Technology and means of communication need an ethical analysis, which should be developed in educational contexts, so that they can be used suitably. This idea is materialized in the concept of educational technoethics, which deals with the following two parameters: the intrinsic values including technology and means of communication (the objective of technoethics), and their uses as mediums for ethical values. (the means of technoethics). The following proposals, currently carried out, are introduced from both senses: one of them in my university, through the project “Seminar on Technoethics for Future Teachers” (STFM)\(^1\), and the other one in education centres for adults “Observation Laboratory on Technoethics for Adults” (OLTA)\(^2\). Finally, some aspects of intervention for the educational fields from the lowest levels up to the highest ones are presented.

When revising the studies already carried out with regard to educational technology and means of social communication, most are directed to the what and how of their existence and use, which Martínez and Área (2003) compared to pedagogical hardware. Nevertheless, there is a lack of studies on the axiological dimension. With this in mind, Hawkridge (1991) broke the areas of competence of educational technology down into an interesting conceptual map, taking into account, among other aspects, means of education, assessment of audio-visual means, selection of technological resources, and technical production although the ethical part is avoided. This is only an example of a usual practice; at the very best, as Gill (1997), Martínez...
and Área (2003), or Ward (2003) expressed, the cultural and human factor is introduced in some manuals and studies on educational technology, which might be considered the closest to an axiological approach. This fact might be understood from the division between, on one hand, scientific positions and, on the other hand, alternatives based on values, criteria, and judgement of values. It has always been so in the field of social sciences but it could be combined with a sensible justification as Weber (1973) explained. For Velasco (2003) it is a way to establish, on one hand, a balance between principles and moral convictions in a technological horizon, and on the other hand, the forecast of consequences as the basis for scientific knowledge.

Technology and means of social communication require ethical analysing in order to be used in a suitable and coherent way as Hawkridge (1991), Nichols (1994), Postman (1995), Gill (1997) or Sunstein (2003) have underlined. This is why their stamp and repercussion in the processes of education-learning (Dede, 1986; Cabero, 2001) must be followed not only in educational centres, from the lowest to the highest levels but in family and other exo and macrosystemic environments as well. This is an ecological model (Bronfenbrenner, 1979; Cortés, 2001) and a position we support. Indeed this idea is our guideline and we can summarise it in two words: educational technoethics that constitutes the core of this study. For this purpose, a double context is essential, within a socio-cultural and philosophical frame and an educational structural outline. We superficially make reference to both questions since they would require a deep analysis if approached individually. They are useful as a basis in the search for alternative methods of application. In this sense, our proposal has two inter-linked objectives that include: understanding the intrinsic values involved in technology (objective) and making use of them as a medium for the transmission of values (means). Taking into account both factors, we approach several studies supported by two research experiences, which I am currently developing, and that are briefly presented in this study. One of them is in my university project “Seminar on Technoethics for Future Teachers” (STFM); and the other one is in two adult education centres with the “Observation Laboratory on Technoethics for Adults” (OLTA) project.

If we start from a socio-cultural approach, the triangle made up by the person, resources, and society is easier to understand. The three angles share perspectives within, what was called, “city of computers” by Braun (1992), “technopolis” by Postman (1993), or a “third environment” by Echeverría (1999). These terms make a reference to the new social space created by
new technology and *mass-media*. As Postman (1995) expounded, there were more technological innovations during the 19th century than today—such as the telegraph, photography, the telephone, the typewriter, the X-ray, the revolver, or the first computers. However, there is not a single approach related to their moral influence, even though they were great innovations. This is why we wonder: what kind of society we are living in today if an ethical frame is necessary to educate properly within a technological environment. Pruzan and Thyssen (1994) and Hargreaves (1999) coincided when they described a society immersed in efficiency, technological growth, the relevance of personal values, and technology for a higher quality of life, as well as moral uncertainty in the culture of the image, and saturation of information (overinformation and misinformation) in economic globalisation.

