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Specific Didactics Prospective, an *area*of the Science of Education for Effectiveness in the Classroom

Prospectiva de las Didácticas Específicas, una rama de las Ciencias de la Educación para la eficacia en el aula.

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Abstract

Specific Didactics, or Area Didactics, are the recent emergence in these knowledge areas in Education. It involves specialization of different scientific disciplines and also specialization of educational sciences regarding the application of each discipline in the classroom, within curriculum analysis and theorization. And this is because the tool used by education is, mainly, discipline knowledge: the *"subject.* Sciences that study the use of knowledge to educate have much to provide in education, despite their recent origin, they are already doing so, starting from the definition of its objective and its action framework, and with the creation of their own scientific community.

Key words: *Specific Didactics, educational imaginary, educational science, general didactics.*

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1. INTRODUCTION

The word *"prospective"* comes from the Latin word *prospícere*, which means "looking forward". In the scientific world, this word refers to the analysis of an issue in order to deduce its future possibilities. In everyday language, *"prospective"* refers to explorations, field recognition or drilling, with the purpose of discovering sites that are vaguely known, maybe to find mineral deposits or oil wells.

So, is it right to carry out prospects on a recent scientific field as Specific Didactics? Teachers, trainees or professionals, only have vague information about this new field of scientific knowledge. It has been said that there is not much to explore or discover about it and, of course, only a few people believe it is possible to find new landscapes of science, unknown fields of knowledge, or that it is possible to find oil through this prospecting process.

However, those who have started caring about a Specific Didactics will find some suggestive lines of work and innovation; new landscapes for both experimentation and research. A vast field so wide that it is almost unmanageable in which multiple contribution factors for a more effective teacher training and teaching careers will be found.

2. THE REASON OF THE BIRTH OF SPECIFIC DIDACTICS

A Specific Didactic depends directly on the two fields of knowledge from where it takes its constitutive elements: Educational Science and an area of knowledge (principally school knowledge) that we call, in our recent scientific terminology, the regarding science. In short, this didactic would try to apply the knowledge given by the educational science to a specific field of factual knowledge: Mathematics, History, Language, Physics, etc. Therefore, when educational sciences are applied to a regarding science, a new type of scientific knowledge is produced and, when a regarding science has an educational use (because a science becomes a differentiated sub-science, depending on the use we give it) it dramatically changes its perspectives. Consequently, these are the two sources of any specific didactic.

The specialists from these sciences have not really accepted (let's be honest) the recent birth of this new branch of the tree of knowledge. Today, these reluctances are gone… or at least they are going away. But, there is no doubt that this little branch fighting to grow in order to breath oxygen in the middle of this leafy tree, still needs to explain (sometimes) the reasons of its birth, the need of its presence, and, at times, it needs to justify the reasons and the way it is part of science. While facing well-established traditional academic sciences, it needs to guarantee that it has got something to offer, that provides an efficient service, and that it can give unknown, unsuspected and full-of-freshness sites, if young researchers and teachers become interested on it (González Gallego, 2002).

Maybe, it would not be bad to offer a particular vision of the article's signatory about the reasons of the existence (past or current) of this *"disdainful reluctances".*

A) A specialization of teacher training, educational research and professional exercise.

Some *"reluctances"* come from the field of Educational Sciences. They are expressed by those who *"believe"* sciences study and/or solve all the problems related with teaching. Therefore, educational sciences (general didactics, learning psychology, instructional design, etc.) are applied to a specific knowledge, no matter which knowledge it is. Other "*reluctances"* come from the field of each regarding science. They are expressed by those who *"believe"* that in order to teach a specific science,

you just need to know it because from this knowledge all the things we need to teachefficiently it are born.

So, we have the two reasons for the existence of these reluctances: in some cases because there are people who *"believe"* that in order to teach, we only need to apply a *"instructional design"* and, in other cases, because there are people who *"believe"* that in order to teach anything, we just need to know the specific science related to it.

In our view, both *"beliefs"* reveal the lack of self-confidence of those who establish them, because, from our point of view, those who maintain their *claims* (at some point these claims become real dogmas) are just afraid of losing their scientific status in the world of education, without regard to the damage this may cause to education.

There is an unquestionable reality: education manifests itself expressly in the classroom and in something so evident like the specific fields of knowledge, like Mathematics, Chemistry, Geography, etc., but it does not express itself in any of the educational sciences. However, in no case these scientific fields can manifest themselves directly in the classroom, butthey need to be applied in order to be transposed towards the student, in correlation to the student, according to the norms designed by the different educational sciences.

In the end, these two types of knowledge are cooperative. One cannot survive without the other and they are not exclusive. However, when they look at each other, based on the *"beliefs"* we have discussed before, the specialists from a specific science do not know much about the educational sciences because they are not part of their competences.

