

Communication and didactics, the difficult but needful symbiosis in higher education systems

Stefano Mustica

Professor - Link Campus University — Rome and Fondazione Sicurezza e Liberta' Email: stefano.mustica@gmail.com

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Abstract

The first purpose of the university system is to deliver qualitative education through solid didactics/educational, but not many university structures seem really interested in the subject.

Sets of laws, measures, rules, and prescriptions of all kinds are in fact relegating it to a corner, making it less and less central and effective while also increasing the difficult to decipher, update and innovate it.

As a matter of fact, the issue of modernization of teaching methods has been tackled decisively by the European Commission, which has placed it among the priorities of its agenda. By acting in this way, EU is manifesting the conviction that a better quality for higher education will determine a growth in development and competitiveness not only for the Union itself but also for the individual universities that will define a strategy to improve the level of their teaching and learning and to give equal importance to research and teaching.

In its report on the theme of modernization and quality of teaching and learning, the European Commission summarizes its conclusions in 16 recommendations, including:

- the need for adequate teaching training for teachers;
- the need for the merits of teachers who make a significant contribution to improving teaching and learning methods to be recognized and rewarded.

But in order to achieve such quality prospects, it is necessary for university teachers to combine the knowledge of their discipline with specific communicative, cognitive and, more generally, relational skills. All this must become a principle of the university teaching of the future.

However, on a practical level, it is not uncommon to meet teachers who are not sufficiently attentive to these dimensions of the teaching-learning dynamic, failing to identify the "language" capable of transferring their theoretical/practical knowledge in the function of real learning of the student.

Keywords: communication, didactics, higher education systems

1. Introduction

It was 1630 when Jan Amos Komenski (Latinized in Comenius) introduced a concept that for about 400 years, and today, even more, has been playing an essential role in the development of human beings and society. This concept is based on didactics and how this science is the basis for the "creation of man".

Comenius tells us "to be a man, one must be formed".

This is the principle of his opus "Didactica Magna", the work in which Comenius expresses his vision of teaching, of the relationship between teaching and learning, based on the "pansophic" principle: every man must strive for the most complete and integral training possible.

Comenius' words, "Complete and integral formation as possible" bring us back to today, 4 centuries later, to the logics of lifelong education and lifelong learning, and to the sphere in which these logics develop, that is the higher education system.

This article aims to try and analyze which are the essential implications between teaching and communication, specifically within the scenarios dictated by higher education.

Let's start by introducing the characteristic elements of the components that we want to analyze: didactics and communication.

2. Didactis and communication

By didactics, we mean the science that links the "teaching" phase (by the educator, by the professor), meaning all those actions carried out in order to determine changes in the knowledge, skills, and attitudes of the recipients to the "learning" phase, which is the process by which knowledge, skills, and abilities generate "changes" for the recipients of the training (students, trainees).

By communication, on the other hand, we mean the complex action of "relationship" between the issuer (professor, trainer) and the receiver (students, trainers).

By "complexity" we must essentially understand the difficulties/differences, which often obstruct the correct transfer of competences, which are generated - as reported by Gennari (1996) - from the "dynamic synthesis of the interaction "teaching-learning" which is undoubtedly contained in the dialogue. that in the bipolarity of the didactic relationship expresses both "personal" equality and a "professional" diversity between the teacher and the learner". (Gennari, 1996)

There is, therefore, a "gap" in the path between "teaching and learning", a gap between professor and student, and this gap is due to incorrect communication between the parties.

As a result, the need to intervene in communication systems in the educational field arose.

Moreover, in 1600 Comenius wrote about the didactics of the time, "It (the didactics) would be very neglected or left in the hands of general instructors. The few schools work badly, the students are mistreated and even beaten, the teachers

have a lot of special knowledge, but not a specific method, nor follow a general rational program. The result is a disorderly accumulation of abstract knowledge. Gennari's consideration of the divergence between the teacher and the learner leads us to an analysis of the problems underlying didactics and its main components, such as teaching and related communication models, active listening, content to be learned, communication technologies and the motivation of both parties involved.

