Report on the provisional MOTFAL Project's implementation in C.P.R. Campiña de Tarifa

1. Introduction

Educational Research as an educational model.

MoTFAL is presented as a research project aimed to evaluate, calculate and analyse the implementation possibilities of mobile technology (such as PDA, GPS, digital cameras, digital video camera...) in the teaching-learning processes taking place in schools from different countries, as well as its application for information communication and exchange within the schools involved in the project.

Educational research, represented in MoTFAL, considers teaching as a complex activity characterized by simultaneity, multidimensionality and the possibility to improvise (Darfling – Hammondo, 2001)

Learning in the classroom is defined by the interaction amongst its members, who are unrepeatable individuals regarding the time and space coordinates in which we are situated, the culture, the idiosyncrasy defining them... what implies that educational agents are taking decisions constantly. An evidence for this idiosyncrasy that

is taken into account when taking decisions, is the fact that this project has been implemented in several schools from different countries. Each school is unrepeatable: they belong to specific contexts, with valuable and different social-cultural realities which will define different features of the group-classroom and the learning process developed in it.

From this approach, the educational model we support aims to re-establish the student's experiential and intuitive knowledge and his or her own culture, and not to perpetuate the non-critical knowledge within a society in constant mobility and renovation: it aims at the arising of an autonomous person.
School is a context representing society, and aims to teach the students in such a way that they can access the world of production. To do so, the context in which we are situated (Bolonia and Greek) can be used as a tool of analysis in order to understand school reality, essential requirement for the school to get transformed and improved.

This educational approach is only possible when based on the individuals´ reality, on their experiential knowledge, consequence of the interaction with the social and natural environment. As such, it varies according to the individuals, and it requires to potentiate non-academic, contextualized and varied performances.

In MoTFAL- UCA, the selected school is characterized by being situated close to Baelo Claudia excavations, one of the best samples of the urban city structure in Roman times preserved in the Iberian Peninsula; and Bolonia beach, rich in marine flora and fauna. The subjects selected for the implementation of the project are related with this exceptional background which will allow the students to know who they are, where they are, the origin of their traditions... These subjects are Biology (the resources at their disposal will be exploited: marine flora and fauna) and History: Archaeology (Roman excavations). This is a clear example of how the context can be used as a tool of analysis in order to understand and transform the reality they are living in.

The educational objective explained in MoTFAl, is based on students´ education so that they can **understand** their reality, history, traditions and origins; on the development of a critical awareness and on the possibility to get involved and improve society in a **democratic, responsible and shared** way: construction/reconstruction of knowledge.

The following chart synthesizes the most important aspects defining the two main theoretical approaches on the learning processes: Transmission of Information versus Social Construction of Knowledge.

TEACHING AND LEARNING AS A TRANSMISSION OF INFORMATION VERSUS AS SOCIAL CONSTRUCTION OF KNOWLEDGE

(Good and Brophy, 1997: 403)

Transmission View	Social Construction View
Knowledge as fixed body of information transmitted from teacher or text to students.	Knowledge as developing interpretations coconstructed through discussion.
Texts, teacher as authoritative sources of expert knowledge to which students defer.	Authority for constructed knowledge resides in the arguments and evidence cited in its support by students as well as by texts or teacher; everyone has ***expertise*** to contribute.
Teacher is responsible for managing students' learning by providing information and leading students through activities and assignments.	Teacher and students share responsibility for initiating and guiding learning efforts.
Teacher explains, checks for understanding, and judges correctness of students´ responses.	Teacher acts as a discussion leader who poses questions, seeks clarifications, promotes dialogue, helps group recognize areas of consensus and of continuing disagreement.
Students memorize or replicate what has been explained or modeled.	Students strive to make sense of new input by relating it to their prior knowledge and by collaborating in dialogue with others to coconstruct shared understandings.
Discourse emphasizes drill and recitation in response to convergent questions; focus is on eliciting correct answers.	Discourse emphasizes reflective discussion of networks of connected Knowledge; questions are more divergent but designed to develop understanding of the powerful ideas that anchor these networks; focus is on eliciting

Activities emphasize replication of models or applications that require following step-by-step algorithms.	students´ thinking.
Students work mostly alone, practicing what has been transmitted to them in order to prepare themselves to complete for rewards by reproducing it on demand.	Activities emphasize applications to authentic issues and problems that require higher-order thinking.
	Students collaborate by acting as a learning community that constructs shared understandings through sustained dialogue.