The result is the dreadful researcher that destroys education as far as the type of knowledge inside the classroom and that produces this foolish educational behavior (the only one we have), based on intuition, stereotypes, prejudices, traditions, interests, ignorance, laziness, conformism, arrogance, apathy, and the lack of scientific research! Educational sciences are sciences, both specific and regarding sciences (Mathematics, Geology, Economy, etc.). They are sciences but, is the symbiosis between them, the only thing that will allow teaching them more adequately and efficiently, science too?

We need to create scientific communities of teachers and, of course, specialists from each regarding science that have a deep knowledge of their area, because that is the only authentic way to educate through a regarding science. But at the same time, they need to be specialists in the educational sciences applied to the regarding sciences. These specialists will be the only ones capable of training good teachers and the only ones capable of teaching efficiently. They will also be the only ones capable of generating the necessary scientific research that does not exist today: the scientific research about an applied didactics that has originated a recent branch of knowledge: specific didactics.

B) The decoding function of Specific Didactics

We insist this is a didactic applied to a specific science, because educational sciences cannot be directly applied as a huge umbrella to the curricular knowledge of the classroom *(Fernández, 2005).* We found this idea both hard and unquestionable. We have to particularly insist that, from our point of view, General Didactic is inadequate, but it is a construction on which Specific Didactics relies. General Didactics can only express itself in the *"curricular classroom"* through each Specific Didactics that constitute the specialization option of the General Didactics.

The latter is due to a reason that, in our view, should not be discussed: the role of the teacher is to be a decoder of knowledge, the restructurer of knowledge, the producer of a new epistemology, different from science's, in order to rebuild it and re-decode it from the perspective of each student.

In order to do so, a teacher needs to know profoundly his field, because only by knowing his field, he will be able to decode it. At the same time, he needs to profoundly know the educational sciences because it is the only way he will be able to assign it new codes to restructure it at the service of the students. This new type of knowledge, created from science to the classroom, and based on learning, not on teaching, is what I have been calling in other works as *"educational knowledge".*

Due to the fact that each specific science whose curriculum gets into the classroom has its own problems to be taught, it needs to pay attention to each individual in his or her chronological and psychological age, his capacities, and mental peculiarities

interacting with a specific knowledge. Each science generates specific methodologies, its own area to apply them, the materials and didactic techniques, theories that justify them and organize them, different competences to be developed by the students, and a bibliography that modernizes it and reinterprets it.

Mathematics' epistemology is different from Physical Education's, History's and Biology's. No matter how wise a specialist in any of the educational sciences might be, he would not be able to say what a specialist in the History of the Soviet Union would say about the origins of the Soviet Revolution. He would only be able to narrate certain knowledge to fifteen year old kids, if he had not taken into account their phycology, capacities, social conditions, interests, and limitations. Essentially, if he did not conceive his teaching work as a way to educate a specific kid, and a way of achieving an efficient, autonomous, and adequate learning (i.e. the student as the objective) instead of exposing with asepsis what he has learnt to judge if it was learnt by hearing what the student is supposed to learn (i.e. the science as the objective), he would not be able to teach properly.

A teacher that relies only in his knowledge and that does not know nor apply educational sciences to teach his subject is a bad teacher. We need teachers that *"believe"* in educational sciences while facing the danger of an excessively competent teacher, as Fernández Pérez (1994) stated in his book with a phrase full of suggestions: *"I would like to thank the numerous teachers from different countries and different educational levels, that for the last years have shown me how easy is to teach and how hard is to be aware of that."*

An *"excessively competent teacher"* can be too dangerous for teaching, because he will feel disgusted by what he will consider *"mutilating"* or *"restructuring"* the curriculum based on *"educational knowledge"*, fragmenting the *"wise knowledge".* That is to say the encyclopedic knowledge in which everything is important. *"Excessively competent teachers"* are incapable of deciding what the student must know and what the student can ignore: something extremely difficult in the relationship between teachers and curriculum.

Specific Didactics is essential to decode the wise knowledge and to decide a new order in educational curriculum, by adapting the successive order of knowledge, year by year, with the order of the intellectual progress and the students' cognitive abilities, also year by year *(Perrenoud, 2004).*

However, unfortunately, the current curricular codes are defined, justified, and made explicit through the codes of wise knowledge because, in most of the cases, they have been designed by excessively competent teachers.

C) The location of Specific Didactics in the "managing of science".

I am writing from Spain, where in 1987 the university areas of knowledge were administratively created. Among them we can find the areas of Specific Didactics, one per every academic knowledge. Accordingly, in 1994, the Graó Publishing House from Barcelona started the publication of a series of journals on a quarterly basis (that are still being published during the wiring of this article, in 2010), dedicated, each of them, to the main Specific Didactics. The author of this article, along with Xavi Hernández, professor from the University of Barcelona, was the promoter of this important publishing project. A *"baptismal process"* to *"administer the sacrament"* to the series of neophyte that were being expected, along with a proactive catechumen, should be implemented and that is exactly what happened.

