Education, ICT and School Dispersion

Alessandro Astorino, Antonella Reitano, Francesco Rosa, Iliyan Stefanov

Abstract: *In Italy, school dispersion continues to register considerable figures, despite the different attempts that the institutions, both at central and local level, try to set against this phenomenon. Several laws have been passed in order to confirm compulsory schooling and control the observance of the laws. The research presents a model of integrated application program, which put in a network all the actors involved, that is school, public administration, pupils, parents and social workers. The system allows the schooling dispersion monitoring and permits the reduction of the problem also by using the computerized social folder.*

Key words: *Information and Communication Technology (ICT), School Dropout, School, Public Administration (PA), Citizen.*

INTRODUCTION

In Italy, school drop out is a very important phenomenon, despite the improvements observed since 2000 it still occupies a delay position: in 2006 the 20.8% of children had only the middle school certificate without attending any training course, against an European average of 15.3%. The data updated to 2007 underline, however, a further progress that contributes to reduce the distance of Italy in comparison to the other countries. The regions with the most evident difficulties are the Valley of Aosta (29,5%), Campania (28,8%), Sicily (26%) and Puglia (23,9%). As regards the South of Italy, the situation is surely serious [5].

Up to today, there have been a lot of attempts to solve or to contain the problem, without, however, meaningful results, also because of an inadequate activity of coordination and interactions of the different components involved.

The ICT, being the best instrument to transmit data and information in an efficient and effective way, allows overcoming the communication problem among the different components and to contribute in such way to the contraction of the phenomenon [5], since communication among different actors is fundamental and essential.

REGULATIVE PROGRAMME

In Italy, "the obligation imposed to parents to maintain, instruct and educate their children" is established by specific laws.

For a best understanding of the model proposed it is necessary to describe the roles of the actors involved. The control of school dispersion and the consequent notification to the judicial authorities must be made mainly by the municipalities and the schools.

The municipalities take action when they verify the children were not enrolled in school or when the headmasters ask the Provincial Education Office to inform the municipalities so that they admonish parents to fulfil their duty. The warning can be either a simple or formal communication, rather, in the request for intervention because of social services, identify the reasons, including psychological, that led to the problem, work towards the solution.

If the aim is not reached, the Municipality has to report the child's parents to the authority. Even the school is obliged to indicate the school dropout when the young people do not attend the lessons. The Headmaster may also decide to inform the Judicial Authority of the non fulfilment of compulsory schooling for parents already informed of unjustified absences of their children. In fact, the "offence" is "in having already, without justification, failed to fulfil their duty of monitoring and supervising the minor, in order to make sure he goes to school to receive education. Finally, it must be said that even the police may go first to the local registry to see who and how many school children and then to local schools to check school dropouts undertaking to notify the offense.

THE MODEL

The research presents a prototype of a computer system aimed at creating a network among the various actors involved in the phenomenon, ie school, local public administration (PA), students, parents, social workers, police, courts. The system, already realized but not yet used, will permit the monitoring and reduction of school dropout through a more effective management and spread of information. The model will also use the computerized folder, which aims at collecting and storing data and information relating to the citizen and to the intervention of the professional social service. Specifically, the services are designed considering the characteristics of the various actors involved in the school dispersion: school, PA, citizens. As regards schools, they will have an autonomous platform to computerize the register of school staff, students, parents and tutors, making the communication among themselves and with the PA more efficient and cost-effective. The attendance register of the students will be computerized so that the school will have all the necessary information to contain school dropout. The PA, thanks to the computerization of schools, will have crucial information for the monitoring of school dropout and thus provide more appropriate and timely actions.

The model foresees the implementation of the computerized social folder that, in compliance with the principles of confidentiality and privacy of the citizen/user, has as a primary aim, the collection and processing of data regarding different areas of life and action of the citizen. The management procedure of books supply to students will be automatized, besides it will be possible to publish information and forms, concerning these services, on the web portal. For the citizens it will be realized a new integrated channel of communication with schools and the PA, through a portal allowing the consultation of information relating to local schools and also able to find all the forms necessary to apply the PA for services.