These situations echo and make use of technology and means of communication to spread and consolidate in development and education. Not only is this sociological frame indispensable but also the philosophical one, which was emphasised by Nichols in most of his studies, (1987; 1988; 1990; 1994). Technological education is of a philosophical nature, as the first expression of a mental model, more specifically empirical and rationalist, mainly when related to the negative repercussions of technology such as an unbalanced search for efficiency which results in fragmentation of human beings. As an alternative to this outline, Nichols resorts to the philosophy of Habermas, Rorty, and Barret (2002), especially the first one’s, highlighting the relevance of pragmatic communication, democracy, morality, holistic education on which the Association for Educational Communications and Technology (AECT) is currently working. Nichols (1994) mentioned this relevance with regard to matters such as biotechnology in order to face the future of human nature. In this sense, Habermas (2002) wonders where the liberal eugenics is aimed, as an attempt to clarify the ethical positioning, considering the progress of biotechnology in the control of human genetics. To that end, we include a quotation from Nichols (1988) about this combination between technology and morals:

> That educational technology may be morally indefensible is not to say that it is totally immoral, for that would be to claim that humans are always immoral. We have not completely lost our self, though the likes of human chemical and genetic engineering may lead us to full control and, perhaps, to the “death of the soul.” (p.72)

Even though we have dealt briefly with the socio-cultural and philosophical
approach, technology can also be dealt with by following an educational parameter in three different levels: conceptual, procedural, and attitudinal. The first step involves knowing what the existing resources are, how they are structured, and their functions. The procedural level comes in the second stage, which implies education with these means: finding information and creating original materials. On a third level we find the attitudinal position towards the means, with the purpose to interpret the narratives transmitted from a critical position and make inquiries into their explicit and implicit values. For our work, we believe that it is necessary to operate from the last point of view.

By unifying these social, philosophical, and educational references, we emphasize the need to analyze axiologically, educational technology in the school curriculum to fully educate the learners in our current, as well as future, society. As Cortina (2001) expressed in a Global Ethics of Joint Responsibility, guiding current processes and computer globalisation is required, so that this technical progress would serve human beings, without losing the ethics of minimum values, which for Cortina (1998) are: freedom, solidarity, equality, responsibility, and honesty.

From the whole of this contextualization, we understand the educational technologies according to their ethical “use,” either as an end, to get to know the different axiological arguments spread by technology, or as an instrument to understand their usefulness in widening our knowledge on ethics and morals. Some studies following both guidelines are presented to conclude subsequently that they must be narrowly linked in the search for educational technoethics.

The Educational Technoethics as an End

In our opinion an end implies that technologies and mass-media also include an assessing connotation. Nevertheless, we do not want to use a negative argument about the precise end, which is, on the other hand, what has usually happened (Nichols, 1987; Ward, 2003). Katz (1992) declared that every technological change from the Neolithic, the Industrial Revolution, up to the new information technology, has influenced some of the ethical approaches. In this way, this author thinks that there has been for years, an ethics of coexistence related to technology, as is the case with the ethics of the
Holocaust. The author mentions this fact because Hitler’s regime invested in technology and technical innovation for its own purposes: Jews’ extermination and the creation of a modern society. In other words, philosophical and technological politics serve the rhetorical and moral basis of the holocaust in rationality, efficiency, speed, productivity, and power. Katz compared, this period to the present capitalist and post industrial one. That is the case in the United States: “there are many parallels between Hitler’s propaganda techniques and contemporary political campaigns as well as commercial advertising in the United States” (p. 269). In spite of this argument, he finally pointed out that technology is not harmful in itself but depends on the consequences of its uses.

The main issue lies in the fact that schools have to deal with these aspects of the ethos, as Katz (1992) called them, by means of either the curriculum or a guideline to “help us understand and diffuse the inevitable conflicts in our practice of educational technology,” an approach already expressed by Rossett (1979, p. 19). Such conflicts might arise from the influence of the world of telecommunication. According to Dede (1986), these conflicts need to be taken into account in the educational program through the following three subject matters: (a) the distinction between reality and fantasy (in advertising, the sophistication of computer programs, etc); (b) the reason for the political need of centralization and homogeneity of society, and (c) the viewer’s active participation in the one way contents broadcast by television and computers.

