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Teaching and learning in Basic Education: Interaction mediated by research

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Abstract:
This article presents a narrative work of qualitative research on the education and learning processes which interact with research and are related to the scientific and pedagogical approach to the human body. The research was developed with a group of thirty five students and their teacher, with the participation of the researcher, in Year four of a Basic Education state school, with the aim of establishing how the dimensions of the *human body* emerge and are specified. Data was collected through semi-structured interviews with the students and their teacher, through research developed by students and their community and teaching activities. The analysis revealed that significant learning of the *human body* emerged from constructed practice and constant dialogue in some of the real work situations involving the group of students, which was developed and overlapped with the life histories of each student in terms of their conflicts, anxieties, challenges, desires, knowledge and social and emotional experiences.

Keywords:
Research, Education, Learning, Science, Human body.

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INTRODUCTION

Throughout my pedagogical experiences over the past 20 years of my career, I have come to understand that everyone learns at one's own pace. One needs only to believe and contribute in order to open the way to knowledge and develop the skills that each individual has to acquire.

As teacher of the Education Course, I have experienced and shared the difficulties and complaints of teachers with regard to teaching and learning in Basic Education. The need to interact with pupils and the reality of these teachers have led me to contribute to the pedagogical training of future professionals in a significant way.

In the Education Course, my lessons began to give value to research mediation in the classroom with Basic Education pupils. The starting point came from knowing and understanding the needs/priorities of the teachers and pupils' daily lives, with a view to giving their school actions a different meaning. I understood that beyond the "texts generally used in the classroom" there is a teacher and pupil, each with his/her own "body" who thinks, acts, knows, teaches and learns at the same time. These experiences helped clarify that I need to believe in the pupil, particularly those who are thought to have deviated from general school standards, in other words, the "different" ones. I have come to realise that it is necessary to acknowledge the importance of mediating the pupil's construction of knowledge in an appropriate manner, giving value to his/her actual level of knowledge. In Vygotsky's opinion (2001, p. 97),

> [...] the zone of proximal development of the child/pupil is the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers.

The research is of a qualitative nature. The approach was based on narrative research, involving thirty-five pupils from Year four of Basic Education and their teacher from a state school in São Paulo. The research was developed in the Science classes at the point of the introduction of scientific concepts referring to the *human body* in the early years of Basic Education, so that we could observe some of the factors that favour the creation of a suitable pedagogical context.

Data was collected throughout the teaching and learning process in the Science lessons with the use of the following instruments and procedures: semi-structured and recorded interviews in school with both pupils and their teacher. Interviews with the pupils were carried out periodically during normal classes and always based on the pedagogical work being developed. Interviews with the teacher were carried out on a monthly basis, outside the classroom context and with focus on evaluation and the organisation of the topics in question in her lesson planning.

Direct observations were made in order to understand the interpersonal relations among peers, between the pupils and the teacher and pupil participation in educational activities. Field notes, pupil narratives describing their conflicts and anxieties, research carried out by the pupils through the application of questionnaires to people in the community on issues regarding the human body were also a part of this research project.

My aim, in this project, was to collect data from some pupils on a closer and more continuous level, with a view to finding the rhythm and nature of their cognitive development, their ideas in relation to the *human body*. For this effect, I have given fictitious names to the pupils involved in this specific research project: Jasmin, Rose, Violet and Daisy.

THE TEACHING-LEARNING-RESEARCH RELATIONSHIP IN BASIC EDUCATION

As regards the above-mentioned relationship, Stenhouse (1993) emphasises *research in action,* with particular reference to school processes. In his opinion, this research is a kind of "applied social research" which differs from others, as a result of its immediate implication of the researcher in the action process. There is, however, no effective distinction between "social scientists" and "teachers", but rather between (i) a *research act* and (ii) a *substantial act*. This author considers the research act to be an action which gives rise to inquiry. A substantial act is justified by changes in the world and/or in people that may be considered desirable. In education, for example, substantial acts are created in order to *help people learn.*

Stenhouse (1993) points out that the purpose of the teacher is to make decisions regarding the educational process in his/her classroom and, under no circumstances whatsoever can he/she abandon the role of *researcher.* In the research of action, the teacher has full control over the research act. The responsibility of the researcher is to achieve maximum learning according to the teacher's input through an act which is simultaneously caught up in educational, pedagogical and research time. Thus, research forms the necessary basis of "good education".