But, by the way, what was the formula of this baptism? Where should these areas be located? Would this really become an Educational Science, since the main purpose of its creation had an educational nature? Would this constitute a specialization of a scientific field? Could they be both?

And, if they were not a recognize science yet, where can we find the sources to build it? Isn't this too much effort? Does this constitute what Tim Urwin (1992) called *"a Magpie Sciene",* but that has not been built step by step (which is how several sciences have grown), but decided by a managerial finger that needs, in order to develop itself, to take contents from other sciences since it does not have any? Where do these new ideas come from? What is their origin? Were they recognized somehow?

It was necessary to look in the thesaurus of UNESCO. In *"Education"* (d. Pedagogy, 580000) the search was relatively useless and disappointing. UNESCO does not recognize the existence of any *"Didactics",* but it does admit scientific fields in education dedicated to "*Pedagogical Methods"*(580107) and, the most interesting thing is that it recognizes the *"Development of Subjects"* as a scientific field as well.

Finally, we found another interesting scientific field that could also be the source to build our areas of knowledge: the entire *"Educational Psychology"* (610400), in which the *"Cognitive Functioning"* (401), the *"Educational Methods"* (402), and the *"Laws of Learning"* (403), along with the *"Pedagogical Methods"* and the *"Development of Subjects",* with an adequate *"Educational Sociology"* (not a *"Sociology of Education"*), would let us move forward towards the construction of our own field of knowledge.

On the other hand, we would have to resort to the composition of areas recognized by UNESCO itself. However, we would find ourselves in the Area V, along with the *"Areas of Science and Technologies".* In this area it is possible to find Social Sciences, Anthropology, Ethnology and *Education(where Didactics is finally in)*, and Geography. Rather, Didactics is located under the same category as *"Pedagogy" ("Pedagogy and Didactics", S270):* Specialized Pedagogy.

Somehow, as we just saw, we had an international recognized scientific origin but without our accurate denominations. However, what did our colleagues from other parts of the world think about this? Well, surprisingly, several specialists in General Didactics did not show excessive enthusiasms, while others, on the other hand, embrace Area Didactics with great interest. Instead, educational psychologists were able to see clearly the existence of direct links between different sciences and their learning. So they accepted these new areas without what we called in the previous chapter "academic reluctances". Today, these remaining reluctances are about to disappear.

Since 1987 until today, Specific Didactics from different areas of knowledge have gone through a long and productive road. They are not only areas of knowledge of primary education, but they are essential during the formation of teachers of the new and mandatory secondary education. They are also areas that concern university degree programs.

The main scientific research works of our disciplinary area had been in hands of psychologists instead of Area Didactics specialists. There are reputable instructional psychologists that claim the existence of a very specific field of knowledge, "Psychodidactics" and "Specific Psychodidactics".

According to Titone (1986, pp.9-13), the term psychodidactics *"has been frequently*

used since the 50s, but its conceptual history is far more remote than that (…). A serious teaching methodology must start from the plurality of fundamental sciences (…). In the History of Psychodidactics it is possible to distinguish three elements: firstly, a completely original tendency, originated during the first decade of our century, which aims to classify the logical structure and the dynamic of the learning of the most important school disciplines, in order to adapt the contents of knowledge to the capacities of the students. Consequently, it aims to create didactic methods. Secondly, the psychological analysis of the processes, factors, conditions, and agents involved, regardless of the particular content: Piaget and Aebli; Mialaret and DEbesse; Thonudike and Woodrutt; Vygostky, Luria and LEontiev. Finally, the analysis of the interaction or didactic communication is the most recent of all".

Ultimately, there exist distinguished specialists in Educational Sciences (like Hans Aebli, one Piaget's disciples and successors, and, to some extent, Bruner's) for whom Didactics and regarding science constitute the same unit, since the first depends on the second. This position has become stronger and stronger and today most of the scientists support it. For that matter, *Aebli (1988a, p. 331)* points out that *"we must always discover the subjects taught through the corresponding concepts of the sciences they proceed from (…). There are no psychologisms, but objective relationships; there is no methodology, but Didactics. This has been taught for a long time under the provocative tittle of Psychological Didactics: what does the scientific knowledge (or the best analysis of life practices available) have to offer regarding the way students think and behave?"*

3. THE JUSTIFICATION OF SPECIFIC DIDACTICS FROM THE THEORETICAL CONSTRUCTION: THE EDUCATIONAL IMAGINARY

Any kind of knowledge generatesand develops different imaginaries of it. This will depend on what face of the scientific prism are we using to access its interior. These imaginaries of a specific knowledge will have an impact on the way we act on it and the way we allow it to perform on us *(Torres, 1991).*

The different imaginaries that a knowledge offers us (actually, what we raise from every knowledge), predetermine the way we penetrate in its search from different external surfaces, thus each of the imaginaries from a knowledge ends up constituting distinct knowledge creating systems. These systems are defined by what in several occasions I have called the use of knowledge. Based on the use, the users "*re-create"* knowledge within different imaginaries. Specific Didactics assume an imaginary: the imaginary of the educational knowledge from a discipline.

