



How to cite this article:

Nocua Cubides, Á. P. (2021). Vocational guidance for women in times of technological revolution. *MLS Educational Research*, 5(1), 7-24. doi: 10.29314/mlser.v5i1.461.

VOCATIONAL GUIDANCE FOR WOMEN IN TIMES OF TECHNOLOGICAL REVOLUTION

Ángela Patricia Nocua Cubides

Ministry of Education (Colombia)

nocuangela@yahoo.com - <https://orcid.org/0000-0001-5950-1123>

Abstract. In a context of reflection on the challenges of promoting human and social development that countries such as Colombia are currently facing, to relate citizens to the understanding of the transformations that the 21st century summons characterized by the predominance of influential digital technologies in the reconfiguration of people's ways of life, the interest arose to focus on the risks of women's underrepresentation in the development of information technologies. Around this idea associated with the gender gap and the commitment to contribute to the reduction of women's inequalities to enhance well-being and progress, it was considered relevant to carry out research that investigates through a mixed design, on opportunities to strengthen the offer of vocational guidance that public education institutions in a sector of Bogotá, Colombia, implement in the level of secondary education to make women visible and motivate them to identify opportunities for participation and/or professional training in the field of education information technology. The study collects and analyzes the expressions of 267 adolescent women, who are in secondary education, regarding their perceptions about the experience of vocational guidance and thus contributes suggestions that lead to formulate and qualify proposals for the educational environment, which are recognizing their rights and talents; inclusive and promoters of its integration into a world mediated by information technologies.

Keywords: Vocational and professional guidance; education and women; women, and technologies of the information.

ORIENTACIÓN VOCACIONAL PARA MUJERES EN TIEMPOS DE REVOLUCIÓN TECNOLÓGICA

Resumen. En un contexto de reflexión sobre los desafíos para la promoción de desarrollo humano y social que enfrentan en la actualidad países como Colombia, entre los que se busca relacionar a los ciudadanos con la comprensión de las transformaciones que exige el siglo XXI, caracterizado por el predominio de tecnologías digitales influyentes en la reconfiguración de las formas de vida de las personas, surge el interés de focalizar la mirada investigativa sobre los riesgos de la subrepresentación de las mujeres en el desarrollo de tecnologías de la información. En torno a esta idea, asociada a la brecha de género y al compromiso de aportar en la disminución de desigualdades de las mujeres para potenciar bienestar y progreso, se considera relevante adelantar una investigación que indaga, mediante un diseño mixto, sobre las oportunidades que ofrece la orientación vocacional que implementan, en el nivel de educación media, las instituciones educativas públicas de un sector de Bogotá, Colombia, para visibilizar a las mujeres y motivar en ellas la

identificación de oportunidades de participación o formación profesional en el ámbito de las tecnologías de la información. El estudio recopila y analiza las expresiones de 267 mujeres adolescentes, que cursan educación media, en cuanto a sus percepciones sobre la experiencia de orientación vocacional y proporciona sugerencias que conducen a formular una propuesta cuyo alcance permite también cualificar otros planes y programas para el entorno educativo, que sean reconocedores de sus derechos y talentos, incluyentes y promotores de su integración a un mundo mediado por tecnologías de la información.

Palabras clave: orientación vocacional y profesional; educación y mujeres; mujeres y tecnologías de la información; desarrollo de la carrera.

Introduction. The question of vocational orientation and gender discrimination.

In this historical time, influenced by the deployment of communication networks, market globalization trends and transformation of economic and political systems, governments face greater challenges in terms of recognition and inclusion of their population to stimulate economic growth and social development to ensure sustainability and projection (Castells, 2006; Giddens and Sutton 2014; Touraine, 2007). This process entails evidencing the implications that the constant interaction of people with Information and Communication Technologies ICTs has today in the different scenarios where their personal, family, work, and social life takes place (ECLAC, 2012).

The presence of these technologies has imposed on people and societies ruptures and modifications in their behaviors, which have marked new directions and, in turn, have opened possibilities for the expansion of 'citizens' capacities to understand the changes and participate in the assumption of new trends (Castells, 2006; Han, 2018). In this context, making women visible represents an essential commitment to generate conditions of justice and equity (Castells, 2006; Nussbaum, 2002; Touraine, 2007).

It is important to recognize and address the imbalance of economic, social, and political opportunities that women have historically had compared to men and the predominance of interaction practices characterized by undervaluation, marginalization, and ignorance of their potential to create and manage their own life projects based on the exaltation of their interests and rights as autonomous individuals and citizens (ECLAC, 2013; Touraine, 2007). In terms of Castells (2016), the inclusion of women, who for decades have been discriminated against and have had more barriers to access opportunities that ensure their human, social, and economic development, is a key challenge for governments in the 21st century.

In particular, policies led by governments, in their mission to develop educational systems, require considering the participation of women in the construction of societies that are increasingly interconnected with the digital world (Castells, 2016).

