfer.

Research Methodology and Procedures

Research Method

The experimental research method was adopted to achieve the objectives of the study.

Experimental Design

A quasi-experimental design with a non-randomized control group and post-test was employed, allowing partial control of variables (Van Dalen, 1985).

Group	Independent Variable	Dependent Variable	Post-Test
Experimental	Diffusion Activation Model	Acquisition of Psychological Concepts	Applied
Control	Traditional Method	Acquisition of Psychological Concepts	Applied

Research Population and Sample

The research population consisted of fifth-grade literary students enrolled in preparatory and secondary schools (morning study) under the General Directorate of Education of Wasit Governorate for the academic year 2024–2025.

The research sample comprised 64 female students from Al-Batool Secondary School for Girls. Two divisions were randomly selected: Division B formed the experimental group, while Division A served as the control group, with 32 students in each group.

Equivalence of Research Groups

Chronological Age

A *t*-test for independent samples was used to verify equivalence in chronological age.

Table **1**

T-test Results for Chronological Age of the Two Groups

Group	N	Mean (Months)	SD	df	t (Calculated)	t (Tabulated)	Significance
Experimental	32	214.36	18.25	62	0.555	2.00	Not Significant
Control	32	216.97	19.33				

Intelligence

The Raven Intelligence Test was administered to both groups.

Table **2**

T-test Results for Intelligence Scores

Group	N	Mean	SD	df	t (Calculated)	t (Tabulated)	Significance
Experimental	32	40.14	4.12	62	0.132	2.00	Not Significant
Control	32	39.99	5.21				

Research Instructional Material

The instructional content consisted of 14 psychological concepts extracted from the second chapter of the *Principles of Philosophy and Psychology* textbook prescribed for fifth-grade literary students by the Ministry of Education, Republic of Iraq. These concepts were selected based on their relevance to concept acquisition processes and served as the core content for the experimental intervention.

Validation of the Instructional Concepts and Content Sequencing

To ensure that the selected psychological concepts accurately represented the instructional domain and were appropriate for the preparatory stage, an initial list of concepts was submitted to a panel of experts specializing in teaching methods and educational psychology. Experts evaluated the list in terms of (a) coverage of essential concepts, (b) scientific accuracy, (c) suitability to learners' developmental level, and (d) alignment with the objectives of the *Principles of Philosophy and Psychology* course. The concept list was then refined based on reviewers' feedback.

The final set of concepts was organized in a logical and pedagogically graded sequence—from relatively simple, familiar concepts to more abstract concepts—while maintaining semantic interconnectedness across lessons. This sequencing supports cumulative knowledge construction and facilitates the development of an integrated cognitive structure, which is essential for conceptual learning in psychology (Bruner, 1966; Nussbaum, 1989; Al-Najdi et al., 2003).

Teaching Plans and Behavioral Objectives

Teaching plans for both the experimental and control groups were prepared based on the identified instructional content. A total of 14 lesson plans were developed for each group, with each plan focusing on one psychological concept from the instructional material. The plans were designed in accordance with the course learning outcomes and with the overarching research goal of improving concept acquisition.

Behavioral Objectives

To measure concept acquisition at different cognitive levels, 42 behavioral objectives were developed and distributed across three levels of concept learning:

1. Concept Definition: Measures students' ability to identify the meaning and essential attributes of a concept.
2. Concept Discrimination: Measures students' ability to distinguish examples that represent the concept from non-examples.

3. Concept Application: Measures students' ability to apply the concept to new situations requiring reasoning and analysis.

These objectives were reviewed by the same expert panel to ensure validity, relevance, and appropriateness. In preparing the lesson plans, key instructional components were included: lesson preparation, content presentation, learning activities, formative assessment, and summative assessment. This ensured practical engagement with psychological concepts and supported active learner participation, particularly within the experimental group taught according to the Diffusion Activation Model (Bloom, 1971; Van Dalen, 1985).

Research Instrument

Psychological Concepts Acquisition Test

A **Psychological Concepts Acquisition Test** was developed to measure the extent to which students acquired the psychological concepts included in the instructional material. Test construction was aligned with the identified concepts and the table of behavioral objectives to ensure direct correspondence between instruction and assessment (Abu Allam, 1987; Brown, 1981).