A) The imaginary of the educational knowledge

The different uses of knowledge have inspired us the idea that, for some years now, researchers in specific didactical sciences have been handling, following Yves Chevallard, who has reflected about the educational use.
I am talking about the confirmation of the existence of a *"wise knowledge",* (what I have called the construction of science in itself), and the existence of a *"taught knowledge",* (what I have called the construction of science over the mind of the beneficiary subjects). These are different uses of knowledge and they are two of the imaginaries that are always developed in any knowledge (we are sure they always get born and they always develop). It involves two scientific fields that due to their purposes, their content, their methodology and their application (i.e. their use), turn into different "knowledge systems", even though their origin and objective are the same.

I consider that what *Chevallard (1991)* discovers as *"taught knowledge"* is a term that, maybe, we can identify better if we call it *"educational knowledge".* We would call educational knowledge to the imaginary developed as a referent to any kind of knowledge, whenever the use given to this knowledge does not aim to the amplification and deepening of its own frame, but it aims to the construction of a specific system

that allows converting its informative sets into meaningful formative knowledge in the mind of the beneficiary subjects. As it has been said many times, it involves turning information into knowledge.

Switching from a wise use of knowledge to an educational use of it has not been easy. Especially because this last use, from a scientific perspective, is very recent. Since 1987, in Spain, this use corresponds to Specific Didactics.

It is clear that, traditionally, one of the uses of an area of knowledge is the instructive formation, and for this instructive formation the wise knowledge was never enough. However, it was thought to be sufficient: firstly, due to the recognized pre-scientific didactical intuition, which was very active and efficient for the teachers, who, in the case of primary education, were clear about the purpose of the use of this knowledge. Secondly (when the differentiation between the beneficiary subjects and the curriculum occurs), due to a didactical device only extracted from knowledge (we will talk about this later), which allows solving teaching problems in the case of secondary education. That means that the educational imaginary was an indissoluble part of the formation and the daily performance of primary education. However, it was not part of formation of secondary education *(González Gallego, 2010).* Nowadays, on the other hand, we believe that “vocationing”, training, selecting teachers of all levels of teaching, and enhancing them in the educational imaginary, constitutes an unavoidable need.
Thus, let’s say this as soon as possible, it cannot be done after the fact, nor it is not produced by intuition, neither it gets more efficient by practice. The term “vocationing” refers to recruiting young people that want to become teachers. In order to do so, an effective social recognition is needed. Training means to educate teachers. In order to do so, the intelligent will of public administration or private educational companies is needed. Therefore, society, university and public administration / companies need to contemplate the teaching tasks from the “educational imaginary”. However, it is possible to affirm (and what worst, it can be easily demonstrated) that this is not done easily. The only imaginary considered is the imaginary of wise knowledge.

B) The need to generalize the educational imaginary

However, in the case of Spain, the constitution of a unique and mandatory level established in the first fourteen years, and extended by the educational laws to sixteen years, has forced the administration and university to configure teacher

training processes up to a period of 12/18 years (including, after sixteen years, two years of college - preparation for university studies). This is based mainly in the educational imaginary of every Specific Didactics of knowledge. This also forced to design a curricular teaching action based on educational knowledge (which implies the creation of a scientific system), as a guideline of performance and the teacher selection process.

The instrument to do it, applied with irregular success in different university, has been the Master for High school Teacher Training, which is compulsory for the students that aspire to become teachers, according to a system that, within the European Higher Education Area (the so called *"Bologna Process),* is being applied in every European country *(Master de Formación del Profesorado de Secundaria. Monograph of the Journal IBER.N° 61. Ed. Graó, Barcelona, 2009).* One thing is being a specialist in one knowledge, and quite another is being a teacher of that knowledge. If the principal of an educational center needed somebody to tech Mathematics in his school, he would never post a sign asking for a mathematician, he would ask for a mathematics teacher.

As we defend that Specific Didactics is a science, it would not be strange to establish the terms of a formula to explain our theory, because, as I have pointed out in another place, Generalized Education, for all citizens (G.E.), has grown over the last half century, at the expense of Selective Education (S.E.), (the former high school), invading it until its disappearance. This is what we could call "relation A", (G.E./S.E). This obliges that the wise knowledge, based in the unique imaginary of the construction of the Scientific Knowledge (S.K.), is being substituted by the Educational Knowledge (E.K.). The construction of knowledge on the beneficiary subjects, while knowledge stops being selective and grows into a general nature, is what we could call "relation B" (S.K./E.K).