> *" As educators, we want students not just to retain information but to develop deep understandings and reflect thoughtfully about what they are learning. We want them to become scientific inquirers, critical thinkers, systematic problem solvers, and value-based decision makers. If these lofty goals are to be accomplished, we need to teach with emphasis on higher-order thinking about and implications of what is learned".* (Good and Brophy, 1997: 399).

The educational aims we are posing must be coherent with the roles of the involved educational agents and with the methodological strategies used. Some of the methodological teaching strategies required by this educational model are the following ones:

- Not to compartmentalize knowledge, but to pose problems which can be approached in different ways, from different perspectives.
- To start from students' previous experiences and ideas: to get to know the explanatory system underlying student's conceptions.
- To promote students' active participation in the decision- taking process according to:
  - Planning of the activities (methodology, grouping, resources…)
  - Organization of the activities.
  - Distribution of activities and responsibilities.
  - Evaluation of process and learning.
- To raise the discussion and review, to promote the group and collaborative work.
- Creation of the required conditions for the students to develop research and investigation strategies.
- Creation of the environment based on:
  - Cooperation versus competitiveness.

- Intellectual activity versus passivity.
- Creativity versus homogeneous thinking.
- Curiosity versus indifference.
- Open-mindedness versus stubbornness.
- Comprehension and review versus unaware repetition
- Communication with the group and groups from other schools versus individualism

In these cases, the means, the strategies we support are the goals themselves, since the methodology itself, the characteristics of the activities, the role of the students, teachers and parents, allow the proposed aims to be developed.

2. **Typology, role and sense of mobile technologies**

In MoTFAL project we apply different digital technologies, but it is mainly focussed on mobile technologies. One of the elements we consider to enrich students' experiences through TCP, is the design of learning experiences in which the students must consult different information sources:

- Information from texts: books, magazines, handbooks, etc.
- Digital information from Cds and the Internet, compiled and registered by the students in a digital way.
- Iconical information (images, photographs obtained by the students)

Digital sources – specifically for this project- can be catalogued in fixed technologies and mobile technologies. In the first group you can find fixed computers, the Internet, Cds.- multimedia, etc.

Mobile technologies constitute the experimental basis of the project. What do we mean when talking about mobile technologies? The mobile technologies approach developed by MoTFAL project aims to be very generic, and we include any handless technology helping the students to compile information and to communicate outside the context of the school and the classroom.

The mobile technologies used throughout the development of the project are as follows:

.- Laptop computers
.- Digital cameras
.- Digital video cameras

.- Pen-drivers
.- G.P.S.

Students use mobile technologies in order to compile information during the field trips, which are related to the study of the units. The cameras are used for taking photographs of the plants and flowers covered in the subject of Biology, as well as of the surrounding area and the archaeological remains in the case of the subject of History. These photographs allow the students to gather relevant information for any report or work to be undertaken in these subjects.

We should not forget that handling these tools implies the use of different concepts, pictures, signals, as well as the development of other capacities such as synthesis, electronics….Therefore, MoTFAL technologies are not only aimed at establishing complement tools for students' practice, they are not only a means to accomplish educational purposes, but the use of these tools are themselves educational aims.

3. The role of the involved agents

Teacher's role

The critical approach we are supporting as a teaching role model conceives education as a complex and reflexive task, which is conditioned (but not determined) by the idiosyncrasy of the context in which it takes place. This fact leads to state that what occurs in the classroom is unpredictable and that practice is full of conflicts. The teacher is a **critical thinker**, a **researcher**.

We consider education as the overall development of the students and teachers. Education is based on the cultural exchange, on a communicative and collaborative process; such as the opportunity to learn how to learn within a dynamic, changing and unsteady society. School is considered as a meeting point for knowledge and it should avoid technical conceptions. In the same way, it demands the agents of the teaching-learning process, this is teachers and students, to have the leading roles.