School Module

During the school year, school faces many critical moments, first of all the enrolments and the management of benefits for the books supply. Enrolments are an important aspect from the administrative [4], organizational and management point of view and also represents an opportunity to engage in a constructive and lasting dialogue between schools, parents and students so that to enable the last ones to take meaningful choices, whose value often goes beyond access to training. The module (Fig.1) aims at computerizing the exchange of communication between primary schools and the PA, in order to facilitate and support school staff in the enrolments management and in the use of benefits for the books supply, but especially in the attendance management using an electronic register.
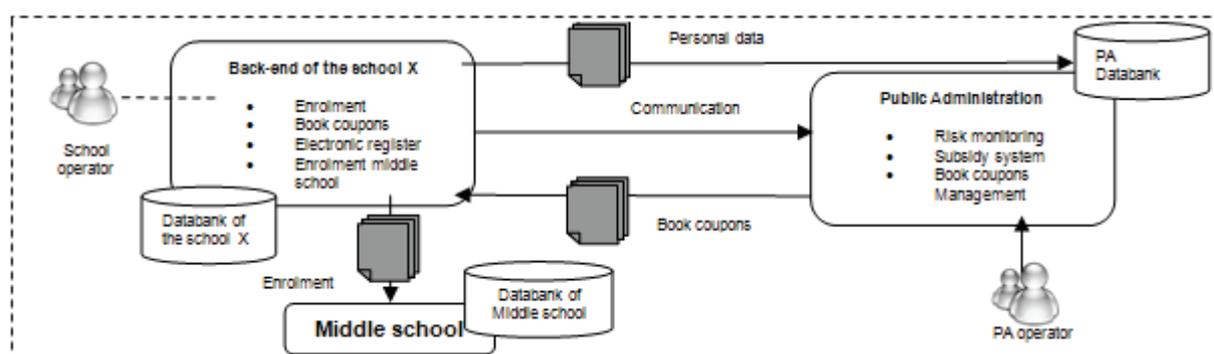

Fig.1. School Module

Data Processing

The system allows the registry data management of students, parents, teachers and school staff, allowing to establish a more efficient and economic channel of communication between school and family.

Essentially, thanks to this process, it will be possible to have a data bank in output containing the registry data of all the present actors in the school context.

The data bank produced has a great utility to the management of an institute; besides, as soon as these data are made to converge in only one centralized data bank of the Municipality through a mechanism of synchronization, they will allow the PA to acquire information of great utility.

Management of Enrolment in the Middle School

Primary schools have to manage the enrolments in the first year of the Middle school, transferring to this one the paper documentation concerning the students. The application wants to automatize this process saving a lot of activities to the school operators. The administrative clerk of the primary school, thanks to the data bank described in the previous paragraph, will simply have to select the pupils attending the last year, and send the information concerning the Secondary middle school already chosen by the student.

Electronic Register

Teachers can compile the attendance registers concerning the students of their own classes through an on-line procedure, supported by technologies that will facilitate the acquisition and the processing of such data (preparation of paper forms, optical character readings).

The possibility to acquire the attendance information through optical reading modules reduces remarkably survey times and allows distributing the burden of the systematic survey on a biggest number of operators within the school. Therefore forms can be filled in by the teachers and administrative auxiliary technical staff, starting from the traditional registers, and then transferred with simple and quick operations, without using expensive hardware.

The result will be a more effective and less expensive management that will congest the operativeness of the employees to the reception office students. Through such a procedure the school will have an analysis of the data on the students' absences that could be shared with the PA in order to favour the institutional cooperation for the fight against school drop-out.

In such a way, the corporate bodies in charge of the management and control of the resources can employ the statistical information in order to plan didactic-pedagogic interventions to support the schools that have students in difficulty.

Communication Management

A further service is the functionality of automation of the school-family communications through SMS, in order to inform parents on early delay/leaving, absences, disciplinary, didactic and administrative notes. The entry of the students' absences could be made in a manual way or through optic reading. Particularly, this last function is of remarkable innovation since it allows the automatic entry of the absences. Thanks to these new systems it is possible to notice the data written on paper forms without using the manual data entry.

Communications with families can be developed with a good level of automation starting from the absences data. It will be possible to instruct the system to send systematically internal memorandum through SMS messages, without keeping busy the administrative staff in long and expensive phone calls. Besides, there are further advantages in the drastic reduction of communication costs and in the general

improvement of the school-family information service which will be more punctual and traceable.

Schools will be able to upload the information concerning the institute and the training offer on a web portal created for the occasion (known as Citizen Portal), with the purpose to strengthen the external communication and starting activity of guidance and information for the citizen.

Book coupons Management

Compulsory education foresees some economic helps for books purchase. For the primary schools, books are totally free and financed by the town administration. The benefits are disbursed by the Municipality to the Schools through the dispatch of book coupons that subsequently the school will deliver to the student, who will use them to take for free the texts in the bookshop.

