The Importance of Teaching with Problem Solving Strategy
A theoretical study

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Abstract. Problem solving is a way of stimulating mental curiosity, pleasure , and learners desire to search for a solution, as it develops a sense of confidence and an ability to discuss, as well as, the critical thinking. It also develops a relationship of respect and trust between the teacher and the learner. The present study aimed at defining and highlighting its effectiveness and positive aspects in achieving the desired objectives of the educational learning process, through clarifying its importance in the teaching process.

Keywords. Strategy; problem solving strategy; teaching; teaching strategy

ملخص. تعتبر حل المشكلات وسيلة وطريقة لإثارة الفضول العقلي والمتعة والرغبة لدى المتعلم في البحث عن الحل ، كما تُنّمي الشعور بالثقة والقدرة على المناقشة والتفكير النقدي ، وتنمي علاقة الاحترام والثقة بين المعلم والمتعلم .

و تهدف الورقة الحالية إلى تعريفها و إبراز فعاليتها وإيجابياتها في تحقيق الأهداف المنشودة من العملية التعليمية – التعلمية من خلال توضيح أهميتها في عملية التدريس .

الكلمات المفتاحية . إستراتيجية؛ إستراتيجية حل مشكلات ؛ تدريس ؛ إستراتيجية التدريس

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I . Introduction

The distinction between teaching strategy and teaching method is often confusing. Teaching strategy is more general and comprehensive than the teaching method; the strategy is based on one or several methods according to the goals to be achieved ; however, teaching method sare chosen to achieve an integrated goal in one educational position (Zeitoun,2003). The teaching strategy is a general plan of teaching that includes all its procedures, and deals with all its components: objectives, ways, means, and aids to teach, evaluate the results of learning , also on it objectives of the educational format and its outputs are built. These methods and strategies - old and modern - have a significant impact on the psyche of the learner where the effect of education and teaching methods is not limited to the extent of information provided to students, but goes further to the long-term psychological effects which may leave their mark on the individuals' way of thinking and characteristics of their personality.

There are multiple specific ways of teaching; they can be grouped into three main ways: the protective method which is a traditional method that relies mainly on the educator in determining the subject of study and education, without giving students an opportunity to express their concerns, discussion and search for correct answers, but the educator is the focus of the learning process. The learner only receives knowledge thus information to be store and prepared for exams in contrast to the participation method. The latter involves engaging learners in determining goals and approaches, contributing to the preparation and discussion of lessons and determining methods of evaluation and collective search of the right answers (Wight, 1970).The educator here is a contributor, facilitator, assistant; he teaches and learns, thus involving students in all stages of the educational process. Independent learning method is what we can call self-learning or experimental learning (Boydell, 1976). It depends primarily on the student's incentives and facilitates the process of control in learning based on experiences and self-testing. The role of the educator is secondary because it is limited to guidance and coordination (Giyat, 1994, p. 144). Problem solving strategy is one of the crucial modern teaching strategies included in the literature of education.

The problem-solving pedagogy is considered as an effective method to build competencies. It is based on a philosophy that seeks to help the individual achieving a high degree of adaptation to the environment, which is the same endeavor sought by the approach of competencies. Therefore, it tends to go against educational trends that depend on direct intervention to control and direct the teaching learning action.

 The process of education is considered as the product of the individual or the group of pupils efforts which leads to the construction of knowledge that turns over time to abilities and competencies with interest in scientific applications, and close link to the reality of the learner's actual life in the era of knowledge, economy, and attention to the achievement of educational goals in the field of knowledge. Critical thinking skills and different actual capacities are developed (Qabalawi&Hilali, 2006, p.32).Problem solving is one of the most important modern teaching strategies that positively affect learners' learning; many research and studies proved the effectiveness of teaching. Research on the subject are still modest in Algeria - within the limits of the researcher's knowledge - and are continuing in other international environments. Therefore, we can understand the concept of problem solving

strategy and its role in achieving the goals of learning with its importance in teaching . This is the subject of our article .