In the demand for permanent adaptation that countries inevitably experience in the current historical moment, educational institutions are called to review and contextualize their offerings to eradicate models and practices that reproduce inequalities from the process of building the curricula that guide their work, where imaginaries about men and women underlie, which underlie the design and development of all educational

¹ In the development of this document, the double mention of gender will be used when the grammatical construction and the writing context require it. In other cases, the masculine gender will be used, considering the inclusion of men and women (Real Academia Española).

actions, including vocational guidance offerings (Subirats, 2017).

With the purpose of detailing the view on the orientation offer, particularly in secondary education, corresponding in Colombia to the tenth and eleventh grades, and incorporating elements that make women and their relationship with ICTs visible, it is proposed to develop this research. Its purpose is to identify and generate reflections on the choice of the professional route of adolescents and young women, which in turn, will generate understanding of their inclusion in any professional space and, in particular, promote in them the identification of training and participation opportunities in this area, which today constitutes a transversal axis to guide professional life routes (ECLAC, 2014a).

The problem defined in the study is formulated through the question: how to incorporate the visibility of women in the vocational orientation offers of secondary education in order to promote their identification of training and professional development opportunities in the field of information technologies?

Specifically, the problem interrelates three aspects: the supply of vocational guidance in secondary education, women in secondary education and the introduction of women to professional development in the field of information technologies.

The observation of the three elements indicated is understood as an opportunity to resume the analysis of the conditions of inequality that throughout history have been experienced by women and have limited their freedom (ECLAC, 2012^a; Nussbaum 2002; Subirats, 2017; Touraine, 2007;) and to raise reflections to promote new practices in the educational environment.

Vocational guidance in secondary education is defined as an educational strategy to offer support to adolescents and young people at a decisive moment in which they are proposed to outline the path to assume their autonomy and move towards adulthood with tools that enable them to select their priorities, based on their own criteria that promote their capabilities and freedom of agency (Álvarez and Bisquerra, 2012).

Secondary education is a bridge to continue higher education studies and, given the history of underrepresentation of women at this level, it is expected to encourage and strengthen them to identify possibilities that recognize their characteristics, interests and talents. Promoting them by guaranteeing their rights makes it possible to move forward in closing the gap that has kept them at a socio-cultural disadvantage (ECLAC, 2012^a; Nussbaum 2002 and 2012,).

The so-called gender gap evidences that, for different reasons, women have had fewer opportunities to participate in education and in leadership and decision-making spaces, which has given them a place of subordination and dependence (ECLAC, 2012^b; Castells and Subirats, 2017; González, 2002; Touraine, 2007).

During the last decades, it has been identified in the Latin American region, the increase of women who finish secondary education and access higher education; however, their decision to pursue programs other than mathematics, science, and engineering is still notorious, a reality that raises questions about the reason for this inclination (ECLAC, 2019).

The demands of the 21st century associated with the deployment of Information and Communication Technologies require that men and women relate to these tools and know their potential to interact with them and find options for participation and professional development. The predominance of information technologies in every area

of human life, demands to review the place of women and offer ways to ensure their integration through the development of capabilities. (Castells, 2016; ECLAC, 2014a; ECLAC, 2019).

Neglecting this commitment to justice and equity could mean the deepening of the gender gap. An alternative to avoid this is to promote that more women are present in technological developments, a purpose that requires not only socializing information, but also recognizing the debt due to exclusion and motivating their presence in the field of technology and science, which today is reflected in a maximum distribution of 70% men and 30% women (IDB, 2019; ECLAC, 2014b; European Union, 2018;).

To promote changes in perspectives and expand work initiatives from the educational environment, it is proposed to reflect specifically on the aspect of vocational guidance and propose actions that explicitly accompany women to live the transition to independence and economic autonomy, preparing them to assume roles that enable their active participation in the exercise of their rights (ECLAC, 2017 and 2019).

The above implies rethinking school orientation offers based on the recognition of the trends of the new social dynamics, the organization of work according to the forms of production and identifying strategies that ensure the inclusion of women to make them part of the digital world, understanding the changes in the labor market, directly influenced by information technologies. Forecasts refer to uncertainty, constant adaptability, development of socio-emotional and specialized competencies, and emergence of new professions (IDB, 2019; OECD, 2018;).

The technological convergence that integrates the so-called Fourth Industrial Revolution includes trends in automation, artificial intelligence, cloud computing, analysis of large volumes of information, internet of things, machine training, and technological intermediation, all of which structurally modifies production systems and radiates jobs in all sectors of the economy and transforms social interaction (ECLAC, 2019; Schwab, 2016;).

The effective participation of women will foster creativity and the construction of diverse and contextualized knowledge, which is the basis of innovation for the competitiveness and sustainability demanded today by national and international markets (Castaño, 2011, ECLAC 2014b, 2019).

The concept of vocational guidance, associated with career guidance, socio-vocational guidance, socio-occupational guidance, and career counseling, is a category of study that has generated controversy since the first decades of the twentieth century, when different initiatives emerged to support young people in deciding on their educational future and preparing them to enter the productive world (González, 2014).