Therefore, it is required a teaching body aware of what occurs in the classroom, in the society and in the context it is situated; it must be ready to respond to the unexpected, which will not be so when considering the classroom as being complex, unexpected, in which there are people living, feeling and thinking. The educational

agents interact among one another in order to provide different and changing realities as a result.

Teacher acquires an important role since he or she does not apply determined laws or rules, but he or she becomes a researcher, a critical thinker, an emancipator, the student's companion, autonomous, expert, an agent of change, an analyst of his or her own practice. Teacher's performances will be based on the idiosyncrasy of the educational context the school is situated in. After applying the "educational hypotheses[1]", next performances will be structured. At the same time, these ones will constitute new "hypotheses", as a consequence of the cyclical and dialectical relationship between theory and practice.

Therefore, the teacher is a RESEARCHER in the classroom.

The teacher becomes a companion, a fundamental mediator between theory and practice, aiming to improve his or her day-to-day practice and that of students'.

One of the strategies helping the teacher to accomplish this objective, will be that of sharing his desires, fears, discoveries… with other teachers and his or her own students. A valuable tool will be the external and internal evaluation as well as the communicative exchanges with other experts (if focussed on in our project, we would make reference to the experts developing MoTFAL in their schools) by means of common spaces such as forums, chats, teacher's dairy... These are all tools used in MoTFAL.

As education is aimed at reconstructing knowledge, students are required to be: of a critical turn of mind, autonomous, reflexive, tolerant, participative, involved... This is possible only if the teacher provides the opportunity for this to happen, this is, for the students to become decision makers about everything that occurs in the classroom, taking into account every student.

Teacher in TCP is neither the owner of the truth, nor simply the applicator of the resources; it is required experts, commitment, responsibility, sensitivity and comprehension. These requirements become the main handicaps and challenges for this work. Teacher's task becomes less comfortable, more committed to the school and

[1] The term "Educational hypotheses" makes reference to those procedure principles founding teacher´s educational practice.

society in general. All these elements are required in order to analyse and reflect on his or her own classroom and educational practice. This is the only way that it will be possible to meet the student's needs. Only by means of a teacher with such characteristics will it be possible for students to commit themselves to their studies; only by means of a collaborative researcher is TCP possible. This is why the teacher's expertise and identity increase when he or she is able to take decisions about his or her own classroom.

Student's role

Throughout the development of the sessions, students play the role of researches; firstly, gathering the required information and preparing any material or resource necessary for the field work; selecting and planning any route or context where the field works will take place; visiting the real background where the events and facts to be studied take place; carrying out field work sessions...

The goal is indeed that the student undertakes high level cognitive processes as if he or she were a scientific apprentice.
In this way the student considers teaching as a support to his or her cognitive and personal development.

Relationships between teacher and students are based on the collaboration principle. In the schools and groups it is promoted the collective performance, the interrelation and working making different groups (even of different levels and ages) and the use of the knowledge in an interactive way.

Students´ role is characterized by:

- A positive attitude towards learning.
- To be the main figure in their own learning process.
- To be active in the decision taking process taking place in the classroom and in the development of the sessions.
- To be of a critical turn of mind in order to be able to confront the information taken from different sources, as well as to analyse it in order to solve the posed questions, to plan the tasks, to select and organize the information, to transmit and apply the knowledge acquired in different contexts (as a consequence of a flexible mind developed by the capacity to learn for comprehension purposes.

Educational community's role

Something that characterizes the relationships between the teacher and the students, as it has been stated before, is the mutual collaboration and understanding. In the same way, the centre is determined by the community's involvement in the activities developed in the school. Parents and the society in which it is situated, are fully involved and have an active participation in what occurs in the school. This is a school open to the community it belongs to and this community feels as an integral part of the decision taking process as well as of what occurs in the school.

This is the reason why at the beginning of the scholar year, we reach a consensus on the development of this type of project with the educational community: parents, teachers, students, leaving the doors open to any negotiation or proposal.