II.   Definition of teaching and its strategies

The teaching method is one of the most important factors in the success or failure of the school curriculum . The way in which the teacher implements the latter will result in achieving specific educational objectives or vice versa ,while recognizing that There is no best or specific method in all cases. For example, a casting method may be valid and perfect in a lesson but not valid in another. Thus, teaching methods vary greatly depending on the diversity of the educational situation and in each lesson. The teacher may use more than one method or way of teaching when he begins using the discussion to explain the first element of the lesson and then moves to a second element using the method of dumping in order to introduce students to specific information or facts that were previously identified in the objectives of the lesson and when moving to a third one, a particular problem may arise and students may be asked to discuss and solve them; here the teacher resorts to the problem solving method. Thus, the teacher's use of different teaching methods is an attempt to enrich the learning process, helps facing the phenomenon of individual differences among students and enables the teacher chooses the most appropriate method to his/her students' level and the possibilities available to be used in the educational situation (Hayja, 2001, p.171). Teaching can be defined as an interactive process of relationship, environment, and learner response, which has a practical role in it and must be judged in the final analysis through its result. Teaching is a deliberate process to form the learning environment in a way that enables them to learn, to practice, or participate in a specific behavior, or in response to specific circumstances (Jaber, 2005, p.81).

Hayman defines teaching as "a pattern or method - which can be repeated - in the treatment of people, objects and events directed - intentional and conscious guidance - towards achieving a goal" (Hayja, 2001, p.171).

This definition is general to the teaching method. Teaching is a continuous activity aimed at stimulating and facilitating learning teaching behavior includes a set of communicative actions and decisions made by the teacher in a particular educational context ; teaching process is comprehensive of the purposes, objectives, contents and activities of teaching learning procedures and teaching strategies. Teaching methods are classified into a number of methods according to certain criteria adopted by the people of education. It is related to the role of teacher and learner, time available, in addition to the nature of the material and the education taking place.

Practitioners view teaching methods as a source of knowledge in three main groups: methods of education patterns, in which the method of education is shared between the teacher and the learner; methods of presentation and listening, in which the teacher is dominant in the method of teaching; and methods of the separation of education, in which the main role is that of the learner (Marai &Alhilla, 2005, p.35). The teacher's effective method of teaching is what distinguishes him from other teachers who use the same method. Thus, the teaching method is mainly related to the teacher's personal characteristics (Bokbasha, 2013, p.240).However teaching strategies are the group of movements of the teacher that occur in

the classroom in an orderly and sequential manner in order to achieve the goals set in advance; it is synonymous with the teaching procedures including : the method of diction, the method of discussion, the method of discovery, the standard method, the method of extraction and other methods and strategies (Muhammad al-Heila, 2000, p.78) . What is meant here is that strategic teaching involves many of the tasks required from the teacher: a thorough knowledge of the subject and the content of the study, an accurate assessment of students' tribal knowledge and needs, with a good analysis of the book material and curriculum and a good understanding of the learning and thinking processes to be used in teaching.

The importance of applying teaching strategies to the learner is that it helps integrate learners into work and makes learning fun and joyful, encourages learners to think critically , solve problems and develop the desire to learn to reach mastery, help interact, and promote the spirit of responsibility and initiation of the learners, and increases self-confidence which emphasizes the importance of participation in the   effectiveness learners in the learning process (Ramadan, 2017,p.436).

The use of teaching strategies represents a qualitative leap in the world of modern education according to Jabir (2010), especially after the transformation of educational thought from the focus on the role of teacher as a vector of knowledge to his role as facilitator and supervisor. The old methods of indoctrination, filling students' brains with information, measuring the portfolio are not feasible with the breadth of knowledge and the transformation of the world into a small village thanks to the explosion of knowledge and technology, which necessitates the use of more modern and effective methods which serves the goals of the stage and meets the needs of students and communities (Azzam 2017, p.153).