The discussion would become "abstract" if first, we do not make an essential consideration, trying to find a way to link Teaching and Learning. We shall attempt to do so, using a mathematical formula of function and by considering learning as a function of Teaching: A = f(I).

Trying to clarify the mathematical examples, the data we are interested in is the explanation of the term "f", that is the link (action) between two phenomena, so that when one changes, in our case I (teaching) the other, that is "learning" (A) changes, as well. Our function "f" refers to the ability to transfer knowledge by the teacher, generating the capacity for listening, attention, and retention of the learner.

We could say that the function ("bond" in mathematical terms) that connects teacher and learner and learners one another, is the didactic communication, namely all those activities and interactions concerning the teaching-learning process (Boscolo, 1986). Its essence can make us understand which are the areas in which we must work to reduce the gap.

In fact, by analyzing what are the aims of the teacher/professor during the Teaching phase and those of the student/student in the learning phase, we realize that these aims should theoretically coincide.

The teacher should transfer knowledge, skills, and abilities in an appropriate way to "generate knowledge" and the students should carry out all those actions that will allow them to learn what is transmitted to them.

Therefore, the teacher must implement those communication strategies that generate in the students that "fertile ground" on which they will have to find the right stimuli to cultivate and nurture the "fruit" of their learning.

In synthesis, the teacher must know how to transfer, more precisely create the right conditions for "learning" and the student must (when the conditions are right) want to learn.

Learning is the common factor that must guide the activities carried out by the teacher and assimilated by the student.

The didactic communication in any environment should be characterized by a cause-effect relationship between teacher and student, constituting a proper working environment in which people are working for the same cause: optimal learning.

However, as we have just explained, the student learns mainly in relation to how the teacher sets up his own didactic communication activity. It becomes therefore essential to have in teachers skills and levels of motivation high enough to acquire such communicative activities.

However, this is frequently not the case.

In fact, it's not rare to meet teachers who are not sufficiently aware of the importance of communication strategies and therefore do not understand the extreme importance of adapting the knowledge of their discipline with specific communication and relational methodologies (Salvitti, 2017).

For example, regarding the role of technology, in the university environment we are faced with a world where teachers have seen classrooms invaded by interactive whiteboards, touch screens, tablets, without understanding what role they should have in the educational process, especially dealing with technologically prepared people who were waiting for the use of such tools with great hopes and expectations.

But the teachers, who should be the promoters and divulgation of the advantages of this cultural revolution, are often unprepared and too often, due to their inability to understand the change, they remain attached to the frontal lesson. They find that now obsolete modality of teaching, the one "behind the desk" safer, for fear of entering a world in which they risk being unable to live up to their role.

3. Learning process

The truly crucial issue is Learning; but what is exactly Learning?

Many theorists agree that providing certain definitions is by no means a simple matter. Smith (1982), one of the scholars who expressed his difficulty in providing a precise definition, argues that this difficulty is to be found within the very question. The term itself is in fact used with different meanings: for example, "acquisition and mastery of what is known on a certain subject", or even "widening of the meaning of one's own experience and the processes of controlling ideas relating to certain problems".

Hilgard (1971), on the other hand, pointed to the fact that learning "is an intellectual process through which the individual acquires knowledge about the world which he subsequently uses to structure and orient his behavior in a lasting way". (Hilgard, Bower 1971)

Crow and Crow in 1963 highlighted the concept of changes within learning by stating that "any change in an individual's behavior means that learning has taken place".

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Others such as Haggard and Cronbach address the issue of experience by agreeing that behavioral change comes from experience.

Harris and Schwahn add to this assumption a relevant distinction between:

- Learning as a product: in which the results and outcomes of the learning experience are accentuated.
- Learning as a process: in which the experience is emphasized as learning outcomes are achieved.
- Learning as a function: in which some crucial aspects of learning are highlighted, including motivation or retention that make change possible.