In the opinion of this author, the problem lies in creating a practical scheme of education which manages to maintain the authority, autonomy and responsibility of the teacher in such a way that he/she does not transmit any kind of message that will cultivate the idea *authority guarantees knowledge.* If "knowledge" is taught reproductively, it will be a mere shadow or pale reflection of the actual knowledge being constructed by the pupil.

As far as the teaching-research relationship during educational processes is concerned, it is important to consider the terms of *narrative research* since, in the opinion of Connelly and Clandinin (1995), it is being used more and more in studies related to educational experience. The main reason for the use of the narrative in educational research is that human beings are story--tellers and, on both individual and social levels, experience reported lives.

For these reasons, in addition to providing interpersonal relations between the researcher and research subjects, narrative research also facilitates a "significant pedagogical mediation", in which the construction and knowledge of those involved emerges, in other words, the knowledge of the researchers, teachers and pupils. These ideas are based on some of the theoretical propositions of Vygotsky (2001, p. 58) set out as follows:

> The issue of verbalised conduct is the central issue in the entire history of the child's cultural development. With effect, the determinant event of human history, of which the history of the child is included, is the creation of semiotic mediators which operate in the relations of men with the physical and social world. By moving in to these sites for natural signalling systems, these mediators turn them into representational spaces so that a new world emerges, a symbolic or *significant* world (my italic).

In my opinion, a kind of *significant mediation* has to imply an understanding of learning as a process of the "entire body" and not of an abstract, dichotomic, distanced and often meaningless rationality for the pupil.

During the research, I realised the pupils needed to express their points of view, their arguments and suggestions on the research aims. The teacher often asked them to be quiet and to simply listen while others were talking. However, both she and I began to become aware of the fact that they were actually revealing a much richer form for the learning of content through their way of understanding and expressing the phenomenon in question, than what we had intended to pass on through the language of "the older and wiser". The construction of knowledge emerged in a fluent way. All unknown terms and doubts were clarified and particular care was taken so that the pupil did not lose his/her "turn or voice."

At the beginning of this investigation, I tried to find out how each one perceived his/her own body and the bodies of others. In our meetings, I realised that the more their teacher and I listened and encouraged them, the more they participated. As we were dealing with research in the subject of Science, and working specifically on the "human body", I realised that it was important to look at the individual characteristics of each person which, in general, are of *permanent significance to the human body,* such as being fat, thin, one's build, wrinkles and the meanings these factors create in the human being.

While preparing the first questionnaire with the pupils, we suggested that they should develop it with people from their own social context. In the didactic material that was elaborated, there were questions on the "human body" related to being "fat, thin, tall and short" – in other words, to different bodies– with a view to finding out about their social, cultural, dietary and physical habits. There was also a question asking how these people felt in relation to their present condition.

During pupil guidance, I realised that most of them were reluctant to ask those with whom they wished to establish interaction, questions related to "fat people". One of them said: "Miss, there's no problem with the thin and tall ones, but how can we ask the fat and short ones this? They're bound to lose their temper and kick us out of here". Such concerns highlight the prejudice or discrimination known to have emerged from the social establishment based on a "single model" of the *body* produced by power structures which standardise a "perfect" model of the man and woman.

I understood that the time had come to open the space for interaction with these pupils as far as this subject was concerned. We drew the attention of each one to what I called " giving value to our differences, our feelings", in accordance with what several pupils had mentioned among themselves: the importance of not allowing ourselves to be influenced by the *standardisation of beauty, tastes and habits,* trying to specify *what was behind* these kinds of interests; the importance of showing solidarity towards people who feel or who are effectively ostracised by society, not just on the basis of their physical appearance, but also due to hunger, prostitution or drugs; the importance of their feeling that they can do something to change this, even if only listening to the people they interviewed. However, no matter how hard I tried to encourage them to accept the responsibility of the interview on such terms, I felt that even so, the pupils were not truly convinced, but their urge to participate in a research project, or rather, to feel like researchers was much stronger and so most of them left, saying they would do whatever possible to interact with the interviewees and acquire the desired data.

