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The Effect of Using the SWOM Model on the Achievement and Life Skills Development for First Grade Students of Biology

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This study aims to identify the effect of the (SWOM) model on the achievement and life skills development of first grade students. Two groups were randomly selected from the first grade. The first group represented the experimental group which is taught according to the (SWOM) model; the second is the control group which is taught according to the traditional method. The number of students in each group is 38, so the sample of the study is 76. The study groups are equalised according to the following variables (age in month, life skills test, degree of biology). To achieve the aim of the study, a life skills test has been constructed of multiple-choice items, which consists of 35 items, whereby validity and reliability are achieved. The data was treated statistically using a t-Test of two independent samples, a Person correlation coefficient, a Cronbach–Alpha equation, a Spearman-Brown equation and a Chi-square. The findings of the study show that there are statistically significant differences between the mean scores of the two study groups on the life skills post-test, in favour of the experimental group. In the light of the findings, the researcher recommends using the (SWOM) model in teaching biology. The researcher also suggests cretin studies that are relevant to the present work.

Key words: *SWOM model, Achievement, Life Skills*

Introduction

The recent trends in curriculum planning emphasise the need to provide the required education skills for life, work, and education, as confirmed by many studies that have been concerned with the acquisition of life skills. This points to their importance, the need to

develop students, and to make it one of the basic skills that must be acquired by the learner during the various stages of education. This is beneficial in order to meet a student's basic needs and thus help them to adapt to the variables of the age in which we are living (Bahaa El-Din, 2000;Abeer Shawqi, 2005). Many of the skills are needed by the individual in daily life, especially those related to scientific skills, such as the skill of personal care of the body, the skill of caring for healthy food, the skill of preventing diseases, the skill of using environmental resources and rationalising consumption, the skill of using tools and household appliances (Qeshta, 2008). A number of studies were conducted aimed at developing life skills through different methods, strategies and teaching models, such as: Saima Samar (2010), Ibrahim (2006), and Abu Hajar (2006). In light of the above, the researcher believes that we need to use strategies and educational models, including the model (SWOM) in order to be able to raise a generation with life skills which allow them to be capable of adapting to life and exercise the necessary thinking skills, especially since the curriculum in Iraq has still to adopt decision skills. Life skills are taught independently in various stages of general education and there is an inclusion of them in some courses, which caused a shortage in the further development of life skills of students.

For this reason, the researcher surveyed the views of some supervisors and biology teachers about the life skills included in the book of biology for the first grade of middle school. It was found that there is a significant deficiency in the inclusion of a number of life skills, especially in the field of manual skills, problem-solving and decision-making skills (Mohammed Ali Saleh Abu Jadu, & Mohammed Bakr Nova, 2007). This is compounded by the importance of the study to the importance of secondary school students, which is one of the most important stages in the age at which skills begin to be refined (Shaima Sobhi Ibrahim, 2006). Due to the scarcity of studies, according to the researcher 's knowledge, which linked the model of SWOM and life skills, the researcher decided to experiment with teaching according to the model of SWOM and identify its impact on the development of the life skills of first-grade middle school students.

Importance of the study

The education regarding thinking and life skills is an urgent necessity imposed by the current era, that will equip people to face the challenges of globalisation. This is important given that the world is witnessing rapid changes in science, knowledge and information flow, making the individual possession of different thinking skills, development and education a necessity (Shawqi Al-Sharifi, 2000). One of the priorities of educational policy tasks is not only pertinent to developed societies, but is important in all societies (Alawi et al., 2008). This has necessitated an urgent need to move education from the memorisation stage which relies on memorisation and information recall for the development of thinking skills.

To enable individuals to be able to cope with this development and its future variables and situations that require understanding, interpretation and analysis to reach sound conclusions about them, in addition to enabling students to think methods, processes, and patterns according to the levels of maturity of students, the requirements of knowledge selected, and according to the characteristics of communities. Ghazi, (2002). In this regard, educational conferences have stressed the importance of the development of the thinking skills of students as a fundamental goal of all curricula, including the Second Conference of Ministers of Education in the Arab World in 2000, which stressed the need to acquire patterns of thinking, especially scientific and critical thinking (UNICEF, 2000). The curriculum should include skills, values , and attitudes that develop different types of thinking (UNICEF, 2004). The teaching of thinking skills has taken a prominent place in the thinking of educators and curriculum makers since they are convinced of its importance, especially as students need to provide them with thinking skills to associate with their success (196). Teaching thinking has taken two paths: teaching as an independent program or teaching by incorporating thinking skills into the curriculum by rebuilding modules that include thinking skills, and there is a possibility of course merging (Diab, & Suheil Rizk, 2005).

