

FINNISH AND ITALIAN TECHNOLOGY IN THE GLOBAL ENVIRONMENT OF THE EUROPEAN UNION: A COMPARISON OF ICT STRATEGIES IN EDUCATION

Introduction

Educational systems are now facing new challenges that spring from the passage from the industrial society to a society of information and knowledge. This transformation can open up new possibilities, but also increase the existing inequality of the citizens of countries whose education is not adapting to the new cognitive, cultural and technological changes. The European Council at Lisbon in March 2000 set the ambitious goal of making the European economy the most competitive and dynamic in the world. This brought the urgent need of the European Union to quickly put to use the opportunities offered by the new economy and in particular the Internet. In order to reach the goal, the eEurope programme was created[2]. The global project eEurope outlines ten smaller programmes, one for each public sector that Europe is trying to innovate. Among these is eEducation, a programme with a primary objective of bringing European young people into the information age. To reach this goal, the commission has appointed the plan of action eLearning [3] that “seeks to allow Europe to take advantage of its strong points and to overcome obstacles that stand in the way of increased integration and the use of digital technology.” In order to obtain the desired results, the introduction of information and communications technologies must be accompanied with a complete reorganization of educational systems.

In its study, “Finnish and Italian technology in the global environment of European Union: a comparison of ICT strategies in education” [1], Giuseppe Lugano analyses the situation of secondary school education in two very different countries that are however, connected by the European Union. A recent study from OCSE called PISA[5] determined that the Finnish educational model was superior according to every criterion used in the survey, bringing the educational system of Finland into the center of international attention. On the other hand, Italy has a long tradition in high quality theoretical research and education, but today finds itself behind in technological innovation and with an education programme that needs to be brought up to speed with the current times. The research has been conducted during 2002 and presented as a Master’s thesis at the University of Bologna in March 2003.

Comparison of Finnish and Italian ICT Education Strategies

Thanks to the European Union, the previously diverging paths towards innovation of two countries so unlike each other as Finland and Italy are now coming together. However, the European programme of innovation is quite different between in the two countries. In Finland, the decisive push was given by two main reforms: the first, concerning the scholastic curriculum, took effect in 1985, and the second, starting in 1992, dealt with cultural and instructional financing. These reforms were the result of a change in the social values and objectives; they were further motivated by the fact that the compulsory schooling did not provide every student with the means necessary to advance to instruction at a non-compulsory level. An inadequate level of preparation for the changing needs of the work market was also to blame. Furthermore, school administration was too centralized, excessively bureaucratic, and founded on the strict control of municipalities and schools. [4] The school system conformed quickly to the new norms and has been successful; with it the work field has also developed, thanks to a new generation of workers prepared to meet its needs. Italy also suffered in the same situation as Finland before the reforms and discussions as to which changes should be made to the system were rampant. Numerous proposals were made and many were actuated, only to be abandoned with the frequent change of the government. Presently, after more than a decade, the social, cultural, economic, and cognitive revolution, brought about by the information age, has shed even greater light on the inadequacy of the system. However, we still cannot speak of a real reform, which is why Italy has been placed among the last European countries in instruction, according to the PISA[5] surveys. This basic difference in reform is essential in comparing the two situations; if we consider the local didactic innovation strategies, we will see that they are for the most part similar, seeing as both countries follow the European directives included in the eEurope programme. Naturally, there are also individual themes, which reflect the local realities. For example, the development of global connection and distance learning are primary objectives for the Finnish, who strive to offer the same possibilities in communication and learning to the inhabitants of rural areas or residents of foreign countries. The Italians, on the other hand, give priority to updating infrastructures and the teaching staff to new technologies. We can witness the progress of the programme according to many indicators of the Eurobarometer. This type of comparison, however, is not considered very significant, in that the true difference lies in the starting points of the two countries: Finland, with an educational system ready to meet the cognitive demands as well as those of the new market, and Italy, still heavily tied to the past. From this perspective, the European programmes for the advancement of the information society should have first standardized the educational system of each member country, or at least brought such

system up to par with the demands of a new era. Only then would concerns for the technological infrastructures and staff briefing be justified. Nevertheless, in an effort to compare the present state of didactic innovation in the two countries, it is safe to say that Finland, not without numerous problems, is further developed compared to Italy.