There are references to guidance of North American and European origin; in the United States we speak of vocational guidance and in the old continent it is known as professional guidance. Throughout history there have been different approaches that manage to coincide in the purpose of providing students with tools for self-knowledge, identifying talents, and opportunities; obtaining information on training programs and fields of action; and making decisions regarding the area of study they will pursue, after finishing secondary education (Álvarez and Bisquerra, 2012; Ministry of Education, Social Policy and Sport, 2008;).

Recent academic production, evidences academic interest in the design, development, and evaluation of vocational guidance programs, recognizing that they

constitute an essential input to contribute to the choice that people make about an area of study and to the construction of the life project that will allow them to interact in the social context (Abello, 2007; Chamorro, 2016; Cruz, 2013; Duarte, Hernández and Rodríguez, 2016; González, 2014; Panqueba and Mesa, 2014).

It highlights the interest in understanding the vital moment of people who finish high school and middle school and the social expectations about the importance of students preparing themselves to develop an activity that derives income and ensures them autonomy, participation, and projection (Abello, 2007; Chamorro, 2016; Cruz, 2013; Duarte, Hernandez and Rodriguez, 2016; Gonzalez, 2014; Panqueba and Mesa, 2014).

Likewise, it has been reported that vocational guidance has an effect on reducing dropouts from the programs chosen by young people in post-secondary education, referring to the academic options that it is possible to pursue after finishing eleventh grade, in two routes: university education and technical vocational training (MEN, 2017). It has also been found that this orientation has an impact on self-satisfaction, the sense of belonging and the quality of performance that people have when they finish their studies and participate in some sector of the economy.

Research on vocational guidance in the context of secondary education denotes a variety of approaches from methodological designs of quantitative and qualitative approach, which offer contributions to make decisions about who should lead it, who should participate, with what resources, with what intensity, at what time is more convenient and how its implementation is evaluated (Abello, 2007; Chamorro, 2016; Cruz, 2013; Duarte, Hernandez and Rodriguez, 2016; Gonzalez, 2014; Panqueba and Mesa, 2014).

The review prior to the research² identified the absence of studies documenting the relationship between the contributions of vocational guidance offers and motivation to promote the identification of opportunities for participation and training in the field of information technologies among adolescent women. There is also no evidence of studies on how to make women visible in the educational environment in order to reduce the gender gap that may widen if the trends in the use and appropriation of information technologies continue in different contexts.

For this reason, it is considered useful to contribute, with the study, to expand the work in vocational guidance and contextualize the opportunity to provide relevant offers to meet the needs of students and the social and labor market conditions of the XXI century. Likewise, to make women visible and promote the understanding of the meaning of their interaction with Information and Communication Technologies, as an alternative to promote their development and autonomy.

Method. Path followed in the research

Based on the objective of elaborating an educational program of vocational orientation for the secondary education level that promotes in women the identification of training and development opportunities in the field of Information and Communication Technologies, the research is framed in a comprehensive and action paradigm that allows,

² The majority of documents consulted were master's and doctoral theses produced between 2013 and 2016).

not only to describe and contextualize the phenomenon related to the study category vocational orientation, but also to derive a product to contribute to the strengthening of the design and development processes of vocational orientation strategies specifically aimed at women in secondary education, based on the reflection on the challenges of human development and the generation of conditions of inclusion.

A mixed research design (Hernández, 2014) that combines quantitative and qualitative data collection techniques is used. The inquiry through the quantitative method gathers the perceptions of adolescent girls on the key aspects present in the vocational guidance they receive in tenth and eleventh grades and their relationship with the opportunities of the digital world. The qualitative inquiry is subordinated to the quantitative method and emphasizes the understanding and interpretation of the study phenomenon, through a greater deepening of the quantitative findings and the theses they raise.

The population of the quantitative component considers 100% of female students (872) at the secondary education level (adolescents between 15 and 18 years old), in 2019, in all (nine) public educational institutions of one of the twenty territorial divisions of Bogota, capital of Colombia, known as Barrios Unidos.

The sample is defined by random selection of female students in tenth and eleventh grades. With a margin of error of 5%, the sample is composed of 267 women.

The quantitative research was carried out through the application of an instrument for consulting the opinion and perception of adolescent girls about the vocational guidance offered. This instrument was designed specifically for the research and consists of nine multiple-choice questions. The instrument was defined on the basis of previous contributions received from female high school students and the review of 5 professionals specialized in adolescent education. The design of the instrument considers the recognition of the characteristics of the moment of development of adolescent women and emphasizes on making it understandable using a language close to them. The questions are associated with the variables defined: vocational orientation process developed at the high school level and women's inclination towards professional careers.

The quantitative inquiry allows us to know the general characteristics of the vocational orientation offer in the educational institution based on the perception of the adolescents and opens the way to formulate the qualitative inquiry, seeking to complement, according to the understanding of the women participants, their experience of vocational orientation.