Reflection on the results of our teaching-research practice led me to realise the extent to which we, teachers, cease to "allow" pedagogical practice at school "to happen", underestimating the pupils in their initial years or their context, in the belief that they are "still" incapable of developing research, or any other activity of a greater cognitive nature. Vygotsky (2001) points out that in human activity a double mediation process is at work: the "technical and semiotic". If technical mediation allows man to transform (give new shape to) the nature of which he is an integral part, it is semiotic mediation that allows him to confer meaning to this "new form".

After tabulating the data of our first meeting with the teacher, I exposed the answers of the interviewees obtained by the class, by means of annotations and tables on cards. The pupils identified the answers to "their own interview" and, with great pride, described them and commented on them to the rest of the group. It became clear what this experience had meant to them when we opened the space for each one to highlight his/her research and to give value to what they had produced outside the classroom. Through collective interaction, we were able to make the most of the socialisation of information and data obtained by them, attributing sense and meaning to what they had constructed.

During the research process, three questionnaires were developed: 1) on fat people; 2) on wrinkled people and 3) on the beauty of the body. I will now go on to present the data collected in one of the interviews, so as to provide an idea of how they were pedagogically developed.

IN RELATION TO FAT PEOPLE: HOW DID THEY END UP BEING FAT?

The most prominent answers and those taken from the references of the various pupils were as follows: through hormonal problems; overeating; emotional problems; lack of interest in life; because they eat a lot of dough-based products, sweets and fats; because they didn't/don't do any physical exercise; because they have a sedentary life-style; because they prefer to eat meat and dough-based products instead of greens and fruit; because of a large alcohol intake; emotional problems, anxiety, hereditariness.

After reading out these answers, we asked the pupils which of the words mentioned by the interviewees were unknown to them. The most mentioned were: hormonal; anxiety; emotional; hereditariness; calories; sedentariness.

In addition to trying to specify each term – based on their reflections – we exposed *examples* using the words considered to be unknown or not very familiar, at the pupils' request. In addition to this, we tried to explain expressions such as healthy diet, lack of interest in life, changes we make in our lives, among others. At that point, the teacher went on to insert the content selected by her, in school, and questioned the pupils on the basis of observations regarding biological or scientific content, giving emphasis to the *diet-nutrition* relationship.

On the subject of a *healthy diet*, for example, she drew the pupils' attention to food that is part of their daily routine, asking *what they most enjoyed eating.* The vast majority replied: chips, rare steak and coke. In a different way, the teacher asked how many pupils *checked what the labels contained,* for example, *of the crisp packets sold in the supermarkets.* Very few knew the importance of reading such compositions in order to receive the information contained therein.

She also asked them to go to a supermarket, if they had the chance, and examine the labels on the products and look for the *carbohydrates that* are found in sugar, rice, wheat flour, cassava, bread, potato, macaroni and sweets. She explained to the pupils that these foods are the richest sources of energy in our body, which is why they are always included in the diet of athletes.

She then went on to talk about fats, mentioning butter, soy, chocolate and olive oil. She explained that when fats are consumed correctly, they provide energy to the body and are responsible for tissue formation. The teacher discussed *proteins,* stressing that they may be found in meat, beans, eggs, milk and soy, among other foods. She also informed the class that they provide energy, they are important for bone, blood, skin, hair and muscle formation as well as other organs and tissues.

One student stood out in the class when she said: "Miss, I now understand why the person I interviewed

was so fat. He told me that he loves eating fatty meat and sweets". On the basis of the pupil's observation, the teacher discussed the importance of people learning about their diet and eating selectively and in moderation. Another pupil intervened asking: "Miss, are vitamins also part of a healthy diet? My grandmother says that I'm skinny and that's why I need vitamins". The teacher emphasised the question stressing that she would talk about some important vitamins in food, but, in order to find out if a body is lacking in a particular vitamin, it is necessary to consult a doctor and undergo tests.

