

Didactics : an overview on the key concepts

Mezaini Djilali¹, Khemmad Mohammed²

¹University of Djilali Bounaama Khemis Miliana(Algeria), d.mezaini@univ-dbkm.dz

²University of El Oued(Algeria), khemmad-mohammed@univ-eloued.dz

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Abstract:

This study aims at identifying didactics as a science with its own concepts and theoretical principles. It also aims at clarifying the development of this concept in Arabic and foreign languages, and clarifying the difference in the use of the connotation of this word among the Arab countries and to make distinction between types of didactics. The didactics is based on the study of the triadic interaction of the teacher, the learner, and knowledge. We also took a closer look at some concepts such as: didactic contract, didactic transposition, didactic obstacles, didactic perceptions, as well as didactic situations. We also some historical facts about didactics in the Algerian educational system.

Keywords: didactics, didactic contract, didactic transposition, obstacles.

ملخص:

تهدف هذه الدراسة إلى التعرف على التعليمية كعلم له مفاهيمه و مبادئه. كما تهدف إلى توضيح الذي حصل في هذا المفهوم في اللغة العربية واللغات الأجنبية. كما ترمي هذه الدراسة إلى توضيح الفروق بين أنماط التعليمية. فالتعليمية بنيت على أساس دراسة التفاعل الثلاثي بين المعلم، التلميذ، والمعرفة. كما تناولت الدراسة الحالية بشيء من التفضيل لبعض المفاهيم مثل: العقد التعليمي، النقلة التعليمية، العوائق التعليمية، التصورات التعليمية والوضعيات التعليمية. وتطرق الباحثان كذلك إلى بعض النقاط التاريخية المتعلقة ببدايات استخدام مفهوم التعليمية في المنظومة التربوية بالجزائر. كلمات مفتاحية: التعليمية، العقد التعليمي، النقلة التعليمية، العوائق التعليمية.

Corresponding author: Mezaini Djilali,

1. INTRODUCTION

Many teachers find it difficult to communicate their teaching contents and transform them into abilities and skills that can be easily acquired by learners. Moreover, the learner by his turn faces a great deal of difficulties that prevent him from grasping those contents. Consequently The negative results are clearly noticed during classroom assessments. The main reason for that failure might be due to the fact that our traditional curricula as well as our teaching methods put more emphasis on the lower cognitive teaching objectives such as recalling ,rather than the higher ones.

On the other hand, we might ,by no means, be able to overcome those shortcomings unless we intend to apply the reliable findings of the recent studies that focus on transforming the scholar knowledge into teachable knowledge that fosters the learners 'competencies and establish the appropriate environment to boost their creative abilities and motivate them to actively acquire knowledge.

No one can ignore the fact that effective teaching is not limited to the teacher's ability to master the content area of any teaching subject, but it rather, requires that the teacher should have accurate and comprehensive knowledge of the components of the teaching process. And didactics is the science that is interested in studying of interrelation of these components.

2. The evolution of the concept of didactics

Didactics was defined by Dolch as " the science of learning and teaching in general. It deals with learning in all possible forms and with teaching of all kinds at all levels" (Zierer&Seel,2012,p.1). As for Chevallard, didactics is defined as the science of dissemination (and the non-dissemination, or even the retention) of knowledge and practices in a determined group of human – a school classroom, "the" society, an institution, etc (Chevallard,2003

And to investigate the core of didactics, Jank and Meyer (2002) suggested the following questions: "Who should learn what?, from whom? ,when?, with whom?, where?, how?, with what? and for which purpose?" These questions are often addressed by various didactic approaches (Zierer&Seel,2012,p.1).