In order to complement the information and give consistency to the research design, the qualitative inquiry process is developed in a second moment, after the analysis of the results of the quantitative instrument and the reflection on the main needs of understanding required by the analyses carried out. We worked with the focus group technique (Hernández, 2014); five groups were conducted with adolescents representing five of the educational institutions. A total of 25 women participated, who also previously filled out the quantitative instrument.

The information collected with the selected instruments follows a process of analysis and interpretation corresponding to the research design. Each question of the quantitative instrument is analyzed in terms of percentage and, based on this analysis, the questions developed in the focus groups are designed in such a way as to deepen aspects that support the understanding of the quantitative findings.

The structure of the quantitative instrument facilitates the organization of information into six categories for analysis. These categories are: 1) existence, form and mode of vocational guidance; 2) existing leadership in the vocational guidance offer; 3) participants in vocational guidance activities; 4) presence of women in vocational guidance; 5) contributions of the vocational guidance offer to the relationship with the field of information technologies; and 6) opportunities to enrich the vocational guidance offer.

From the analysis of the focus groups, categories also emerge that are used to relate quantitative and qualitative aspects. These categories are: 1) perception of the vocational guidance offer provided by the educational institution, equivalent to the students' understanding of the vocational guidance offer to which they have access in their educational institution; 2) valuation of female inclusion in the vocational guidance offer, evidenced in the considerations reflected in the students' positions on the visibilization of women in the vocational guidance offer provided by their educational institution; 3) self-assessment of the capacity and development of female talent in the field of information technologies, expressed in the concept that women have about their own capabilities and opportunities to guide their personal and social development and 4) interest in vocational training in the field of information technologies, derived from the offer of vocational guidance provided by the educational institution.

Results. Weaknesses and strengths of vocational guidance for female adolescents.

The subordination of the qualitative method to the quantitative method makes it possible to relate the findings of both inquiries to achieve a cohesive interpretation.

The interpretation of the percentages obtained with the quantitative instrument is related to the manifestations of the women in the focus groups and it is possible to establish associations that link the experience of vocational guidance with the perception of being a woman and being part of the education offered.

The following results stand out: 96.6% of the adolescents recognize the existence of a vocational guidance offer in their institution, worked on in workshops, visits to universities, application of tests and fairs of higher education institutions, but consider that it does not make visible their characteristics, strengths and interests. 56% of adolescent girls identify the person who exercises the role of *counselor* as the main responsible for vocational guidance actions and consider that other actors linked to the educational institution (teachers, academic coordinator, and family) could participate and, if possible, link external guests who promote relevant updates in the implementation of specific actions that recognize women and enhance their opportunities for participation and development.

Regarding the characteristics of the proposed activities and the person who leads them, 62% of the adolescent girls perceive that the vocational orientation offer does not sufficiently respond to their searches and expectations to strengthen their transition process after finishing eleventh grade. 99.9% of the women consider that the work carried out in the orientation spaces does not include alternatives to intentionally make women visible and promote them, and even less, to relate them to the opportunities for integration

in the field of information technologies and the recognition of the changes in the social, economic, and political paradigms of the 21st century.

Adolescent girls are critical with respect to the contribution of vocational guidance at the secondary education level for their personal and professional projection. 65.2% express greater expectations given their vital moment; they recognize their capacities and would like to have support from the educational institution to exalt their interests and talents in the face of the dynamics of naturalization of neutral educational practices that do not include a gender approach and maintain practices based on sociocultural stereotypes that generate distance between men and women. In particular, they express interest in the possibility of vocational orientation activities facilitating options for them to dialogue with men about gender stereotypes and the implications of maintaining interactions based on female undervaluation.

Among the considerations of women to vindicate their position in the context of the vocational guidance offer, 94.7% propose to introduce adjustments in the strategy by opening spaces for interaction, inclusiveness, attractiveness, convenience, fairness, and visionary. In addition to recognizing their rights and particular characteristics, their priorities include bringing students closer to the offer of post-media education programs in ICTs and explaining their characteristics; inviting employers to present professional development opportunities for women in the field of IT; showing students examples of women with professional experience in IT and articulating vocational guidance work with all the subjects taught in the curriculum.

In the qualitative research, the women expressed that in their opinion, the vocational orientation processes developed by the educational institutions of Barrios Unidos in the tenth and eleventh grades do not make visible the characteristics and interests of adolescent girls and restrict the possibility for them to identify opportunities for training and participation in the field of information technologies.

In relation to the perception of the vocational orientation offer, there is a generalized expression of discontent because they do not feel welcomed in the design and development of the activities and think that they do not respond to their interests. They suggest that the activities could be improved to support their preparation and decision making as of the completion of the eleventh grade. In their opinion, this would be possible if: the orientation recognizes their characteristics and interests; is articulated with the curriculum and expands the resources for consultation and relationship with families, academic institutions that offer programs at the post-secondary level, the productive sector, and professional women who share their personal and work life experiences.