The SWOM model is one of the models that has focused on integrating critical and creative thinking skills into the content of the study because of its practical solutions to the current problems of education. Furthermore, the strategies used in the model seek to form a new capable mind . The model aims to prepare a generation of educated, productive, and lifelong learners by integrating a range of skills in teaching different subjects, in accordance with clear, practical strategies, techniques, and procedures (Fahim Mostafa,2002). Especially in a science which is prepared Compromise for the development of various skills due to the nature of its construction, content, and method of processing topics Add to that nature associated with extrapolation and inference and knowledge of Muslim and evaluate the arguments and the requirements of previous information and ways to link them to reach the right solution Fayez Abu Hajar (2006). The interest in the development of life skills through the curriculum and for all levels of education in order to prepare the individual educationally for life in the community, and provide them with skills associated with the environment in which they live and related knowledge, trends, and values acquired by the learner intentionally and systematically and practice a range of activities Educational and practical applications, to achieve an integrated building of his personality in which he can take responsibility and deal with the requirements of life successfully (Ghazi, 2002: 211). Hence the importance of acquiring life skills in students:

1 - Help to build the learner's social and psychological abilities, including the support provided during the different situations that they go through.
2 - Qualifies learners to take responsibility and self-confidence and the ability to solve problems through dealing with different life situations.

3 - Gain an individual tendency to science and depth in the study through a closer link between the learner and the school. Facilitate the learner to make plans for life, and the interpretation of many natural phenomena (Ahmad Odeh Qeshta, 2008).
4 - Enable individuals to manage the health interaction between themselves and others, and between themselves, the environment and society. (Qeshta, 2008)

Objectives of the study

To identify the effect of using the model (SWOM) in the development of life skills for students of the first intermediate grade in biology (Ayesh Zaytoun,1999).

Study Hypothesis

There are no statistically significant differences between the average scores of the experimental group students and the average scores of the control group students in the post-life skills test.

Limits of the study

The study included the following limits:
1 - A sample of students of the first-grade intermediate/secondary secured for girls in the district of Baquba.
2 - The second semester of the academic year 2012 - 2013.
3 - The last three semesters of the first-grade textbook, second edition, 2010.
4-Life skills included in the study: skills (health and safety, environmental, manual, problem-solving, decision-making).

Study Terms Model

This is the strategy used by the teacher in the educational situation in order to achieve educational outcomes for students based on assumptions upon which the model determines the role of teacher and student and the method of evaluation (Peregrine and Peregrine, 1998).
Zaghloul (2002) defined it as: An integrated plan and format that includes the design and implementation of specific content, guiding the learning process in the classroom and evaluation.

SWOM Model: An educational system and a practical developmental program that includes all aspects of the successful human learner's industry Al-Hashimi & Al-Dulaimi, (2008) defined it thus: One of the recent trends in the teaching of supra-cognitive skills is to improve learning to prepare a generation that thinks in a holistic way instead of receiving information

and not interacting with it. Questions organised by the teacher when teaching creative thinking skills is critical. (Hashemi & Dulaimi: 2008)

The researcher defines this procedurally as: A set of regular procedures necessary to prepare specific teaching objectives and achieve them in accordance with the integration of specific thinking skills, in the context of the study, in order to demonstrate its impact on the development of some life skills in biology for first grade intermediate students (Azra Ahmad,2008).

Life Skills These are the mental, emotional and sensory abilities which enable an individual to solve the problems that they face in daily life and includes the skills related to science (nutritional skills, health skills, preventive skills, manual skills and environmental skills (Fathia Sobhi Salem Lulu,2005).

Bastian & Venta (2005) defined it as a group of actions and activities carried out by an individual in daily life, including the interaction with objects, equipment, and people, accurately and skilfully (Bastian & Venta, 2005)

4. The researcher defines life skills procedurally as the ability of the student to deal positively with their personal or social life problems and includes skills (health and safety, environmental, manual, problem solving, decision-making) and is measured to the degree obtained by the student in a specially designed test (Marwa Adnan Al-Jedi,2012).