Responding to the emerging information and biological technologies is particularly important for value-oriented education. Without it, these new achievements will further widen the gap between civilisation’s power to affect reality and its wisdom in controlling what it has unleashed. (p. 44)

In the same way, Braun (1992), Pruzan and Thyssen (1994), Postman (1995), and Bilbeny (1997) reflected on this issue: educational technoethics with an intrinsic purpose. The emphasis on responsibility towards the new challenges involved in the “city of computers” led Braun to set out some actions to work in educational contexts and, therefore, analyze the social revolution that computers stamp on the human brain. These actions are: (a) techniques for the clarification of values through the Magic Circle, a method to discuss making use of dilemmas; (b) debates about technological situations through Educating in Citizenship, which is another strategy
to establish rules and solve problems; and finally, the need of individuals’ implication and engagement in “the environments of computers.” And all that together would result within the support of a school curriculum in which citizenship and controversy would be top priorities.

This aspect of controversy, is one of the solid bases of the project Ethical Accounting Statement (Pruzan & Thyssen, 1994), a proposal born in 1989 in the Institute of Computer and System Sciences of the Copenhagen Business School, to formulate some ethical considerations in the economical world. In fact, the project was first implemented in the Danish Bank, although it is aimed to extend to other public organisations, among which are schools and universities. This idea would link with the arguments of Olivé (2003) about the fact that the States, companies and educational and research institutions are responsible for promoting a scientific and technological knowledge, as well as a moral justification of the purpose of this knowledge.

Pruzan and Thyssen (1994) started from a wide sociological analysis, already mentioned in previous paragraphs, to justify the revival of ethics within the current social frame, which is generally characterized by a fragmentation between the values of economical rationalism and the moral ones. From this point onward, ethics is no longer understood as a mere list of what is good or bad but as the acceptance of the considerations of all parts involved in the social debate. In the specific financial world in which the project is developed, references are made to economists, staff, customers, distributors, local community, and society. Therefore, the conversation is the strategy “par excellence” to agree on the points of the conflicts and to reach a consensus in the engagements between the technological-economic organizations and the individuals. A dialogical proposal has been chosen with the figure of the stakeholder, which etymologically means the person responsible for other people’s bets and the person who pays the winner. In this case, this figure acts as a mediator in the specific conflict and harmonises the values, words, and facts from all the involved parts. For this purpose, an agreement, moderated and mediated by the stakeholder, should be reached in the concretion of a Code of Values, which is, as a last resort, the core of the project Ethical Accounting Statement presented by Pruzan and Thyssen.

These authors suggest this proposal be adapted to other nations and contexts, such as education. Their work appears to be interesting, therefore
we believe that the figure of an educational mediator in schools would be suitable to explain the conflicts between the values required by the technological society, the society of telecommunications and the conflicts involved in the curriculum for student’s development. The fact is that in relation to the question: should the objectives and contents dealing with the subject of technoethics as an end be included in the school curriculum? The answer is affirmative from our point of view.

In this direction, Postman (1995) pointed out that television has become the first vehicle of information for young people’s values; the streets are flooded with billboards, the market offers videos, computer material, and the Internet easily accessible but, still many teachers and more specifically in the context of America, keep a sceptical or neutral position towards the power of these elements. Anyway, we do not agree totally with the direct relationship the author establishes between the narrative of these arguments and some social disasters: for instance, an increase in crimes, the growing number of divorces, drug and alcohol abuse, and so forth. We are much closer to an approach in which the values spread by technology and mass-media would also depend on the subjects’ perception, on the family’s participation as well as school, and so forth (Calvert & Kotler, 2003; Medrano, in press).