Regarding the inclusion of women in vocational guidance, the adolescents mention that it is necessary to develop actions to recognize them and transform the stereotypes in the educational environment that affect the exercise of women's rights and that reinforce the concealment of the meaning of making them visible and promoting them in the different scenarios of social interaction.

Regarding the self-assessment of capabilities and the development of female talent in the field of information technologies, women refer to their capabilities and strengths to develop learning in any area; they state that they consider themselves to be distant from information technologies because the realities of the family and educational environment have kept them at a distance; First, because of cultural stigmas that associate men with technological artifacts, and place them in other fields, reproducing the idea that they should not or cannot interact with technologies and, second, because the activities of the

curriculum subjects do not promote their interaction with information technologies, generating as a result, the learning of a pattern of isolation from them.

Regarding the interest in professional training in the field of information technologies resulting from the vocational orientation offer, the adolescents reaffirm that they do not identify options of relationship with information technologies. They show a lack of reflection on aspects such as sexist language; the recognition of the characteristics, interests, and capabilities of women and the motivation to promote the understanding and development of specific skills for the appropriation of information technologies. From their perspective, cultural models are accepted and disseminated by managers, teachers, counselors, male peers, and by women themselves. This leads to feelings of hopelessness and resignation regarding their social role and the expectation of finding spaces for participation that allow them to be recognized in the field of information technologies.

They express that it would be different if the process were aimed at recognizing the gender gap and expanding opportunities to provide women with spaces for inclusion and identification of opportunities to interact with information technologies, taking into account the challenges of living in a digital world.

These results provide the inputs for the design of the educational program of vocational orientation for the secondary education level in order to promote the identification of training and development opportunities for women in the field of information technologies.

Discussion. Adolescent females, vocational guidance, and information technologies.

The findings of the quantitative and qualitative research process and the suggestions regarding the options to generate changes in the offer allow linking the theoretical and conceptual framework of this research and argue that the approach to the study category of vocational guidance is a relevant topic and is under permanent construction. As comprehensive global approaches point out, vocational development is a complex, multifunctional, and multidimensional process that must be approached with a holistic view, which represents a challenge for all the actors that dynamize the work of educational institutions and for the entities that lead the management of public policy in education (Álvarez and Rodríguez, 2006; OECD, 2004, 2018;).

Including the gender perspective to close the gap between women and men in the supply of vocational guidance means rethinking the schemes in place and adopting new guidelines to promote the guarantee of the right to education and development of women on an equal footing with men (Castells and Subirats, 2007; ECLAC, 2013; Serres, 2013; Subirats, 2017).

In addition, making women visible and acting to include them in this historical time by giving them roles different from the traditional ones requires relating them to the interconnected world facilitated by Information and Communication Technologies and generating conditions for them to develop their capabilities and value their contributions and productions (IDB, 2019; Castells, 2016; ECLAC, 2019; Nussbaum, 2012).

The results show that it is convenient to continue proposing research actions that consider the preparation for the participation of women from basic and secondary education in processes associated with economic growth and social development with the

integration of Information and Communication Technologies. Although this is a growing topic, as noted in the theoretical framework, the academic production does not yet delve into the identification of opportunities that can be derived from vocational orientation to contribute to closing the gender gap in times of technological revolution.

The above argues the relevance of continuing to analyze the challenges in vocational guidance work, summoning the participation of all the actors involved to observe the achievement of its objectives in the context of educational and pedagogical bets within society and agree together, as suggested by Alvarez and Bisquerra (1996-2017), the implementation of strategies to generate cultural, pedagogical, and didactic transformations that enrich the offerings of the educational institution aimed at men and women.

Proposal. An inclusive vocational orientation for women

The proposal is understood as an educational program or organization of cohesive actions to systematically guide the achievement of pedagogical objectives and a purpose, which in this case is related to the strengthening of the Institutional Educational Project, concerning the offer of vocational guidance and the implementation of the curriculum.

The conceptual foundations of the proposed program are guided by the human development approach formulated by Nobel Prize-winning economist Amartya Sen, who recognizes people as the wealth of nations and argues that social development should be centered on the promotion of freedoms, in order to generate in all individuals, under conditions of equity, the skills that allow them to shape their own destiny. That is, to encourage the role of human agency, understood as what each person is free to do and achieve according to his or her valuations of priority and relevance (Sen, 2000; Sen and Kliksberg, 2007).

This approach highlights the contribution of interactions with other individuals in the expansion of people's freedoms, to access different options, and the intervention of the State with all the institutions that can offer opportunities to promote capabilities.

Along the same theoretical line as Sen, the capabilities development approach is complemented by the postulates of Martha Nussbaum, who refers to what people are capable of doing and being, in accordance with an intuitive idea of life that corresponds to the dignity of the human being. She argues that capabilities should be procured for all people, treating each one as an end and not as a tool for the ends of others, thus enunciating the principle of the capability of each person, which is necessary to promote in order to speak of participation and well-being (Nussbaum, 2002, 2012).

