






Toward a Virtual Vocational Guidance Model

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Abstract. Selecting the best profession from the antic until today have been looking for new ways in order to improve the methods for advising to the people interesting in continuing their formation in higher education. Several efforts have been develop from the education field, and now with Information and Communication Technologies (ICT) tools support. However, nowadays-integral solutions in order to correct this issue are scare explored. This paper presents the advance in the research in order to create a Virtual vocational guidance model that allows advising in real time to people interesting in get a professional degree. Action research design approach has been applied in order to get interactive information from higher education applicant and improve prototype and model by each interaction. Early outcomes have shown increase the number of student that access to higher education. Outcomes allow us show a list of recommendation in order to find ways for applied ICT tools as support for effectiveness vocational guidance.

Keywords: Virtual education · Vocational systems · Higher education

1 Introduction

The scientific-technical development, the everyday advances in the working market, as well as the Information and Communication Technologies (ICT) impact of in the different spheres of life, require an adequate professional training of citizens able to assume the changes imposed by the socio-historical moment in which they live and respond to the challenges that the accelerated socio-political and economic transformations generate.

The educational institutions must have educational strategies that allow the student the responsibility of becoming aware or decisions that are not acquired with temporary solutions or casual practices. The adequate incorporation of ICTs in education does not reside so much in the technology itself but in the human being that guides it [1].

[2] attributes to L.S. Vygotsky "... the choice of profession is not simply the choice of one or another professional activity, but that is a determined path of life, the search for a specific place in the social process of production. In this area, the role played by Vocational Guidance (VG) in the choice of a career acquires great significance in response to what society requires.

Ecuador is currently in search of quality assurance of professionals who graduate from Higher Education Institutions (HEI), with solid foundations in their training and above all based on a true vocation in their profession, which is evidence in their regulations that have been created since 2012, however despite the efforts made by the authorities of higher education, there have been contrary effects to those expected with these institutions, so according to Technical University of Manabí, a decrease of 15% of the net enrollment in relation to the historical (50%) has been generated. Some factors identified with this decrease are related to the economic and material factors that vocational guidance processes require. In this sense, multiples [3, 4], agree that the use of Information and Communication Technologies (ICT) allow a range of resources and possibilities for the achievement of new communicative realities and educational, playing an important role in our society and in the world of Professional Vocational Guidance.

The evidenced conditions ratify the opportunity that ICT offer in the solution of those problems, therefore, this research explores the effectiveness of the use of a Virtual Vocational Guidance System for young people who aspire to enter the careers developed by the UTM-Ecuador.

This article first examines the state of the art and the socio-pedagogical conditions that support the analysis of VG, and the integration of Information and Communication Technologies (ICT), then the process of designing the Virtual Vocational Guidance model is presented, where the methodological requirements for its implementation are described; and finishing, some previous results that allow to establish a list of recommendations to be considered by higher education institutions in Ecuador in order to improve the vocational guidance process for applicants to Higher Education.

The remainder of this document is structured as follows. Section 2 explains the theoretical background. Section 3 describes the methodological approach based on action research approach. Section 4 shows the prototype design and preliminary outcomes obtained with its delivering. Finally, Sect. 5 details conclusions and proposes future work.

2 Theoretical Background

2.1 Vocational Guidance, ICT and Virtual Environments

The Vocational Orientation began in 1908 in Boston, United States, in its origins had great acceptance by its beneficiaries as it directly contributed to the generation of a motivated workforce.

Fitch J., cited in Maura [5] defined Vocational Guidance as: “The individual assistance process for the selection of an occupation, preparation for it, initiation and development in it.”; at the same time economic theories emerged, which, contrary to random positions, see the subjects outside of what they aspire for themselves. The occupational definition is determined by the rise that occupations acquire in society.

The person chooses his occupation only in dependence on his economic and power advantages. According to [11], this is a cause of demotivation because the individual is not aware of the profile of his occupation. In this sense, the Vocational Guidance was

determined as a process of help for the choice and professional development, but this value was limited to the moment of the choice of a profession. In addition to these orientations many other authors have configured similar concepts. The currents analyzed by the authors at the level of the world and of Latin America today have evolved towards the use of ICTs as a way to improve the efficiency of Vocational Guidance processes.