In the field trips carried out, parents have the opportunity to participate as researchers (just like students), guides of the area to be visited, or connoisseur of relevant information about the plants or the remains to be studied.

School, as a formative, educational and social institution, is aimed at becoming a place for everyone, a meeting point for knowledge and training; a place for interaction and exchanging any idea, proposal, knowledge or experience. In this way, the school becomes a place for culture.
Taking into account the little population in Bolonia, where everyone knows one another and maintains close interpersonal relationships, this objective can be accomplished more easily. The atmosphere of mutual collaboration, coordination and partnership within the staff of the centre enables this kind of practices and commitments.

Group work

Learning process is defined by the exchanges and interactions amongst the members participating in it and, the interrelation with the individual and his or her natural and social environment. From this point of view, an active work of students collaborating in groups becomes very fruitful given that they learn from one another.

The organizational structures used in the development of the teaching-learning process emphasize the educational aspects of an attitudinal and academic nature.

We consider **group work** as the students´ organization in order to undertake any task. This is one of the most appropriate and coherent strategies regarding our project's philosophy.

> MoTFAL as TCP, potentiates comprehension, constructive knowledge and collaborative learning. These three elements demand collaboration, cooperation, sharing with other students and other teachers participating in the same project and providing different experiences, ideas, results, doubts... As a consequence, there is a mutual contribution in order to solve any problem (since teaching-learning process becomes a source of conflicts). The group work enables these requirements to be achieved.

Comprehension understood as the capacity to think and act with a flexible mind regarding what is known for us, demands the movement from the culture of certainty to the *culture of uncertainty* Hargreaves (1996). The concept of Truth becomes non-existent, giving way to that of truths (provisional, depending on situations...) which should always emerge from the exchanges of arguments, shared search, the contrast, the consensus, reflexive participation...

In order to think and act with a flexible mind, it is necessary the culture of uncertainty, as we said before, but this is only possible when we pay attention to the ideas, doubts and/or solutions provided by the other. It is not possible to consider different ways of thinking and acting when we are not aware of their existence. Individual's contradictions are just the driving force of progress, when the individual is sensitive to them. The need to exchange, to dialogue and to cooperate with the different participating agents are founded on the educational process and society in general, so that we can question our own truths, our ways of thinking, and promote their development and evolution.

Group work enables comprehension since it is in fact based on this communicative exchange, potentiating:

- the concept of knowledge as provisional and limited,
- the distribution of responsibilities,
- the development of a sense of group as a self- identity,
- to listen to the other makes us question and re-elaborate our own thoughts as we are provided with new input,
- The proof that performances and thoughts are related to the idiosyncrasy of the contexts in which they are applied.

The **construction** of the own **knowledge**, is undertaken in a dialectic process, which is bidirectional between the individual and the

social and physical environment. It is, in fact, characterized by the relevance of such a social interaction (contents themselves are social rather than individual, what is provided in the classroom is in fact a "selection" of them.

> "not only does the child interact due to some affective and cognitive structures he or she owns, but these structures themselves are originated in the interaction (RIVIERE in Deval, J 1983)

If education is considered as the overall development of the fields that make up an individual, we should not forget that the student is a social being by nature. The group-class itself makes up a micro-society.

Cooperative learning. Current researches (Regional Government for Education and Science. Regional Government of Andalusia) highlight that interaction amongst students is relevant not only due to a social-affective learning purpose, but also due to a cognitive one. The **"cooperative" organization** rather than the competitive one is highlighted. The discussion amongst classmates and the confrontation of ideas on which group distribution is based (which is far beyond the simple mixture of children) enables self-reflection, self-review and to search for the arguments which might found our own ideas versus those provided by the other. These are the key elements for the cognitive development and the construction of our own knowledge.

Work between the students and the schools will achieve:

- To understand the importance of the group to improve the organizations.
- To develop the communication capacity in such a way that it facilitates the process of the team (and of the group-classroom)
- To handle the tools which allow the efficient analysis of any problem.
- To apply any technique or strategy allowing the team to work efficiently and achieve results.
- To handle the conflicts emerged in the group, solving them in a constructive way.