The teacher then went on to talk about *vitamin A,* explaining that it may be found in liver, egg yolk, carrot and green vegetables, such as spinach. She also explained that this vitamin is important for growth, sight and skin. At that point Rosa, who rarely participates in class, intervened asking: "Miss, what is a vegetable? Is a carrot a vegetable?" The teacher briefly explained that vegetables are "dried fruit", or cereals which split into two longitudinal and parallel cracks which may also be called a pod, for example: beans, soy, peas. She explained that the term vegetable is commonly used to refer to fruit such as pepper, pumpkin, cucumber and aubergine and presented the pupils with a challenge, telling them to do some research, during the course of the week, in markets and grocers on three things: a) to define fruits; b) vegetables; c) greens; The pupils exchanged timid glances and Granada, one of the female pupils said: "Sounds ok to me". Most of the pupils participated in the proposal and many organised themselves in pairs for the accomplishment of the new research task.

The teacher went on with the lesson on vitamins, explaining that vitamin *B* may be found in meat, milk, eggs, cereals, vegetables, fish and liver. She emphasised that the vitamin is extremely important for the nerves, the formation of red corpuscles in the blood which transport oxygen from the lungs to the cells and carbonic gas from the cells to the lungs. She said that vitamin *C* is found in citric fruit such as orange, lemon, tomato and strawberry. This vitamin helps fight infection as well as being important for the skin and gums. Furthermore, she drew the pupils' attention to vitamin D which is found in cod liver oil, egg yolk, milk and fish, stressing that this vitamin helps bone formation. Some pupils observed– with great propriety and showing that they are not narrow-minded – that several vitamins are repeated in different types of food. The teacher ended by underlining that the observation of the nature of food and its contribution to our *diet* would help provide everyone with a healthy and balanced diet. At that point, a pupil interrupted the teacher and asked the following question: "What happens to people who don't eat vitamin B or any of them [vitamins] like meat, for example? At home we don't always eat meat". Before the teacher had begun to reply another pupil intervened saying: "My mother is a 'naturalist', she eats soy meat instead of beef. She says that it [the meat] is cheaper and healthier than beef". The teacher explained that as she had previously said, protein is found in other types of food other than meat. She went on to mention some of them but, even so, the group continued to display some restlessness in relation to the question asked by their peer.

While the pupils were commenting on the relationship that had been established, I realised the extent to which we, teachers, need to be attentive to interactions with pupils in class. I say this because one of the pupils who hardly ever participated in class and was not considered very intelligent by the rest of the class, as he couldn't read, asked such a "serious" question which made me think. And to think there are still teachers who believe that the child does not think because he/she does not decode, without taking the "several interpretations of the world" into account!

The girl had shown one of the ways of understanding the question/answer, but the pupil, who persisted, was referring to a crucial social issue that we could not ignore: "Why do some people eat meat and others don't?" She wanted to know if the "many" lost out for not having the necessary vitamin intake!

I went on with the discussion pointing out that few people have a healthy diet. Some through lack of guidance, others through personal choice, taste or preference, but the vast majority didn't have a healthy diet due to financial difficulties. One of the pupils made a very poignant observation: "In school there is always food but at home that's not always the case".

During this period, the press was showing reports on the exploitation of child labour. One of the pupils said that he was able to help his mother buy meat for Sunday lunch with the money he earned as a *labourer,* saying: "Meat is good, isn't it, but I didn't know the bit about protein. If I have to stop working because of the government it'll be hard to buy meat and protein!"

We took advantage of the opportunity to talk about some social issues in Brazil. The differences and injustices are on our doorstep, yet we don't do anything to change them. Rose asked: "Isn't it better for a child to work than to go out stealing?" There were a variety of opinions, however, we were unable to establish a coherent pedagogical position.