III.   The concept of steps problem solving strategy

III- 1 - Definition of a strategy

A strategy in general is the way or plan a person follows to reach a specific goal in his or her field of interest (Lorsi & Zukai, 2015, p.28).A Strategy is derived from the greek word "Strategos" which means the art of leadership or the art of generalship. As such, it is related to the military tasks of the concept of strategy, namely, the science of planning and directing military operations. Strategy takes various forms , including many sciences and fields, all social sciences (politics, economics, sociology, administration, etc.) Ansoff believes that strategy envisions the organization on the nature of the expected relationship with the external environment in light of the quality of the work which determines what should be carried out in the long term and the extent to which the organization seeks to achieve its goals and objectives (Mutlak 2005, pp.24-25). Strategy that we mean , is a set of procedures followed by the teacher, planning implementations and evaluation to stimulate the thinking of students through issues, problems that student seeks to reach a decision or search a meaning (Soliman. 2011,p. 10). It is a set of procedures (Kamal. 2003,p. 280). The problem solving strategy is one of the most important modern teaching strategies. To get to know them , one must refer to the meaning of "problem " first

III-2 - Definition of the problem

Daily exposure of the individual to many problems requires a suitable solution to them , the activity of solving the problem means the mental processes carried out by the

individual while seeking to reach the goal that requires access to such an individual. This requires the use of specific strategies to discover this path and implement it according to specific steps (zagul, 2009, pp.21-22). The problem is a difficult goal to achieve or a situation or position which has goals but there is a barrier to achieve them (Mari &Alhilah, 2002, p. 222). The causes of the problems vary depending on the nature of the surrounding environment and the degree of the impact varies according to the factors leading to it, the person may benefit from any problem he is exposed to, even if it has some negative results because they contribute to help solve similar problems.

III - 3 - Defining a Problem Solving Strategy

Problem solving is a behavior that relies primarily on the application of knowledge, methods and strategies of the previously learned solution, so that this knowledge and methods are organized in such a way as to help them apply to an unfamiliar situation so that he chooses from the knowledge he has learned and the strategies and methods he has acquired in solving a situation, to apply in another position. the process of solving the problem involves several mental and interrelated processes such as visualization, remembering , generalization, analysis and synthesis, in addition to the use of many different types of cognitive structures. Therefore, process of solving the problem is known as a series of successive processes which are responsible for reaching the solution (Zeitoun.2003,p. 283).

Some people view problem-based learning as a teaching method as (Griffith, 2005, p.10) and (Wang etal. 2008,p.6). They define it as an educational method that relles on introducing positions to students leading them to a problem they have to solve. This results in a process of understanding and problem solving that is centered to the learner, it is not just a way to get students to find the right answer. It is a method that requires thinking about asking questions, gathering information, generating potential solutions and then evaluating alternatives to find the best solution. The problem-solving teaching strategy is a set of moves adopted by the teacher in terms of planning , organizing , and implementing the subject. The problem is dealt with according to specific steps: identifying and understanding the problem, developing a plan for solving and implementing the solution. The role of the teacher during teaching is guidance and orientation, and providing feedback to the learner (Al-Khatib&A,al-Abayneh, 2011, p.192). The problem solving method is summarized in one of the problems related to the topic of study and the starting point in teaching the subject by thinking about this problem the work of the necessary procedures and the collection analysis of information , results ; then developing appropriate proposals for them, the student should have acquired the scientific knowledge and trained in the method of scientific thinking which led to the development required for his mental thus practical skills (Abu Jalalah, 2001, p. 105) The approach of problem solving in learning dates back to the work of John Dewey, who confirmed at the beginning of the last century that the information does not turn directly. (M,Tahrouli, 2012, 168). Learning requires an active participation of the learner. He proposed a pedagogic approach in which the problems we encounter in reality are the starting point for achieving learning and he gave a particular emphasis on the development of the learner's ability to self-learning that involves learning to solve problems in the framework of the streams of cognitive psychology and the two directions: structural and social structures .

This method has been an important development since the 1980s, and has been important in all educational institutions, including the university. Experimental studies have shown that it helps learners achieve better results at the level of professional competencies and relational competencies ; it also makes them able to direct the search for information learning and problem solving in a better way (Tahrouli, 2012,pp.168-169). Van Dalin points out that the use of this strategy in teaching develops the scientific research skills of the students. It is called the scientific method in reaching the results and suggesting solutions (Hamida et al, 2000, p.153).