Students are divided into small groups of two or three members, established by the students themselves according to their own criteria. If necessary, at the request of the group members or due to any handicap within the group which makes the development

of the task impossible, the teacher will be able to modify the established groups.

4. Research process

The activity is being developed with students of the First Cycle of E.S.O. (Compulsory Secondary School), in their first and second grade. It is the third consecutive year that the project is being developed.

This is a multidisciplinar activity aimed at accomplishing the objectives related to attitudes, procedures and knowledge (more accurately "to learn how to learn"). We should highlight the most successful element in this activity: **motivation.**

Motivation is constantly reflected throughout the process: before, during and after. Students enjoy themselves, are happy, they mix with one another, investigate, analyse and learn.

One of the most important objectives is **to learn how to get to know, respect and perpetuate the archaeological, historic and natural heritage within their own environment;** to consider necessary to maintain the heritage for the future, to appreciate the cultural relevance it has and will have in a social, human and economic level for their culture in the future.

MoTFAL project as TCP aims to achieve comprehension, constructive knowledge and collaborative learning. MoTFAL considers comprehension as the capacity to think in a flexible way according to what the individual knows.

The development of comprehension demands a range of basic conditions in order to potentiate such a capacity. This is why in-depth learning is so relevant.

In-depth learning implies that schools develop learning for comprehension purposes. The students will undertake the activities as writers, scientists, researchers...; it is focussed on active learning developed in real life contexts.

Students work as researchers in order to study the didactic units of Biology and History subjects.

Work is structured in the following phases:

1. Preparatory phase: in the classroom
2. Field work phase: outdoors (in the surrounding area)
3. Analytical phase: in the classroom again
4. Informative phase

1. Preparatory phase: in the classroom

The didactic process prior to each field work session in the surrounding area (field trips) is as follows:

At the beginning of the scholar year, parents, teachers and students hold a meeting in which the activities, field trips, units and session planned for this project are discussed. In the beginning, they have reached a consensus on the day of the week to have the field trips, it does not mean to have it every week.

- Presentation of the generative topic.
- Explanation of the tasks to be undertaken
- Presentation of the tools to be used during the field work.
  - Proposals of different tools which can be used

- It is planned the day for the field trip, the type of plant and the archaeological remain to be found and analysed.

In order to define the study objectives of the corresponding session and establish the bases for the search parameters, we move on to consult the guidebooks, the plant and history books. So, we make a first approach to the search objectives.

Therefore, the previous session consists of defining the study objective for the week, the routes to be walked, the responsibles for the material as well as the mobile technology to be used...

- In the same way, all the resources to be used throughout the field work phase are prepared:
  - Camera batteries are charged.
  - Bicycles are tuned up (in the case that they are going to be used on the field trip).
  - Photographs already stored in the computers are downloaded/erased.
  - Field notebook is prepared.

For this purpose, students volunteer to prepare the necessary material, every week the voluntary groups are changed.

- Field notebook preparation.
- Organization of the groups (in the beginning the groups are established by the students themselves and they are stable). In the case that communication within the group is not fluent, the group will be modified by either the teacher or the students.
- Elaboration of the botanic and/or archaeological glossary.

In order to exemplify the activities and tasks undertaken throughout the researching process, we will show the unit about flora in the surrounding area of Bolonia.

Example: unit on flora in the surrounding area of Bolonia.

Performance objectives:

- How many different plants can we find in the surrounding area of Bolonia?
- The plants grow under particular circumstances and have some needs, can you identify them?
- What are their differences and similarities?

2. Field work phase: outdoor and indoor.

The field work of both subjects is carried out in the real context in which knowledge takes place and is constructed.

Field work sessions are based on the field trips to the school surroundings, where the plants and archaeological remains to be studied can be found.

"the field trips start at early in the morning, after preparing the necessary material. Some field trips are carried out on foot, other ones by bicycle and other ones by bicycle and on foot at the same time (they are mixed)"

1. Searching for plants in the surrounding area of Bolonia:
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    - Taking pictures of plants and flowers.
    - Drafting-writing previous notes on the field notebook- using the plant reference book.