However, others prefer to talk about spontaneous growth, theorizing learning as a change in human dispositions or abilities, but also that "learning is the process by which an activity originates or changes in response to an encounter with a given situation".

To sum up, learning is considered by most theorists as a process in which behavior can be both modeled and controlled, even when many others prefer to pass it off as a process of growth and development of skills.

But learning does not elude psychology scholars who, within humanistic psychology, are equally interested in incorporating personal elements such as personal involvement, self-initiation, pervasiveness and assessment by the learner into development and growth.

In short, the results of all the various theories and conceptions of learning - a highly complex and ambiguous phenomenon -, perception and the way in which it is theorized strongly influence its concrete implementation.

However, learning is studied and analyzed from the point of view of the final result, of "what has been learned" and "which changes have occurred" while neglecting the initial part of the process, that is teaching.

All this although, as previously written, learning is a function of teaching; therefore, teaching has an essential role in transferring knowledge, skills, and abilities.

If didactics is, as stated, essential in all training courses, its crucial importance in higher education courses -such as in the university environment - cannot be neglected.

The first mission of the university is, in fact, didactics, but not many university structures seem really interested in the subject.

The set of laws, measures, rules, and prescriptions of all kinds are in fact relegating it to a corner, making it less and less central and effective and increasingly difficult to decipher, update and innovate.

Yet, for several years now, the issue of the modernization of teaching has been tackled very decisively by the European Commission, which has placed it among the priorities of its agenda. This shows EU's conviction that its growth, development, and competitiveness will depend on the quality of higher education, while also assigning equal priority to research and teaching.

From a theoretical point of view, we're not stating anything new; in 2013, in fact, the Group for the Modernization of Higher Education published its first report about the improvement of the quality of teaching and learning in universities, defining 16 "Recommendations to improve the quality of teaching and learning", including:

Recommendation 4: "By 2020 all teaching staff in higher education institutions should have received certified pedagogical training. Continuing vocational education of teachers should become the norm for higher education teachers." Recommendation 6: "Heads of institutions should recognize and reward (e.g.

through grants or prizes) higher education teachers who make a significant contribution to improving the quality of teaching and learning through their teaching practice or through their teaching and learning research."

The acquisition of innovative teaching methods in the teaching staff could lead to significant progress so that the university can better serve the social reality and become a true strength and lever to create a link with the world of work.

Nonetheless, we are still faced with analyses and statistics "on the field" which indicate us the presence of a teaching class, at all levels, not fully prepared from a new pedagogical/andragogic perspective connected to the social and technological evolutions which are currently taking place. In the vast majority of cases, the teaching model is the classic one based on the centrality of the teacher and, in any case, completely decontextualized for both basic and advanced training.

In particular, the University System is characterized by being a "closed system", with rigidly determined organizational levels centered on "status" and power, making a change attempt impossible in order not to lose the established power. Moreover, in a closed system, the lack of contact with the outside world obviously translates into resistance to change, whereas, instead, the Educational System should be the first to read the signals of the context and to adapt to them.

To all this is added a lack of motivation of the "teaching staff" towards a necessary change, leaving little room for innovation to a few people's initiatives.

For each of the points previously identified, it's fundamental to make a decisive counter-proposal, such as, for example:

- continuous training in pedagogy/andragogy enabling teachers to improve their practice, especially from a communicative point of view.
- trying to change the System of transmission of knowledge by abandoning the model centered on the teacher to arrive at systems where dialogue, interactivity, and the practical part assumes that central role.
- Revising the organizational system giving, where possible, greater autonomy of management, especially to those people who demonstrate a positive attitude to change.
- thinking about new training models, which take into account how research on teaching opens the door to new scenarios such as, for example, the importance of emotional factors for learning, which in fact leads to a necessary "diversification of learning" based on the students or even the incredible potential of digital communication.