One of the most important foundations and educational contents that must be observed during teaching problem solving for students to achieve the desired benefit of the following is:

1. The selection of the relevant problems to the environmental reality surrounding the learner.
2. Paying attention to problems that are the focus of attention to the learner
3. Providing clear formulation of the problems, and accurately identified, so as to avoid any confusion on the learner, which affects the understanding of the problem, thus failing to resolve
4. Helping learners identifying information that helps them solve the problem and determine the relationship between this information and what is required to get access.
5. Providing guidance and hints that work to guide the thinking paths among learners in the direction that they can understand what they are doing to solve the problem, without resorting to direct and explicit solution to the solutions
6. Taking into account the student's cognitive background, linking the information and data in the problem with this knowledge background, will facilitate the learning process on the one hand and achieve the practical aspect of the problem on the other hand.
7. Taking into account the mental level of the students, where the problems are not below their mental level, making them difficult or impossible solution
8. Focusing on teaching the steps to solve the problem and strategies that can be used in the solution, and not only teach how to get the final solution to the problem (S,Ibrahim, 2011, pp.160-161).

III.4. Steps to problem-solving strategy

The problem solving strategy of the teacher has been detailed according to (Husni,2005,p. 80) who mention that it has six steps ;

1. **Identifying the problem** : capture the problem , or find problematic conditions within a set of data and information, or situations, specifying the elements of the desired goal and reality, and the dilemmas between the intended and the reality. Determine the contradiction that created the problem

2. **Representation of the problem**: by defining key terms and conditions_ identifying key elements, objectives, procedures, data and unknowns_ embodiment of position elements in the form of shapes, symbols, words, graphs, etc.

3. **Choosing the solution plan**: reformulate the problem to facilitate the solution - choose the appropriate plan for the pattern of the problem of different types of solutions, try and error(accuracy), multidimensional matrix, the imposition of hypotheses and testing, certain mathematical formulas, transforming the mother problem into small problems easy to solve, From easy solutions possible, practicing verbal representations, anticipating dilemmas and planning them(Husni,2005,p. 80) .

4. **Implementation of the solution plan**: control operations - remove the dilemmas - the adequacy of the procedures

5. **Conclusion**: formulation of outputs - increase of proven alternatives to solution