Moodle is one of the tools of Virtual Learning Environments (VLE) with greater acceptance in the world. VLEs are considered to be characterized by expanding access to education, promoting collaborative learning and group work, promoting active learning, creating learning communities because they are focus on student and make fulfilled the function of the teaching-learning process more fluency. Therefore, any proposal that uses virtual learning environments must take into account the characteristics and demands of technological platforms [6], where the student can already learn “on their own” in these, to acquire the knowledge and the respective skills, committed to a greater responsibility in the learning outcome, what energizes the VLE as a solution for the improvement of the Vocational Guidance processes, since the way in which they are created and used depends of the role that universities, organizations, families and the socio-cultural environment assign to technology in education, so that they can be considered as communities of human interrelations, artifacts, or technological systems that hold their stakeholders together for the objective that arises the virtual environment.

2.2 Philosophical, Sociological and Psychopedagogical Foundations of Professional Vocational Guidance in Virtual Environments

The Vocational Guidance (VG) is analyzed from understanding the complexity of the nature of human motivation, and its regulatory function in the decision-making process in relation to a profession has been studied from functionalist, psychoanalytic and humanist conceptions, since this is based on the recognition of the dialectical unity between the subjective, active nature of the psyche and its historical-social determination, which conditions any assumed position. In this context, it is worth what was mentioned by [7], who maintains that the principle that man is formed for life, starts from recognizing all the formative actions from school to the social coexistence that they have in the preparation for a profession.

Several authors agree on the process of reflection of vocational counselors, before this several questions arise in the guiding process: (a) the educational purposes; (b) the objectives to be achieved; (c) the selected contents; (d) methodological strategies; (e) the social relations between the actors of the guidance process; and (f) the evaluation criteria of the learning with the intervention. In order to cover these questions, VG programs must contribute to the development of the student’s natural potential, in a climate of cooperation, acceptance, cordiality and empathy [8].

The VG over time has been influenced by philosophical, sociological, psychopedagogical and technological foundations, towards an effective vocational guidance, which contributes to the design of a system that integrates the school-family-community relationship from virtual environments; This VG must guarantee the security to the subjects that aspire to enter the University and their permanence in the university work.

2.3 University Direction Towards a Virtual Professional Vocational Guidance Model

Over the years, trends in Vocational Guidance (VG) have focused on individual interventions with a reactive and therapeutic nature, focused on the resolution of specific problems and taking little interest of the context, however at present the approach to Vocational Guidance has been changed and is conceived as a permanent process that takes place throughout life, from the social point of view, economic and social goals are drawn up with the aim of labor, and the educational institution from the educational point of view, it is set goals of retention of their students in the educational system and more comprehensive training of young people. In this sense, [9] refers to four principles to be taken into account.

- Principle of Prevention: VG has a proactive character, that is, it must anticipate and anticipate the problems.
- Principle of development: VG must be a continuous process aimed at the integral development of the person accompanying him throughout his life to reach his maximum potential.
- Principle of social intervention: also called ecological, refers to how the context of the subject should address the guiding action. According to this principle, all guiding interventions must consider the environmental and contextual conditions of the person, as they influence their decision making and personal development.
- Principle of personal empowerment: the guiding action should be aimed at modifying the structures and systems that impede the development of the less favored in their context of both economic and cognitive relationships.

These postulates undoubtedly affect the process of developing a VG. It should be noted that the practice of the VG in Ecuador is a great challenge, since Ecuador is a scenario of cultural diversity, with heterogeneous characteristics of the actors in different cultural contexts; therefore, the effective VG must be sectorized based on the context of complexity, recognizing that it is not pertinent to apply standardized and unified solutions, but to generate an approach that respects and recognizes individual differences such as, for example, cultural heritage and traditional professions within families that are transmitted over several generations in certain regions of the Coast, Sierra and Amazonia and that give young people a sense of identity and continuity.

Among the Professional Vocational Guidance models that develop basic skills for vocational or professional training in a context of high cultural diversity such as Ecuador, it is necessary to work on the following aspects:

- Deep self-knowledge of the individual and cultural identity (Who am I?)
- Be aware of other cultures (Who are the others?)
- The needed skills to build a career in a context of cultural diversity (Benett 1993) (What competencies are necessary?)
- Be aware of social demands in the current context and the real possibilities of personal fulfillment. (What is needed and how is achieved?)