The foundational period of didactics goes back to the seventeenth century ,and it is well common to connect the first modern use of the term with Wolfgang Ratke (1571–1635), who presented a reform programmer, the so-called "Frankfurter Memorial" for schools in 1612 (Kansanen, 1992, p. 5). In those days didactics was primarily known as "the art of teaching". For Johann Amos Comenius, i.e. Jan Komensky (1592–1670), didactics was an art. It was the art of "teaching everything to everybody" (Uljenš1997). Comenius wrote the *Didactica Magna* (1640) expecting that using both a new method and more effective teaching media would make it possible to teach everyone everything (omnes omnis) both quickly and effectively. According to Folke (1971): The French word "didactique" was derived from the Greek "Didaktikos", which means: "let us learn", (i.e, we teach each other, or I learn from you, and I teach you).Moreover, the term "Didasko" corresponds to I learn, while "Didaskon" means education (Lourci,2002). But according to Blankertz, didactics , however, should not be confused with the French term "didactique", a term still used today for a specific kind of instructional literature (Blankertz, 1987, p. 21). This usage has its roots in Greek literature.

As far as the Arabic language is concerned,it always happened to come across a variety of Arabic terms that correspond to just one single word in other foreign languages, and this may be due to the diversity of translation sources, including the multiplicity of terms derived from English or from French, since they are the two common languages from which new terms are borrowed, among which the term "didactique" in French and "didactics" in English, which are closer in meaning to the following arabic terms: "taelimiat, taelimiaat, eilm altadris, eilm altaelim, altadrisiat, aldidaktik ". And Those terms vary in use all over the Arabic countries. Some Arab researchers prefer using the term "aldidaktik" to avoid any confusion in the concept, while others prefer using other equivalent terms.

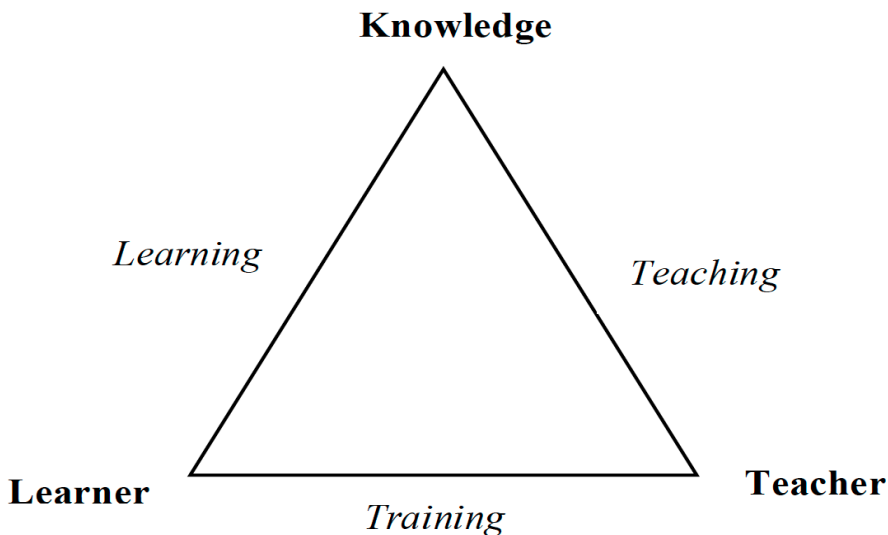
According to Hanafi bin Issa the word "taelimiat" in the Arabic language is stemmed from the word "taelim" which is derived from word "allema" which means placing a mark to denote something without bringing it (Derridj,2011,p.8). And it also referred to a type of poetry that expresses scientific or technical knowledge. And according to Blankertz, didactic literature comprised various kinds of instructional poems which existed alongside with the heroic and historical poems. These instructional poems are quite similar to our instructional rhyming poetry, which was written on purpose to help learners to easily and quickly grasp, memorize, and recall what they learn.

Although the concept of didactics remained prevalent until the sixties,it was limited to the educational activities, and used interchangeably with the pedagogy, and it was extremely hard to make a clear cut between them.

3. Didactic object

Every teaching and learning process and at any level consists of three basic factors (teacher, learner, and the content).These factors interact reciprocally forming the so-called “didactic triangle”.

According to Jean Houssaye, every teaching situation can be described as a triangle consisting of three main poles: knowledge, teacher and learner. All the teaching process is based on a particular relationship between two of these three elements and the exclusion of the third with which each of the chosen elements must maintain contact (Houssaye,1996).