The First Axis: Theoretical Background

The SWOM model, called the All-Inclusive School Model, which is built on the philosophy of the US National Center and in collaboration with the Idrak Center in Abu Dhabi, consists of a set of comparative thinking skills, questioning, brainstorming, forecasting, problem-solving and decision making which are taught by incorporating skill into the course content. The name SWOM is based on the first letter of the first word of the model name in English and is a school-wide optimum model (Mohamed Khalil & Khaled El-Baz,1999).

Principles of the model

1. Reflection and meditation corner as the basis for learning.

2. The basic structure of the model is to integrate productive mental habits and cognitive skills clearly and specifically in the teaching of educational material.

3. Consideration of the mental model of the learner, such as patterns of thinking, preferred learning styles, types of intelligence, tendencies, and interests, as an essential element for successful learning (Hosni Abdel Bari Asr,2001).
4. Learning is a lifelong process that is effective if appropriate strategies are used.
5. Attention to emotions, attitudes and internal perceptions of the learner is a large part of the learning process, and action, application, and performance are the other part of the learning process (Al-Hashimi & Dulaimi, 2008).

Definition of the skills involved in the model

Questioning**:** Find new information by creating and raising questions (Fathi Jarwan,2000).

Comparing skill: Identifying similarities and differences between information used as a deliberate process to facilitate the handling of a set of data or problems to reach solutions as a result of similarity or difference (Debono, 1998).

Decision Making: The intention is to differentiate between alternative solutions to a problem and then obtain the correct information and data (Mustafa, 2002).

Predicating: A mental process that includes the ability of a student to use his or her previous information or observation to predict the occurrence of a phenomenon in the future, i.e. estimating the future direction or inclination of events based on past experience (Zeitoun, 1999).

Problem Solving: This refers to the skill of the individual in identifying the problem and generate effective solutions. Implementation requires the student to be disciplined, employ structured thinking and the diligence to address problems, and to have the desire to face problems rather than avoid them (BarOn, 1997).
Generate Probability: The ability to be creative by discovering or generating other ways to prepare and organise available information and generate new solutions (Abu Jadu & Nawfal, 2007).

Life Skills

Life skills contribute effectively to the acquisition of a group of basic skills that enable students to adapt to the difficulties of the surrounding environment and enhance the positives to ensure the ability to make decisions and solve problems, and that the success of the individual in his life depends largely on the extent of possessing life skills and experiences that help them to face life situations In addition, life skills gain students direct experience

through direct interaction with people and phenomena and give learning meaning (Abu Hajar, 2003;Moataz Obeid, 2008).

Classification of Life Skills

- Classification (Saad Eddin, 2004) classified into skills: communication and mathematical operations; self-fulfilment and social awareness; consumer awareness and scientific awareness; and skills for job readiness.

Classification (Teacher Training Manual, 2004) classified into skills: self-awareness, empathy, decision-making, problem-solving, communication, interpersonal relationship, creative thinking, critical thinking, dealing with emotions, coping with stress (UNICEF, 2004: 6).

- Classification (Lulu, 2005) life skills into skills: food, health, preventive, environmental and manual.

Classification (UNICEF, 2005) included skills for: interpersonal communication, negotiation and rejection, understanding and empathy for others, collaboration and teamwork, advocacy, decision-making and critical thinking, including decision-making and problem-solving skills, critical thinking skills, interpersonal and self-management skills include: skills to increase internal control, emotion management skills, stress management skills. Definition of life skills related to study:

Health and Safety Skills include:

1. Nutritional Skills: Skills that require the development of the individual in order to acquire a healthy and proper nutritional pattern and behaviour which reflected positively according to concepts and trends that enable students to make a decision to choose a food commensurate with the circumstances of their lives (Abu Hajar, 2006).
2. Preventive Health Skills: This is the sum of skills related to the ability to maintain personal hygiene and acquire sound health habits (Sharifi, 2000).

Environmental Skills: A set of skills necessary for the individual to deal with the environment using various data for successful interaction for personal benefit and the benefit of society (Hossam Mazen, 2002).

Decision-making Skills: this refers to the skill of learners to deal positively with the problems facing them and enable them to make a constructive and appropriate decision in creative ways and according to scientific foundations (Abu Hajar, 2006).

