IMPLICIT EPISTEMOLOGY - THE BELIEFS OF STUDENTS OF EDUCATION SCIENCES

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ABSTRACT

The purpose of this research is to understand the mental states of the students of Educational Sciences around the educational phenomenon, which also includes the knowledge of emotion and feeling (Zohar & Dori, 2012). To this end, a questionnaire was administered, analyzed in the light of a quantitative-quantitative methodological approach. In fact, the beliefs around the educational emergencies of our time condition the learning of our students in the main disciplines studied during study. Consequently, it is useful to know these representations to formulate a more effective training proposal as more aware of the receptive and processing characteristics of our young interlocutors. There is a similarity between cognition and implicit epistemology, this research wanted to make some of its fundamental structures explicit (Santoianni, 2019).

KEYWORDS

Implicit Epistemology, Youth Anthropology, Training, Hermeneutics, Learning

1. INTRODUCTION

The relationship between the behaviors and learnings of our children, like that between knowledge theory and educational choice, are organic to the processes of structuring, demarcation, and composition of the cognitive field (Sternberg, 1997). This is the starting hypothesis.

Technology has introduced epochal changes, both in social dynamics and in the processes of construction of Knowledge, and, finally, in the elaboration of thought (Gramigna, 2018).

Digital natives weave with new technological devices a relationship that involves all areas of their existence: play, cognition, social and friendly relationships, affectivity (Ferri, 2011). The consequence is that it has contributed to forging anthropology and therefore the mentality of our young people who respond to new training needs (Galimberti, 2018).

In fact, as a result of the massive use of technology both in the field of play and in communication, the youth mentality is highly conditioned by a technical rationality. The meaning attributed to learning and, in general, to education is extremely far from what we teachers attribute to it. Finally, the learning styles of our students, whether global or analytical, visual, or verbal, reflective, or impulsive, converging, or divergent, are decisively affected by the new socio-cultural context of modern technologies. It is in this context that young people start the processes of building their own identity, the anthropology of the new generations.

Hence, the importance of knowing the beliefs of our students around the most current educational issues. It is precisely the implicit epistemology, that is, the idea that children have of Knowledge and of themselves that solicits and guides the dynamics of their learning. The idea that young people have of education, its processes and ends have a lot to do with their cognitive self, that is, with that conceptual domain where those same mental representations operate. In this sense, this conceptual domain represents the basis for the organization of many cognitive activities. For this reason, it is especially important to know the beliefs of our students for the active role they play in the processes of knowledge construction. The cognitive self is structured around the attitude that the subject has towards learning, its motivations, the imaginary that concerns training, fantasies, desires, expectations of gratification or not on the achievement of educational objectives. The feeling, the perception of the self is a basis for the organization of every cognitive activity, it has to do with an explicit dimension of the self, but it does not end with it.

In fact, it is especially important in the mechanisms of learning optimization, because it can strategically help to organize content and methods in the light of that context of meanings. The exploration, awareness and deepening of the sense of self helps to structure knowledge, to organize associative networks, to increase logical connections (Chalmers, 1999). In fact, how to deny that the ideas we have about our mental processes influence the construction of knowledge, the elaboration of cognitive strategies, memory itself. Implicit theories, not fully connoted and not conscious, act on our way of learning and processing knowledge.

Hence the importance of knowing implicit epistemology and, broadening the discourse, of knowing Knowledge (Morin, 1989).

The epistemic and consequently methodological assumptions of our research are the following:

- the parameters by which we evaluate the impact that the beliefs of Educational Sciences students exert on motivation and expectations
- the epistemological presuppositions, including the implicit ones of procedures that have a hermeneutic, qualitative-quantitative character
- methodological consistency with these assumptions
- the conceptual tools, the theoretical background in the international debate around implicit epistemologies
- the theories of reference: constructivism and cognitivism (Piaget, 1962; Vygotsky, 1987)
- the criteria for a constant review of the research model and its strategies: coherence and consequentiality
- the means of observation, collection, cataloguing and documentation: questionnaires using scale Likert for a measurement of attitudes for both a qualitative and quantitative evaluation of the mental states of students of Educational Sciences at the University of Ferrara, Department of Humanities taking into account that the educational phenomenon it is also understood and constituted by the knowledge of emotion and feeling (Damasio, 1995); it was chosen to use a scale with an even number of values, 6 (from 0 to 5) to avoid neutrality and "force" a choice of field for each of the statements of the questionnaire. The choice of statements and terminologies that may be, at first reading, excessively technical are chosen according to the target of the research, students of Educational Sciences who have in the use and contextualization of these terms one of their types of knowledge;
- the tools for verifying and evaluating the results of our research in relation to the objectives, assumptions and means that we have been able to use clarity of data in relation to the objectives and their correspondence with the expected results;
- the coherence between all these elements and the possibility of a readjustment of the research design during construction.