A figure: shows the three poles of didactics

The relationship between the poles of the didactic triangle that determines the learning situation, which takes place through taking into account the balance between these poles when planning and implementing according to each teaching-learning situation and not neglecting any of its components, to avoid falling into what Mirieu called “drifts”. Philip Mirieu identifies three types of drifts in which the teacher can fall during the planning and implementation process, and these types are as follows:

Curriculum drift : a process whereby the learning experiences associated with a curriculum do not match the specific syllabus associated with desired outcomes.

Demiurgic drift : the teacher on himself as a teacher and transmitter of knowledge

Psychological drift : the teacher focuses is totally on the learner and neglects the other two components.

4. Branches of Didactics

Legendre states in the “Dictionnaire actuel de l’éducation ” that a distinction must be made whenever didactics is defined.

4.1 General Didactics

The concept of General Didactics, is a unified body of knowledge about teaching and learning can be applied in all the different disciplines. It represents the overarching theory of both decision making on and processes of teaching and learning in societal institutions .

4.2 Specific Subject)

It is a type of a subject-related didactics that studies the conditions for the transmission of “culture” specific to an institution as well as the conditions for the acquisition of knowledge by a learner. This type of didactics allows teachers of a certain discipline or subject to help their learners grasp the content taught with rigor and efficacy. It is also considered as a part of General Didactics, and is equally concerned with laws, data and principles, but on a smaller scale, because it is related to one academic subject, deals with a particular subject, and uses particular teaching techniques.

5. Basic concepts of didactics

Although didactics is considered as a newly emerging science that relies on linguistics, epistemology, pedagogy and psychology, it has rapidly established and developed special theoretical concepts for it.

5.1 Didactic contract

The Didactic Contract typically implies the ‘modification’ of knowledge. Brousseau (1997) describes the Didactic Contract as ‘a system of rules, mostly implicit, associating the students and the teacher, for a given piece of knowledge’ (p. 15). This term was introduced by "Brousseau" and "Chevallard" in 1990, through which they stressed that the relationship between the teacher and the learner is tied by a set of reciprocal obligations in a didactic situation that appear in the form of behaviors based on clear rules explicitly or implicitly that are expressed. The teacher expects a set of particular responses and behaviors from the learners, and in return the learners expect a particular set of behaviors from the teacher.

The Didactic contract differs from the pedagogical contract in the way that it is not limited to teaching strategies, but it rather goes beyond it to researching the contents and their methods of teaching. The corner stone of the didactic contract is the students’ acquisition of abilities, skills and knowledge.

5.2 Didactic Transposition

The notion of didactic transposition was introduced in the field of didactics of mathematics by Yves Chevallard, and it refers to the transformation an object or a body of knowledge undergoes from the moment it is produced, put into use, selected, and designed to be taught until it is actually taught in a given educational institution (Chevallard, 1985, 1992). The didactic transposition is the process by which a content of knowledge is modified to adapt it to its teaching to a less technical level, accessible to non-specialised students. In this way, wise knowledge is transformed into taught knowledge, appropriate to the student's level (Chevallard, 2005). The process of transposition is described using a number of key subconcepts that are first ‘desyncretisation’, which refers to the fact that the knowledge is cut off from its origin; second, ‘depersonalisation’ because the knowledge is no longer linked to its producer; third, ‘programmability’, which is based on the knowledge being ‘elementarized and organized’ according to a progression and, finally, ‘publicity and social control of learning’ (Hudson, 2016).

Didactic transposition involves a series of stages in which the scientific knowledge is progressively adapted to the level of the learners. This knowledge is shaped according to the objectives of the curriculum proposed by the educational authorities and, both the authors of the school books and the teachers themselves in the classroom are involved in this process, making the knowledge useful for the learners. When one wishes to “transpose” a body of knowledge from its original habitat to school, specific work should be carried out to rebuild an appropriate environment with activities aimed at making this knowledge “teachable,” meaningful, and useful (Chevallard & Bosch, 2013). One can distinguish three types of knowledge :

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a) Scholarly knowledge ('savoir savant'): Because the contexts of scientists in which scholarly knowledge is constructed are not similar to the contexts of learners in school or other educational situations (Fensham, 2002).