In this regard, it is possible to establish the following formula: *"if the relation G.E./ S.E. grows, the relation S.K./E.K. must decrease".* That is to say, as the Generalized Education takes the place of Selective Education, the Educational Knowledge takes the place of Wise Knowledge. In other words: if a differentiation between general education and selective education does not exist, a differentiation between *"educational imaginary"* and the *"wise imaginary" cannot exist.*Consequently, the only kind of knowledge inherent in the classroom, until eighteen years, must be educational knowledge.

Naturally, no matter what is the use we give to knowledge in the educational system (university, adult education, touristic education, children education, museums, etc…), we must always keep in mind this formula that establishes the parameters born in the conjunction between both relations, and in which the terms of both of them can increase or decrease. Thus, it would be possible, from a theoretical point of view, that in the "relation A" the term S.E. were to grow to the extent of invading the term G.E. For example, if in music teaching the term S.E. grew up so much that it invaded the term G.E., we selected only one individual to teach him music, this individual would be Mozart and, in this case, in the relation "B", the term E.K. would disappear invaded by the term S.K. This is due to the fact that educational knowledge has a final horizon and, from a theoretical point of view, is ephemeral: its final horizon is to get to become a *"wise knowledge"* in the mind of the beneficiary subjects.

From this point of view, which is ours as well, and in order to reassure the excessively competent teachers, Specific Didactics is an applied science, an instrumental science, and a science delimited to its temporary applications. When its use has finished and the subject has acquired the knowledge wanted, the wise knowledge has succeeded in the subject. Well then, that is exactly what we intended, but without the educational knowledge, the wise knowledge would not have been here.

Therefore, we use educational knowledge as a means of approach to consolidate the wise knowledge that certainty has the vocation to succeed. However, it will not succeed if the approach is not produced through the organized construction of educational knowledge in classrooms.

Nonetheless, the wise knowledge also suffers from a handicap in its vocation of *"universality",* because this final horizon is not universally reachable. In the road to it, only a few will get to the goal. They will achieve progressive goals through the educational knowledge; the rest of the citizens will not get there… they do not have to. Specifying which goals will constitute an obstacle, a detour, the beginning of another road, or the pause to take decisions on which *"wise knowledge"* we want to follow is unpredictable. From this perspective, the educational knowledge establishes different final horizons that, as we mentioned at the beginning of this article, are based on each subject. Here is the greatness of the educational knowledge: it *"saves"* knowledge for all citizens and it establishes the achievement of personal horizons for all during the road or at the end of it.

C) The definition of the system

There is no doubt that educational knowledge assumes a scientific activity coated, like any other knowledge fields, by requirement specific to every science. Its objectives are based in the receiver of knowledge, not in knowledge itself and not in the construction of knowledge on itself, but in the construction of knowledge on our students' mind.

By contemplating knowledge from this perspective, the imaginary the teacher uses to behold the set of knowledge of his regarding sciences changes radically, to such an extent, that it constitutes a system of his own knowledge, which allows him having access to educational knowledge about these disciplines.

In the academic world, as we have been analyzing in this *"prospective",* the science that takes care of the constitution and applications of the system has been called Specific Didactics or Area Didactics, which is part of a knowledge that establishes its own referential rules. One definition of this scientific discipline (highly identifiable with what we have called educational knowledge) that we have consigned in different occasions, could be the following:

A *"Specific Didactic"* is a system of science that studies the phenomenology raised from the actions applied to the educational or social communication in a referential field of knowledge. Both its applications and its theoretical formulations are derived from this field of referential knowledge and are based on Communication and Education Sciences. Therefore, Area Didactics constitute a specialty inherent to each scientific field, as far as this didactical specialty is concerned about the problems that come out of the transmission of content, the transposition of its logical structure, and the communication processes originated from the interaction between the issuer and the receiver. Nonetheless, this does not prevent that the Specific Didactics of each Area frames itself inside the Educational Sciences.

As *Porlán*and *Rivero*(1988, p.75) have state, the educational knowledge of a science *"has a different epistemological nature"* from the science that is referring to. Since the structure of its epistemology is based on its objectives, some different singularity variations occur, but, as we will see later, some singularities about the logical structure of each science, organized with different parameters that do not necessarily coincide with the educational knowledge, occur as well.

This different nature needs, in order to set up itself, the full acceptation of the educational imaginary we have discussed many times. Objectives, content, theoretical methodology, and a practical application of knowledge are different when we talk about the educational use. The knowledge system is also different because it has to be built over the mind of the beneficiary or receiver of knowledge.