2. MATERIAL AND METHODS

2.1 Motivation and Identification of the Problem

The generational gap in mentalities due to the massive use of new digital technologies, as well as the high index of change and complexity in the social structure of Western countries, is a salient problem in the field of training (Bencivenga, 2020). Today more than ever it is crucial to study the anthropology of the younger generations to analyze the specificity of their educational needs and, consequently, to elaborate an effective training proposal for the context in which they live. The study we present identifies some salient guidelines of the youth mentality whose analysis allows us to structure our training offer more effectively. The identification and analysis of the elements characterizing contemporary youth anthropology is fundamental to orient the processes of knowledge construction both in teaching and learning (Gramigna, 2021). Gardner (2004) explains that the two cognitive postures lead to resonance, or the belief or not of having arrived at a good knowledge that does not require further investigation. But the prejudicial role of activated cognitive operations is dominant and can be significant in forms of learning difficulty or resistance.

2.2 Objective

This research aims to understand the implicit epistemologies of the undergraduate students of Educational Sciences of the three-year degree course.

The survey aims to analyze the mentality of our young interlocutors to better intercept their pre-judgments around issues of immense importance both for the course of study they have chosen, and for the profession they intend to conduct.

To this end, we will try to clarify the areas of signification of the concept of Education.

Contents

Therefore, an attempt has been made to highlight beliefs, often not fully conscious, about the meaning of the educational phenomenon. Specifically, these thematic nodes have been identified as we believe that they are formative emergencies of contemporaneity:

- responsibility in the educational relationship
- learning and the role of modern technologies
- the educational response to violence and suffering

These problems are interconnected with each other because of the educational implications that cross them.

The solicitation we have placed on our students puts in place a first essential process of auto reflexivity through a practice of applied hermeneutics that is represented by the process of analysis of the questions administered with the relative answers.

2.3 Epistemic Frame

The epistemic frame is autofermenters and auto reflexiveness, both in the disciplinary side and in the personal one, are those techniques of self-construction that Foucault (1988) had already partly illustrated to us in the story of himself. In fact, as Bateson (1979) teaches us, the epistemological structure of our reflection determines the questions we ask ourselves and the procedures we follow to find answers, to build solutions to problems, to elaborate innovative ideas, to teach and to learn. The epistemic framework refers to a hermeneutic conception of knowledge that is here conceived as a relational process in continuous construction. Within this framework lies the constructivist and cognitivist conception of learning (Bruner, 2000). Any learning is therefore considered a construction because it operates a structural change in complexity and depth in the configuration of mental representations as in their enrichment.

2.4 The Quantic-Qualitative Methodology

In the sciences of education in general, like the methods we are dealing with, need to confront each other on innovative epistemological bases so as not to have to depend passively on the uniqueness of approach of the dominant hard sciences. Innovation is also measured by the ability to expand the number of stakeholders involved in the screening of meaningful information and discussion on the key issues of science and technology. Specialists often lack the humility to relate to everyday life, for them only the "laboratory" is a place appropriate to science. And, however, it seems a suggestive hypothesis to reconsider the task of the "experts" to leave adequate space for the "concerned", who usually suffer the decisions from above both for school reforms and for organizational changes in the world of work. In the last decade, an idea of post-normality has made its way that moves according to a precautionary principle, to concentrate the greatest number of opinions and verify the legitimate aspirations that have the formative factor at heart.

Post-normal intelligence, which should be put to the test, implies a systemic strategy, a willingness to confront difference, to respond to a deep desire that until now has not found effective and credible solutions. Post-normal intelligence wants to prefigure the future, it feels the desire to undertake, to give shape: for this reason, it would be important to reconsider the role of techniques that involve a wise use of the hands that, in our youth world, have become almost inert. The formation aimed at taking charge of the new intellectual processes will have to diverge from the normal image still prevalent, based on the hierarchies of disciplinary areas.