Based on this theoretical foundation and the voices of women, the following guiding principles of the proposal are formulated.

- *Recognition of individual capabilities*: consists of making visible and valuing the characteristics and development potential of each woman who is part of the social system.
- *Participation*: associated with the generation of inclusive conditions for women to achieve a sense of belonging and motivation for self-management and co-creation.

- *Flexibility*: refers to the possibility of introducing timely adjustments in the design and development of the vocational guidance offer, according to the interests and needs of the women participants.
- *Continuity*: understood as the formal implementation of a constant and uninterrupted offer in the spaces defined in the academic calendar.
- *Articulation*: it is equivalent to harmonizing purposes and resources between the design of the institutional educational project, the development of the curriculum and the vocational guidance offer, in order to present a cohesive work, which facilitates the understanding of the meaning of the different actions.
- *Contextualization*: related to the identification and analysis of the opportunities and strengths offered by the family environment and the socio-cultural contexts in which women live their lives.

Objectives

Promote the visibility of women in the vocational orientation offer developed by educational institutions at the secondary education level.

Encourage reflection processes to transform vocational guidance offers through the inclusion of women with a gender perspective and the identification of opportunities for participation in the digital world.

Encourage the inclusion of the gender perspective and the understanding of the challenges of configuring the knowledge society in the design and development of the institutional educational project with emphasis on the vocational orientation strategy.

Table 1

Lines of action and contents

Line	Contents	Triggering questions	Example of practice guidelines
Human rights	Human development. Women's right to education and development on equal terms with men. Gender stereotypes. Sexist language. Gender gap.	How is human development and the recognition of women's rights promoted in the educational environment? What cultural practices restrict the guarantee of women's rights?	Dialogue between actors of the educational community around perceptions and imaginaries about women, female gender, rights, and development. Identification of common relationship practices with the female gender.
Development of individual capabilities	Recognition of women's capabilities. Recognition of the characteristics of the vital moment of adolescent women.	How and why make visible and exalt women's capabilities, strengths, and talents? How to recognize and address the particular	Detailed listening to the life stories of women who are part of the educational community. Socialization of characteristics,

<i>Line</i>	<i>Contents</i>	<i>Triggering questions</i>	<i>Example of practice guidelines</i>
	Generation of conditions and opportunities for women's participation. Inclusion, equity.	characteristics of women to enhance their development?	interests and achievements. Analysis of the characteristics of the spaces for women's participation in the family, educational, and community environments.
Challenges for integrating women's participation in society and in the knowledge economy	Knowledge society and economy in the 21st century. Social development and economic growth based on information technologies. Gender digital divide.	What are the consequences for women's freedom and for social and economic development of the exclusion of women in times of technological revolution?	Context analysis of economic and social changes in the 21st century. Challenges of the educational environment to develop capabilities in the XXI century. Review of situations of inequity and exclusion experienced by women in the family, school, social, and work contexts. Documentation of comparative international, national, and local figures on the social and economic situation of women. Reflection on participation opportunities offered by information technologies to women and the implications of the technological revolution on women's labor market.
Inter-institutional and intersectoral management to support	Characterization of economic development sectors. Characterization of post-secondary education offerings and	How and with whom can the processes to enrich the offer of vocational guidance led by educational institutions be made more dynamic?	Identification of key actors inside and outside the educational institution.

<i>Line</i>	<i>Contents</i>	<i>Triggering questions</i>	<i>Example of practice guidelines</i>
the qualification of the vocational guidance strategy offered by the educational institution.	analysis of professional development opportunities.		Formation of support networks for the management of the educational institution. Review of the regulatory framework and development of a gender focus in the management of vocational guidance in the educational environment. Identification of contributions of information technology integration in professional development.

Note: Source: Own elaboration.

Methodology

According to the voices of the women participating in the research, environments for dialogue and construction should be fostered by considering work spaces: individual, conversations, workshops, forums, consultations, and extracurricular meetings that can be face-to-face or through the use of technological resources, if there are infrastructure conditions, meetings to present testimonies of women with professional experience who share stories and lessons learned that can be references to identify characteristics of the work environment.

Monitoring and evaluation

Scheduling, within the school calendar, of spaces for analysis and assessment of achievements and opportunities for improvement in the development of vocational guidance activities, with the participation of adolescents, teachers, and the guidance counselor. This procedure should include adjustment proposals to reorient the development of the work plan.

Conclusions: successes and scopes of the research process carried out

The research is developed according to the design; the inquiry allows answering the guiding questions and with this input the educational program is designed: what issues are relevant for the vocational guidance offer developed in the tenth and eleventh grades to promote in the students the interest in identifying training opportunities in the field of ICT? What pedagogical assumptions can contribute to strengthening the work in

vocational guidance to facilitate the integration of tenth and eleventh grade students in ICT-related learning? What educational and pedagogical strategies are required by the institutions, based on the characterized guidance practices, to mobilize vocational guidance to make women visible? What educational and pedagogical strategies are required by the institutions, based on the characterized guidance practices, to mobilize vocational guidance to make women visible? What educational and pedagogical strategies do the institutions require, based on the guidance practices characterized, to mobilize vocational guidance aimed at women? What lessons can be learned to promote in Colombia the participation of women in ICT training through vocational guidance processes?