The main role of the beneficiary subject, who is not considered in the wise knowledge, is fundamental in this recent scientific use of knowledge. The beneficiary (our students) is the axis on which the system of knowledge turns and it forces the development of a scientific imaginary: the use of knowledge that serve to educate.

The wise knowledge can provide information only by being exposed. Although this does not implies the generation of knowledge, nor education. In this use, teacher's professional imaginary coincides with science imaginary. Actually, it coincides so much, that it creates an irritation of this "educational use" of knowledge that many teacher consider "a minor work", a use consisting of the existence of beneficiary subjects turning into an irritating interference that stands in the way of the exposure of knowledge.

We propose, therefore, the use of knowledge with other objectives, other contents, another methodology and another application. That is to say, adopting a new imaginary that substitutes the imaginary under which we have been trained as teachers (wise knowledge, "the major work") turns into an unsurpassable obstacle. However, this is the problem we need to solve in order to educate. As the neurologist and Nobel Prize winner Rita Levi-Montalcini was recently saying in the Spanish Newspaper "El País", *"we learn because we are capable of building our personal version of the information we receive, not because we are given that information".* This means that the informative exposition is incapable of generating knowledge because knowledge is a personal construction that every student creates with the information received. In order to do so, the work of the teacher is fundamental. He is more than a provider of information.

Educators, as we said in the subsection 2, thought that overlaying some basic didactical rules over the wise knowledge would be enough to solve the problem of teaching. These rules would constitute a "general system of educational knowledge" that would solve all the issues produced by the needs, bigger and more general, imposed by the new applications and the new uses of the wise knowledge.

However, reality was very different. Today, many of us think that general rules are needed, but not enough. It seems that it cannot be questioned that each area of knowledge is constituted from different approaches, and it generates imaginaries very different from others. Therefore, it has educational potentialities that go through parallel ways that are not susceptible of identifications or becoming part of a repertoire of general and basic rules. Its horizons and goals cover the objectives of the same spectrum (education). They are related and partially equivalent.

In the end, each field of knowledge, in our view, produces specific systems of educational knowledge.

Nor it cannot be questioned, on the other hand, that beneficiary subjects have different capabilities and predispose intelligence organized in percentages that encourage or hinder the access to different fields of knowledge. In consequence, the systems will suffer different developments and organization, based on the target subjects and their capabilities: verbal, space, numerical, manipulative, temporary, abstract, etc.
Ultimately, we consider evident, based on what has been exposed, that there are some educational imaginaries inherent to each area of knowledge. We consider that each are of knowledge generates specific systems of knowledge when they are used with educational purposes *(Zabala, 2000).* Finally, we consider the latter constitutes a specific branch of knowledge, covered by the requirement that define a scientific field. We believe this is the only chance to make the construction of educational knowledge more efficient.

4. SPECIFIC DIDACTICS RESEARCH

The patient reader will allow me to consume a few more pages exposing some ideas about two issues. The first one would be doing some reference to the research in the field of Specific Didactics *(González Gallego, 2000).* The second one would be offering some specific information about method versus concepts, due to the fact that young researchers tend to depend too much on the structure of the method. So much, actually, that they end up drowned in concepts that eventually disappear inside the method.

A) Faculty's research, as a source of scientific knowledge and educational improvement.

A research developed by teachers, whether a university professor, who has to be a researcher, or a pre-university teacher, who must also be a researcher of his own teaching practices about the issues of the conversion of knowledge in the classroom, would provide productive oasis in the middle of that *"researcher desert"* I talked about in previous pages. In my view, this is the fundamental key for advancing in the area of educational knowledge, in order to find solutions to its problems. This will increase the recognition of the value of Educational Sciences in the scientific community. Aside from that, it will also increase the efficiency of teaching and learning actions. Here is the mayor responsibility of Specific Didactics *(Educación Journal, 2002).*

So far, educational research has been almost exclusively in the hands of Educators and Psychologists. For years, they have developed a commendable and praiseworthy work, but they are only one part of the responsible for working on this task. There is another part, as important as the first one, which must deal with this responsibility: teacher staff. Teachers can develop their research task through two types of action, both of them within the category of *"investigation research"*: a) action/research, an initial model of action, the first type of *"applied research"*, and; b) the one we could call educational research, that embraces the rest of the models.

Action/research: the crucial role that action research plays on teaching gives it some inherent features within scientific research. This kind of investigation is no more than the investigation about the professional action. All professionals (lawyers, architects, doctors, etc.) investigate about their action. None of them acts *"just because",* intuitively or based on books.

This is the process we call action/research. Therefore, it identifies any kind of higher status professional action, like teaching. This is why it also identifies the teacher-student relationship when it moves towards the improvement of the individual teaching action and the search for a more effective use during classes. This is the objective of this process and its methodologies and techniques can be quite extended.