6. **Evaluating the solution**: Formulating the outputs according to the objective and steps
- Ensuring the adequacy of the steps and their effectiveness in the clear summary solution.
There are several models developed for strategic steps to solve problems, all of which are poured into one mold, The strategy of teaching problem solving can be summed up and summarized in the following figure ;
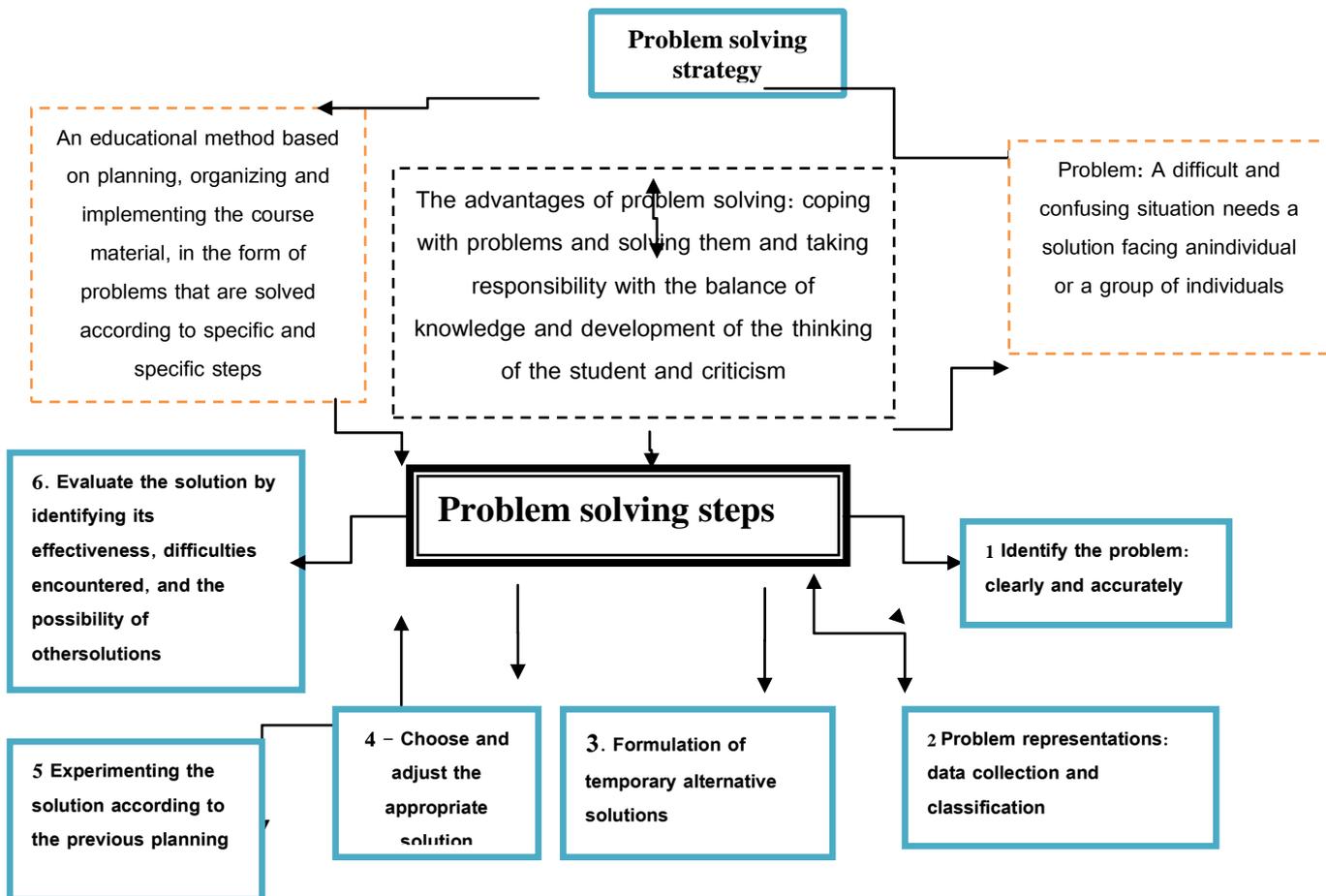

Figure (1):Problem solving strategy and steps

The method of solving problems is one of the most effective teaching methods as it develops the learner's value of self-reliance and the development of his ability to think and find solutions to issues he face; this method is represented by the issue of teaching in the form of a problem either through individual or collective work . This process is conducted in three basic steps or stages:

-Introduction : the teacher attracts the attention of learners and begins to ask the problems and works to clarify the dimensions and discusses with the learners steps and processes that may lead to the solution

- Guidance: the teacher motivates learners to think and retrieve information related to the problem and monitor their performance while appropriate feedback to them during they find solution to the problem.

- Evaluation: This step is to evaluate the solutions reached by the learners and discuss them together with working to strengthen and support the correct solutions and to identify errors in the wrong solutions and in the end the problem is re-summarized and the procedures to solve problems (Zoghul&Alhamid, 2007, P.90).

From the above three elements, the steps of the method of solving problems can be summarized for use by the professor in presenting the subject of teaching as follows ;

Introduction   **Evaluation**

Guidance

| 1 - Attract the attention of learners
2- Issue the problem

3- Processes and steps of solution | 1- Motivating learners

2 -Monitoring Performance

3- Giving Feedback | 1- Evaluation and discussion of solutions
2- Enhance correct solutions and correct errors
 3 Re-summarize the problem and appropriate solutions |

