Not cognitive skills for master students. Reflective practice and pedagogical reflections

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Abstract

The forum highlighted the set of 10 skills considered most valuable for qualified professionals in the 21st century, such as soft skills, transversal skills, personal skills and the like. a broad semiological spectrum of human skills that always involve two elements: acting and relating. Non-cognitive skills are not only a way of responding more effectively to the current needs of the world of work, but can become the basis on which people's social-ethical training can be founded, so that they are able to cope with the complexity of the future, its unknowns and the uncertainties that accompany everyone's life. Analysing the existing literature, the term non-cognitive skills is identified by favouring a multidisciplinary approach and enriched by international research evidence. The contribution consists of empirical research with master's students, whose data show students' interest in learning non-cognitive skills. Pedagogical reflections suggest attention in the design of educational programmes in higher education.

Keywords: non-cognitive skills, master students, education, curriculum

Introduction

Since the 1990s, driven by efficiencyism of the economic kind and the dominance of an environment of relativism, a predominant technical-

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nihilistic pedagogy has emerged, in so far as only the positive data have been recognised as legitimate and valid, without paying attention to people's individual and unique dispositions, which are considered invalid since they are vitiated by questionability. Consequently, there was not just an shift towards perfecting and strengthening cognitive processes, but also a reduction of learning to a real 'product', prepackaged, measurable and remotely manageable. The heavy emphasis on its measurement has fatally stressed its objective characteristics (World Economic Forum, 2016). Nowadays, it is realised that the exclusive or almost exclusive interest in cognitive skills constitutes a limitation that is now recognised even by its strongest and most convinced supporters. The World Economic Forum involves the most prominent political, economic, and cultural leaders as well as other sectors of society to define global, regional and industrial agendas (World Economic Forum, 2020). This Report presents a study on human skills, among which the forum highlighted the set of 10 skills considered most valuable for skilled professionals in the 21st century. In this sense, there are a number of reports published recently by important study and research centres committed, among other things, to strengthening the relationship between education and training systems and economic development. The framework of the latest European Recommendation on Key Competences for Lifelong Learning of 2018 (https://eur-lex.europa.eu/legal-content/IT/TXT/PDF/?uri=CELEX:32018H0604) enhances the above-described meaning of the term competence. The view adopted is that of the transferability of skills from one occupation to another, both in a transversal and vertical sense. The most transferable competences are referred to as soft skills. For example, in the New Vision for Education project drawn up as part of the initiatives promoted by the World Economic Forum, about one third of the qualities (six out of sixteen) considered necessary for the future of an 'active citizen' and his or her well-being belong to the genre of non-cognitive skills. For some time now, the OECD has not only been expanding the horizon of the notion of skills as the focus of human training , but research has also been conducted to assess the socio-emotional skills, an expression used by the OECD to indicate non-cognitive skills. The non-cognitive skills perspective has the potential to challenge the techno-nihilistic framework we have described , if it is not conceived in purely functionalist terms: the person returns to centre stage with those skills that make him or her a human being who acts, works and naturally also produces together with other people, and not just as an actor in a story dominated by the laws of profit that dominate and sometimes cancel him or her out.

Non cognitive or character skills?

It may be useful to try to clarify some of the meanings of words that have become very common in recent years, such as soft skills, transversal skills, personal skills and the like. a broad semiological spectrum of human capacities that always involve two elements: acting and relating. To avoid misunderstandings, Aristotle speaks of virtues, or competences, proper to thinking (dianetic virtues) and virtues, or competences, proper to acting (ethical virtues), but it is always the whole person that comes into play, in its different dimensions: cognitive, affective and behavioural (Pellerey, 2019). The ancient Greek term meraki, which has now re-emerged in political debate, indicates dedicating oneself wholeheartedly to a task, including one's reference values. In the Anglo-Saxon world of work, it is consequently preferred to speak of soft skills, instead of personal competencies, attributing to them certain specific characteristics that would hardly characterise personal competencies, such as an easier possibility of development, measurement, and articulation according to the tasks to be performed, the projects to be drawn up, and the rules to be followed. Moreover, they seem to be more easily transferable (Ragusa et al., 2022).A different approach appears to be the expression soft skills, developed in relation to the world of work by contrasting soft skills with hard skills. This distinction indicates the need to describe two different but both necessary components of the ability to perform in the working environment. the expert in this field – James Heckman – is a prominent economist who for more than thirty years has studied how to improve the performance of individuals, working from their earliest school years and investigating the different characteristics of the human personality in order to enhance their best qualities for their reliability in the world of work. The cultural background in which the irruption of the theme of non-cognitive skills has occurred over the last decade, and on the other hand explain the reasons for some mistrust and critical reactions. Contrary to what some critics believe, non-cognitive skills are not only a way of responding more effectively to the current needs of the world of work, but they can become the basis on which to base people's social-ethical training so that they are in a position to cope with the complexity of the future, its unknowns, and the uncertainties that accompany each person's life. The link between the focus on the result of performance and its possible contribution to the formation of the moral character makes it possible to move beyond a certain reductionism into which non-cognitive skills may end up falling if they were limited to the results relating to perseverance and tenacity in positively completing one's commitments or fundamental tasks, regardless of whether they are of study, work or every day and social life. These

