

# Opinion of the Population of the City of LIKASI on National Computer Education Program in DRC

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**Abstract:** *In this article, it is a question of probing the opinions of the population of the city of LIKASI on the national Curriculum of Computer Science and new information and communication technologies. The results show a dissatisfaction on the part of the direct and indirect beneficiaries. The national programme for Teaching computer science and initiation to new information technologies is limited to enumerating materials and pedagogical methods without specifying the environment in which the process should take place Transmission learning.*

**Keywords:** New information and communication technologies (NICT), National Computer Education program in the DRC, transmission learning process, psychopedagogical approach

## 1. Introduction

The city of LIKASI is among the mining towns of the province of HAUT KATANGA in the DRC. Because of this vocation, it attracts investors who come to implement their companies that use advanced technology. At the time of hiring, the managers of these companies need a staff capable of manipulating the technology they bring. Usually, for lack of finding the right skills, some investors resort to the expatriate workforce that becomes so exorbitant until sometimes creating social tensions.

The question is acute when it comes to skills in the manipulation of computer tools and NICTs. Essential, they pose a serious problem at the time of their learning. Knowledge in computer science and NICT require environments that do not offer schools in the city [1].

As regards the DRC, before 2003, each school was granted freedom to provide optional computer training. This situation was at the root of the fact that students from some schools showed more skills than others in the same country.

In 2003, the Ministry of Primary and Secondary Education provided schools with a national curriculum that defines the knowledge and skills that students need to acquire nationwide in computer science [2].

In the DRC, the objectives of teaching computer science are to acquire basic knowledge such as the manipulation of operating system functions such as stopping or starting the machine, selecting a file, the copy of a document. As the student progresses in his curriculum, he is subject to the concepts of programming, word processing and notions on the spreadsheet. The training ends with the acquisition of notions on internet browsing knowledge on the sharing of resources within a network.

The program includes active teaching methods that require teachers to place learners in an environment that requires the presence of a machine during the teaching-learning process.

During the communication of the material, it is also recommended to each teacher to exploit the principle of topicality to speak on the NICT which evolve with giant

step.

The use of computers and NICTs is common in almost all areas of LIKASI's life. It extends from the civil service to public and private enterprises through small and medium enterprises. Currently, the student is no longer evaluated in relation to his computer skills but also in relation to the knowledge he has on NICT.

Indeed, by computer science, we must understand the science of information processing and communication, we see two hosts who have the opportunity to exchange data, media through a network [3].

However, there is a proliferation of private training centers. The latter also provide training in the field of informatics and introduction to NICT to young people without respecting the national computer program.

The objective of this study is to be able to determine the opinion of the population of the city of LIKASI on the Ministry's national education program.

## 2. Theoretical aspects

In the DRC, research was conducted on the national curriculum and on IT and NICTs.

In relation to the educational program, the studies focused on the various reforms undergone by this program from colonial times to the present day. These studies have shown the structural improvements of the program and the matching of the teaching requirements, assessment systems and practical and theoretical requirements to the job requirements [4]-[5].

On the subject of IT and NICT, studies show that these technologies are evolving with giant leaps and contribute to the rapprochement of different countries. This phenomenon, tending to make the world a global village, is called globalization [6]. Emile BONGELI defines it as a process of opening up all national economies to the international market to which the DRC can not escape.

Studies by MWENZE WA KYUNGU Eric, for their part, show that the integration of NTCIs can take a "major form" or "a minor form". With regard to the minor form, we see how these means can be used as a support made available to the teacher to modernize teaching. In their major form, one is interested in how these means can intervene medium in the process of teaching learning. "The major form" directs the teacher in the choice of learning methods of computers and NTCI and the choice of communication strategies [7].

Studies on school legislation led to the production of the framework law. This constitutes a legal text codifying the decisions taken by the Congolese state in matters of national education [8]. These decisions are sanctioned either in the form of a presidential order or in the form of a ministerial order.

The present study aims at determining the opinion of the population of LIKASI, about the national program of computer science education introduced at the primary school and the secondary school by the minister of primary and secondary education in 2003.

The theoretical aspects that we will develop in this article revolve around the concepts that intervene as the basis of the opinion on a program by the classes targeted by our study in population of LIKASI. This is the school national curriculum, approaches to the process of teaching learning and educational communication.

About the national curriculum, traditionally, it is defined as all the subjects to be taught at school. For G. IBEKI, the program is a list of subjects established by year of study and presented in skeleton with the number of hours [9]. These subjects constitute experiences to which the learner must be subjected for his well-being and the well-being of society. According to D. HAMELIN, a program provides guidelines to an educational system and subjects.

In the development of a school curriculum, there are several considerations, among which social issues are not negligible [10]. The program must reflect the expectations of the community where the children live in its social dimension. The program is a means of organizing the educational work.

According to LUBAMBA KIBAMBE LANGAYI, on the one hand, the work of education is of capital importance and of divided greatness, on the other hand, it presents difficulties which greatly increase the merit for those who do it [11].

