

Portfolio assesment: a tool for the development of scientific-research skills

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ABSTRACT

The development of scientific-research skills from the professional training process constitutes one of the insufficiencies not yet achieved in the students of the Pedagogy-Psychology career. Some theoretical and practical references on the evaluation by portfolio are systematized, for the development of these skills from the subject Professional competences of the psychopedagogue. Theoretical and empirical research methods were used, such as analytical-synthetic and the self-evaluation test, allowing to verify achievements in decision making and solution of professional problems. This work constitutes an experience of an institutional research project.

Key words: Evaluation; Professional Training; Scientific-Research Skills; Portfolio.

Introduction

The VI Congress of the Communist Party of Cuba held in April 2011, approved the Guidelines of the Economic and Social Policy of the Party and the Revolution, among them No. 152 requires updating training and research programs in universities according to the economic and social development of the country and new technologies.

The updates of the training programs allowed the emergence of the "E" Study Plan, as well as the introduction in the Ministry of Higher Education (MES) of new policies that favor the improvement of the continuous training process of Cuban professionals; one of them is related to the resizing of the undergraduate training in careers of broad profile, refocusing them towards the solution of the general and frequent problems of the profession in the basic link.

For this reason, universities today are required to improve their own curricula and optional/elective curricula of the careers, which are increasingly relevant, and strengthen the comprehensive training of students, from an educational process that enhances learning and the formation of skills for the management of knowledge independently, which is an education for life.

In addition, university students are required to have greater independence and autonomy in the search for information and an appropriation of knowledge for the solution of professional problems that they will face in the different contexts of professional performance.

In the model of the professional of the Pedagogy - Psychology career, the professional problems that the psychopedagogue must face in his professional performance appear, one of them is the psychopedagogical consultancy to directors and teachers for the direction, research and orientation in the educational process.

In order to achieve the preparation of students, in the solution of the previous problem, the authors consider it necessary to introduce new alternatives in the teaching-learning process, essentially in the evaluation of this process, which favors the acquisition of research skills and makes it possible to successfully face their professional performance. One of them is the portfolio evaluation.

The portfolio as a technique arises from the need to demonstrate professional competencies in the labor market. This technique, taken from the business environment, is extrapolated to the field of education, becoming a teaching and evaluation methodology.

In this regard, Rodríguez (1997), Ibarra (1997) and Corominas (2000), cited by Barragán (2005, p.123) in their work related to the portfolio as an evaluation and learning methodology, systematize some assumptions given by different authors who have ventured into this subject, who consider the portfolio as a technique for diagnosis and guidance in education, since they report on the competencies demonstrated by a

person or group of people, as well as the learning process they have followed to obtain these achievements.

In the same work cited above, Barragan (2005, p.123), shares the criteria of other authors, among them: Cole, Ryan, Pick and Matthies (2000), who express adaptations and modalities of the basic idea of the portfolio according to the nature of the information to be verified and evaluated. He also cites (Val Klenowsky, 2005), who suggests that the portfolio is known as an expansionist and alternative technique because it allows the incorporation of multiple sources and a variety of evaluation measures, and alternative because it offers a series of evaluative possibilities different from those of an eminently quantitative nature.

In Cuba, the works carried out by some researchers stand out, among them: Fimia (2010) suggests the digital portfolio as a tool that contributes to the quality of the teaching-learning process; Gutiérrez (2018) analyzes the use of the portfolio for the undergraduate in Medical Sciences and Moya (2018) presents the diary and the portfolio of practices as a learning and evaluation tool in Higher Education, among others.

They all agree on its contribution to the quality of the teaching-learning process of university students, a novel tool to evaluate learning from a new look.

In the authors' opinion, it is significant to demonstrate to university teachers the use of the portfolio evaluation technique from the experience obtained during the teaching of the contents of a subject of their own curriculum in the students of the Pedagogy - Psychology career of the University of Artemisa, since even in the practice of the profession it has been possible to verify that the students of this career present insufficiencies in the appropriation and demonstration of the general professional skills, essentially the scientific-investigative skills.