The cultural aspects and the emergence of ICT through the VLE, ratify the challenge and changes of approach that should be applied in the VG processes that allow to generate the permanence of the students in the university cycle and cover the demands that the market labor requires.

Virtual Vocational Guidance is a process of helping the individual mediated by virtual environments in which the student is inclined to learn to know himself, the work market and the educational possibilities in the educational institution, with which he identifies his aptitudes, competences, motivations and interests for its determination by a profession for life, through the advice and approach to the process of search and analysis of information about the educational and work offer in the inclusive environment that allows to make the decision on a responsible future and with total autonomy to start and continue a life project and professional development from the personal and sociocultural insertion context.

The integration of the models exposed in this section ratifies the opportunity of a Virtual Vocational Guidance model that affects decision-making for the responsible self-determination of the subjects, of their professional career as an expression of the interaction and integration of the socio-cultural, educational, psychopedagogical, guidelines, training and technological (Fig. 1). The elements presented in Fig. 1, are the theoretical components that motivate the design of the Virtual Vocational Guidance model in virtual environments that is detailed in section III (System Design).

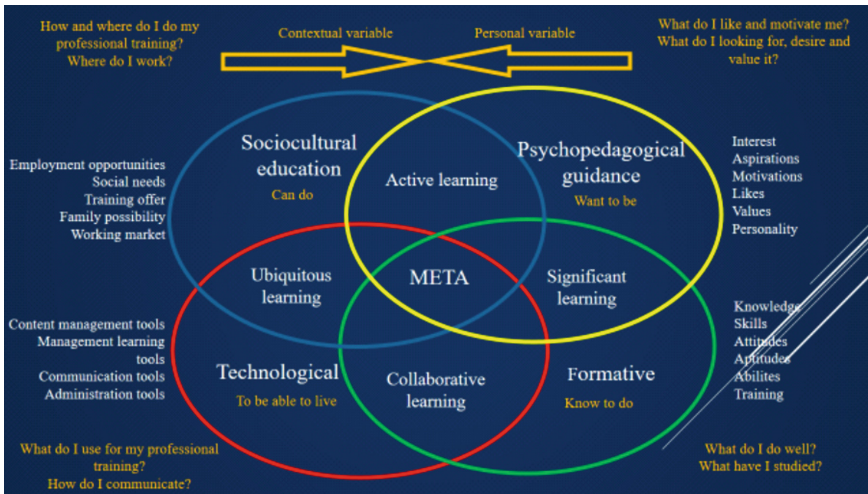


Fig. 1. Factors that influence the decision making of the subjects in their professional career. Source: Authors

3 Methodology

This section explains the methodological approach of the research carried out and presents the Virtual Vocational Guidance System at Technical University of Manabí, consisting of a set of premises, principles that support the characteristics of the system, its structure organized by levels, dimensions stages and actions for the design.

The applied research approach is action-research, this approach is the core of information systems. The applied approach conceptualizes the research process as if it contained inseparable and inherently intertwined activities to construct the IT artifact, put it into practice in the institution and evaluate it simultaneously [10].

4 Virtual Guidance Model Virtual Prototype and Outcomes

The prototype presented to date has undergone two iterations since August 2016. It implements the components presented in Fig. 1, in several sections that allowed application of the theoretical underpinnings in the technological solution, the sections in mention are summarized in the following paragraph.

4.1 Prototype Design

Section # 1 - Home Page. Shows a welcome message and the components and tools that the system has, as well as the “Alma Mater” location, taking advantage of the Google Maps resource.

Section # 2 - About Us. On this page the student can visualize and attest to the work done by the vocational counselors through photographs of past training sessions, in the same way he can know in greater detail about the objective or the reason to be of this area.

Section # 3 - Leveling.

3.1. Areas

In this sub-section are the academic areas available at the Technical University of Manabi, the student, by selecting an area, can access to more detailed information and thus know in a better way the specialty or major he wishes to study.