The methodological rigor in teacher's reflective action validates this kind of research. Teacher's conclusions are justified by themselves, because they are related with the mechanics of operations of the educational group and the efficiency of its results: Specific Didactics constitute essential areas of educational research for scientific knowledge about what happens inside the classrooms.

Action/research, as we say, is a professional application founded on an applied scientific action. According to its objectives, action/research heads towards teacher's professional efficiency regarding a subject in his or her classroom. According to his or her author, this investigation focuses in self-analysis, in which the researcher investigates him or herself. According to its contents, it is implemented during the whole course due to its permanent action, and tries to analyze all the diverse teaching actions to improve the educational efficiency of a discipline.

Action/research does not need to get some conclusions all the time, because this research is justified by the confirmation of efficient results. However, the educational research needs to offer some conclusions to the scientific community.

Educational research:the previous paragraphs indicate us what we understand by scientific research, whether is action/research or not. Educational research can look for its objectives in itself, independent of its professional action. It arises from the scientific interest to move knowledge forward, and its subjects are not only in the classroom, but they are inside the educational community in more extended frames. Therefore, while action/research belongs exclusively to the teacher's field, educational action is inherent to the teacher and university researcher in Specific Didactics.

In the end, the educational research has different objectives that go beyond just measuring and certificating efficiency (although that might be part of the research), because it does not study problems of the professional action of teachers in order to improve it. It studies the problems that can affect a determined number of classrooms,

in order to look for the conclusions that allow solving those problems in the same case and in the same circumstances. Thus, this kind of research has captured the interest of teachers, educational administrations, and society.

Educational research, like all research, may be of two types: basic research or applied research. The first one is based on the interest to know. Applied research is based in the search for rigorous solutions to solve a problem or a series of problems. As we have said, the first type of applied research that teachers raise is action/research.

As we have pointed out, the generalization capacity is the most important, that is to say, its capacity to provide knowledge or to solve something that might help the entire scientific and educational community. Its methodology is wide, and a many strategic and technical factors come into play, especially to validate it.

However, there is one important feature that action/research should not care about. We are talking about the will to distribute a new knowledge that allows moving forward and/or expanding our knowledge about education.

This will to distribute knowledge forces this research to get equipped with a determined repertoire of important requirements, because this dissemination needs guarantees of liability demanded by the scientific community. This is why some issues that are not always part of action/research processes, become important and essential:

There is one golden rule for all research: we need to delimit the problem and exhaust (study) the analysis possibilities. Another rule whose gold is even more precious, talks about the fact that research will have more scientific quality and will move knowledge more forward if it refers to a more delimited, specific, defined and structured problem. In overall terms, this means that the researcher elaborated his or her own *“construct”.* In education we are used to address problems too big to handle, which turns several research into theoretical speculation, general reports or philosophical essays. But, we must pay attention to something, because this does not mean that we are despising theory. A theory is always needed because it justifies our *“construct”.*

Specific Didactics, or Applied Didactics, which is the filed inherent to teacher’s research, is what methodologists call *“soft science”,* just like all educational research is, in which it is impossible to get to certain principles, rules, and formulas from *“hard sciences”.*

We, in Specific Didactics, cannot reproduce situations like in a lab. Our subject under analysis is always changing and situations are not the same, times are not the same, and subjects are not the same. This is why we will only be able to get some regularities, rhythms, sequences, measures, adjustments, possibilities and, at best, odds. Aside from that, constant are not likely to be found. These are the eight main characteristics about the scientific generalization in educational applied research.

In education, generalizations do exist. However, in basic and not-applied educational research they do not. That is why we need to redefine, frame, and establish the specific situation we are acting on. We can only generalize our conclusions if we have a completely identical situation, which is impossible.

B) Specific Didactics research topics, issues and problems.

Specific Didactics has a wide research variety: its own history, didactics history *(Chervel, 1991),* previous and current curricular legislation, analysis of circumstances, groups and/or groups that decided, prescribed and redacted curricula, educational science scientific sources, etc.
Compared research between countries is a matter of great interest.

Another passionate field is the analysis of student's capabilities, related to the knowledge of a specific didactics. Our psychologist colleagues tell us about space, verbal, and working capabilities. Is this related to their success or failure in areas like geography, language or lab practices?

From the historical and current point of view, we are interested in studying the manuals of each subject *(Tiana, 2000),* the ideology they transmit, their contents, their language, what they say and omit, the activities proposed, the evaluation, etc.

What does Specific Didactics say about teaching activity? What teachers think about their discipline, the way they teach it, their relationship with the classroom and their students, their efficiency valuations and learning results.

Is teaching and learning the same? How is a discipline taught? What can we do in order to teach it? Do we have to select the knowledge? How can we organize it and

decode it? What is the relationship between the different types of knowledge? What is interdisciplinary in schools like?

