

## *Letter from Academia*

### **The learning cube**

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**Abstract.** This article reflects on the concept of “Entrepreneurial University” and, in particular, on the need for university education, and in general all educational stages, to focus on students' executive intelligence, and not exclusively on cognitive and pragmatic intelligence. We present the learning cube, a conceptual model that reflects the different capacities associated to greater or lesser intensification in the training of these three types of intelligence.

**Keywords:** Education, Entrepreneurship, Entrepreneurial University, Executive Intelligence, Innovation, Learning Environments.

#### **1. An entrepreneurial shift for the millenarian university**

Universities are rapidly and resolutely pushing forwards with the University's so-called third mission, focused on greater interest in extending its socio-economic impact, highlighting its activity in the transmission and transfer of knowledge and technological development, innovation and entrepreneurship. Such universities are often referred to as entrepreneurial, a concept popularized above all through a number of works in this field by Burton R. Clark. While many definitions of what an "Entrepreneurial University" is, are focused on the creation of companies derived from research and development (R&D) and the impact on regional economic and business development (Etzkowitz, Webster, Gebhardt & Terra, 2000; Barmwell & Wolfe, 2008), I feel that this is a somewhat limited vision of this concept. Indeed, just as a university is a research institution if a highly relevant part of its academic and technical personnel are involved in R&D work, including the training of new researchers, a university can be classed as entrepreneurial if a significant proportion of its personnel are involved in intra-entrepreneurial (implementing innovative initiatives within the university itself), meta-entrepreneurial (stimulating and helping entrepreneurial behaviours among the university community) or entrepreneurial activities (being involved in the establishment of university companies, in particular *spin-off* and *startup* companies). In these cases, the very entrepreneurial component of the university ends up being reflected in both its educational responsibilities, helping to stimulate and train enterprising university students, and research responsibilities, facilitating the transfer of R&D results to the productive environment.

The general consensus among experts is that entrepreneurs are not born, rather they are “made”. Whether there is a genetic predisposition to being an entrepreneur, as a number of scientific studies would seem to point to (Nicolaou, Shane, Cherkas, Hunkin, & Spector, 2006), or not, evidently they do not arise by spontaneous generation. Though it is not easy to teach someone how to be an entrepreneur, clearly it can be learnt, particularly if we provide young people with training in entrepreneurship throughout the entire education cycle. Education has a highly

decisive influence, not only in the vocational aspect of entrepreneurs, which is linked more to attitude, but also in their capabilities, an issue of key importance to entrepreneurial success. Tribolet (Tribolet, 2013) holds that “educating the educators to innovate” is perhaps the biggest challenge today for universities. I agree with that if we also include entrepreneurship. Innovation and entrepreneurship are, in fact, intimately related. As Hannon asserts (Hannon, 2013): “Entrepreneurship in higher education is now recognized as important as a major driver to underpin innovation”.

## 2. The training of executive intelligence

Clearly, we need to train our students as cultured, free and critical individuals, and their training must not be simply of a cognitive nature, but also practical, producing good professionals, capable of responding to the needs and challenges of society's development. But we also need to stimulate and educate their executive intelligence. That is, we must teach them how to act. With this in mind, the University, indeed the entire education system, needs to change its “modus docendi”.

The University has evolved from training almost exclusively aptitudes (cognitive training) to also deal with certain attitudes (practical training); nonetheless, it does not appear to be so concerned with, or at least capable of, training its students for action (executive intelligence training) (Table 1).

Cognitive training focuses particularly on knowledge acquisition, in general, with no specific, direct connection with a professional area. It is a commitment to training through knowledge; possessing greater knowledge implies the improvement of an individual's aptitudes. This is the classical type of training and is clearly predominant in our classrooms today.

Pragmatic training has progressively been incorporated into teaching, initially in those countries with more advanced university systems. It is one of the objectives, for example, of the European Higher Education Area, wherein it is assumed that having more skills improves the student's attitudes. It is, so to speak, a commitment to providing students with possibilities, by opening up their option space, then with the skills to be able to implement them.