It can be understood that training is the work of the trainer. Anything that is manifested as behavior by the learner can be attributed to the trainer. In the DRC, the national curriculum is issued by the ministry with primary and secondary education in its attributions.

With regard to the approaches defined by the psychopedagogy in a learning process, we will speak, in this study, mainly about the objective approach, the competency-based approach, the proximity approach, the approach mastery and the allosteric approach [5].

The objective approach is to have an observable behavior on

the man who has been subjected to a training program [12].

The competency-based approach aims at acquiring knowledge in a specific field, at the learner who has undergone a given training. The acquired knowledge can be cognitive, affective, directive or conative; it can consist of a know-how or a know-how to make [13]. In the hierarchy of competencies, Karl Roger speaks of the ability to equip schoolchildren to use new technologies.

The proximity approach aims to get the learner to equip skills that meet the needs of the environment [14].

For the mastery approach, the learner must have a complete notion before submitting a new one.

There is also a mixed approach that combines all the aforementioned approaches: it is the allosteric approach.

Based on the foregoing, the program evaluation indicators can be defined. It is:

- The number of graduates from secondary schools who demonstrate the ability to use machines in a public or private service environment or through trade;
- The number of graduates who have the skills to manipulate the technologies brought by the mining investors in the different companies that they implant around the city of LIKASI;
- The number of organized retraining in favor of technology for a total mastery of existing technology.

### 3. Methodology and approach

To carry out this study wisely, we used the documentary technique, the processing and analysis of the data collected and the statistical approach.

The documentary technique allowed us to collect general information on the different pedagogical approaches used in the learning process [15]-[16].

A survey was conducted on a population of 500 people spread over the 4 municipalities of the city of LIKASI. As the city is mainly industrial, it is made up of workers, public servants, teachers called to supervise children of 2 categories mentioned above in public and private schools.

The industrial vocation of this city also attracts traders and other domestic and foreign manufacturers who come to create services and jobs.

The Radom point technique allowed us to build a stratified sample of 200 people from the population. Four subgroups that were selected as strata namely: workers in industries called industrial in this study, traders, teachers and civil servants.

The free interview technique was used to interact with each member selected in the sample in order to know the reasons that justify their opinion.

Data analysis and processing is done by the Chi-Square method. In general, the Chi-Square test is used when a problem that involves more than two variables [17]. In the

case that concerns this study, we use it to check the homogeneity of the opinions within each class targeted by our surveys.

An opinion on a program therefore appears as a function with several variables that constitute the different strata of the society that are to benefit from computing resources, the result of which is expressed with the help of very satisfied, satisfied or less satisfied concepts [20].

To verify the homogeneity between the different opinions expressed by the different groups concerned, the Chi-Square test was used to analyze the sampled data.

### 3.1 Principle of the Chi-Square test

For a given phenomenon, the Chi-square test compares the frequencies observed with the expected frequencies. To make this comparison, one needs to know how the quantity, called  $\chi^2$  (Chi-Square) is distributed.

The Chi-square is mathematically calculated by the expression

$$\chi^2 = \sum \frac{(O - E)^2}{E} \quad (1)$$

where O is the observed frequency and E is the expected frequency.

There is, in fact, a family of Chi-Square distributions [16]-[17]. That which is correct and which must be used is that which depends on a quantity called degree of freedom noted by df which is calculated by the expression

$$df = (c - 1)(r - 1) \quad (2)$$

Where c is the number of columns and r is the number of rows.

By comparison between the value of  $\chi^2$  obtained and the tabulated value, the Chi-Square test leads to a statistical decision. The latter consists either in accepting or rejecting the null hypothesis [17]-[18].

When the obtained computed value of  $\chi^2$  is greater than the tabulated value, the null hypothesis is rejected. We conclude that several classes concerned by the survey are not homogenous in their opinion [19].

## 4. Results and discussions

### 4.1 Results

The values provided in the table were derived from the survey forms used to probe the opinions of each targeted group expressed in terms of Very satisfied, Satisfied and Dissatisfied. The four groups constitute the four main social classes of the population of LIKASI beneficiaries of computer services.

**Table 1:** Number and Percentages of 200 opinions of persons by Targeted group of the population of LIKASI

Targeted Group	Opinions						Total	
	Very Satisfied		Satisfied		Dissatisfied		n	%
	n	%	n	%	n	%		
Industrials	9	18	17	34	24	48	50	25
Traders	12	24	15	30	23	46	50	25
Teachers	11	22	13	26	26	52	50	25
Civil servants	21	42	20	40	9	18	50	25
Total	53	26,5	65	32,5	82	41	200	100

#### 4.1.1 Reasons given to justify the great satisfaction

According to our surveys, the high level of satisfaction is justified by the national curriculum, which was designed according to the objective-based approach. It provides in its form that the persons called to exercise the teaching profession must be who would have previously undergone an adequate pedagogical training. For the group of people who share this view, this program engages teaching on the path of modernization through the use of computers and the use of NICT. The main reasons advanced to justify the great satisfaction are:

- The national program for computer science and ICT literacy comes from a single decision-making body, namely the Ministry of Primary and Secondary Education and valid throughout the national territory;
- This program outlines the guidelines for teaching-learning at the national level;
- The program provides for the production of textbooks that integrate the realities of the DRC.