According to Medina (2000), *the vision of people's bodies varies according to the social segment to which they belong.* He makes some comments on this, arguing that disease, itself, may acquire a class nature. In his opinion, there is a difference between disease in *the body of a bourgeois* and the same disease *in the body of a social delinquent.* This opinion is what enabled me to relate the speeches of the subjects to the analyses of this author.

As far as the author is concerned, the *body of a bourgeois* in an environment with sedentary and dietary hab-

its that favour the emergence of fat and obesity, coupled with high blood pressure makes it susceptible to disease such as heart attack, arteriosclerosis, haemorrhage and cancer. However, since it has all the resources of medical technology to hand, its average life expectancy can be prolonged. The *body of the social delinquent,* on the other hand, acquires diseases which come from underdevelopment such as infectious and parasitical disease, characterised by lack of hygiene and a poor diet.

This subject was dealt with beyond the context of the Science lesson, it went further than the aims the teacher and I had established for that moment, but it was what was flowing in the mind/creativity/knowledge/experience of the pupils interacting with us.

As researcher and teacher, I questioned myself on the possibility of working with Science in a significant way, on how to work with the human body to give sense and meaning to the words and complaints of the pupils. I reflected on how to interact in effective teaching and learning terms with the pupils, without ceasing to be involved in the social context in which both they and we were/are immersed. I believe in the possibility of our being able to adjust our strategies, our teaching practices *towards a differentiated pedagogy,* without doing away with conflicts. There are no idealised terms in reality, only in discourse. We need to bear in mind a kind of pedagogy that will reflect the reality we experience on a day to day basis.

The pupils' comments led me to realise that most poor children seem to be convinced that they have two options in life: they need to work or steal so that their families can survive. Vygotsky (2001) points out that instead of asking how the child behaves in his/her social environment, we should be asking how the social environment acts on the child so that he/she may acquire more important social duties. On being confronted with theses kinds of situations, the importance of clarification on the matter is paramount.

Following these lessons, the teacher focused on lack of interest in life and registered some facts regarding people from her social environment who did not value their lives, even though they had easy access to daily updated information. She exemplified with data about drug addicts, alcoholics, smokers and marijuana–addicts. She explained to pupils that these people often become depressed, others lose their jobs and the whole family is affected and forced to live with suffering and difficulties.

During these explanations, the pupils interacted and constantly brought examples of their social context to the discussion, giving examples of mothers, grandmothers, aunts or neighbours having experienced something of the same kind. Jasmin commented: "My grandfather and aunt died from excess alcohol and I pray every day for my mother to stop drinking [...] It makes me so unhappy but she won't listen to me[...]". During the speeches of the pupils, we were able to see the interaction of research data with their surroundings; this helped them enormously to understand what they had learned and experienced throughout the research activity and the interactive discussions in class.

Some didactic and pedagogical reflections may be made as an "exercise" to set out a path for the methodological and epistemological re-dimensioning of the teaching-learning process by means of these speeches.

Another, more specific research project in "scientific terms" could have stemmed from the first questionnaire on *how many acid preservatives there are in some of the foods people eat every day* (for example, margarine, soft drinks and others), stressing that they are chemical substances which may have a damaging effect on our bodies. From another angle, *comparisons between industrialised and natural food stuffs* could be made (in terms of composition, price, benefits and harm they bring to the body) and so on. Through pedagogical practices like these, we can understand through Coll (1998, p. 108) that,

> [...] new information needs to be presented in functional terms for the pupils, in problem-solving situations and contexts that are close to their daily lives. All of this will enable the pupil to understand the use of the new information and make it easier to relate it to what they already know.

It is worth pointing this out in the speeches of the pupils in terms of the emphasis given to experience. They understood that *anxiety* and *emotions* are part of their lives, *their bodies,* and that in order for that body to feel happy, loved, desired and healthy, it *depended on someone else*, and this was beyond their control.