That is to say that technoethics as an end has to pay attention to the educational contexts, which is a thesis we support, but this does not imply that the intrinsic values to this technoethics are, as has already been expressed, exclusively exchange values. Postman (1995) finished his work in the following suggestive way:

I should like to call your attention to the line that says our children have “no gods to serve,” because that speaks to the heart of the matter. The goods of consumership and economic utility—and especially, the god of technology—may say something to youngsters about how to make a living. They are silent on the question of how to make a life. Perhaps some day soon, educators will get together to address that question. (p. 13)

Let us study more thoroughly the references of Bilbeny (1997) and Sunstein (2003). Bilbeny says that the cognitive revolution of information transforms the field of ethics because beliefs and habits change what he calls “the revolution of the etemas.” We agree with this author when he emphasizes that, today, the challenge is to avoid nihilism, relativism, apathy in technology,
and social means of communication. Although there may be a gap between the cultural evolution of computers and that of values, society, and education, which still need to devote efforts to a better understanding of their technological impact.

On the other hand, in relation to this situation, Bilbeny (1997) suggested a minimal moral level from a cognitive and constructivist approach based on three principles: first, thinking about oneself or the principle of moral autonomy (moral point of view), secondly, imagining oneself in the other’s place or principle of reciprocity (ideal role-taking) and finally, thinking in a consequent way or principle of reflexivity (moral insight). In this sense, he differs from Cortina’s argument (1998, 2001), already mentioned, who defends an ethics of minimums: freedom, solidarity, equality, responsibility, and honesty, which for Bilbeny would be maximums related to technology. In our point of view, the values to be followed are those pointed out by the former author, but by means of processes suggested by the second one, that is to say: moral autonomy, empathy, reflection, and we still suggest another one, somehow implicit: engagement in whatever our social and professional role is, even more if we are an educator (teacher, parent, monitor, adviser…)

Bilbeny (1997) even suggested learning again from sensitivity, in other words, the recuperation of the sense of touch and looking to observe what is happening around us although he warned us about the dangers of modern technology with regards to sensitivity and interpersonal communication. Therefore, an ethics for our times needs to assume the changes and must be prepared for transformations by means of re-socialising education, because; “in times in danger of drought of senses and thinking we must drink from these sources more than ever” (Bilbeny, p. 191). These sources are of course, emotional intelligence, empathy, sensitivity, reflection, and education. Therefore, “our understanding of the moral fact must change radically with the growth of the digital society” (Bilbeny, p. 188). This ethical approach would be applied to technology to give an account of this “revolution of the etemas.”

Bilbeny put forward another aspect related to space. If with technology and the means of communication exists a step from a proximal and sensitive relationship to a distal, virtual, and subjective one; this latter link has different relational and moral connotations. Therefore, a distal interaction may invite people to get to know other people, but the danger pointed out by Sunstein (2003) is that these individuals, through these virtual forms, will end up
searching for common spaces and isolating themselves from other experiences and ideas. Sunstein in his book *Republica.com* emphasised the fact that the Internet is suitable to encourage a democratic system because there is an increase of meetings. However, if these meetings become very selective and exclusive the tool may turn into a wall, in other words, a digital gap or in Castell’s words (2001), a digital division.

To summarize, technoethics as an aspect including an ethical end by itself, must be taken into account in current society, as well as in the educational fields, through engagement and curricular proposals. This is why we have expounded the previously stated reasons. In fact, both of the projects (STFM and OLTA), which will be described at the end of this article, are a symbiosis between this former idea and the following one: *educational technoethics as a means*.

**EDUCATIONAL TECHNOETHICS AS A MEANS.**

The implication is that technological and informational means can be transmitters of contents and activities of an axiological kind, as is shown in the following studies. Then, although Covey (1989) used the video as a resource to expound moral dilemmas, Campbell and Ben-Zvi (1998) resorted to the Internet and computer programs to deal with religions, as do Ryan, Bednar, and Sweeder (1999). Meehan, Holmes, & Tangney (2001) also used the Net and video to deal with moral affairs but with personal relationships in education from constructivism.