b) The knowledge to be taught (Savoir a Enseigner): It is the one that is found in curricula and textbooks and is derived from scientific knowledge. The main difference between them is that scientific knowledge is characterized by broadness, openness, and fulfillment of pure scientific purposes, while this knowledge is governed by closure and selection in order to serve the goals of an educational project.

c) Learned Knowledge (Savoir Enseigné): The learned knowledge is represented in what is actually circulated by teachers and the learners, and it derives its content from the knowledge to be taught (curricula and textbooks). It can also be taken from other tributaries such as exam topics, forums, formative courses that the teacher undergoes, the teacher's own experiences...etc.

And according to Chevallard, didactic transposition includes two major steps (Chevallard, 1991, 35

a) External transposition: It refers to the process of selecting, adapting, organizing and declaring the "knowledge to be taught" beginning from scholarly knowledge and ending with all the teaching materials that can be proposed in a given course (Bosch et al, 2021).

b) Internal transposition : It refers to the process of transforming programmes and syllabi or the "knowledge to be taught" into the "actually taught knowledge" in classrooms. The teacher's role at this level is chiefly concerned with the functions of thinking and practice, in addition to the evaluation and intervention to adapt the teaching resources to correspond to the level and characteristics of his group of learners.

5.3 Didactic Obstacles

The word Didactic obstacles refers to the obstacles that prevent access to building knowledge in good conditions, hinder the process of teaching and learning in the desired manner, and stand as a stumbling block that hinders learners' control of concepts, and prevents them from acquiring knowledge, skills, and experiences in appropriate conditions. Obstacle can take two forms:

a). Positive form: we consider the obstacle as positive when it is seen as a challenge, and turns into an exciting one that helps the learner to achieve his learning objectives and expectations.

b). Negative aspect: the obstacle takes a negative form when it is regarded as a source of learner failure.

5.3.1 The nature of didactic obstacles

According to didactic experts, didactic obstacles are a result of two major causes:

a) Epistemological causes: They refer to the teaching approach adopted in the classroom, such as opting for a methodology, or a teaching method that seems inappropriate for the learner.

b) Psychological causes: They represent the perceptions and beliefs held by both the teacher and the learner which stand as an obstacle that hinders the learning process. Educators believe that the student's first interaction with knowledge is clearly affected by his previous knowledge.

5.4 Didactic representations

Didactic representations are a set of common concepts and firm practical rules established by individuals based on their experience, knowledge, and research results. These representations are considered as a cornerstone in interacting with learners, planning for lessons to make learning happen.

The teacher's correct perception of the students' situations, their prior knowledge, personal characteristics, and their way of thinking is one of the most important factors for success in

developing curricula, planning for lessons, and achieving the goals of the teaching process. Moreover, these perceptions and beliefs relate to all teaching subjects.

Learners' perceptions of any type of knowledge may happen to be more or less wrong, and modern education considers that error is part of the learning process. Therefore, analyzing the learners' errors and identifying their sources is necessary to promote his educational performance.

And if the teacher is required to modify the learners' beliefs and perceptions and help them detecting their errors, and he is also required to plan his lessons on his practical perceptions of knowledge, and on the assumptions of the teaching method that corresponds to the characteristics of the learner.

5.5 Didactical situations

The theory of didactical Situations began to develop in the 1960s in France, initiated by Guy Brousseau who has led its development since that time. A first synthesis was published in 1997 (Brousseau 1997). And a situation refers to a system of interactions between three poles: students, teacher and knowledge. And knowledge, according to Brousseau (1998), is a property of a system constituted by a subject and a "milieu" in interaction. Learning occurs through this interaction: the subject acts within and receives feedback from the milieu and the important role of the teacher is to establish an environment that facilitates the learning process. And we can find different types of didactical situations :

5.5.1 Situation of action

The "didactic situations" of action are those in which the learner, who is actively engaged in the search for a solution to a certain problem, performs certain more immediate actions, which result in the production of knowledge of a more operational nature (Catarino, 2020, p. 229). (a) the students are willing to adopt it as their own, and are interested in solving it to satisfy their own curiosity or ambition; (b) the students have the means to construct the solution by themselves, either by inventing a new procedure or choosing one among those they know, without, however, the teacher suggesting which one to choose. In this situation (Sierpinska, 2003), knowledge appears as a means for solving a problem or a class of problems. It allows learners to demonstrate their knowledge in the form of a decision making. Such a situation aims at creating a sort of interaction between the learner and the environment.