Figure (2): Summary of the problem –solving steps used by the teacher

IV .The importance of the strategy of solving problems in teaching

The importance of solving problems is not limited to being a skill of well-known thinking skills, but is even more important when applied in the educational process as a well-known method of teaching. Research, studies and facts have proved beneficial to learners and teachers (Saada, 2003, PP.475-573). The importance of this method in education comes from the fact that it puts the learner in a real position for his mind to reach a state of balance of knowledge. the state of cognitive equilibrium is a motivational state that the child seeks to achieve. This situation occurs when it reaches a solution or answer or discovery therefore the motivation of the child or learner rises and develops the ability to solve problems, contribute

to provide the learner with opportunities to create a personal approach of his own thus help in adapting to new data . A group that studied the strategy of solving creative problems, and many studies indicate the importance and effectiveness of teaching problem solving strategy in the achievement of students in most of the materials as the study of Ibrahim (1986), Roth(1993), Rizk(1996), and Azhari (1996) , etc. Studies that have been experimental results for the benefit of school groups problem solving strategy compared to the normal teaching method, and the ability to solve problems a basic requirement in the life of the individual, many of the situations that face us in daily life are basically situations that require solving problems, behavior and students learn to solve problems to be able to make the right decisions in their lives. Problem solving was not an urgent issue. All what individuals have to learn is to play their specific roles. The life is variable, complex, and all we can predict is that it will not be what it is in a world like this. the ability of the individual to adapt and solve problems becomes critical (DeBono, 2008, p.193).

(Djaber) indicates that there is a difference between learners with high ability to solve problems and learners with low ability to solve problems, where procedures and how to solve are known in a logical and sequential manner, in which the learner relies on analysis and progression in solving the problems presented (Djaber, 2005, p.239- 240)   The author believes that there is an imperative to take care for accuracy integrate the complex problem and take the concept part first to facilitate the transition to the hardest part the learner analyzes the problem into smaller problems and then begins the solution from the most obvious point Segment the problem Tend to skip the introductions and rush to give conclusions and guess the answers before completing all the steps necessary to reach accurate answers to walk the problem in a step-by-step and carefully from beginning to end meditation and avoid guessing the problem is not represented either in mind or on paper so that it is easy to understand and not to think aloud during work to solve the problem . They appear to be active in different forms. (Ibrahim, 2011, p.156) which shows the differences between learners with high ability and lack of problem solving , the most important characteristics that we observe these differences are: positive trend characterized by confidence in the self and positive vision of the analytical problem its content and not rushing to govern, but the depth of thinking to solve the problem , the second feature to be careful to accurately identify the content of the problem and diagnosis of good and proper, the third characteristic is to divide the problem, because the details of the parts of the problem and know the privacy of each part helps solve the problem more the fifth characteristic refers to the vitality and activity of the high capacity to solve problems through dynamic mobility while thinking about solving the problem with all activity and vitality at the intellectual and physical levels. So we summarize that the methods of teaching depend heavily on the method chosen by the teacher to achieve his goals in education and the delivery of the necessary information, through a series of activities and practices within the classroom to achieve these goals.

The method of problem solving seeks to put students in front of problem learning through the problem gives students information and life skills because they learn through work and in the face of realistic situations (Obaidat &AbuSamid, 2005, p.67). The classical methods contribute to the low cognitive and pedagogical achievement of the learner , thus theoretical aspect of teaching decisions or the inadequacy of methods and methods on the

purely traditional character, given the large number of learners in the classroom, the intensity of programs in the curriculum, and the lack of use of modern teaching techniques and other educational problems that limited from the use of modern teaching methods and strategies, which affected the achievement of the desired educational goals, and ensure the knowledge economy hoped, under the change to achieve the quality of education .

Conclusion

Methods of teaching are based on the procedure a teacher chooses to achieve his /her aims through the implementation a set varied and various activities and behaviours at class because of the adoption of problem solving method efficiency regarding to the different abilities learners since they should get involved more by offering them much space to feel they are free to foster and overcome the different difficulties they may confront when learning and acquiring knowledge . Solving problems needs more time as circumstances of learning differ from one school to another . In addition a teacher should play an important role as a supervisor , a guide , an assessor , a tutor , so that he intervenes adequately and at an exact time to give assistance .

Consequently , a teacher must show positive attitudes when necessary . He /She has to diagnose and specify learners needs through diagnostic evaluation then construct his formative one and end his /her process with the summative one to know to what extend have his learners improved them selves . So, it very crucial to plan his her lessons so that he cures the different learners weaknesses   and reinforces their strengths allowing them to implement what has been taught in their practical lives .

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