To my way of thinking, this is not simply a case of more practical training connected with professional practice; we also need to be pragmatic when selecting that which students' must be taught, whilst not losing sight of what can effectively be taught and learned within a limited time frame. As Ortega y Gasset postulated: the principle of economy in education consists in not having to teach everything that must be known, rather all that can be learned. I believe that today we need to go even further, guided by a forward-looking principle of educational profitability: teaching to facilitate the constant learning of what must be and needs to be known at any given time. This is not exactly synonymous with the often-repeated “learn how to learn” principle, since in addition to possessing a degree of autonomy for self-directed learning, there is also a need for the critical and practical selection of what has to be learned on the basis of certain objectives, whether these are set by oneself or by others. In short, it is a case of the University which already teaches how to know, to do and to be, also engaging with “teaching how to learn to take action”. Learning to act and to act by creating. Resorting to a reference from the European Parliament and Council: teaching individuals to turn ideas into action —intelligence “in action”, or talent, according to the Spanish philosopher, José Antonio Marina (Marina, 2012)—, something which is related with creativity, innovation and the assumption of risks, as well as with the ability to plan and manage projects with the aim of attaining the goals set.

Thus, the type of training that should most concern and occupy us, owing to its continued absence in agendas, and even more so in achievements, is the training of

executive intelligence. This is not simply a case of dealing with the student's opportunities and needs, but also of fashioning a more participative, more active society. It is true, however, that training for action, teaching students to set goals and to aspire to tackle them, is much more difficult than adhering to the previous two types of education. While cognitive training teaches us above all to handle information, and pragmatic training to acquire skills, executive intelligence teaches us to set goals, owing to which it is not simply a case of teaching different things, but of ensuring that other types of things are learned.

**Table 1.** Educational university: types of education/training.

Training Type	Intensifies	Teaches how to	Improves	Models	Type of process	Type of society
Cognitive	Knowledge	Handle information	Skills	Thought	Memorisation-reproduction	Information
Pragmatic	Competences	Acquire skills	Attitudes	Possibilities	Realisation-reiteration	Knowledge
Executive	Commitments	Set ourselves goals	Action	Purposes	Conceptualisation-execution	Intelligence

### 3. The learning cube

If learning is focused on the improvement of cognitive, pragmatic and executive intelligence, and we represent these three dimensions of intelligence in a three-dimensional space, the different learning situations that may arise for an individual can be represented in a cube, as shown in Figure 1. The point of intersection of the three axes is associated with a hypothetical individual with no cognitive, pragmatic or executive intelligence and who is thus “ignorant”. Accordingly, moving along each of the axes is associated with an increase in each type of intelligence, as applicable. By way of example, possessing a developed cognitive intelligence, without pragmatic and executive intelligence, limits individuals in their capabilities, restricting them above all to handling information more or less reliably. Similarly, increased pragmatic intelligence is associated with the acquisition of skills. If this occurs with executive intelligence, it reflects a high capacity for setting goals, which in turn guide the individual's will. Obviously, those individuals who excel in one or more of the intelligence dimensions considered will possess greater capabilities in general. Those who stand out owing to their cognitive and pragmatic intelligence will be particularly good at executing tasks; those who shine owing to their cognitive and executive intelligence will be thoughtful individuals with high reasoning capacity, which will be useful, for example, in problem solving; and those who do so owing to their executive and pragmatic intelligence will have good capabilities in drawing up projects or plans. The ideal situation is obviously to be outstanding in all three intelligence dimensions considered, located at the opposite end of the line from ignorance, and which can be associated with the will and desire to create: to not only be capable of resolving problems or drawing up plans, but to bring that which has been conceived and designed to fruition.

Every time I present this "learning cube" at a conference, I ask the audience to think about each of the sides of the cube. These correspond, respectively, with the positive end of each of the axes, associated in turn with the fact that the corresponding intelligence is accentuated very significantly in a given person. Thus, the vertexes of the side of the cube associated with a highly accentuated pragmatic intelligence will

be: acquiring skills, doing, creating, designing. Similarly, the vertexes of the side of the cube identified with a well developed cognitive intelligence will be: handling information, thinking, creating, doing. And lastly, the vertexes identified with the side of the cube corresponding to outstanding executive intelligence will be: setting goals, thinking, creating and designing. Having reached this point, I then ask the audience which set of four vertexes they would choose from among these three groups as the most desirable scenario for themselves, for their children or for their students. To date, the most common choice has always been the side of the cube related with accentuated executive intelligence. In fact, this implies that they particularly value executive intelligence having primacy in individuals. This, obviously, without renouncing the cultivation of the other two types of intelligence. I found this response, which I also share, particularly striking in the setting of a pedagogical innovation congress. On that occasion, the educators present had no qualms in positioning themselves in this sense, and what is more, the vast majority of them did so. It is indeed paradoxical that we who live immersed in an educational model which does not particularly cultivate executive intelligence, something which, on the other hand, we assume without question, are so convinced that it is a type of intelligence that is particularly relevant for individuals.