The system, thanks to the shared data bank School-PA, will permit to automatize the management and control of the necessary procedure to deliver the book coupons to schools.

Public Administration Module

Following the transformations of the educational national system [2] and in answer to the obligations and responsibilities of the PA in the management of the resources for compulsory education and training period, some functions (Fig.2) allowing to operate the monitoring and the evaluation of the phenomena characterizing the formative processes in action with ex-ante methodologies, have been planned. Such functionalities put the PA, in charge of the control and management of the compulsory training period, in a position to have synthesis data with which it will be possible to operate the strategic planning of interventions suitable to improve the quality of the local educational system.

Drops-out Monitoring

It is foreseen a service allowing the monitoring and evaluation of the school drop-out risk, starting from the statistic analysis carried out on the data provided by the schools. The availability of the absenteeism information allows to operate some statistic evaluations having the purpose to individualize some indexes of variability against which it is possible to estimate the level of drop out risk per individuals.

Books Supply management

The functionality aims at computerizing the communication exchange between primary schools and the PA to facilitate and support the PA staff in the distribution of benefits for the school books supply. In this way, the town administration will be able to manage in a more efficient way the procedure.
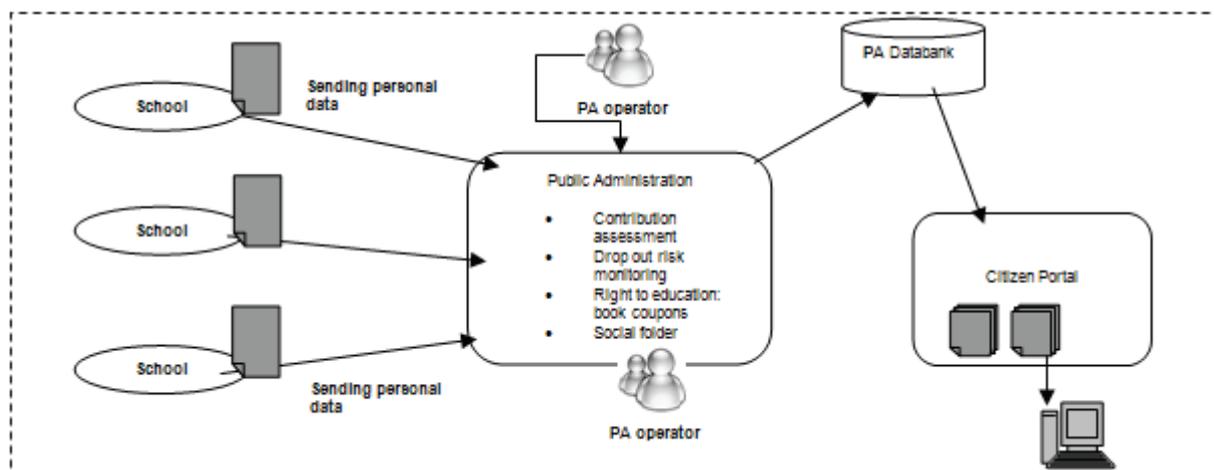

Fig.2. Public Administration Module

Social Computerized Folder

A further service for the Public Administration is the social computerized folder (Fig.3). The social computerized folder [3] has as main aim the one to store and elaborate information concerning different life aspects and action of the citizen (ex. family, school, health). The use of such a computer system will allow to obtain important information through digitalization and data sharing. The implementation of this shared approach to problems will favour the process of integration among operators and corporate bodies in order to meet the citizen's needs in a better way. The social computerized folder will allow:

- to collect and store data and information related to citizen and to the elements of a possible action taken by the professional social service;
- to note all variations occurring during the assistance path (that is individual, family, etc…);
- to report the results achieved by the professional social service's intervention in special moments of verification and evaluation (ex-ante, in itinere, ex-post);
- to note the conclusion of the intervention, pointing out the reasons that determined it (ex. attainment of the objectives, solution of the problem, elimination of the state of need, dispatch to other services).
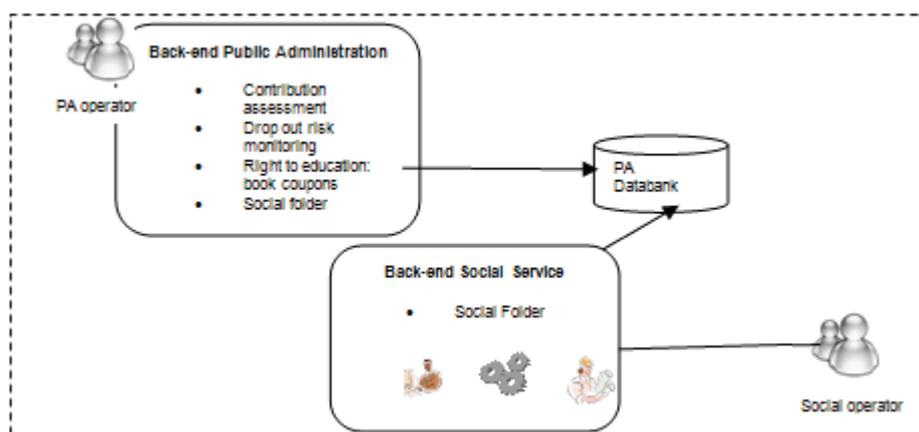