elements, seen from a pedagogical perspective and not only functional to the world of work, can be enhanced, we repeat, precisely in function of the formation of a moral conscience. (Broccoli, 2022)

In the American pedagogical culture, the theme of non-cognitive skills is addressed in two different ways: the more psychological one (with the Big Five theory) on which Heckman's reflection is based, and the more ethical-moral one as in the proposals and experiences of the movement known as Character education. According to the leaders of this movement Lawrence Kohlberg and his pupils, the best known of whom is Thomas Lickona), what counts more than standardised, proceduralised teaching practices and impersonal assessment is the environment in an educational establishment (in particular, the ability to create a real community), the quality of the relationship with teachers (and adults in general), the motivation to study, the ability to personalise cognitive effort and make it easily manageable. The topic has had a significant relaunch in Italy as well, with various initiatives including the translation of the volume by James Heckman, and Tim Kautz introduced by Giorgio Vittadini, *Formazione e valutazione del capitale umano* (2016), the booklet edited by Michele Pellerey, *Soft skills e orientamento professionale* (2017) and other contributions within the framework of the research conducted by CNOS-FAP.

The author's arguments are based on evidence largely from his studies, applied to the field of vocational education and training, asking whether the *General Educational Development (GED),* i.e. the set of tests that qualify students at the end of secondary school, is predictive of success in life and in the world of work. These are the competences that Hackman calls cognitive skills. He goes so far as to affirm their lack of validity when considered in isolation, while other types of personal qualities, those that can be described as non-cognitive skills, are increasingly emerging as determinants. A review of Heckman's contribution highlights, however, a lack of consideration of what has been developed over the last few decades by the so-called character education movement, a movement that is widespread, not only in the United States (Grządziel, 2014). The framework developed by pedagogues, philosophers and psychologists converges from a perspective with what has been identified by Heckman, Humphries, and Kautz (2014), but more evidently valorises a long educational tradition that goes back to Aristotle and that in the United States flourished again with John Dewey and, later, with Aladsair McIntyre, Thomas Lickona, Dacia Narvaez, Mark Berkowitz and many others. Studies on feedback in organisations have shown that it is necessary to learn how to control and direct one's emotional reactions in different environments, especially at work, and not to let oneself be led astray by them (Pellerey, 2022). It seems that a large part of job abandonment is

due to emotional and/or relational problems. In part, this is fostered from childhood by promoting one of the elementary capacities of self-management, known as emotion control. A child, like a boy, or a young person, must become capable of modulating and controlling his emotional responses.