The first Finnish strategy for the development of new technologies [6], lasting from 1995 to 1999, had, with considerable investments, tried to introduce information and communication technology into every aspect of public life, including that of education. When the first Finnish strategy was first implemented, Italy also disposed of a multitude of valid innovation projects, but it would still be two years before the first of these, the PSTD (Programme for the Development of Educational Technology) [7] could take effect. Today, following the success of the first strategy, which brought about the creation of infrastructures, Finland has entered the second phase, which will last until the year 2004. This phase has the primary goal of developing the contents and the new paradigms of virtual schools and universities. Italy, on the other hand, despite the milestone of innovation that was the PSTD, can still not boast excellent infrastructures but must worry about proper faculty preparation. Considering the vastness of the endeavor, the programme is limited to faculty preparation and there is no mention of distance education or development of multimedia content, as in the Finnish model. Moreover, unlike the Finnish strategy, which is based on a five-year-period, the Italian strategy is annual; once this stage has been completed, focus will switch to other aspects that will probably, considering the demands, reflect those of the Finnish. This different method of approach can be explained by the greater educational funds of the Nordic country and a general difference in mentality. Also, the implementation of a change in a nation of little more than five million inhabitants is surely much easier than one of more than sixty; in Italy it would be senseless to attempt to actuate and predict the outcome of numerous changes when it is clear that it would be difficult to adhere to and receive the general consensus for just one aspect of the change. As usual, the most relevant aspect concerns the economic side: plans can only be made on the basis of what funds are available. Italy, thanks to the UMTS auction, has had a great economic opportunity to bring its teaching staff up-to-date, but over the next few years these funds are believed to be destined to decrease, making it impossible to plan anything in advance.

Implementation of the ICT strategy in the two countries

After having analyzed the official ICT strategies in education, we move to on the implementation of the official strategies. The research method involved preparing and sending a teacher questionnaire and visiting several schools in both countries, interviewing teachers, headmasters and students about the use of didactic technology.

The questionnaire for teachers is divided into different sections: the first part seeks to obtain general information about the school in order to classify it according to the number of students, teachers and laboratory administrators; the second part is about the school technological infrastructures and the third part about the insertion of ICT in the curriculum.

The individual results were compared, despite the fact that the difference in the two school systems did not allow a comparison of every parameter. Even when faced with the same question, the answer provided by the schools was greatly influenced by the cultural background which the schools made reference to. It is also interesting to note how the Italian institutions often chose not to respond to questions considered not pertinent to the survey or too personal, like those related to the age of the computer science teacher. On the other hand, some schools chose to offer long explanations concerning other questions, like those addressing laboratory policies. Conversely, the Finnish schools answered with great honesty, although some answers were so brief and schematic that they seemed almost cryptic. Despite the differences encountered, we believe we can consider this comparison quite faithful.

Studying the Italian situation, it was imagined that one of the obstacles to introducing new didactic technology would be the older age of most of the teaching staff, in particular the faculty of computer science, which would have resulted in a difficult adjustment to new methods of teaching. We find full confirmation of this notion when we compare the Finnish situation, in which 39% of the computer science teachers are under thirty years of age; in Italy only 3% of the answers fell into this age range. This is, however, a partial comparison in that 43% of Italian faculty refused to answer this question regarding age. We can safely presume that faculty in this group are older, and by responding would have tipped this comparison even further in favor of their Finnish counterparts.

In the questionnaire, it was asked also to evaluate genders' different participation and profit in computer science classes. This was not an attempt at proving that males are simply "more apt" to the use of computers than females; the purpose was to understand if indeed there exist differences between the sexes, and if so, how these differences could be smoothed out in an effort to guarantee equal opportunities in the work field, where so often those with better computer skills are easily

hired. The Italian schools maintained that participation and return were equal for both sexes, and in rare cases some schools actually answered, with clear annoyance, “*of course participation and results are the same for both sexes*”; many others (24%) preferred to not answer. Conversely, the comparison with Finnish, revealed that 60% of their questionnaire answers sustained a greater participation and profit from males over females. This statistic is even more solidly confirmed when we compare it to the percentage of male computer science teachers, which has the upper hand in both countries: these differences would not have been as noticeable if the female students had been, on the whole, more interested in the subject.

Shifting the comparison to the technological infrastructures, where the most important figure is that of the number of students per online computer. With the European objective of one computer for every five students in mind, it is safe to say that Finland is much closer to meeting this objective than Italy, where 73% of schools can provide only one computer for ten or more students. We also see consistency between Italy and Finland in operating systems installed. Windows is predominant from every perspective. The country of origin of the Linux operating system expected a usage of over 21%, but as some teachers explain, using Linux is not simple or intuitive. Furthermore, Linux cannot boast the gamma of software applications that the Microsoft operating system can. One of Italy’s strong points concerns their Internet connection, which is present in all institutions, via either ISDN (38%) or ADSL (54%). Europe is aiming at a high-speed, global connection, which would cut the connection costs; in this area, Italy proved to be ahead of the game. The Finnish situation is pretty good: all schools are connected and half of them through a broadband connection.