Based on the information gathered, it is evident that the offer of vocational guidance in secondary education, in the participating institutions, does not include a gender approach and this omission contributes to maintaining the condition of social disadvantage experienced by women (ECLAC, 2017).

There are opportunities for transformation to strengthen quality and relevance in accordance with the responsibility of accompanying the individual projection and social integration of adolescent women. This work can contribute to the revision, updating and contextualization of the institutional educational project, in order to advance in the understanding of the challenges that educational processes face in the development of capabilities with a gender approach in the 21st century.

The orientation offerings articulated in the curriculum must integrate the development of digital competencies and prepare students to understand the digital transformation challenges facing the country. This includes inter-institutional and intersectoral management.

The spaces for interaction to collect the information for the inquiry are confidential, without the intervention of the professional team linked to the institutions; and this allowed the women to feel comfortable expressing their perceptions to the point of expressing that they liked the invitation because they had not had similar experiences directed specifically to them.

Limiting aspects of the fieldwork were the delay in obtaining permission to access the different educational establishments and the constant changes in the planned schedule due to various circumstances in the dynamics of the educational sector during 2019.

In relation to the quantitative instrument, it is worth mentioning that not 100% of responses to all the questions were obtained and the question remains as to why, if there was space for indications and questions before filling out the questionnaire. In the focus groups, this aspect was consulted and no specific answer was obtained.

Another concern about the quantitative instrument is the answer of option *other*, without indicating a subject. In the group research, it is known that perhaps some adolescents did not agree with the options given, but at the time of answering, they were unable to express an alternative.

Regarding the qualitative instrument and associated with the management of authorization to enter the establishments and the atypical behavior of the school calendar of the public education sector during 2019, it was not possible to obtain permission to conduct more focus groups.

As an opportunity to generate new questions on the topic addressed, the relevance of continuing to promote research in this field is identified, which also integrates the voice

of adolescent men, in dialogue with women, guidance counselors, teachers, families, and authorities of the educational sector to analyze their views on the gender and equity approach and contextualize the supply of vocational guidance in the face of the challenges of the twenty-first century.

References

- Abello, D. (2007). *Design of a vocational and labor orientation program for the district educational institution El Salitre*. (Specialization thesis, Universidad Pedagógica Nacional, Bogotá, Colombia).
- Álvarez, M. & Bisquerra, R. (2012). *Educational Guidance. Models, areas, strategies and resources*. Wolters Kluwer Educación.
- Álvarez, M. & Bisquerra, R. (1996-2017). *Manual de Orientación y Tutoría*. Wolters Kluwer Educación.
- Álvarez, M. & Rodríguez M. (2006). The Decision-Making Process in Secondary Education. A Comprehensive Approach. *Journal of Educational Guidance*, 20(36), 20-38.
- IDB (Inter-American Development Bank). (2019). *The Future of Work in Latin America and the Caribbean: What will the Labor Market look like for Women?* <https://publications.iadb.org/es/el-futuro-del-trabajo-en-america-latina-y-el-caribe-como-sera-el-mercado-laboral-para-las-mujeres>
- Castaño, C. (2011). *I want to be a computer scientist*. Editorial Universidad Oberta de Cataluña UOC.
- Castells, M. (2006). *La Sociedad Red: Una Visión Global*. Alianza Editorial.
- Castells, M. (2016). *Reconceptualizing development in the global information age*. Fondo de Cultura Económica.
- Castells, M. & Subirats M. (2007). *Women and Men: An Impossible Love?* Alianza Editorial.
- ECLAC (Economic Commission for Latin America and the Caribbean). (2012a). *Structural change for equality: an integrated vision of development*. <https://www.cepal.org/es/publicaciones/3078-cambio-estructural-la-igualdad-vision-integrada-desarrollo-trigesimo-cuarto>
- ECLAC (Economic Commission for Latin America and the Caribbean). 2012b. *The State vis-à-vis women's autonomy*. <https://www.cepal.org/es/publicaciones/27974-estado-frente-la-autonomia-mujeres>
- ECLAC (Economic Commission for Latin America and the Caribbean). (2013). *Women in the digital economy: overcoming the threshold of inequality*. <https://www.cepal.org/es/publicaciones/16561-mujeres-la-economia-digital-superar-umbral-la-desigualdad>
- ECLAC (Economic Commission for Latin America and the Caribbean). (2014a). *The New productive and technological paradigm: the need for policies for women's economic autonomy*. <https://www.cepal.org/es/publicaciones/37250-nuevo-paradigma-productivo-tecnologico-la-necesidad-politicas-la-autonomia>