Training Not cognitive skills. Coaching session: A concrete proposal

But the actual availability of this personal competence is linked to a multiplicity of factors that characterise different contexts. These are, in fact, personal qualities that today are as intimately connected to everyday life as they are to work. For the latter, even more demanding and continuous training courses must be designed. All this will lead us in the following to take a closer look at two intimately connected issues: assessment and the training of soft skills. Insistent with the above-mentioned use of the term soft skills in the world of work, a number of new training needs arising from developments in the digital transition have recently been highlighted. Thus, one speaks today of digital soft skills, i.e. the personal competences needed to know how to move in the digital technological context. Some of these are new and concern the area of confidentiality and attention to security and privacy (Eizaguirre et al., 2020). This also applies to one of the most considered personal skills, the ability to collaborate, to be able to contribute to a common goal, to be able to communicate with other members of the group, and to be able to coordinate and integrate one's contribution with them. Consequently, the range of possible concrete implementations of the activities and relationships between the different members of a working group widens considerably. In this regard, it is useful to recall how it is preferred to speak of working teams, six participants making different contributions, implying different competences, useful, however, or necessary to achieve the intended common results. Digital evolution has led to more and more virtual teams being considered and used (Arzarello et al., 2019). It is not only about being able to interact and collaborate between humans, but also between humans and machines, which claim to be intelligent. These machines are therefore referred to as cobots, i.e. collaborative robots, and research is being done on how to make them capable of valid and positive interactions with people and each other, designing them as human as possible. (Bastos et al., 2022). From a formative point of view, a current of pedagogy of work well done has developed (GarciaHoz, 1994), which focuses on the development of a taste for doing

one's work well, completing it in the manner and within the timeframe envisaged. It is an ethical-aesthetic dimension based on motivation and volition. Ethical, because it evokes a sense of responsibility. Aesthetic, because it brings into play the taste, the pleasure of doing well, the beauty of a harmony between what one urges and what one actually does (O'Connor, 2007).

Humanistic management aspires to provide value to the community in which it serves, by improving the citizens' quality of life. This concept, demanding a mindset change, requires that as the standard of referencing there are human beings as the benchmark of everything (Dierksmeier, 2015). The first step of the training path consists in deepening the awareness of one's personal competences to be promoted in relation to a professional field, the second step consists in designing and implementing a set of actions aimed at their development.

The training methodologies generally taken into consideration in the work environment go under the name of training and coaching (Tucciarelli, 2014). In these situations, it seems more coherent to adopt methodologies that go under the term of coaching and that simply clarify to the subject the nature of the competence which he/she intends to promote, specifying the conditions of personal commitment that enable this; suggesting ways of acting consistent with it, nurturing the desire to dedicate oneself to it and taking into account the professional context. In this endeavour, the coach also helps to clarify the subject's problems and desires and to find ways of exercising that meet his/her personal aspirations and existential and practical orientations.

Several initiatives focus on not cognitive skills. One such initiative is provided by the Rome Business School, an international business school with students from 150 countries. At the Rome Business School, the hard sciences are complemented by human skills training. In the last 5 years, the Rome Business School has included in the curriculum of all its Masters and MBAs a dedicated module on soft skills such as Emotional Intelligence, Communication, Leadership, Team Work, Mindfulness, Conflict Negotiation and Management, Reflective Thinking and Complex Problem Solving. The participants attend the programme on a cross-curricular level, and 10 hours individually coaching session. In parallel to soft skills training, the Rome Business School has structurally incorporated a module focusing on corporate social responsibility, Innovation and Leadership as part of the Value Proposition of all its Masters courses. Considering that this would be a pilot test, we set a maximum enrolment of ten. The success is that now with the help of many it is a 10-year course with ranking success.

Furthermore, the module design takes into account the various learning styles by preparing inclusive educational materials.

The Applied research

Method and tools: The research is classified as descriptive, since the general objective was to determine the skills possessed by graduates. In this sense, we have tried to identify and characterize a series of not cognitive skills, highlighting the qualities and characteristics of these. It is a non-experimental cross-sectional design in which the data is collected at the same time. In this research, they were collected in particular during the months of April 2022 to December 2022 The research focused on a population of Master graduate, of this population, an accidental sample was developed through the Research Center from Rome Business School, through personal contacts with a snowball sampling, and thanks to the publication of the questionnaire in different social networks. Likewise, the confidentiality of personal data is guaranteed, requesting permission to treat them according to the Italian law D'Lgs 196 of June 30, 2003. The next step of research will be collect data from a graduates in an international countries.

Sample: A representative sample of 200 master students from business school. Among all respondents, there were 70.38% male students and 29.62% female students all aged between 22 and 27 years. The 49.7% of them are executive master students and 50.3% Masters degree students. Regarding the type of first degree 38.2% are engineering students, and 33.8% of bachelors economic studies and marketing. The graduates come from computing and Economics Studies (72,1%), STEM (29,7%); the remaining percentage is divided between different branches of Law. Literature, Pedagogy.