- Picking up specific specimens for a later classification and elaboration of a plant book (plantarium-herbarium)

2.- Classification of the pictures according to families and distribution in the groups.

- To create folders according to families on the computer desktop
- File distribution in the groups using the pen-drive

3. Analytic phase (in the classroom)

Again in the classroom, we proceed to analyse them. Once all the pictures are downloaded in the computer and classified, the groups are ready to select the most representative photographs for each specimen in order to prepare the file- cards for each element.

Once again we take the unit on the flora surrounding the school as an example.

- Preparation of a document (file-cards of each plant) in groups, using the taken pictures, along with an explanation of the basic characteristics of each plant.
- To give an answer to the questions raised in the beginning
- Preparation of 3 different presentations (Power Point):
  - For specific plants on the beach
  - For specific plants in the mountains
  - For garden plants and trees adapted to Bolonia ecology (using the personal computer, the pen-drive and the available software)

(Use of the reference book and the Internet)

Throughout this phase, the teacher's role as a guide and adviser is highlighted, as he or she thoroughly reviews all the works the students are carrying out, either the file-cards or the presentations elaborated through the Power Point.

Despite freedom and taking decisions by common agreement, the format and the procedure required for the file-card elaboration, are defined beforehand and they are the same for everyone. The format was designed by the teacher before the project's implementation.

At this stage, before the informative phase, the evaluation of the works is carried out. However, we must stand out the fact that the evaluation process is continuous and takes place throughout the different work sessions. This facilitates the feed-back and enables to undertake the proposals aimed to improve the works.

Debates and communication between the teacher and the students are the bases of the evaluation being carried out by the teacher for this project about students´ work. In a continuous way, the teacher leads and directs the tasks being undertaken in the computers (in the classroom), establishing the guidelines to be followed if necessary.

When the students and the teacher consider the work about the partial reports to be finished, the students are informed about their provisional report final marks. Once the tasks are finished, one copy in electronic format is given to the teacher and another copy to the students.

The continuous evaluation, based on the dialogue and the joint reflection on the tasks being undertaken, enables the analysis and awareness of the teacher and the students' progress and evolution. This allows us to understand the conflicts and the problems of the school.

The overall evaluation process helps everyone to keep learning, taking into account that the critical turn of mind and the analysis are the bases. This day-to-day evaluation process becomes itself a new teaching-learning process: formative evaluation is a learning source for everyone.

4. Informative phase

Throughout this phase, the small groups into which the students have been divided, will undertake an illustrated presentation of the final report, submitted in Power Point format, to the rest of classmates in order to improve their diction in public (speakers' diction) and familiarize themselves with the concepts provided by the rest of the classmates. This system allows us to reassert our knowledge, to learn new knowledge, to familiarize ourselves with the necessary vocabulary and concepts and, finally, to elaborate an appropriate data base for subsequent consultations.

5. Conclusions

The introduction of the TICs and the mobile technologies in the centre is an innovation provided by MoTFAL project. Nevertheless, working with other fixed technologies such as computers, working in collaborative groups, using the context as a source of knowledge, considering the teacher's role merely as an adviser and leader of E-A processes... were elements already implemented in the day-to-day centre's life.

Even so, mobile technologies´ use and implementation aimed to develop the units of Biology and History subjects represent a revolution in teaching-learning tasks.

We must comment that the use of this type of technology, such as digital cameras, pen-drivers… did not mean to break down with the dynamic of the work being carried out in the classroom so far; it meant an aid, a complement enriching the tasks being undertaken so far.

Therefore, the use of mobile technologies is generating:

- **Increased globalization of the information:**

The teacher is not the only source of knowledge. As a matter of fact, one of TCP´s basis is the knowledge richness provided by the use of different information sources, such as text books, magazines, along with information gathered from other sources such as the Internet, software and the information compiled through the use of the handless technology used in this project.

In this way, the tasks and activities can no longer be the traditional ones provided in the text books. It is proposed new activities and tasks in which skills and capacities for searching, reviewing, assessing, investigating... are developed through the use of different information sources.