We should not forget our students, who they are, what they think, how the behave, how they interact, the way they learn, the reasons why they do not learn, how they respond to different disciplines.

Aside from that, we should talk about instructing and/or educating. Is it the same? How can a citizen be educated through square roots and irregular verbs?

And, of course, we should not forget the school community: parents and the different social contexts. How do parents react towards the knowledge our contemporary history shows? How do they value the disciplines?

This close relationship is only the repertoire of infinite suggestions. All of the issues described can be studied as a follow-up process during a determined number of years, studied according to the use of knowledge and the receiver or beneficiary ages: adults, children, specialist, teachers in formation process, etc.

C) The underlying character of methodology.

On the reflections on scientific educational research, we have insisted about the importance of the method. Without a rigorous method, research will not be able to get reliable conclusions. However, the method does not impose itself over the concepts of a curricular knowledge, it moves under them. It is an underlying element that can distort the whole work whenever the author decides to bring it up and convert it into the protagonist of the structure of his or her work. The method's structure is not what necessarily must organize the concepts of a research, because it is at the service of the research. The method exists because concepts exist *(GonzálesGallego, 2009)*.

I am saying this as an important wake-up call to all of us, the researches emphasize the importance of the method, but forget to indicate to our future colleagues that the structure and methodological order should not command the structure and organization of a research about Specific Didactics. Young researchers tend to forget what is being research and focus on the way they research and only the method ends up being what drives their research.

In our view, Specific Didactics should have a methodology that does not need to repeat the usual structure of other works related to educational sciences. Its order, its analysis should be based necessarily in the variables studied, analyzing the independent variables that modify them. This is the reason why I believe it is pertinent to do some clarifications.

It is very common that initiatory researchers present their work divided into two parts usually called *"theoretical part"* and *"practical part".* In the first part, they offer a bibliographic review about the study theme and it is precisely in this part where they fulfill the requirements of the method: citations and footnotes, references, general ideas, etc. However it is easy to fall into a kind of work closer to a report or a general summary about the topic discussed, that the synthesis that every research work needs. If we pay attention to this part, during its pages it is easy to find all the quotes that we are going to find in the work we are reading and, afterwards, in the second part, where the results are found, the research fall into the most absolute conceptual void, because footnotes or references do not longer appear. What has this first part served us for? Why have we done this bibliographic review?

There is an *"academic tradition"* in educational research that leads us to massive works, with huge exordiums and pages and pages with unnecessary *"theoretical parts"* and footnotes with no correlation with the *"empirical part"*, which constitutes the investigation based on the instruments we have used. But in this part, there are no footnotes!

This *"theoretical parts"* look a lot like *"bibliographic works"* that undergraduate students are asked to do. On the other hand, with the current technologies this can be solved just by *"copying and pasting".* In many foreign universities, these general expositions are no longer accepted.

From my point of view and from what is currently understood by research methodology in the world, we are interested in the concepts that have been specified in the State of the Art or in the Critical Bibliographical Review. That is to say, a brief, concise and direct exposure about the specific situation in which the research is located about the issues we have been studying. The most important aspect is the critical collection of bibliographic information in order to know where is the scientific research located, regarding the construct we have elaborated. So, what do we know about it? What are

the findings gotten by the researchers? What is the *"study situation"* that holds our problem?

We obviously need to know it, and we need to know the situation so our work confirms, qualifies and modifies, or refutes the information and conclusions that constitute the set of knowledge the scientific community has recognized so far. The reasons for that are both completely and partially true, because every research, in its empirical phase, must be used to confirm, qualify and refute the concepts that the scientific community has about the topic studied. This is our research collaboration and, therefore, footnotes and citations ought to be constant.

It is common that young researchers, absorbed by the accuracies of the method, have nothing else to say beyond the method. They are not even capable of recognizing the structure or the variables of their work! In fact, the second stage is usually composed of graphics, charts or survey results with no connection with the topic studied, without references and, what is worse, without any comments.

We will end up with an example we consider clear. Let's imagine we are researching the biography of some character. It would be pointless to organize our work in two phases: the first one about the bibliographical review of this character; and the second one will only show copies of the documents found.

Well, Specific Didactics research is a sort of biography of a situation. We are only interest in the State of the Art (the *"theoretical part"*) to know the step of knowledge where the scientific community is located on, regarding the topic studied. Our research should be organized in chapters that analyze the different variables we have considered, confirming, qualifying, or refuting the situation in which the research about the topic studied was. This will build the index of our work. We could say the same if we were researching about a school manual, educational legislation, teachers insights, learning problems, teaching techniques, etc.

Hopefully, the patient reader that has gotten to this point will have reached at least one conclusion: Specific Didactics have something to say in the world of education and it is becoming a subject of interest for professional teachers and trainee teachers. We believe this is important and if the patient reader has concluded the same, the purpose of writing these pages has been satisfied.

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