Procedures and Tool: The consent of the participant was obtained before undertaking the study. The students volunteered and indicated their agreement to participate in the study through a consent form. They were informed that their participation was completely voluntary and that all the information collected would be anonymous and confidential. The questionnaire used included the following sections: Sociodemographic characteristics and studies. The next section was the Business-focused Inventory of Personality (BIP).Additionally, the questionnaire has been adapted to the Italian population by Luissa Fossati and Matteo Ciancaleoni (2013). The current version of the BIP is the result of an intense revision (Fossati and Ciancaleoni, 2007). The evaluated scales are grouped into two areas: *Intra-personal area* includes: Emotional stability. The focus is on

management appropriate to one's emotional reactions. It concerns the ability to react positively to stressful or difficult situations in life. Self-confidence: it is the conviction or security of what is capable of doing a good job. When there is no self-confidence, other personal skills can be ignored. The ability to work under pressure: gives us the image they have of themselves on the ability to perform their functions in adverse circumstances, maintaining a constant level of efficiency. *Interpersonal area:* Communication: is assessed through assertiveness, a social ability that allows us to express our rights, opinions, ideas, needs and feelings in a conscious, clear, honest and sincere way without harming others. It includes the ability to convince others, persevering in supporting one's position. Relationship building: is close to the Big Five Model's extroversion construct (McCrae and Costa, 2003), but there are differences with the present research. In this case, it concerns the development of interpersonal relationships and the creation of a network of contacts. Orientation to group work: The preference to work in a group or individually is evaluated, as well as the ability to integrate into work groups and whether it is better individually or in a group.

Data analysis: SPSS (IBM Corp. Released 2015. IBM SPSS Statistics for Windows, Version 23.0. Armonk, NY: IBM Corp.) was used for all analyses. Descriptive statistics for individual item scores of the competency level of the soft skills were analyzed to establish a general profile of the engineer students' self-assessment qualification patterns. The BIP is a questionnaire that refers to statistical rules. The normative scores are expressed as stanine points, that are on a scale that has average 5.5 and standard deviation 2. Then, a psychometric validation was performed for the item set. The reliability analysis of the questionnaire was carried out with the sample of master students, using Cronbach's internal consistency method. The comparison between means of different groups (age, gender) was carried out through: independent samples T-test, checking first if the variances are similar by Levene contrast test. Nonparametric tests for two independent samples: Kolmogorv-Smirnov and U di Mann-Whitney.

Results and Discussion

The statistical data indicate scores above the average, so they were considered far from one of the main objectives of the project: to design a university program to improve these skills. Furthermore, the evaluated sample is considered significant to draw conclusions from this descriptive analysis. Master students who participate in the research have more self-confidence than the reference sample, which means they rely fully on their ability to perform tasks in their field. They are active people who are

confident when they face new challenges. This area is potential training can be very useful. Self-confidence is something that is not usually programmed in us, and we must try to develop it.

The Levene test for the difference in means between each of the variables observed and the gender is not significant in any case. With parametric variables, it was used T-Student, an there are no significant differences between men and women, although it is true that some yes there is some small difference. With non-parametric variables, two independent samples: Kolmogorov-Smirnov and U of Mann-Whitney. In conclusion, there are no significant differences between the two age groups in Interpersonal Area, since the "p" associated with the statistical T is greater than the level of significance = 0.05 prefixed. Although an increase in the mean is observed as the years increase. In the interpersonal area there is not significant differences. The "p" associated with the statistical T is greater than the level of significance = 0.05 prefixed. The Levene test is not significant in any of the analysis s performed, so the mini-mum differences that may exist between the different age and gender groups are not significant. The table 1 show Intrapersonal Area show that the scores are below the average resspect the international data.

The results observed in Table 2 show that the scores on the variable Relationhip building, Orientation to group work , Sensitivity and Sociability, belonging to the interpersonal area, are below the average with respect to the reference group.