FINAL CONSIDERATIONS

At the outset of this research project, I expected my biggest difficulty to consist of *being able to pedagogically handle specific Science content,* but after the very first meetings, I realised that the crux of the matter would be *knowing how to relate,* being in a position to provide *my body* with interaction based on being and sharing actions and interactions with the *bodies of those involved in the research task.* We all come from different cultures and regions which may give rise to divergences from time to time, as was the case here, Nevertheless, with the intensity of our interaction in class and, over time, I felt that the more we socialised the more I understood that I had a lot to learn from the life histories, experiences and ideas of each one of those pupils in Year 4.

I learnt that research does not occur solely because of the presence of a teacher who is a *self-professed researcher,* but through the effective interaction of all those

involved. In order to allow this to happen, it became absolutely essential for me to detach myself from certain pre-conceptions of the *human body* so that the research could be developed. I still wasn't sure at the time whether a research process would enable us more during the course of the research project than any previously accomplished study or preparation.

Our meetings did not consist of vaster or more limited knowledge, but *knowledge* that was "different in social interactions, mediated in the classroom", to such an extent that with each pupil and teacher participation, we felt more challenged to act in pedagogical terms, believing that together we could "teach and learn interactively."

On initiating the research activities, we stressed the ability and importance the pupils displayed and they had to intervene in the teaching activities prepared by the teacher, which overlapped the data of our pedagogical research. These interventions occurred through the autonomy (even relative) we gave our pupils. Autonomy to question/ experience/ and interact with each other and with us on the "Science: human body" related-content and research on the ideas of people within their social circle and community which came to be part of the "scientific and social knowledge" they acquired through interaction on the basis of their personal experiences.

It is my aim to accomplish my pedagogical commitment as teacher and teacher trainer, which implies the guidance of pupils in the Education course and an effectively pedagogical or educational action, developed through the school context. This can only be achieved through *interaction* that is *mediated* by teachers, in terms related to what was expressed in the experiences of the pupils involved in this research project. Therefore, I am of the opinion that it is through the school that we can bring about "autonomy" so that the pupils learn how to "reconstruct the social reality" they are confronted with on a daily basis, learning to make choices and decisions as citizens who are aware of the possible problems and risks they may have to face. This has to be achieved by believing in our teaching practices with a view to conquering our autonomy to teach, evaluate and contribute to the cognitive and social construction of the pupils.

Looking back on my trajectory as a teacher and researcher, I can say that this was the most challenging pedagogical experience I have ever had. I took many initiatives and made uncertain decisions given that, as far as the pupils and teacher were concerned, "I was the one who knew and I was the one studying" and so, "I was the one who had to clarify all the *doubts whenever they emerged"*. However, I can affirm that on almost every occasion, I had to humbly acknowledge the extent to which I was learning and/ or what I still had to learn. Regardless of my experience of academic life at university, I could see that the social and emotional lives of the pupils and teacher were what brought *sense/meaning /life* to our research.

I must stress that that the "voice and turn" given to the pupils during the lessons strengthened the teaching with research exercise. There was a selection of content based on the interviews and questionnaires that I had formulated and content that had been organised by the teacher, however, the *word of the pupil* was what wove and enmeshed the new learning experience. In accordance with this, it is important for the teacher to realise that during his/her lessons, it is the *ideational movement of the pupils* that creates conflict and, in turn, the latter sets the boundaries around where the pupil is and how far he/she can go.

My aim in carrying out the last interviews with the research subjects was to find out what "our research" had meant to them. Here are a few examples:

Jasmin said:

> At the beginning of the year I didn't feel comfortable here in school.[...] I couldn't understand anything in Year 4. Everything was difficult. My peers made fun of me because I didn't read or write, I didn't feel my body, only my head. Then the teacher started to praise my work, [...] my peers began to help me[...] then I realised that they liked me. The teacher liked a composition I did and gave me a lot of praise. In this lesson, I enjoyed interviewing and writing down what people said. I realised that I can also learn at school. I learned through the research that alcohol is very bad for the health. Whenever I eat beans, I remember they are protein.

With Jasmin, I learnt the lesson that perseverance is needed to accomplish one's aims. From our very first meeting she told me that *she wished and was going to learn to read and write.* Whenever I am confronted with a child from the primary years who is having difficulties in the teaching and learning process, I will remember how important the research mediation was for that young child.