The concatenation of the questions posed by the questionnaire focus on the relationship between the phenomena and on the phenomena themselves that in fact can only be understood in the context and the context is made up of relationships. Therefore, our analysis methodology, while using quantitative data, refers to a qualitative system that considers the numerical data in the systemic relationship with the identified context (Poletti, 2020)

Statistical sample

Having to analyze the students of a specific degree course and setting the goal of understanding the mental states of the students of Educational Sciences in relation to the educational phenomenon, we opted for the administration of the questionnaire to the entire population of students attending the course, collecting eighty-six questionnaires.

2.5 Expected Results

The expected results will allow us to formulate our teaching proposal in the light of their beliefs, both to make them explicit to their own eyes, and to help them problematize the themes. Finally, we will have valuable information on the motivations of learning as well as on the expectations towards the course of study and professional prospects.

2.6 Evaluation

The research project was evaluated in the light of these criteria:
- consistency between objectives, assumptions, and categories used
- between these elements and the possibility of their readjustment during construction
- achievement of the expected results

In the light of this verification, the positive evaluation led us to present this report for publication. In drafting the research design, in fact, we clarified the epistemological assumptions, even implicit, of the procedures we used, relating to the formulation of the questionnaire, its administration, collection, documentation and analysis of information. To this end, we have evaluated from time to time, the operational congruence of our heuristic behaviors, but in the light of a system, albeit dynamic and reticular reference (Morin, 2007).

On the other hand, the problem of "naive theories" on learning had already been highlighted by Bruner, 2000) who nevertheless referred to teachers, but it is important here to point out the importance of the conditioning that common sense plays in educational processes.

2.7 Results

In line with the objectives and methodologies illustrated, anonymous questionnaires were completed through a Google Form, in which no profile data were collected but we wanted to focus attention on the level of sharing of 15 statements that aim to describe and highlight the beliefs of students in relation to learning and the underlying implicit epistemologies. The questionnaire asked to give a value to the level of sharing of fifteen statements on a scale from 0 (total disagreement) to 5 (total agreement) without having the possibility of having a neutral position but "taking sides" with respect to the statements.

The fifteen statements on which it was asked to express a value of sharing are, in the order in which they were proposed:
1. Educational responsibility is shared between teacher and student
2. Today's children are much smarter than those of the past
3. The bully is not a victim of society
4. Suffering is an inescapable existential experience
5. Logic is not the only form of directionality accredited to build knowledge
6. Knowledge is not transmitted.
7. Innovative technologies are hermeneutic
8. Studying eventually is a very tiring matter.
9. Children need to be educated to become smarter

10. Poor academic performance is the responsibility of teachers
11. Bullying is the fault of the carelessness of school and family
12. Suffering must be avoided at all costs
13. The teacher transmits knowledge
14. Innovative technologies have made us smarter
15. The best thing is to know without having to study

The data collected are summarized in Table 1.

Table 1. Summary of valuation data against proposed claims

Claims	0	1	2	3	4	5
Educational responsibility is shared between teacher and student	0	5	19	17	23	22
Today's children are much smarter than those of the past	13	22	20	20	9	2
The bully is not a victim of society	25	31	13	11	3	3
Suffering is an inescapable existential experience	2	12	12	14	24	22
Logic is not the only form of directionality accredited to build knowledge	0	3	17	14	18	34
Knowledge is not transmitted.	53	17	9	5	2	0
Innovative technologies are hermeneutic	3	10	29	25	14	5
Studying eventually is a very tiring matter.	3	12	21	23	16	11
Children need to be educated to become smarter	6	27	19	19	9	6
Poor academic performance is the responsibility of teachers	8	21	30	22	5	0
Bullying is the fault of the carelessness of school and family	4	12	16	20	23	10
Suffering must be avoided at all costs	38	23	10	8	3	4
The teacher transmits knowledge	6	10	20	22	24	4
Innovative technologies have made us smarter	14	23	27	18	2	2
The best thing is to know without having to study	42	21	12	9	2	0

At a first quantitative observation it is interesting to note, combining the values 0-2 and 3-5 how the answers show a strong polarization (see Table 2) either towards agreement or towards disagreement except for the statements:
• Innovative technologies are hermeneutic
• Studying eventually is a very tiring matter
• The teacher transmits knowledge

Table 2. Summary of the data relating to the valuations with respect to the proposed statements, summarized in percentages highlighting Agreement and Disagreement with the statements