Problem-solving Skills: This refers to the ability of the individual to make a decision and choose the best solutions and attitudes that advance decisions (Iraz, 2008).

Manual Skills: This refers to the ability of the learner to use practical devices, tools, and chemicals, to draw shapes and perform movements quickly, and to accurately and synergistically consider safety precautions and avoid damage and danger (Al-Qasim & Hasan).

Previous Studies
Previous studies related to the development of thinking skills: Study by Ghassan Qutait (2007). This study aimed to identify the impact of the integration of thinking skills in content in the acquisition of physical concepts and scientific trends among students of the basic stage in Jordan (Abdulrahman Al-Hashemi & Taha Ali Hussein Dulaimi,2008).

The study sample consisted of students of Abu Bakr Secondary School for Boys of Amman.

Third Directorate: Four types of thinking skills were used: induction skill, deduction skill, decision-making skill, and comparative skill. The researcher prepared a test of the physical concepts and a measure of scientific trends. The alpha-Cronbach equation and the analysis of the variance was used (ANCOVA) and the results were analysed using the SPSS program. Content was integrated into thinking skills, for the benefit of students who studied according to the content integrated into thinking skills (Cateit, 2007).
Study by Ohood Sami Al-Marsoumi (2011):
This study aimed to identify the impact of the strategy of SWOM (Som) in the collection of literature and texts among fifth-grade literary students. The study population consisted of fifth-grade literary students in Baghdad province. The sample of the study consisted of 72students: 37 A students were in the experimental group and 35 students were in the control group. They prepared an achievement test which was applied at the end of the experiment. The following statistical methods were used: t-test, K-Square, Pearson correlation coefficient, and the Spearman-Brown equation. There was a statistical significance in the achievement test for the benefit of the experimental group (Ordinance, 2011).

Previous Studies Related to Life Skills

Lulu Study, 2005: This study aimed to analyse life skills in the content of the science curriculum for first and second grades. The results of the analysis of the science curriculum for the first grade showed the inclusion of practical skills, manual and health skills, while nutritional, preventive and environmental skills were not addressed properly. The results of the analysis of the content of the science curriculum for the second grade focus on the content

of environmental skills and manual skills and health, while food and preventive skills were not addressed appropriately and constructively.

The Capricorn study, 2012: This study aimed to identify the impact of employing some active learning strategies in teaching science on the development of life skills among fourth-grade students in Gaza governorate. A t-test for two independent samples was used, as well as the Mann-Whitney test, and the ETA square coefficient. The results showed that there were statistically significant differences between the mean scores of the experimental and control groups in the life skills test in favour of the experimental group, as well as the presence of statistically significant differences between the high scores of the high achievement in the experimental and control groups for the experimental group and the low achievement in the experimental and control groups for the experimental group.

Study Procedures

Research Methodology and Experimental Design:

The researcher followed the experimental approach and adopted the experimental design of the randomised control and experimental group with a post-test to suit the conditions of the experiment and the available possibilities (Hebatallah Helmy Said,2003).

Society and sample of study:

The original community of study includes the first-grade middle school students in middle and secondary schools within the day schools for girls within the district of Baquba for the academic year 2012-2013. The school administration also cooperated with the researcher. The sample was divided into an experimental group and a control group, each consisting of 38 students, after ensuring that the students of the two groups were equal in a number of variables, as shown in the following tables:

Table 1: The T value of the chronological age in months for the students of the researcher's group

Judgement	Significance level	T value		standard deviation	Arithmetic mean	number	the group
		Tabular	Calculated				
Is a function	**0.05**	**2.000**	**1.540**	**12.065**	**175.078**	**38**	Experimental
				11.161	**179.184**	**38**	Control

Tribal Life Skills Test

Table 2: T value of the pre - life skills test for students of both study groups

Judgement	Significance level	T value		standard deviation	Arithmetic mean	number	the group
		Tabular	Calculated				
Is a function	0.05	2.000	0.418	5.967	21.473	38	Experimental
				4.969	20.947	38	Control

Biology Degree in the First Semester

Table 3: T value of the variable degree of biology in the first semester for the students of the two study groups

Judgement	Significance level	T value		standard deviation	Arithmetic mean	number	the group
		Tabular	Calculated				
Is a function	0.05	2.000	0.053	14.969	66.394	38	Experimental
				15.505	66.578	38	Control

Study Requirements:

1. Determination of the scientific material: The scientific material is specified in the last three chapters (Chapter VI / how parts of living organisms work, Chapter VII/components of the environment, Chapter VIII / First Aid) of the Principles of Biology for the first grade of the second edition of 2010, in the Republic of Iraq.