Interactive simulation of environments based on moral hypotheses and theories about the areas of values is the basis for the project THEORIA (Covey, 1989), which stands for *Testing Hypothesis in Ethics/Esthetics, Exploring the Roles of Observation, Rationality, Imagination and Affection*. The work starts from three videos: one about autonomy and the right to die when we want to; the second one about the limits and the art of deception; and the last one based on the dilemma of abortion. The situations are imaginary, but they deal with imagination and subjects’ implication as well as working with empathy, confrontation, and negotiation of conflicts in such situations. Covey continues to work in this field; on the subject of abortion this situation has been printed in CD ROM format and he is currently the Director of the *Centre for the Advancement of Applied Ethics*. 
Another interesting project is the program Relig 101, an experience presented by Campbell and Ben-Zvi (1998), which combines traditional teaching of the world’s religions through readings with the use of the Internet and computer programs. In this way, they deal with different religions, among them are Islam, Protestantism, Catholicism, African Religions, and Mormonism. The basis is a constructivist model, as they work in a common way and in a real context. They opt for the combination of classes started and presented through PowerPoint, lectures through the Internet and the search for information in bibliographical sources. The program developed with 12-year old children, proves to be positive and motivating in general towards the use of technology and learning of religions. However, some structural problems are pointed out, such as occasional slowness of the Net and more serious ones such as the fact that 59% of the speakers like being in direct contact with the students. This might be the reason why some of the contents related to religions become less believable when transmitted through technological methods. The majority think that the use of videoconferencing in Relig 101 motivates significantly and helps diminish anxiety. One of the most interesting aspects expressed by the authors is the relevance of reflection on how the assumption of technology is being innovated. In this way, Campbell and Ben-Zvi (1998) emphasized:

Learning with new technologies sometimes forces a confrontation between and among cultures-students culture, personal religious values, the discourse of technology and teaching cultures, to name four. . . . Perhaps what is needed is continuing meta-conversation about the nature and value of technology in various domains. (p. 175)

We are in agreement with Campbell and Ben-Zvi (1998) when they asserted that the use of educational technology to deal with problems of a cultural kind, such as religion, sets out a new paradigm or, in our point of view, introduces some changes on how to teach content and reflect on them (meta-knowledge).

This approach is possibly empathetic with some of Ryan, Bednar, and Sweeder’s ideas (1999) about the need to teach morals through educational technology, in their motivating aspect in order to avoid narcissism, a characteristic feature of the American culture according to the authors, and morals only based on reasoning. The authors expound the project called Social Projector Virtual Gatherings, in which they understand that morals should currently aim to combine feelings and behaviour and therefore, friendliness,
duty, impartiality, or justice and self-control. This project tries to obtain operational justice in the learners’ lives and the feelings of duty and friendliness interaction in the practice of personal and social equity.

More specifically, Ryan, Bednar, and Sweeder (1999) proposed four types of strategies for educational practice: (a) virtual meetings to work on ethical subjects with the participation of different people through virtual contact; (b) social action through the Internet to search for texts on humankind, community work, or solidarity; (c) the creation of computer simulation to deal with issues in which taking decisions as well as acting is required, such as for example, in environmental aspects; and (d) at least, the production of videos to reproduce “real” stories with an ethical content such as role-playing. The authors conclude that teachers have to take advantage of their potential “power,” because “they can catalyse the blending of ideas and product technology and they can help students understand how the negative, self-absorbing dimensions of the culture of narcissism can interfere with the growth of pro-social moral behaviour” (Ryan, Bednar & Sweeder, p. 121).