Although there is always room for improvement, it is safe to say that, for the most part, the technological infrastructures are quite adequate. It is a popular opinion, however, that they must be well integrated with the curriculum; in the Nordic countries the tendency has been to use computers as resources in all subjects, while in Italy the first applications of computers were solely in the context of computer science. This tendency is slowly changing and now we find an ever-growing use of technology (38%) in all subjects.

The didactic applications of the new technologies are numerous, even though only a few have rapidly gained popularity within the schools. Word processing is by far the most popular use both in Finland (43%) and Italy (47%), but the number of classes that use the Internet for research purposes is on the rise (29% of Finnish schools and 34% of Italian schools). There are also applications which change according to the country in which they are used: in particular, many Italian teachers (31%) have reported teaching computer programming, while many Finnish colleagues (43%) use computers primarily as assessment tools and group work instruments. As was assessed in the Didamatica 2000 conference [8], Italy has always been more oriented to

“Information Technology” rather than to “Information and Communication Technology”; the use of Internet as a research resource was discovered much too late, therefore it is now considered especially as a great research engine rather than an instrument of communication. In Finland, on the other hand, since the Nineties, there has been a constant dialogue with the outside world, and language exchanges and computers prove to be the most natural means of communication.

Nowadays almost all schools have a web site, which usually contains information as to the history of the school, the courses of study offered, as well as section designated to the faculty and student life, the last being updated by the students themselves. 78% of Italian schools and 73% of Finnish schools are online presence, but unfortunately, after analyzing a sample of these sites, it was determined that many of the Italian sites were simply a source of general information of little worth, in which the students have no active role.

Final remarks

Year after year, there has been a growing integration between the member States of the European Union. After economic consolidation in Europe, we wonder whether or not we will witness an educational consolidation as well. In particular, after analyzing the current situations of two countries so unlike each other as Finland and Italy, which are, nevertheless, European countries, and after comparing the pros and cons of the two educational systems, it seems necessary to attempt a delineation of a model European school. The proposal of such model, called by the author “European Unified High School”, comes from the results of the questionnaire and from observations during school visits; the proposal attempts to interpret the opinion of researchers, principals, teachers and students who were interviewed. Every aspect of the school system should have an important role: the EU should study a unified educational system, that will, however, preserve the local identity; the teachers, who would put into practice the guidelines, should prove to be the strongest believers in the programme, laying the groundwork for an even more united Europe. The students, as beneficiaries of knowledge and future European citizens, should take on an active role in the school. This role would include participating in projects, proposing initiatives, and overcoming the rivalries with the rest of the academic world. The role assumed by the students would be invested with the awareness of being able to acquire a mentality more important to dialogue and desirous of going beyond the boundaries of the individual’s country, on both a physical and cognitive level.

The idea of a European School already exists [9] and is recognized by the EU, with twelve schools in seven different countries and 16000 students enrolled. The Schola Europaea, which for years has been a proof that a multicultural and multilingual school is not just a utopia, should,

however, be strengthened and spread throughout the rest of the member States. The European Unified High School would be none other than an evolved Schola Europaea. This model is open to contributions of both a cultural and a scholastic nature from the country in which the school would be found; the contributions would surely be enriched by the dialectic relationship between school and state. For example, Italian schools, infrastructures aside, would greatly benefit from some good, old Nordic pragmatism, while Finnish schools really must learn from the Italian way that history is life's greatest teacher. An Italian teacher of physics highlights, *"Italy has no rivals when it comes to laying a theoretical foundation, both on the analytical and synthetic levels. This foundation contributes to the development of a deep critical disposition."*

If the complete unification of the educational systems seems an unattainable goal that would not, in any case, be without negative consequences, perhaps the proposal made by a Finnish teacher seems more adequate. *"The European nations are too diverse to have common curriculums. The best choice would be to keep the focus of secondary education on the local realities, establishing, nevertheless, standard objectives to be met. Then, on the basis of these objectives, students would have to take a standardized test for all of Europe, which would have a standard evaluation process and which would allow access to higher education and the working world."*

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