2, Formulation of behavioural purposes: The behavioural purposes included in the content of the three chapters were numbered as 184 behavioural objectives distributed according to the first four levels of the classification (Bloom) for educational objectives (remember - absorption - application - analysis) and to ensure the validity of these purposes and sound formulation.Presented to a number of experts and specialists and made some minor adjustments in the light of their views and proposals to adopt an agreement rate of 80%and above.

3.Preparation of teaching plans: The daily teaching plans were prepared for each of the experimental groups according to the SWOM model which included the skills of questioning, comparing, generation of ideas, forecasting, problem-solving, and decision making. A number of experts and specialists were asked to express their views and observations, and in the light of their feedback, some adjustments were made to the final form.

Study Tool:
A life skills test was prepared after analysing the content of the last three chapters of the biology book for the first intermediate grade, and a list of the basic and sub-skills was included in it. The initial image of the list included: food skills (16) sub-skills, health and preventive skills (30) sub-skills, environmental skills (22) sub-skills, manual skills (14) sub-skills, problem-solving skills (10) sub-skills, Decision-making skills (10) sub-skills, and the list was presented in its initial form to a group of experienced teachers who specialised in the field of teaching biology, in order to solicit an opinion on the link between life skills and biology and its sub-fields to its core areas and the possibility of deletion, addition, and integration. This step resulted in the deletion and amendment of the drafting of some of them and the integration of nutritional skills and health and preventive skillsunder one title (health and safety skill) based on the researcher's proposal. Due to the convergence and relevance of the two skills to the other, the list of life skills in the final version includes five basic (97) sub-skills, which were as follows: Health skills Safety (44) sub-skills, environmental skills (20) sub-skills, manual skills (13) sub-skills, problem-solving skills (10) sub-decision-making skills It includes (10) sub-skills.

Building the test:
The test paragraphs were formulated into a multiple-choice mode. Thirty-five test paragraphs were drafted with four alternatives to the same paragraph. In view of this, the necessary deletion and modifications have been made. The test map has been prepared as shown in Table (4) below:

Table 4: Life Skills Test Map

Total Summation	Skills and Weights					Content weights	Skills / Content
	Make decision	Problem Solving	Handmade		Health and safety		
13	1	1	2	13	6	89.38%	Chapter six
13	1	1	2	13	6	89.38%	seventh chapter
9	1	1	1	9	4	22.22%	Chapter VIII
35	3	3	5	35	16	100%	Total Summation

Test Validity: Done

Statistical Analysis Sample: The test was applied to a sample of 100 first-grade middle school students in Adnaniya Secondary School for girls in order to verify the clarity of the test items, their level of ease, the power of distinguishing them, the effectiveness of their incorrect alternatives, and the time taken to answer the test items. The time taken to answer the test

was 60 minutes. The coefficient of ease of the paragraph ranged between (333.0 - 629.0), and this was within the acceptable level. The discriminatory power of the paragraph ranged from 269.0 to 666.0 within the acceptable level. The effectiveness of the wrong alternatives for the test items ranged from 01.0 to 43.0 which means that the wrong alternatives have attracted more students from the lower group than the students of the upper group, which indicates the effectiveness of the wrong alternatives (Mohammed Bakr Nofal & Mohammed Qasem Sa'ifan,2011).

To verify the stability of the test, two methods were used:
1- Half-fractionation method: To calculate the stability of the test in the half-fractional method, the Pearson correlation coefficient was used to calculate the coefficient of stability between the two halves of the test (806.0), then corrected by the Spearman-Brown equation. The calculated stability coefficient (892.0) is a good coefficient of stability (Abdul Karim Sudani, & Abbas Fadel Masoudi,2011).

2 - The method of analysis of variance using the equation Alpha-Kronbach: The coefficient of stability was calculated using the Alpha-Kronbach equation (914.0), which is a good coefficient of stability.