Affirmation	Disaccord	Accord		
Educational responsibility is shared between teacher and student	24	62	28%	**72%**
Today's children are much smarter than those of the past	55	31	**64%**	36%
The bully is not a victim of society	69	17	**80%**	20%
Suffering is an inescapable existential experience	26	60	30%	**70%**
Logic is not the only form of directionality accredited to build knowledge	20	66	23%	**77%**
Knowledge is not transmitted.	79	7	**92%**	8%
Innovative technologies are hermeneutic	42	44	49%	51%
Studying eventually is a very tiring matter.	36	50	42%	58%
Children need to be educated to become smarter	52	34	**60%**	40%
Poor academic performance is the responsibility of teachers	59	27	**69%**	31%
Bullying is the fault of the carelessness of school and family	32	53	37%	**62%**
Suffering must be avoided at all costs	71	15	**83%**	17%
The teacher transmits knowledge	36	50	42%	58%
Innovative technologies have made us smarter	64	22	**74%**	26%
The best thing is to know without having to study	75	11	**87%**	13%

Where there is a substantial and here vision in the two segments, particularly evident in "New technologies are a hermeneutic" where there is a 49% of disagreement and a 51% of agreement with a prevalence of values 3 on the one hand and 4 on the other to underline an uncertainty and a probable difficulty of instantiation of the term hermeneutics.

The quantitative analysis of the data also shows a strong propensity to disagree with the statement Knowledge is not transmitted (92%) which is certainly supported, in its credibility by the fact that there is a decisive disagreement with the statement The best thing is to know without having to study (87%).

To be noted, from a quali-quantitative analysis a further congruence is detected by analyzing the result relating to the statement: Educational responsibility is shared between teacher and student who points out a 72% concordant attitude, with 53% of 4 and 5 (complete sharing) and at the same time there is a substantial disagreement (69%) on the affirmation Poor academic performance is the responsibility of teachers. The only element of perplexity is the propensity to agree that the teacher transmits knowledge where knowledge is not transmitted, but this can detect the awareness of the substantial difference between knowing and knowing, that is, detecting and highlighting relationships.

The data for this reason reveal a hermeneutic context and implicit beliefs that enhance and allow to structure increasingly effective educational paths.

The data reveal, even if still in a non-clear way, that students have the concept of knowledge and how emotional and relational elements also converge in it, not only cognitive.

3. CONCLUSION

This survey has led us to reconfigure in a global sense our own reflections on training practices and their models, finally on the consequences, not always explicit, that both have towards the learning behaviors of our students and the values they attribute to study practices. We have noticed that there is a tendency to find information but not to process knowledge that can also be spent in contexts other than those in which it was found. The idea of knowledge on which we teachers have been trained, with the related learning strategies, have nothing to do with the conscious requests of the students. It is not only an anthropological phenomenon, but also and a cognitive problem. The social image of knowledge as an "encyclopedia" has been replaced by that of "context".

We have come to the conviction that the mindset we must educate must include both procedural and finalistic aspects. From this study it emerges that the criterion of judgment with which our students evaluate knowledge is marked by pragmatism. This means that they consider the study based on a practical relational model for the life lived. Knowledge, for them, must solve problems in a concrete and inexpensive way. Hence the drifts of much school policy and not little didactics.

Yet, shift the focus of attention to metacognitive mechanisms, draw their attention and soon realize that they can approach studies with greater satisfaction.

For this reason, in the light of the results of our research we can affirm that the conception of knowledge cannot concern only the field of acquired knowledge as it contemplates its matrices and its implicit cultural roots. Knowledge, in fact, constructs the correlations that connect reality to our system of representation, or to what we believe to be reality itself and knowledge. This has important implications on our training proposals because we must teach to evaluate, from time to time, the operational congruence of cognitive behaviors, in the light of that system, albeit dynamic reference that we have called epistemology, or theory of Knowledge. In fact, to know a phenomenon means to understand it, to have a clear awareness, and to be aware of oneself, in relation to the problems posed by that phenomenon. This goes far beyond the goal of passing an exam.

Teaching involves setting up contexts that promote cognition through targeted interventions. A first step of this set-up is in the analysis of the implicit beliefs of our students through the observation of their behaviors both socially and cognitively. This process of consciousness will help the students to understand the nature of certain difficulties and to use, in a metacognitive sense, their talents (Margiotta, 2015). Hence the emphasis on those themes to intercept and build links of signification, interactions, virtuous dialogues between disciplinary, scientific, cultural, and anthropological environments often wrongly considered incommunicable with each other.