This experience is part of a scientific result of the institutional research project "The direction of the scientific-research activity of the professional in formation of the University of Artemisa".

The purpose of this article is to systematize some theoretical and practical foundations on the evaluation by portfolio, for the development of scientific-research skills from the subject Professional competences of the psycho-pedagogue.

Development

The meaning of portfolio is very broad in the literature. It is known as a technique of collection, compilation, collection and repertoire of evidence and professional competencies that enable a person for successful professional development.

In the Spanish Language Dictionary, the term portafolio means "portfolio", it can be a handbag to carry books, papers.

Portfolio assessment in higher education

Among the conceptual bases issued by the MES for the design and execution of Study Plan "E", is the need to achieve an adequate integration between academic, work and research activities. To this end, the incorporation of new perspectives and evaluative techniques to measure the learning and integral formation of students is suggested.

In this regard, the authors suggest the evaluation of the portfolio as a novel tool that favors the motivation of students for the acquisition of new contents. The fulfillment of the tasks that are oriented to them become spaces for reflection for their professional reaffirmation, as well as the development of analytical skills, teamwork and decision making, development of professional skills specific to the profession and general skills.

We agree with Rey (2015) in stating that.

"The portfolio can be used for different strategic and didactic uses: it is a means that favors learning because it is a way of gathering information that will demonstrate the students' skills and achievements, how they think, how they question, analyze, synthesize, produce or create, and how they interact with others." (p.22)

For other authors, portfolio evaluation is considered as a teaching method to evaluate students.

The portfolio is something more than a mere compilation of reports, summaries, diagrams, graphs and other evidence of learning, because together with these activities, the student should make a small reflection about his learning and the competencies that he himself is acquiring with the development of the work done.

Barbera (2005) considers that the portfolio is an instrument whose common objective is the selection of work samples or evidence of the achievement of personal or professional objectives that ordered and presented in a certain way, serve the function of promoting reflection on each of the practices.

Other authors state that this is a technique widely used in the field of education; it can be used for the development and assessment of knowledge of a subject, for the

acquisition of teaching skills and reflective practices, as well as for professional and vocational preparation.

In this sense, Marqués and Banqué (2007) consider that the idea of the portfolio or learning portfolio has reached university teachers basically as a tool that teachers can use in their subjects, either individually (one portfolio per student) or in groups (in the context of teamwork), either in physical format (the classic ring binder) or electronic format (the so-called e-portfolio).

The portfolio and its contribution to the development of scientific and research skills.

In the "E" syllabus, the basic link and the most general and frequent professional problems are specified, and they constitute the starting point for the determination of the general objectives of the course and the contents that are really necessary to achieve them.

In this regard, the curriculum of the student of the Pedagogy-Psychology course explicitly presents the professional problems for which he/she must be prepared from the training process, among which the following stand out:

- Psycho-pedagogical counseling to managers and teachers for the direction, research, guidance in the educational process and the need to develop personal resources and skills in the management and resolution of conflicts arising from them.
- The systematic evaluation of their work and the results achieved and the need to use educational research as a resource to improve the quality and professional pedagogical improvement of teachers working in the institutions.

As can be seen, educational research and with it the professional skills of research from the training process constitute essential contents to be prioritized so that students reach a certain level of preparation from the career with a view to face the professional problems that appear in the different contexts of action.

The scientific-research skills shared by the authors are those proposed by Chirino (2005) to problematize, theorize and test.

During the execution of the different actions and operations of the skills, students are in a constant observation of the educational reality that allows them to describe it, compare it with the theories studied in classes, identify the contradictions that are established between the educational reality they observe and the proposed theories, and thus pose

and formulate scientific problems to be solved in the course of the program of the subject.

All these actions prepare them for an adequate problematization of the reality they study and with this they collect evidence that can be included in the portfolio, among them: scientific observation guides, logical schemes, conceptual maps where the contradictions found are observed, among others.

The student formulates an objective and precise scientific problem with the accompaniment of the professor during the consultation and tutoring sessions; he/she is able to analyze different texts, make syntheses and summaries of these to look for theoretical arguments that allow them to support some scientific ideas and propose their possible alternative solution.