Test Construction Procedures

Item Development

The test was constructed based on the 14 psychological concepts included in the second-semester content. For each concept, three items were developed to reflect the three concept acquisition processes:

1. Concept Definition: 14 items
2. Concept Discrimination (examples vs. non-examples): 14 items
3. Concept Application in new situations: 14 items

Thus, the test included a total of 42 multiple-choice items. Multiple-choice format was selected due to its suitability for measuring well-defined behavioral objectives, ease of scoring, and capacity to distinguish between correct and incorrect alternatives objectively (Bloom, 1971; Brown, 1981). Items were written with attention to clarity, linguistic precision, and accurate representation of each concept domain.

Validity of the Test

Validity refers to the degree to which an instrument measures what it claims to measure. The test validity was established through two complementary approaches:

1. Face Validity

Face validity was examined by reviewing the items in relation to behavioral objectives and targeted concepts. Each item was assessed for whether it clearly represented the intended concept and measured the specific behavior it was designed to assess.

2. Content Validity

Content validity was verified through expert judgment. Experts evaluated the extent to which items covered the conceptual domain adequately, represented the research topics, and met scientific, educational, and linguistic standards. Based on their feedback, items were refined through rewording and improvement of content clarity. Items were retained if they received majority approval from the experts, resulting in a final test of 42 items, evenly distributed across the three acquisition levels (Abu Allam, 1987; Brown, 1981).

Scoring Procedure

The test was scored using a dichotomous scoring method:

- 1 point for a correct answer
- 0 points for an incorrect or blank answer

Accordingly, the total score ranged from 0 to 42, where 42 indicates full acquisition of psychological concepts. An answer key was prepared and checked to ensure objectivity and minimize scorer subjectivity (Abu Allam, 1987).

Pilot Study

An exploratory administration of the test was conducted with 25 fifth-grade literary students from the same research community. Results indicated that instructions were clear and items were understandable. The average completion time was approximately 45 minutes, which was considered appropriate for the students' level and the test structure.

Statistical Item Analysis

To evaluate item quality, the test was administered to a statistical analysis sample of 100 students from the research community. Items were analyzed using standard psychometric indicators:

1. Item Difficulty

Difficulty indices ranged from 0.42 to 0.55, which falls within acceptable levels for educational tests. Bloom (1971) suggests that items with difficulty values between 0.20 and 0.80 are generally appropriate for achievement measurement; therefore, all items were considered suitable for the target population.

2. Discrimination Power

Discrimination indices ranged from 0.57 to 0.76, indicating strong ability to differentiate between higher- and lower-performing students. Educational measurement literature commonly considers discrimination values of 0.20 or above acceptable, supporting the quality of the test items (Brown, 1981; Abu Allam, 1987).

3. Effectiveness of Distractors

Incorrect alternatives were examined to ensure they attracted more responses from lower-performing students than from higher-performing students. The analysis indicated that distractors functioned effectively, suggesting balanced alternatives and absence of non-functioning distractors. Therefore, distractors were retained in the final version.

Reliability of the Test

Test reliability was estimated using Kuder–Richardson Formula 20 (KR-20), appropriate for dichotomously scored items. The reliability coefficient reached 0.80, which indicates good internal consistency for a researcher-developed educational test. Abu Allam (1987) notes that reliability values of 0.70 or higher are sufficient for educational research contexts, supporting the dependability of the instrument.

Application of the Research Tool

After completing instruction for both groups, the Psychological Concepts Acquisition Test was administered as a post-test. Students' responses were scored, and data were analyzed statistically using SPSS.

Statistical Methods Used

- Independent samples t-test
- Item difficulty and discrimination indices
- Distractor analysis
- KR-20 reliability coefficient. These methods are consistent with experimental educational research and psychometric test development procedures (Bloom, 1971; Van Dalen, 1985; Abu Allam, 1987).

Results and Interpretation

The null hypothesis stated:

There is no statistically significant difference at the significance level ($\alpha = 0.05$) between the mean scores of the experimental group taught using the Diffusion Activation Model and the mean scores of the control group taught using the traditional method on the Psychological Concepts Acquisition Test.

The experimental group achieved a mean score of 40.6549, while the control group achieved a mean score of 28.365. The independent samples t-test indicated a statistically significant difference in favor of the experimental group.