- ECLAC (Economic Commission for Latin America and the Caribbean). (2014b). *The software and computer services industry: a sector of opportunity for the economic autonomy of Latin American women*. <https://www.cepal.org/es/publicaciones/36857-la-industria-software-servicios-informaticos-un-sector-oportunidad-la-autonomia>
- ECLAC (Economic Commission for Latin America and the Caribbean). (2017). *40 years of the Regional Gender Agenda*. <https://www.cepal.org/es/publicaciones/40333-40-anos-agenda-regional-genero>.
- ECLAC (Economic Commission for Latin America and the Caribbean). (2019). *Technical professional education and economic autonomy of young women in the Americas and the Caribbean*. <https://www.cepal.org/es/publicaciones/44628-educacion-tecnico-profesional-autonomia-economica-mujeres-jovenes-america-latina>
- Chamorro, M. (2016). *Gender and vocational orientation*. (Master's thesis, Universidad del Rosario, Bogotá, Colombia).
- Cruz, E. (2013). *Vocational orientation in the curriculum of the municipal educational institution La Arboleda*. (Master's thesis, Universidad Militar Nueva Granada, Bogotá, Colombia).
- Duarte, Y., Hernández, C. & Rodríguez, S. (2016). *Pedagogical strategy of vocational orientation for eleventh grade students in an educational institution in Bucaramanga, Santander*. (Master's thesis, Universidad Cooperativa de Colombia, Bogotá, Colombia).
- González, A. (2002). *Mujer y Educación: educar para la igualdad, educar desde la diferencia*. Editorial Grao.
- González, D. (2014). *Beginnings of career guidance in Colombia*. (Degree work, Pontificia Universidad Javeriana, Bogotá, Colombia).
- Giddens, A. and Sutton, P. (2014). *Essential Concepts in Sociology*. Polity.
- Han, B. -C. (2018). *Hyperculturality*. Editorial Herder.
- Hernández, R. (2014). *Research Methodology*. McGraw Hill.
- MEN (Ministry of National Education). (2013). *Rutas de Vida: Manual de Acompañamiento en Orientación Socio Ocupacional (Life Routes: Manual of Accompaniment in Socio-Occupational Guidance)*. <http://mineducacion.gov.co/1621/article-342444.html>
- MEN (Ministry of National Education) et al. (2017). *National Qualifications Framework*. www.mineducacion.gov.co
- Ministry of Education, Social Policy and Sport. (2008). *Educational Guidance: Theoretical Foundations, Institutional Models and New Perspectives*. General Technical Secretariat.
- Nussbaum, M. (2002). *Women and human development*. Herder Editorial.
- Nussbaum, M. (2012). *Creating Capabilities*. Paidós.
- OECD (Organisation for Economic Co-operation and Development). (2004). *Career guidance and public policies. Bridging the gap*. <http://www.oecd.org/education/innovation-education/34529291.pdf>

- OECD (Organisation for Economic Co-operation and Development). (2018). *The Future of Education and Skills Education 2030*. [https://www.oecd.org/education/2030/E2030%20Position%20Paper%20\(05.04.2018\).pdf](https://www.oecd.org/education/2030/E2030%20Position%20Paper%20(05.04.2018).pdf).
- UN (United Nations). (2015). *Agenda 2030 and the sustainable development goals*. <https://www.un.org/sustainabledevelopment/es/2015/09/la-asamblea-general-adopta-la-agenda-2030-para-el-desarrollo-sostenible/>
- Panqueba, M. & Mesa, S. (2014). *Vocational and professional orientation to eleventh grade students of the educational institution Silvino Rodriguez, headquarters Jaime Rook of the city of Tunja*. (Undergraduate thesis, Universidad Nacional Abierta y a Distancia, Tunja, Colombia).
- Sen, A. (2000). *Desarrollo y Libertad*. Planeta.
- Sen, A. & Kliksberg, B. (2007). *People First*. Deusto.
- Serres, M.(2013). *Thumbelina*. Fondo de Cultura Económica.
- Subirats, M, (2017). *Coeducación, apuesta por la Libertad*. Editorial Octaedro.
- Schwab, K. M. (2016). *The Fourth Industrial Revolution*. World Economic Forum.
- Touraine, A. (2007). *The World of Women*. Editorial Paidós Ibérica.
- UNESCO (United Nations Educational, Scientific and Cultural Organization). (2015). *Education for all, global monitoring report*. <https://en.unesco.org/gem-report/report/2015/education-all-2000-2015-achievements-and-challenges>
- European Union. (2018). *Women in the digital age*. Luxembourg: European Union. <https://doi.org/10.2759/526938>.
- International Telecommunication Union. (2018). *Gender Issues*. <https://www.itu.int/es/sustainable-world/Pages/goal5.aspx>

Date of receipt: 04/30/2020

Revision date: 12/14/2020

Date of acceptance: 01/10/2021