For this reason, it is essential to know the processes and mechanisms of knowledge, to be able to build "other" knowledge and transfer skills from different areas and times. Epistemology can read entropy, the disorder that generates uncertainty, anxiety, difficulty in studying. What? building a domain of coherence, that is, extending in time and space a network of significant relationships between the phenomena that characterize the context in which we live. In this perspective, the school or university environment cannot be considered just a sort of scenario, background or inert envelope that welcomes a being who determines himself independently of his presence. It can only be understood as a network of relationships whose nodes refer to other networks that surround and intertwine in the subject. Its network of structures is like an elastic, dynamic, strongly integrated and, at the same time, open hierarchy.

It is an organizational scaffolding of knowledge with which we interpret and build, therefore it has an active and concrete tension. Active, because it acts on reality and concerns both processes, acquisition, construction, organization of cognitive data. And it is concrete, because it refers to the way we see the world, to the questions that we ask ourselves when we act and that direct our conduct, it concerns the hypotheses of our research and its procedures.

This constitutive state does not concern only the teaching-learning processes, which is easily inferred, but also and above all the quality of the reactions that these processes trigger in the subjects involved and, through them, in the environments that relate to them, and vice versa, in a continuous circle of interdependencies.

The administration of the questionnaire allowed to establish associative chains within the thematic context of their own beliefs around knowledge and learning. In this way the structure of a learning can be highlighted to their own eyes. Selecting the salient data of implicit epistemology favors the organization of its mental representation, which is the first step to monitor the processes of obstruction of knowledge (Flavell, 1979). Selection and organization are two essential functions of intelligence that can thus be encouraged.

In short, we need to help our students understand how we represent ourselves and how, with learning, we can produce more effective problem-solving representations. To this end, with the questionnaire, we have drawn cognitive lines of action according to the principle of coherence. Monitoring one's learning is the first step to learning to learn (Margiotta, 2013). The next steps are self-knowledge, the salient characteristics of one's cognitive field, one's motivations, the best strategies to adopt and their combination. And then, learn that reflection that evaluates the phases of the cognitive process and that puts the boy in a position to recalibrate it (Feuerstein R., Feuerstein R. S., Falik L. H., Rand Y. 2013).

The awareness of the mechanisms of knowledge construction, of the active role of the ideas we have of it, the implicit theories that we manufacture, the prejudices, finally, the possibility of controlling, at least in part, the progress of cognitive processes, has important repercussions on learning because it orients us – or disorients us – in the use as in the invention of the tactics we implement when we learn. Strategies for organizing data, content and information, association paths, mnemonic references, in fact, play a crucial role in the processes of optimization of learning. This is what we mean when we talk about learning to learn, when we say that we need to learn to translate knowledge, content, methods, codes and languages from different contexts and times. Creativity has a lot to do with the ability to invent, develop, elaborate, and learn strategic learning plans. In short, all this is intricately linked to our metacognitive competence. Both the choice and the invention of learning strategies, and finally the productive use of error, depend, to a considerable extent, on the metacognitive knowledge that we are accumulating, processing, organizing.

Consciousness makes perceptible the sense of self to us that we reflect on it.

Here, then, following the thread of reasoning, we can reach a further consequence in our considerations on consciousness and its educational implications: consciousness is sense of self in knowledge. It enhances the reach of the mind because it allows it to develop its abilities.

To this end, we believe that any type of teaching requires preparation of an epistemological nature, because the knowledge we intend to build with our students aims at processing information and not simply at receiving it. This elaboration requires knowing how thought works while it learns. This is the existential meaning of knowledge that in epistemology binds the individual to science. Therefore, the formative philosophy that, in this brief conclusion we wish to propose, consists in linking the study of gnoseological processes to reflective dynamics, therefore, to the critical knowledge of personal epistemologies as well as those implicit both of common sense and of ideologies. The objective of this training is in the construction of "ability to manipulate the models of explanation, execution and regeneration of mastery systems related to the expert development of the areas of experience and culture studied" (Margiotta, 1997, p. 76). The school,

the university, the research centers, the various educational institutions, the work should contribute to elaborating a description always elastic but satisfactory (that is, able to provide us with an orientation map) of the contemporary. We need a dynamic and ecological conceptual system of the socio-cultural context to which we belong.

For this reason, it is important, with the boys, to reason around their idea of knowledge and education, but also of the existential knots that accompany the growth of each one. Hence the questions about the educational emergencies of our time.

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