Table 3

Independent Samples t-Test Results for the Psychological Concepts Acquisition Test

Group	N	Mean	SD	df	t (Calculated)	t (Tabulated)	Result at $\alpha = 0.05$
Experimental	32	40.6549	7.3256	62	5.491	2.00	Significant
Control	32	28.3650	10.3256	62	—	—	—

Since t(calculated) = 5.491 exceeds t(tabulated) = 2.00 at df = 62 and $\alpha = 0.05$, the null hypothesis was rejected. This confirms that the Diffusion Activation Model significantly improved students' acquisition of psychological concepts compared to the traditional method.

Interpretation

This superiority can be explained by the cognitive mechanisms underlying the Diffusion Activation Model, which emphasizes activation of prior knowledge and semantic linking within memory networks. By employing concept maps and semantic networks, students integrate new concepts with existing cognitive structures, moving from rote recall to meaningful understanding and application (Collins & Loftus, 1975; Anderson, 1995).

In contrast, traditional instruction often emphasizes memorization and verbal repetition, which may support short-term recall but is less effective for deep conceptual understanding and transfer to new situations (Bloom, 1971; Nussbaum, 1989).

Additionally, the model appears to produce motivational and classroom-engagement benefits. Active participation in constructing conceptual networks increases students' sense of responsibility for learning, strengthens attention, and supports retrieval processes, which collectively enhance learning outcomes (Bruner, 1966; Anderson, 1995).

Finally, the Diffusion Activation Model supports transfer of learning. When students build interconnected conceptual structures, they can apply concepts to novel situations more effectively because understanding is relational rather than isolated, which is a core indicator of meaningful concept acquisition (Nussbaum, 1989; Raji, 2012).

Recommendations

1. Teachers of the *Principles of Psychology* course are encouraged to adopt the Diffusion Activation Model to enhance students' acquisition of psychological concepts and increase active classroom participation (Collins & Loftus, 1975; Anderson, 1995).
2. Teacher education programs should incorporate training on cognitive network-based instructional models, including diffusion activation, and provide applied opportunities for pre-service teachers to practice these strategies (Van Dalen, 1985).
3. Educational directorates should organize professional development workshops focused on designing semantic-network activities and concept maps to improve conceptual learning outcomes.

Suggestions for Future Research

1. Investigate the effect of the Diffusion Activation Model on concept acquisition across different educational stages (intermediate, secondary, and university levels).
2. Conduct content analysis of the *Principles of Philosophy and Psychology* textbook in light of concept acquisition processes and conceptual density.
3. Compare the Diffusion Activation Model with other instructional strategies (e.g., analogies, inquiry-based learning, cooperative learning) using additional dependent variables such as motivation, critical thinking, and retention.

4. Conclusion

The study emphasizes the necessity of transforming psychology instruction from a passive, teacher-centered process into an active, student-centered learning experience. The Spreading Activation Model represents an effective pedagogical approach that supports meaningful learning by linking new psychological concepts to students' existing cognitive structures. Adopting such models can significantly enhance students' understanding, retention, and application of psychological knowledge, thereby improving the overall quality of psychology education at the secondary level.

Conclusions

1. Instruction using the Diffusion Activation Model significantly increased fifth-grade literary students' acquisition of psychological concepts by promoting active participation and cognitive linking of knowledge.
2. The model strengthened students' conceptual understanding by encouraging semantic organization and integration of prior and new knowledge, leading to superior performance compared to the traditional method.
3. The model contributed to a more interactive classroom environment, increasing students' engagement, enjoyment, and learning motivation.

Ethical Considerations

This study was conducted in full compliance with established ethical principles governing educational and psychological research. Prior to data collection, official permission was obtained from the relevant educational authorities and the school administration. Participation in the study was entirely voluntary, and the students were informed of the purpose of the research and the procedures involved in a manner appropriate to their age and educational level.

Informed consent was obtained through the school administration in accordance with institutional regulations. Participants were assured that their responses would be used exclusively for scientific research purposes and that all collected data would remain confidential and anonymous. No identifying information was recorded, and students were free to withdraw from the study at any stage without any academic or personal consequences.

The research procedures posed no physical or psychological harm to the participants, and the instructional intervention adhered to standard educational practices. Ethical integrity, respect for participants' rights, and data protection were maintained throughout all stages of the study.

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Conflict of Interest

The author declares that there is no conflict of interest regarding the publication of this paper.

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