The last experience we present is developed in Trinity College, Dublin (Meehan, Holmes, & Tangney, 2001) and it is divided into two projects. The former one, the creation of stories with an axiological content and purpose presented through videos, and the latter one called Hyperstudio in which tutorials with students are encouraged to motivate and work with others using technological means. In our opinion, it is really interesting to start from the participants’ “voices,” that is to say, the students not only from primary education, but also postgraduates, as well as with teachers and all those people interested in the matter. The experience is based on the application of constructivist strategies through technology: tutorials among equals surfing the Net, publication of the work carried out by the people involved in both projects either in CD ROM format or on the Net, the adoption of other roles, (the teacher as a pupil and the other way round) and constant motivation. Finally, the work currently developed with primary school students appears on the webpage www.geocities.com/minimeie2/

In short, in this second part of the article, we have dealt with educational technoethics as a means: why not use the potential of technological and communicative resources as mediums for the axiological contents? This is what the previously mentioned experiences implemented. In our opinion, moral education as well as transmission not only must be carried out through modelling, present activities for example, or through the “use
of pen and paper.” Other technological instruments should also be used, such as video, television, Internet, e-mail, videoconferences, and so forth, whenever they lead to the final global purpose: development and education in ethical values.

Finally, our argument has tried to defend the fact that technoethics is indispensable in education as feedback to the world in which we are developing; either in the third environment (Echeverría, 1999) or in technopolis (Postman, 1993). Consequently, a reply is required from a doubly interweaved aspect, that is to say, as a reflection and performance about its axiological purpose and as an instrument to deal with attitudinal and ethical knowledge, its medium (Figure 1).

![Educational Technoethics Diagram]

**Figure 1.** Educational technoethics as a means to an end

**Projects: “Seminar on Technoethics for Future Teachers (STFM)” and “Observation Laboratory on Technoethics for Adults (OLTA)”**

This exposition is part of the root of both of the projects here briefly presented and in which I am currently working. One of them is being developed in the university and it is entitled “Seminar on Technoethics for Future Teachers (STFM)” with pupils following the subject *New technologies applied to education* in the second year of Teacher Training School (Magisterio). The seminar will last approximately a month, halfway through the
subject, and it will deal with the theme of the relationship between moral development, education in values and educational technology, through some sessions, which start with a gathering of previous knowledge about the teachers’ preconceptions on these themes. In the following sessions these aspects will be approached: theories on moral development, educational paradigms and strategies of intervention on education in values, debates about the positive and negative aspects transmitted by technology and the means of social communication, application of the techniques to situations related with new technology as well as axiological analysis of educational computer programs. This will be carried out through a questionnaire.

The methodology used is a seminar; (the students will sit in a semicircle), understood as a “context” in which the content or the activity, reflected in books, videos, or WebPages, is shared by everyone or in small groups from a reflexive analysis. For example, one of the exercises is to ask the university students to give the following dilemma to a teenager to find out the two values that conflict and which of the confronted values the interviewee opts for (Cortés, 2004):

The first thing that a boy called Juan does when he gets home is switch on the television and then he goes to his bedroom to play with his computer and surf the Internet. One day, his father suggested he go for a walk and visit a relative but, Juan has already decided to stay and chat through the Net with some friends. Juan decides to stay at home to “talk to his friends.”

1. Should Juan go with his father? Why?
2. Should he stay at home to chat through internet? Why?
3. Is it good or bad to stay at home to chat with his friends? Why? (p. 85)

The university students taking part in this seminar have assessed the seminar positively (the average mark is 8.7). Finally, I would like to comment that I still coincide with my idea, already explained: “We opt for this project for several reasons, among which are because it brings new technology closer with an axiological prism, it educates in ethics, it teaches future educators who, in turn, will educate and teach the people of a future society”
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(Cortés, 2003). For all that, we wish for the “Seminar on Technoethics for Future Teachers” to continue to be carried.

On the other hand the “Observation Laboratory on Technoethics for Adults (OLTA)” is being given in classes of Adult education in two Aragonese Centres (Spain): Concepción Arenal (Zaragoza) and Isabel Segura (Teruel). Most of the suggestions in the field of adult education have been directed to distance learning, for example, the program MENTOR from the Ministry of Education and Sciences of Spain, as well as technology as a prothesis of memory or the Internet for the intergenerational and generation relationship. However, these programs of adult education may lack a more reflexive approach towards the resources and means of communication of social repercussion. This project STA has been introduced as a contribution to an eventual solution. Its purpose is to teach how to analyse, criticise, choose, and reflect on new technology of information and communication through an axiological interpretation.