In this way, they demonstrate the acquisition of the ability to theorize. The bibliographic and content cards elaborated, examples of pedagogical-professional activities to be implemented in reality as psycho-pedagogues, case studies, psycho-pedagogical treatments, among others, constitute activities to be included in the portfolio.

The possible alternative solution modeled is introduced into the educational reality and through the application of different scientific methods and psycho-pedagogical techniques, verifies the behavior of the process, processes the information of these, presents them in tables and graphs with organized data and communicates the results to the whole group in order to evaluate the changes that have occurred.

The above actions allow students to verify the educational reality with the scientific alternative they have proposed and provide a solution to the scientific problem identified. Therefore, in the annexes they can incorporate the scientific instruments elaborated, the graphs and tables designed as samples of the work done during the whole process.

These actions contribute to the development of scientific-research skills in students, teach them to be orderly with the control of the information they collect, to consult different bibliographic sources and to carry out their settlement according to specific rules, thus favoring scientific honesty and professional ethics. It demonstrates, through the different psycho-pedagogical techniques applied, the objectivity of the problem under investigation, the tabulation of the results and their graphic representation in diagrams, tables and graphs.

In the opinion of the authors, the preparation of the portfolio, more than an evaluation of the subject, constitutes an alternative for learning to investigate by investigating, from the training process.

In this regard, Murphy, Griffin and Higgs, (2010), cited by Rey (2015), state that the portfolio generates some fascinating documents, workshops and debates, which demonstrates the union between research and teaching. Research, teaching and learning are closely related and this is a critical part of the continuing professional development process.

In the literature consulted, subject matter experts argue that there are four basic components that define a portfolio:

- a) It must have a specific objective
- b) It is developed for a specific purpose
- c) Contains a collection of work done
- d) It includes reflections and personal critical comments about the works incorporated.

For all of the above, the authors suggest the following structure for the student's portfolio:

Presentation: with the student's personal data, his/her e-mail address.

Introduction: a brief reflection on the student's expectations about the subject he/she is going to receive, its objectives, its significance for his/her training and professional performance.

Development: the tasks performed for each oriented subject are reflected, an assessment of the successes and failures in each of them.

Conclusions: The achievements reached are highlighted, if the expectations raised at the beginning of the course were fulfilled.

In the bibliography, the texts consulted should be presented, according to the APA standard, and in the annexes, the graphics, content sheets, conceptual schemes and other materials that constitute evidence of the work done should be reflected.

From the psycho-pedagogical point of view, the student develops self-assessment and metacognition, which contribute to the development of skills and thus to professional competencies; he/she knows what he/she is capable of, what he/she lacks and how to achieve it. For his part, the teacher not only evaluates the knowledge acquired, but also the process of acquiring it, the level reached in professional skills, his level of creativity and commitment to the execution of the oriented tasks.

The above theoretical assumptions show that this portfolio alternative is a way to evaluate students through a continuous evaluation of the teaching-learning process, systematic, formative and guiding, which reveals the progress, stagnation or setbacks in their professional training process.

Results of the experience developed in the course Professional competencies of the educational psychologist.

First of all, the main author of this article, who is responsible for the course, prepared a guide of activities that contemplates the objectives, skills and actions to be developed in each of the topics that make up the program.

From a training process based on autonomous, collaborative and meaningful learning, which implies that the student is the protagonist par excellence in the appropriation of new knowledge in interaction with their peers in the group and where the teacher is the mediator, this new evaluation tool was implemented in the subject, which favored the formative process of evaluation, and the development of skills in students for their future professional performance.

Table 1 below shows the dosage of the contents worked on, their correspondence with the objective to be achieved and the activities to be carried out by the students.

Table 1: Dosage of the contents worked on.