3.2. Series: My Route

In this sub-section the student will find countless videos, which include a route on vocational guidance, which will help him to develop strengths and generate vocational guidance projects.

3.3. Be a Bachelor

In this sub section the student will find resources that will help him to take the exam of “Being a Bachelor”; the available tools are the following:

- Simulator
- Instructions
- Android application

Section # 4 - Counseling

4.1. Guidance

In this sub-section the student can review the professional profiles of the vocational counselors of the Technical University of Manabí, in the same way he will know in greater detail about the work experience, the degrees he has and different courses that guarantee the quality of teaching of each counselor.

4.2. Vocational Choice

In this sub-section the student will be able to access information that will allow him to make strategic decisions and choose the career he is looking for, here he will have the opportunity to follow the proposed conceptual process for an adequate VG.

- Self-knowledge
- Knowledge of the environment
- Decision making
- Vocational Project

4.3. Vocational Guidance Test

In this sub section the student will have the opportunity to perform a variety of tests that will evaluate his skills and qualities; the tests he will find are the following:

- Emotional Intelligence Skills Test
- Self-esteem Test
- Interests and Aptitudes Test
- Integrator Test

Section # 5 - Contact Us

On this page the student can have a real time communication with the vocational counselors, in such a way, it will be able to clear up his doubts and clarify any type of concern.

Section # 6 - Virtual Classroom

This section leads to a link to the UTM platform where it is intended to replicate and give the guidelines proposed by the National Secretariat of Higher Education, regarding the processes of admission to universities, their academic proposals and to be able to reach to the awareness that the student can choose his career responsibly and comfortable with it.

You can visualize the schedule with dates, in relation to the process of admission to higher education institutions in Ecuador; it will serve in the guide so that the students postulate to a quota responsibly and can continue their university studies.

4.2 Prototype Testing

The first applied artifact was made based on a template according to the structure of the website of the Technical University of Manabí. In this first iteration, 300 users, both students and interested people accessed it and followed all the phases of the model implemented in the templates. At the end of the process of use, users were invited to fill out a questionnaire to evaluate the platform, both related to conceptual design and

navigability. The results of this piloting allowed to show an average level of acceptance and several suggestions that allowed to enrich the system and adjust the applied instruments.

The second iteration, the staff of the technology department of the UTM agreed to implement the system in the web portal of the university leaving behind access until the end of the design. To test this second prototype, random invitations were made to 1000 users, of which 45% responded to the invitation. It should be noted the multiplier effect that this type of initiatives has had in the UTM, where in the current semester there are 3,600 face-to-face students and 3,200 virtual students who have requested access to a leveling course, these indicators show that the number of beneficiaries has doubled this year.

5 Conclusions

The results presented in this article are preliminary, since they are part of a research in progress, however, the model and the results obtained show a positive effect reflected in the number of aspirants to university leveling.

Several reflections emerge from the theoretical study of Vocational Guidance (VG), we believe that these reflections should be the starting point for Higher Education institutions in Ecuador to expand the VG in Virtual Learning Environments (VLE).

- The VG is a continuous process of helping the subject to develop his cognitive and motivational potentials that allow him to consciously choose a profession and commit to the quality of his training during the study of it, where all the educational agents participate in the orientation actions (teachers, school psychologists, pedagogues, parents, representatives of the community).
- The VG is done not with the isolated individual (attended in an office) but with the individual belonging to a group (school, institutional, community), through a preventive and non-therapeutic process that ceases to be a process of help to the student who spontaneously requests it because it manifests a conflictive situation regarding the professional choice, to become a prevention process in which one works for the development of the potentialities of the student with the objective of preparing them for the realization of a responsible professional choice.
- The student must be considered an active entity in the VG to the extent that he participates in making professional decisions based on a complex process of reflection and reconstruction of his personal possibilities and the possibilities offered by the medium in which develops for the study of one or another profession.
- The VG is a complex process of training and systematic development of the subject's motivation for a profession, where the reasons and the need must coincide.
- The VG with the ICT, has to be conceived on the basis of a scientific foundation that contributes to the design of new learning spaces, these ones could be used for the development of new learning based on the occupation to be chosen by the subjects.

In future researches we are working on measure the impact of VG in the number of graduates students.

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