INTEGRATED TECHNICAL/VOCATIONAL TRAINING IN SECONDARY SCHOOL: DEVELOPMENT OF AN INNOVATIVE CURRICULUM

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Abstract
This article describes the development of an innovative secondary school curriculum, integrated by area of knowledge along with vocational training in the area of informatics, instead of fragmented into separate subjects like physics, mathematics or biology. The curriculum was developed against the backdrop of the reform of Brazil’s secondary education system with the enactment of Law 13,415/2017, allowing the possibility of creating technical courses integrated with regular high school. The law proposes a curriculum composed of the Basic National Curriculum and a learning itinerary composed of five areas, among them technical/professional training, which has the same weight as the other four areas of knowledge, together covering the number of class hours of secondary education. The pilot program, which will be targeted at low-income students, will start in 2019 and can make a difference in the qualification of the participants. The project had the participation of 13 teachers along with technical teams in collaboration. The results indicated that this kind of proposal can make a difference in how teachers of general, technical and vocational education teach. This is an innovative and challenging project in Brazil that requires a change of teachers’ paradigm and creates a social impact through integrated and holistic education to face the challenges of the contemporary world.

Keywords: technical and vocational education; innovative curriculum; integrated curriculum.

1 INTRODUCTION
This article presents a brief report of the development of a plan for a pilot project involving technical/vocational training integrated in the secondary school curriculum. The innovative curriculum will be offered to the first group of students in 2019.

The offer of courses that combine technical training and the normal high school curriculum began with the reform of the secondary education system. The idea is to include professional training with the other four areas of knowledge covered in the traditional secondary curriculum, with each of the five areas having same number of class hours.

The reform of secondary schooling has brought new guidelines, in particular more flexible curricular organization, besides increasing the number of class hours, greater depth of study according to the choice of the educational track, and new weight to technical/vocational training. The new structure includes the common mandatory subjects of the traditional curriculum (Basic National Curriculum) with another part, which is flexible.

The Basic National Curriculum consists of set of subjects that must be taught by all public and private secondary schools in the country, covering the areas of knowledge deemed necessary for all students. The flexible part allows the student to choose to focus on one of five areas:

- Languages and their technologies – Portuguese language, English language, arts and physical education.
- Mathematics and its related technologies.
- Natural sciences and their technologies – biology, chemistry and physics.
- Applied human and social sciences – philosophy, sociology, geography and history.
- Technical and professional training – the vocational area chosen.

The choice of which vocational areas to offer, however, depends on schools or school systems, which must offer at least two possibilities to the students.
Before the reform, high schools already offered technical courses, but the hours devoted to this training were in addition to the hours spent on the regular curriculum. Now the technical part is incorporated in the expanded curriculum.

In this scenario, the possibility was identified to offer a vocational course integrated in the secondary curriculum of a professional education school located in the central region of the city of São Paulo. Besides the guidelines of the recent reform, the model is based on the general objective of preparing students for careers. According to Article 35, paragraph II, of the Law of Educational Directives and Bases (Law 9394/1996), secondary schooling must involve “the basic preparation for work and good citizenship of the pupil, to continue learning so as to be able to adapt with flexibility to new occupational conditions or achieve posterior improvements.”

According to the principles and purposes established in that law, “education, a duty of the family and the State, inspired by the principles of liberty and the ideas of human solidarity, has the aim of fully developing the pupils, to prepare them to exercise citizenship and qualify them for work.”

In this sense, to assure the quality of professional education, a solid basic education foundation is essential, considering that the better the quality of basic education is, the higher will be the probability of success in professional training courses.

However, the basic education model in Brazil is for the most part fragmented, based on teaching rather than learning, more aligned with the models of a mechanical era of industrialization than a model suited to the current digital age.

The proposal described here is for integrated teaching that contributes to mold well-rounded citizens, covering valorative and technical aspects. The idea is not to have isolated disciplines that often do not make sense to the students, but rather to integrate each area of knowledge with the area of professional training chosen by the student.

Secondary school teaching integrating theoretical knowledge with technical skills enables the development of broad competencies allied with concreteness (praxis), necessary to construct knowledge in young people. The conception of a systemic curriculum where everything is in service to flexible formative itineraries assures the protagonism of the students in the search for what makes sense to them, with the possibility of correlating their studies, through the transversality of the world of work, with their goals in life.

In recent decades, especially with the diffusion of the internet, the use of computers has expanded to the point that the ways of working, living and communicating depend to a large extent on mastery of this technology. Virtually all companies nowadays rely heavily on computer networks in their productive processes.

This reality requires a growing contingent of people able to work in the informatics area, and who have, besides technical mastery, a systemic vision and the ability to work in teams, propose solutions and resolve problems, among others skills. The challenge for educators, then, is to train people able to respond competently to the multiple and complex demands of their particular occupation.

Therefore, informatics technicians are highly valued in the job market, but they need to have versatility to keep abreast of the constant innovations of computer technology, to assure their professional longevity. The Basic National Curriculum covers these questions of digital technology and culture in all areas of knowledge. In this respect, it allows various curricular arrangements, contemplating effective integration between technical skills and knowledge of the traditional subjects taught in secondary school in a natural way.