The teacher is not considered as the owner of the truth, since the truth no longer exists, just different interpretations of it; by means of the combination of them we can construct our own interpretation of the studied realities. We can use different tools and strategies for searching information so that they found our actions

and acquired knowledge. The teacher acquires the role of a guide, orientator and adviser in the processes.

- **Students' autonomy**

The use of different techniques of gathering information, the TICs and the handless technologies; the new tasks implying activities of a creative nature, and activities with searching purposes, enable the development of the students´ autonomy since they become researchers. The student is no longer considered as an empty glass to be filled with knowledge, but as the main figure to be in charged with his or her own education and knowledge. The students´ role is not passive anymore, they have a new attitude towards investigation, research, analysis and assessment; they become active agents in their daily tasks.

- **Construction of the own knowledge:**

Regarding the use of the contexts and the experiences close to the students, they construct their own knowledge from their previous real experiences and the use of the media, which enrich and confront such experiences. The collaborative group work enables the accomplishment of this objective, as it was mentioned before.

This type of technologies, apart from being considered as media and a means to have access to information, this is, just as resources, acquires self-identity since it becomes a cognitive tool, given that:

- It enables to compare different perspectives, ideas, relationships…
- It helps to solve problems by defining situations, details, by providing new interpretations...
- It enables the collaboration and confrontation of ideas and reflections, discussing, providing arguments, constructing common points...
- It enables to reflect one's thought, by collaborating in the representation of what one knows and in the transmission of the achieved conclusions and the undertaken work to the rest of the classmates.
- It is developed the capacity of comprehension, handling, critical review, assessment...

- **Form technique to review:**

Teaching-learning processes are no longer based, as we stated before, on the transmission of knowledge from the teacher to the students.

Teacher's role is no longer that of a transmitter and of the owner of culture, he or she becomes an adviser, leader, promoter of conflictive situations for the students "guiding their minds, rather than shaping them" (Delors, 1996 in Garrido Arroyo, 2002)

The teacher becomes a companion, an essential mediator between the theory and the practice aimed to improve the day-to-day practice and that of the students´.

One of strategies designed to accomplish this goal, will consist in sharing his or her desires, fears, discoveries… with other teachers and with his or her own students. An appropriate tool is the communicative exchange with other experts (the teachers developing MoTFAL in their schools, if we are focussed on our project) through common spaces such as forums, chat, teacher's diary...

- **Collaborative work:**

Due to the use of technologies such as the Internet, the e-mail, mobile telephones, and the group work mentioned before, the collaborative group work is developed, in an internal level, in the centre, and in an external level, with the rest of the members of this project. These information exchanges are an innovative element in the project.

- As we have been able to notice, **the tasks** undertaken throughout the researching process are characterized by:

- The development of comprehension and expression capacities: discussing, confronting ideas, sharing experiences…
- The solution of real problems: questions posed by the students about the historical and natural environment, their habits and traditions...
- A critical review developed through the use of different information sources and the dialogue with other classmates.
- Helping to research the environment in which they are situated, checking, discussing...
- Achieving the motivation required in order to keep learning.

The use of the technologies applied in MoTFAL project **enables** the following **types of learning:**

- *Significant:* this is a type of learning related with the students' interests and concerns about the natural, historic and social environment in which they live, so that they can understand their own experiences.
- *Contextual:* in this type of knowledge, the contents are closely related to their personal and historic context, within the environment in which the events take place and connecting them with the aspects close to the students, due to the geography, their affective or social closeness.... These aspects are enriched by the information that the TICs and the mobile technologies provide them.
- *Constructive:* knowledge is constructed from the ideas originated from the previous interaction with their natural and social environment, acquiring new input which is related to their prior knowledge.
- *Dynamic:* a creative learning, in which the students are able to elaborate their own resources and means…
- *Structured:* the preparation of the presentation to their classmates develop characteristic capacities of an structured learning: to plan the presentation to be undertaken, to summarize all the information, to prepare the speech...

6. Unit designs (see annexe 1)

7. Bibliographic references

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