Over the last months of lessons I noticed in my observation of Violet that the teacher wasn't calling for her attention so frequently, since she was participating in the discussions and would often stand up in order to be heard better. In the last interview she remarked:

> I feel better at school now. I was angry with some of my peers. I still argue a bit but not as much as before. The research lessons were great. We used to go to people's houses to interview them. I learnt that very fatty things can develop cholesterol. I have never been very keen on fruit. I would only eat sweets, meat and pasta. I eat salads and vegetables now. I learned that my body has life. It learns, has intelligence, friendship, love, health – It's not just the liver and intestine. I think I'm intelligent too and that I can learn.

Right from the start I felt that Violet was a child who knew what she wanted. Her rows with her peers were in order to defend her ideas. The teacher insisted that she sat down and was quiet. This intrigued me because the child was participative in her own way. The teacher thought she had a *strong* personality. We also contributed to the formation of the child's personality since we were a part of her social context. I believe that it is a great asset if the teacher can observe and understand some of the pupils' attitudes beyond the classroom. This reflection is based on the ideas of Wallon (1975, p. 393), when he sustains that,

> [...] the child can only form his/her personality through relations with others. The personality of the child is just an exchange of other personalities. He/she can not attribute a personality to him/herself and manifest it without having identified the distinct personalities of his/her own self.

In the last interview carried out with the teacher, she pointed out:

> When you started this research project I did not question anything, but couldn't understand how the pupils could do research in the community. When you started to bring "your activities", I realised that I was able to link many of them to my lessons. Diet and the human body, which I was going to work on at the end of the year, were included on the basis of what the pupils brought from their own experiences from April onwards. [...] this proposal also brought a variety of content such as disease, diet, prejudice, social relations and the development of orality and writing. This work unveiled something different to what I was used to doing. [...] I had no idea how the pupils could participate more intensely. As we were developing certain content, the pupils themselves said: "This is to do with what we learnt in the research". Not only in terms of the human body, but also as regards life itself. They realised that everything was related to the research they had carried out. If it meant what it did to me, I can imagine how important the work we developed "in the research" must have been for the pupils. I feel that they are less inhibited and more open.. I know that I didn't reach 100% of the pupils, but I managed to involve pupils I could never have imagined being capable of developing so much. The University should involve state schools in its research projects more often.

The teacher's account shows her initial concerns at the beginning of the research. I also shared these concerns since it was the first time I had developed and participated in a research process in the classroom involving teaching, learning, knowledge, the teacher and pupils.

Let us go back to the teacher's observations on the university developing more research in schools. This stresses the importance of an institutional contribution to the intellectual growth of practising professionals. Furthermore, when it involves school contexts and situations – particularly lessons – educational research gives university teachers the opportunity to understand how to work in the teacher training courses.

My approach to teaching and learning throughout this work will have a decisive impact on my actions as teacher and researcher in future. This means that I can establish more meaningful relations through the research process to promote a type of teaching that will trigger off teacher and pupil autonomy to be able to be different. This difference may be summarised as: the possibility of addressing the needs of pupils who fail and those who are at an advantage; making decisions on the basis of an education of values and conflict-solving; valuing human relations and communication with the class; cultivating cooperation and learning among equals; continuously seeking coherence between discourse and practice (Carbonell, 2002).

Throughout this research project, I learned that one of the greatest innovations in school is the teacher's ability to attenuate or get rid of authoritarianism in his/her actions in the classroom and to give space to his/her teacher authority. This authority comes from the teacher in an experienced democracy, in the confidence he/she manifests to the pupils through the breaking of paradigms, on believing that he /she can learn from the knowledge and word of the pupil…

Finally, I may say that pedagogical experiences make it possible to understand the actions that are indispensable to the construction and establishment of the subject/human being in the course of educational or pedagogical processes, particularly when we bear in mind that in the 21st century we need to shape different paths in the construction of socialisation before other/new social realities.

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