#### 4.1.2 Advanced reasons to justify Satisfaction

The reasons for the satisfaction are more related to the fact that this program has led to many schools in the city of LIKASI to equip itself with computer rooms and laboratories. Teachers and the national program can't be blamed for poor performance. In the DRC, there are institutions empowered to pedagogically train competent teachers.

#### 4.1.3 Advanced reasons for Dissatisfaction

- Irregular teacher retraining sessions. In fact, due to the lack of regular organization of retraining sessions, teachers who train themselves have more up-to-date knowledge than others;
- The national computer science education program, according to the LIKASI population, is static in relation to the evolution of NICTs;
- The subjects intended to be taught relate to general computer skills and place less emphasis on its industrial applications;
- The learner subject to this program acquires knowledge that does not correspond to the needs of the city of LIKASI.

#### 4.1.4 Chi-Square test and Statistical decisions

**Table 2:** Frequencies observed and expected from opinions by group

Targeted Group	Opinions						Total
	Very Satisfied		Satisfied		Dissatisfied		
	O	E	O	E	O	E	
Industrials	9	13,25	17	16,25	24	20,5	50
Traders	12	13,25	23	16,25	15	20,5	50
Teachers	11	13,25	13	16,25	26	20,5	50
Civil servants	21	13,25	20	16,25	9	20,5	50
Total	53		65		82		200

Having the expected frequencies, the homogeneity test leads to the results below:

- Null hypothesis ( $H_0$ ): the opinions expressed by the different classes are homogeneous.
- The critical zone corresponding to a value of 5% of the distribution for 6df starts from the tabulated value of  $\chi^2$  of 12.6.
- The value of  $\chi^2$  obtained by calculation of 19.61 falls in the critical zone. It is concluded that the deviation of opinions among the different classes is not homogeneous.

#### 4.2 Discussions

In view of the results, the distribution of percentages is similar among the different constituent classes of the population of LIKASI with the exception of the civil servants who show more satisfaction towards the computer program and the industrials who are more dissatisfied with this same program.

The great satisfaction which is asserted at the level of the civil servants is justified by the fact that they consider the national educational program only in its form. For this category of the population, this program reflects the will of the country's leaders to modernize education through the integration of informatics object of study and teaching means. For these people, as this program commits education towards modernization, it can only be presented in the form of a list of subjects to be taught, teaching methods and textbooks used, which in the future can be improved.

The majority of people who express the opinion of Satisfaction are based more on the one hand on the equipment of a school in computer equipment and on the other hand on the skills of teachers holding computer courses in the city of LIKASI . This opinion is expressed by the traders for whom the calculation operations are important. For this category of people, training is the work of the trainer. In other words, one can not hope for better training in a school without appropriate infrastructure.

Dissatisfied with the national IT education program in the city of LIKASI is based more on the behaviors displayed by students when leaving the school system. In fact, the people who express this opinion want to see the learners, after having undergone their training, be endowed with the skills and aptitudes that make them usable in the public and private services and in the companies that operate at the level of the city.

The high number of this opinion is found more among teachers because they require more interdisciplinarity in the teaching of computers and NICTs.

The fact that the school does not meet the needs of the population of LIKASI in the field of acquisition of computer skills and NTCI, justifies the existence beside it of the centers of training of the learners in the non-compliance with the national program. This leads us to say that the objective approach alone is not enough.

Many educational experiences can be organized to develop a more appropriate approach. We believe that without rejecting the national character, openings to local needs can be tolerated in the new approach.

In view of the results, the collaboration of the beneficiaries can not be neglected in the design of the subjects to be taught.

Another point to note is the fact that, for greater efficiency, the teaching-learning process of informatics and ICT at the program level must be considered as an instrumented activity. In other words, the program should not be limited to the enumeration of subjects, but also specify the type and nature of activities specific to learners and teachers at the time of learning.

The test administered to our sample, shows a lack of homogeneity within a class for a critical zone of Chi-Square distribution of 5%. This result is justified by the fact that within the same class everyone does not use a computer in the activities they perform. Some still rely on traditional paper-based methods.

#### 5. Conclusion

In this article, it was questioned to probe the opinions of the LIKASI city population on the national computer science curriculum. An investigation was conducted and the results were submitted to the Chi-Square test. The analysis of the results reveals the products from the computer training, are difficult to use in the public and private services of the city. This situation leads to an increase in training centers which, far from using the national program, show much more efficiency compared to schools.

It is important in the future that a reform of this program be considered on the basis of extensive research. We recommend that in the new program the national character be maintained and that the subjects be developed in partnership with the beneficiaries and integrated with the notions of relevance and quality.

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## Author Profile



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