Application of the experiment: After completing the requirements of the experiment and achieving parity and determining the scientific material, the experiment was applied by the material in the school on Tuesday, 26/2/2013 for both groups of study, and ended on Sunday, 28/4/2013.

Statistical Methods: The following statistical methods were used: t-test for two independent samples (t-Test), quadratic test (ka2), equation of the coefficient of para-coefficient, equation of the coefficient of recognition of the paragraph, equation of the effectiveness of the wrong alternatives, equation Spearman-Brown, coefficient of alpha-Cronbach, coefficient Pearson Link.

Results

To verify the hypothesis of the study, which states that there are no statistically significant differences between the average scores of the experimental group students and the average of the students of the control group in the post-life skills test, the mean and standard deviation were calculated for the scores of both experimental and control groups in the post-life skills test as shown in the table below:

Table 5: T value of the post life skills test for students of both study groups

Judgement	Significance level	T value		standard deviation	Arithmetic mean	number	the group
		Tabular	Calculated				
Function in favour of the experimental group	0.05	2.000	2.297	5.809	27.923	38	Experimental
				4.606	21.157	38	Control

The above table shows that the average scores of the experimental group were 921.27, while the average scores of the students of the control group were157.25, and by applying the T-test equation for two independent samples, the calculated T value of 297.2 is greater than the tabular value. Therefore, the zero hypotheses are rejected, meaning that there is a statistically significant difference between the two groups in the average life skills test scores for the benefit of the experimental group, according to the SOM model (SWOM).

Interpretation of the results

1. that teaching according to the educational models that are concerned with the integration of thinking skills through the curriculum, including the model of SWOM (SWOM) is designed to increase the awareness of learners and strengthen it by focusing on the higher levels of thinking, and that their practice of comparative questioning skills and generate ideas Prediction, problem-solving, and decision-making can increase their ability to employ them in similar situations outside the school. This is confirmed by Robert Swartz, a theorist of this trend, namely, that teaching thinking through subjects reinforces the learning of mental processes within the prescribed subjects (Novell and Seifan, 2011). Experience has also shown that learning scientific concepts, facts, and information through the use of different thinking skills achieves better results for overall academic achievement (Ahmed Saleh Alawi 2008).

2. The researcher contends that life skills (health and safety, preventive, environmental, problem-solving, decision making) are all relevant to the curriculum of biology and that they fit well with middle stage students who are in adolescence, which is one of the most important stages of development whereby in the course of a life, humans learnand acquire skills and experiences that determine personality. Biology books also represent a basic field for the development of students' life skills by virtue of the nature of their subjects being related to their environment (Sudanese and Masoudi, 2011).

3. Teaching according to the (SWOM) model SWOMtrains the student in life skills implicitly, clearly and simply, especially with respect to problem-solving and decision-

making, as the development of the life skills of the student is influenced by thinking skills and contribute positively to the acquisition and development of basic life skills (Zaytoun, 1999)
The results of the present study are consistent with those of Qeshta (2008) and Jedi (2012).

Conclusions, Recommendations and Proposals

Conclusions

In light of the results of the study, the following can be concluded:
1. The preference of the SWOM model in teaching in the usual way.
2.The model has a prominent role in achieving positive learners in educational situations through active participation in learning the skills involved in the model.
3. The model has an important role in developing life skills necessary to help students adapt to the surrounding environment and society.

Recommendations

In light of the results of the study, the researcher recommends the following:
1. Adopting the model of SWOM as one of the modern educational models in the teaching of scientific materials, including biology in the intermediate stage.
2. Adopting the concept of life skills as a modern field of education suitable for all stages of education, and the development of specific programs aimed at their development.
3. The responsibility of determining the life skills necessary for students at each stage of study from experts who specialise in these areas.
4. Directing the attention of those in charge of curriculum numbers to the importance of introducing a special material of life skills within the curriculum and giving great importance in including the most important life skills needed by students and each according to the stage of the study, as is the practice in many Arab and foreign countries.

Proposals

In light of the study results, the researcher proposes the following:
1. Conducting a study to identify the effect of the SWOM model in teaching other scientific subjects and in other educational stages of innovative and critical thinking.
2. Conducting a similar study to the current study using a cohort of primary school students.
3. Conduct a study to identify the impact of other educational models on the development of life skills.

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