Fig.3. Social Computerized Folder

In a few words, the functionalities foreseen for the Social Services will allow to develop a series of functions such as: the partner-graphic and objective data management related to the card user; the evaluation of problematic situations; the insertion and the systematic updating of the chronological diary used in the help process; a detailed description of the intervention typology; an updated reporting on the results reached by the interventions set in the service, on the expirations concerning the fulfilments required by other corporate bodies. All this will require simple operations of data entry, that will allow to obtain a complete repository usable for statistic and valuational aims.

Forms Publication

As regards the communication principle among the involved entities, the Public Administration will be endowed with an area on a web portal for the publication of information and forms related to the services it wants to grant. The operator will be demanded to insert the document to publish, and this will be automatically shared on the City portal.

The direct communication with the citizen will allow the latter to get in real-time the necessary information to enjoy some services, avoiding wasting of time and paper.

Citizen Module

The Citizen portal gives him a new channel of interaction with all the schools and the Public Local Administration.

The citizen will be able to access the portal and view the school and formative offer available on the territory, to retrieve information on the schools and visualize statistics in a united form on the school dispersion and he will be able to interact directly with the PA.

Consultation school offer

The system will allow each school to upload information about its own institution and in particular to explain the training offer. The data provided by the schools will converge in the portal in order to allow the citizen with a comprehensive overview of the training opportunities proposed by the school in the territory and make a more accurate choice.

Download Forms

The portal will feed the forms prepared by the local schools and the Town Council that can be found by the citizen in electronic mode without going to the offices.

The functionality will not only produce an evident saving of time, but it will be also useful to the institutions to get a real reduction of the operational and managerial-organizational costs.

CONCLUSION AND FUTURE WORK

The problem can be potentially solved or at least mitigated only knowing the situations - all of them different - which produce this phenomenon, in order to help the compulsory school children to have a high opinion of themselves, to develop their potentialities, to improve their progress at school, to prevent in general school drop out.

The computerized prototype has been designed in order to register, share and process all the information necessary to monitor the school drop out phenomenon. The system not yet put into use, is the fruit of an accurate functional analysis that allow us to state that it is possible to obtain significant results regarding the reduction in the phenomenon, by creating a network among the actors involved in the same phenomenon.

REFERENCES

[1] Beck W., Van Der Maesen L., Thomese F., Walker A. (2001), Social Quality: A vision for Europe, Kluwer Law International, The Hague, Boston

[2] Camera dei Deputati - Commissione VII Cultura, Scienza e Istruzione, Indagine conoscitiva sulla dispersione scolastica. Seduta del 19 gennaio 2000

[3] Gulli A., Un domicilio sconosciuto: drop - out tra selezione scolastica e forme sociali di selezione scolastica e forme sociali di disagio, Edizioni Eucos, Roma, 2003

[4] Lee M., Winzenried A., Use of Instructional Technology in Schools, Australian Council for Educational Research, 2009

[5] Ministero della Pubblica Istruzione, La dispersione scolastica - Indicatori di base Anno scolastico 2006/07, Roma, maggio 2008.

ABOUT THE AUTHORS

Temporary Research Associate, Alessandro Astorino, University of Calabria - Department of Electronics, Computer and System Sciences, MP: +39 338 21 938 78, E-mail: alessandro.astorino@gmail.com

Associate Professor, Antonella Reitano, Department of Business Administration, University of Calabria, Phone: +39 0984 492270, E-mail: a.reitano@unical.it

PhD, Francesco Rosa, Laboratory CIdIMeTT, University of Calabria, MP: +39 349 6414349; rosa.avvocato@tiscali.it

Dr. Iliyan Stefanov, MA, MBA, PhD, University of Dundee, Dundee, Scotland, UK, Phone: +44 1382 385534, e-mail: I.S.Stefanov@dundee.ac.uk