During the development of the project the following modules are covered: an exposition on the general area of educational technoethics, a debate on the subjects related to the technology of information and communication (biotechnology, digital gap of the internet…); ethical dilemmas with technology and ways of communication; dramatisation to empathise with the situations created by new technology of information and communication; axiological analysis of the television format: advertisements, series, news, musicals, Internet, the search for WebPages dealing with educational and social variables; and finally, debates on the conflict whether the Internet democratises or segregates. All of these subjects are part of the program. With regard to the second aspect and as an example, one of the debates that might be proposed in class would be as follows (Cortés, 2004):

Let us think that we are members of an assessment committee deciding whether economic funding for a research project on in vitro fertilisation should be given or not. Should the decision take into account ethical aspects or should it only be based on scientific principles? Why should or shouldn’t it be? And if that is the case, what would such ethical principles be? (p. 97)

Teachers personally develop every module in their classes, previous to the training the mediator as well as the author of this project, offer and share with the learners. Currently, neither the data of the development of the proj-
Finally, we wish to conclude with some ideas that should be taken into account in formal educational fields, from the lowest to the highest levels and although the institutions are obviously responsible, these aspects should also be dealt with outside the educational “premises.” We defend that the relationship between official responsibility and professional responsibility is crucial to understand many aspects and its limitations, and so the link is essential with educational duty. At least what is clear enough is the fact that professionals have experienced an educational process. This is why we propose that, in general, in primary and secondary schools, some subjects should be analysed ethically and critically so they should be in a specific way, in professional branches or university careers. To this respect, they should be more specifically analysed according to the future occupation.

In this way and from our own approach, these aspects must be included in a transversal way with the subjects studied by the pupils in primary and secondary school. In the first place, *Internet: gap and bridge*, to analyse the possibility of the Net as a means to create links and spread information as well as develop a digital gap among those having access and not among everyone in the net. A second subject, the *biotechnology and bioethics*, on aspects such as in vitro fertilisation, human cloning, and the possibility to get to know the human genetic map. Finally, *The computer*, to deal with the possibilities and limitations of computers (computer games, computer programs) in social relationships and in learning. The world of information is another subject to investigate on the values and attitudes spread by the means of social communication, more specifically, in our view, the television. And at last, the *more-less*, a subject to reflect, from an ethical prism, on the positive and negative aspects of technological and informational means existing around us (microwaves, Internet, mobile phone...). We believe the strategies of intervention in values are an accurate way to deal with these subjects, such as those currently involved in the project STFM, among others, ethical dilemmas, working in groups, techniques of clarification of values, debates, and role-playing. Also the use of material resources either written, technological or audio-visual (videos, transparencies, educational forums, Internet).

On the other hand, every profession has a deontological code about the rules and principles for its practice. Therefore, in the branches of professional education and university fields, this content must be studied together with
other more technical conceptual and procedural aspects, which should be analysed during the period of education, no matter what the occupational field is. In our case we refer more specifically to those aspects in which technological instruments are involved and which are linked to telecommunications, for example, an engineer, a scientist, a teacher, an administrator, a computer programmer, or a director of a television news programme. Because as important, is a doctor’s ethical situation towards the confidentiality with respect to an infectious illness, as is a journalist’s towards the truth with information, and a teacher’s unconditional respect towards the student. Today, many debates on the deontological codes are arising due to the development of the world of technology and communication as well as the sciences of life. To this respect, Camps (2003) expounded that scientific committees are becoming more and more necessary to debate and eventually take decisions on ethical aspects related to individual’s protection and environment over all. Nevertheless, these subjects cannot only be dealt with in their initial form but they also need continuous training as is the case in adult education, towards which the mentioned project OLTA is directed.

References


**Notes**


This work is didicated to Araceli and José Luis.