Situation of action can be hard to organise and are rather time consuming, so it is probably realistic only to include a small number of such situations in a course (Pederson, 2010).

5.5.2 Formulation situation

The "didactic situations" of formulation are those in which the learner already uses some explicit theoretical models or schemes in attempts to solving a problem, in addition to showing an evident working with theoretical information in a much more elaborated way.

Sierpinska mentioned that "The milieu for the learners is developed on the basis of some previously shared experience or activity: The learners exchange and compare observations between themselves. They may not have the language to formulate their observations, so their main effort in this situation goes into creating such a language and agree on some common meanings. The teacher chairs the exchanges (in order to avoid chaos) and highlights (repeats louder, writes on the board) some formulations of the students, in case they may not have been heard by other learners. Knowledge, in this situation, appears as a result of a personal experience, which needs to be communicated, and thus slightly de-personalized and decontextualized, in order to be understood by others" (Sierpinska, 2003, p. 3).

5.5.3 Situation of validation

The “didactic situations” of validation are those in which The teacher takes on the role of the theoretician evaluating the productions of other theoreticians, whose role, in the classroom, is played by the students. This situation requires the learners to have the ability to convince others of the validity and legitimacy of the results reached by them. Learners try to explain some phenomenon, or to verify a theoretical conjecture. The teacher acts as the chair of a scientific debate: s/he intervenes only to put some order in the debate among Learners, draw their attention to possible inconsistencies, and encourage them to be more precise and systematic in the use of concepts (Sierpiska,2003) This situation is the most difficult and complex factor because it requires providing explanation and contextualization of the proof (Brousseau,2003).

6. Didactics in the Algerian educational system

The term “Didactis” appeared first through some texts and not by survey, and it did not reflect explicitly the actual meaning after independence, but what appeared in text are another term that indicates its meaning, which is “methodology of teaching” . Grifou announced that “The first Algerian official text regulating the Algerian school after independence dates back to 1965, and the thing that distinguishes this text (this text was not mentioned) is that it cut off all connections with the traditional pedagogies, whether it was related to Arabic or French. Since then, thanks to this decisive text, we moved to the era of teaching methodologies (ie teaching methods) and in such a way both Arabic and French teaching methods were introduced (Greffou,1989,p.21).

In this regard, Abd al-Rahman bin Bouika (1994) mentioned that the term “ Didactics”, which was translated in Algeria into “Subject Matter Didactics” or “ Didactics of a discipline”.

Ali bin Mohammed (1991) - the former Minister of Education – stated that the term “ Subject Matter Didactics” appeared clearly and was officially used in the Algerian school at the beginning of March, 1991 when the Algerian Ministry of Education organized a series of national forums at (the Palais des Nations)that extended from the beginning of March to the end of April 1991 to carry out a more in depth investigations regarding the subject of didactics in a variety disciplines (language and literature, didactics of scientific subjects, and didactics of social sciences and foreign languages). The main issue of the forums revolves around the following questions :What do we teach? Whom do we teach? And how do we teach? these questions and others are meant to convey the idea that the teacher has become required more than ever to have access to modern information, to have accurate knowledge of the learning mechanism, and all the steps of the educational process, starting from defining the contents and ending with preparing and evaluating teaching materials.

7. CONCLUSION

The rapid evolution of the teaching practices throughout disciplines, is due practically to the growth of research scope regarding didactics. The research findings have been contributing in the identification of the nature of the factors that are involved in the teaching and learning process. Given the significance didactics in the field of education, we tried through this paper to shed the light on the main components of didactics , give definition to the different concepts regarding the field of didactics, and trace back its first beginning nationally and internationally.

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