Table 1 - Intra-personal area

Variable	The ability to work under pressure:	Emotional Stability	Self-confidence
N	200	200	200
Average	5,74	6,31	6,34
Standard deviation	1,74	2,13	1,69

Table 2 - Number of responses, average, and standard deviation for Master students on Interpersonal Area

Variable	Communication	Relationship building	Orientation to group work
N	200	200	200
Average	5,67	3,42	3,30
Standard deviation	1,61	0,88	1,03

Table 3 - Reliability Evidence of the Soft Skill Scales

Soft Skill Scale	m.	Number of items
Relationship building	**0,86**	**14**
Orientation to group work	0,89	14
Communication	0,78	14
Emotional stability	0,88	14
Ability to work under pressure	0.77	14
Self-confidence	0,84	14

Table 4 - T-test for different between means and U-Mann Whithey/Kolmogorov Smirnoff in gender and age in the Interpersonal area

		Gender			Age	
	Levene	**T**	**P**	**Levene**	**T**	**P**
Relationship building	0,343	-1.018	0.310	0,849	0,103	0,918
Orientation to group work	0,742	-0,665	0,507	0.512	0.976	0.330
Communication	0,011	U-MW:0.510 K-S:0,526		0.915	-1.006	0.315

Table 5 - T-test for different between means and U-Mann Whitney/Kolmogorov Smirnov in gender and age in the Intrapersonal area

		Gender			Age	
	Levene	**T**	**P**	**Levene**	**T**	**P**
Emotional stability	0.535	-1.380	0.169	0,532	-0,741	0,322
Self-confidence	0,719	-0.126	0.900	0,167	-1,901	0,058
The ability to work under pressure	0,157	0,577	0,564	0.535	-1.380	0.169

The questionnaire included another important question: he wondered whether the respondent was willing to be an active researcher by participating in the training project for the development of these skills. 62.1% showed interest by responding positively to the proposal to participate in the Soft Skills Training Laboratory. The study of the internal consistency (CI) of the Business Focused Inventory of Personality(BIP) scales with the master students' samples was measured by calculating the Cronbach's alpha coefficient. As can be seen in the table 4, the reliability of the scales is very good in: Self-Control, in Relationship building, in Orientation to Team Workin, Communication, in Emotional Stability, in Ability to work under pressure and in self-confidence.

The results also show a great. commitment in setting job goals and following projects. A good emotional adaptation to social situations is observed, since attitudes for a good problem solving are involved. With the total sample and the rest of the variables, some conclusions have been drawn. The perception on the ability to work under pressure that master students have of themselves is in the normative average. The subjects show that they are ready to deal with challenging tasks. This ability can be achieved by managing stress and correctly organizing the tasks to achieve the proposed objectives. An important aspect in the field of interpersonal relationships is the ability to communicate. Assertiveness is a way to firmly communicate one's rights. The score shows that master students are able to express positive and negative ideas and feelings in an open, honest and direct way, finding themselves in the reference average. The data reflect the fact that sometimes they avoid social gatherings and have some difficulties in establishing personal contacts, particularly with strangers. It is important to highlight that the perception of their social relationships is characterized by friendliness and respect. Although the data also show that in conversations it is possible that they can't understand the moods of those who are facing them and, therefore, may also have difficulty in understanding what their expectations are. From the results, it has been interpreted that there are some difficulties in working as a team compared to other people in the reference sample. They feel more comfortable and show greater efficiency by working individually and at their own pace.

Conclusion

For some decades the most widespread pedagogic research production has been largely dominated by themes concerning learning in its various and diverse psychological and socio-organisational modes. Driven by powerful centres of economical elaboration, there has been in recent decades a strong acceleration towards the strengthening of education in a cognitive sense in order to improve the conditions for a more effective alignment of the world of education and training with the needs of the productive world. Economists, sociologists, organisation experts and evaluation technicians have assumed the majority in designing the future of education and training systems, substituting philosophers, pedagogues and even psychologists who have long exercised these functions. It is unavoidable that the focus has shifted to the issues of training structures and their functioning, ending up by paying less attention to the biography of individuals.

Teaching students to think is a global goal of educational institutions. Business schools have approached this goal by integrating human skills activities into their curriculum. While some universities pay attention to providing training for soft skills as part of their modules, this is the exception, not a rule. In reality, non-cognitive skills content is hardly always specifically addressed in devoted modules or lectures. Rather, a business school's specific approach is to integrate the provided material and associated tasks on not cognitive skills into both undergraduate and graduate courses, developing non-cognitive skills through group tasks and exercises.

The applied research and data confirms the need to work on assessment and training not cognitive skills, the theorically references show us the landscape to orient the training proposal especially for business school and stem work professions, but also in a trasversal way to increase the wellness and guarantee the human flowersh.

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