2 METHODOLOGY

The methodological approach began with bibliographic research, followed by observation, including participatory observation, with daily logging of data. This proximity between researcher and the phenomenon under analysis provides the opportunity to apply personal knowledge and experience in the process of comprehension and interpretation (Ludke & Andre, 2015).

The course plan was developed by a technical team, whose members conceived the curriculum, and 12 teachers responsible for their respective disciplines (mathematics, physics, chemistry, biology, history, philosophy, sociology, geography, arts, physical education, Portuguese language and English language), and teacher of informatics, specialized in support and maintenance of computers.
operation of computer networks and development of systems. All of them work in the city of São Paulo.

3 RESULTS

During the period of conceiving and developing the plan, integration was the premise for composing the curriculum, to promote articulation among work, science, culture and technology, integrating the learning objectives related to social practices (self-development, interpersonal relations, life in society) with the knowledge required by the job market, in its ontological dimension, as well as training for critical and active insertion in society.

The integrated curriculum brings a new organization that surpasses the centrality of the disciplines of the traditional model, which hampers the establishment of relations and interrelations between fields/areas of knowledge. In this sense, these areas of learning and technical training coexist, without the predominance one subject over others, so that they complement each other. For this, the curricular organization favors integration, as a single nucleus, where areas of knowledge articulate and complement each other.

In short, the curricular composition of the program called “Technical Training Integrated with Secondary Education” was structured based on these areas of knowledge combined with professional training, to prepare students to achieve their goals in life.

The areas of knowledge included languages and their technologies, mathematics and its technologies, natural sciences and their technologies, and applied human and social sciences. The skills of professional training are integrated in these areas of knowledge.

The project for professional training focuses on skills and favors the connection among the areas of knowledge.

The proposal of the Technical Training Integrated with Secondary Education project is to support the realization of students’ goals in life considering the subjectivity involved in career choices. It will promote the necessary reflection for making sense (of the world, others, and themselves and their dreams and goals). It will be an ongoing exercise to guide the prospect of actions that can contribute to personal and professional development and definition of learning pathways by the students, while also monitoring the students’ performance regarding adherence to the course and its success and survival.

The development of competencies in the areas of knowledge that compose professional training and that allow attaining life goals will be guided by the project established for the school year. Each year certain these, or axes, will be chosen to organize the structure of the pedagogical work. This organization will favor interrelationship of knowledge areas and interdisciplinarity, as well as directing learning attuned to the context, interests and needs of young people.

The project for each school year will be configured as a formative intentionality, in which the knowledge to be taught in each area will be guided based on structuring themes or axes. Therefore, each year will have an intentionality that is related to the needs, expectations and desires of the students, helping to overcome one of the main challenges of secondary teaching: to provide an education that really means something to young people, that respects and whets their interests, that helps them to define their goals in life, and enables them to achieve these goals through lifetime learning.

The emphasis will be contextualized by comprehension of the juvenile universe, formed by young peoples’ varied conceptions, not of a single one that fits all. The curricular integration will contribute to articulation of socially and culturally productive educational processes in the everyday formative activities and the singularity of the paths of young people.

The project for the first year aims to deal with the identity of the individual, the question of “who am I?”, eliciting their ideas, thoughts, repertoires, life histories and personal desires. The intention is to provide an intense exercise of perception and reflection, in which the youths will be able to recognize themselves (in their individual and collective identity), and develop relations and interrelations, i.e., to solidify their bearings in the world. The formative intentionality is broken down into thematic axes to promote knowledge in significant and contextualized form.

In the second school year, the project will focus on emancipation of the students outside the school walls, considering the alignment with the community, geographic expansion (neighborhood, city, etc.).
country) and what interventions they can make in society. The reflections on identity will increase to the perception of new scenarios, in which the community, social contexts, manifestations of society in all ambits, will favor the construction of significant knowledge. This context will inserted in the perspective of educating cities, favoring learning and indicating possibilities for work.

The project for the third year will focus on juvenile protagonism, by which young people can build, transform, modify and prose changes. This formative intentionality will consolidate a process in which recognition and perception of identities and social relations (city and territory) favor the construction of personal projects and formative paths. This dimension will aim to bring the new, or new eyes, awaken interests for intervention in the real world, creation of projects that seek solutions to problems, propose new ideas that favor personal and collective progress.

In this respect, although accepting curricular integration as a premise, the teachers who participated in developing the course initially had difficulties in adapting to the format by area of knowledge. They all had experiences in the discipline taught at their present school. Despite this initial unease, during the development this situation changed, as did the interest in the project.

4 CONCLUSIONS

As a pedagogic consultant specialized in developing curriculums for technical/vocational training at the secondary level, developing a course based on an integrated curriculum was a challenge for me. During the work it was possible to identify that the teachers are to some extent burdened by their previous experience and training, so this shift of paradigm will take some time to fully achieve.

Despite the difficulties, the teachers demonstrated willingness, determination and interest in the innovative project. They expressed the belief that the course will make a difference to the young people, motivating the teachers to break disciplinary barriers in favor of the greater good. The plan is for this pilot program to be monitored on a regular basis to enable identifying and mapping the successes and errors.

In general, the project aims to promote the development of the country, especially by helping to overcome the main social problems involving secondary education and professional training, with focus on the challenges of this educational level. The overall goal is to help create a real social impact, through integrated and integral formation of good citizens who are prepared to meet the challenges of modern life.

REFERENCES