Objetivos	Contenidos	Actividades
Valorar las competencias profesionales y la necesidad de la formación profesional centrado en el desarrollo de competencias	Las competencias profesionales. Definiciones. Relación entre las competencias, objeto, modo y desempeño profesional	Diseño de mapa conceptual que exprese la relación entre competencias, el objeto, modo de actuación y desempeño profesional del psicopedagogo Elaboración de informe escrito donde refleje la relación entre las competencias profesionales y las habilidades profesionales
Reflexionar sobre la formación de competencias profesionales en el psicopedagogo para el cumplimiento de su función de orientación educativa	Las competencias profesionales desde la formación profesional de la personalidad y su relación con las habilidades profesionales	Completamiento de test sobre las competencias profesionales demostradas
Diseñar alternativas de orientación educativa que le posibiliten al psicopedagogo la expresión de sus competencias profesionales en el desempeño, centrado en la orientación educativa	Importancia de las competencias profesionales para el desempeño eficiente y de calidad Las competencias profesionales del psicopedagogo para un desempeño más eficiente y de calidad en su labor de orientación educativa La psicopedagogía en los diferentes contextos Trabajar como orientadora laboral educativa	Diseño de plan de mejoras para el desarrollo de las competencias aún no logradas Modelación y diseño de acciones de intervención para mejorar la realidad educativa Elaboración de fichas bibliográficas sobre las competencias profesionales del psicopedagogo Elaboración de un texto autovalorativo donde exprese las competencias profesionales

Source: Authors' self elaboration

Description of operation

The experience was developed in the 4th year group of the Pedagogy - Psychology course, which has 8 students, they are in the "E" study plan, it is the first graduation of this course with this study plan, which demands greater essentiality in the contents. Since this is a small enrollment group, they were guided to carry out the portfolio in the individual modality.

A diagnosis was made to identify the students' expectations about this type of evaluation, the elements to be taken into account during the learning evaluation process. For this purpose, a survey and a group interview were applied to collect the necessary information.

From the first meeting of the course, students are presented with the planning and organization of the contents of the course by topics, and the activities to be developed, as well as the evidence to be collected in the portfolio. They negotiate with them how the meetings and their evaluations are going to be developed, allowing them to make decisions and participate in the process, they are oriented that they can incorporate all the actions they carry out to achieve the final objective of the activity to be accomplished.

Portfolio evaluation

To evaluate the portfolio, the authors suggest taking into account the following indicators:

Level of depth in the results of each of the theme-oriented activities.

Level of creativity demonstrated in each of the oriented tasks.

Level of self-reflection expressed in each of the solved tasks.

The control of the knowledge system of the subject was planned in three cuts, at the end of each objective of the topic addressed. In each cut, the students presented their progress, difficulties, doubts, and reflections were made among the students, the teacher and the group in general, and decisions were made on how to continue.

Main results

The results of the diagnosis showed that 100% of the students confirmed that they had never used this tool to evaluate their learning in any subject, more than 85% expressed having difficulties in the construction of their self-assessments, they do not know their learning strategies, how they learn, they consider the implementation of this new tool to

socialize the knowledge they are acquiring from a collaborative learning process as very positive.

During a semester of teaching, the students fulfilled the guided tasks, meetings were planned for consultations and clarification of doubts, as part of the accompaniment in this learning process and the most significant results were the following:

Greater capacity for reflection and critical analysis on the part of the students when facing different professional problems of their work practice, responsibility in the presentation of the solution to the problems.

Leading role of the students in the evaluation of their own learning process, greater responsibility in the management and self-regulation of their learning, as well as the ability to learn how to learn.

Collection of evidences that demonstrate the work done and expression of the mastery of scientific-investigative skills, self-learning skills, skills for life.

The experience was able to demonstrate that from an adequate organization and planning of the teaching-learning process, an active and leading role of the university student is achieved in the appropriation of his own learning, participation in the construction of new knowledge, learning to learn and to show quality evidences that express the level of development reached in the scientific-research skills.

Conclusions

The evaluation through the portfolio constitutes one of the alternatives to be introduced in the evaluation process of the essential contents of the subjects during the training process of university professionals.

The evidences incorporated by the students in the portfolio constitute an expression of the development and appropriation of the scientific-research skills of problematizing, theorizing and testing, acquired during the training process.