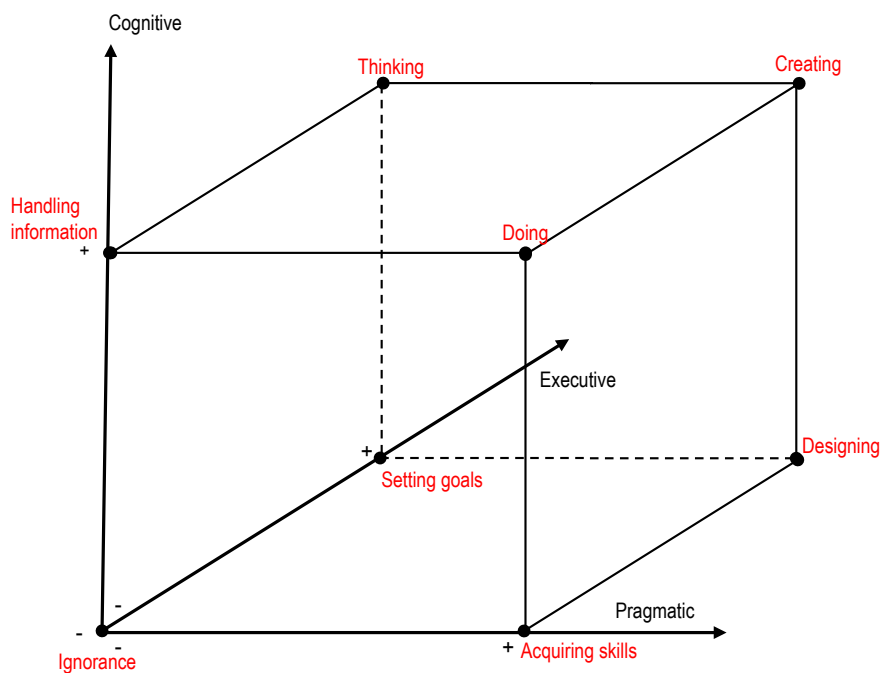


Fig. 1: Learning cube

#### 4. Final considerations

Cognitive [intelligence] teaching has been preoccupied with teaching through a process focused on memorization-reproduction. Pragmatic [intelligence] teaching focuses on performance-repetition, which is effectively teaching tailored to problem

solving. Finally, executive [intelligence] teaching also has to focus on learning, which leads us to the notion of action (conceptualization-execution), which is of particular interest for setting ourselves goals and attempting to achieve them. All three are important. In short, faced with a problem or a challenge, we need to be capable of imagining a space of options, selecting one or more thereof in order to develop them and acquire the competences required to do so, if we do not already possess them.

At this point, the question we need to ask is how can we teach executive intelligence from the University? Taking into account that executive intelligence is driven by goals that are pursued with capabilities and effort, we should teach our students to ask the right questions, to set realistic but sufficiently ambitious objectives, and to strive to attain them, fostering leadership, self-confidence and the composure when faced with failures or drawbacks, to stimulate creative intellectual processes. When we train researchers this is clearer, if not through an explicit pedagogical method, through the treatment of our disciples and the experience they gain on their own account in a good research team. Nonetheless, this is not always true when we train them as citizens and future professionals.

The expression: “**Thinking out of the box**”, is well known as a metaphor that means to think differently, unconventionally, or from a new perspective. This is a useful method for tackling certain problems, linked generally to what we often refer to as creativity. Nevertheless, as a key, professional strategy, we must endeavour to “**move forward within the learning cube**”, along the line running from the “ignorance” vertex, to the one identified with “creating”, coming as close as possible to the latter. Achieving this will depend above all on the education received. In fact, the “entrepreneurial personality” is formed at an early age, and it must be consolidated and supplemented in higher education through intense training in a field or discipline normally related with subsequent professional practice. Accordingly we need to modify our “*modus docendi*” not only in the University, but also in all educational stages. Otherwise entrepreneurs and intra-entrepreneurs will continue to be rare birds.

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