In the latter area, universities are setting up and acquiring technologies to improve and enrich teaching and learning, increasing the opportunities (ability to manage and increase knowledge) for teachers and students to communicate and collaborate with each other and with others. The acquisition of technologies, however, must be accompanied by the acquisition of skills "in teaching use" in order to allow a more effective transmission action. In an American didactic study (based on the ideas of Vigotskij, 1987), researchers developed proposals and methodologies whose central element is the enhancement of interpersonal relations with an emphasis on teamwork, cooperation, peer-to-peer communication, reciprocal teaching and communities of practice (Wenger, 2006) as essential conditions in learning processes. (Mustica, 2017)

We must understand that the society we live in is changing irreversibly and that the university and higher education world cannot be left behind either in the use of technology or in its application to new and more current educational rules.

The labor market requires skills completely different from those to which we have always been attached. Instead, we continue to talk about technologies only in a formal way, without taking into account the educational and cultural processes that need to be modified and adapted.

Universities cannot limit themselves to the external aspects (blackboards, tablets, projectors, etc.), new media must generate the appropriate changes, which will correspond to a transformation of the learning environment to make students the protagonists.

In a nutshell, universities must contribute to the creation of digital citizens in a competitive and globalized world, and all tools must contribute in making their learning more effective, turning it into a real long-life learning process.

Everything must be directed towards a new didactic communication, allowing students to confront articulated and complex problems, putting their knowledge

into practice and their desire to deepen them in different fields. This could be achieved by making them understand the importance of interdisciplinarity, pushing them to confront themselves with "concrete activities" where to apply the acquired competences.

For this reason, the web and social networks both lead to cooperative learning and to a form of knowledge that will grow and evolve as is natural today, but this will happen only if teachers will be able to build an adequate didactic environment, abandoning the traditional models and highlighting the importance of interaction between students and teachers in their own and other contexts.

It is precisely in this framework that universities must begin to propose methodological models of innovative teaching, to improve the process that ranges from teaching to learning, which in fact brings teaching to the same position with research, making it interesting and attractive.

In order to achieve this, these models must start from the recognition of the fact that the teaching-learning process is extremely complex and articulated. At the same time the operative method that must manage it - the teaching process-, must be tackled through a completely new thinking model, different from the one characterizing most universities nowadays: the model-based essentially on the centrality of the teacher.

This is why, in a different thinking model, the one of communication and its derivations assumes great importance in the didactic field.

Tackling the theme of teaching means, therefore, addressing the issue of the right communication/relationship between the different actors participating in the same learning situation.

Discussing the teacher/teacher and student/learner relationship means discussing relational communication mechanisms, which the teacher must convey in a way to which the student must be able and willing to connect.

Which are these mechanisms? And what are the student's subsequent behaviors? We can say that the teacher "enters" the "didactic" situation when he becomes aware of the need to develop a communication strategy (concerning his or her vocabulary, non-verbal attitudes, study materials, the use of didactic technologies, examinations and anything else he or she may consider useful to provide) addressed to one or more students. The access to such a situation must include not only a suitable predisposition of the communicative elements but also the *flexibility to modify them* through the activity of relationship with the students, if necessary.

What is meant by flexibility in changing communication when we write about it? We start from the consideration that knowledge, skills, and abilities are transferred gradually, passing on all those "aseptic and objective" data (one by one) that, in

their gradual composition and interrelation, will allow the acquisition of that specific knowledge about that specific information.

All this takes place in a standard communication situation, in which data will be processed through code and transmitted through what is considered the most suitable communication channel to a receiver, in expectation of his communicative feedback (essential), therefore employing a model of circular communication.

In communication systems in general, but especially in didactic communication, feedback plays an essential role.

In fact, it is precisely the feedback coming from students/learners in response to a prior message from the teacher that allows all the actors involved in the process to understand if the same message has been correctly conveyed to the target and correctly decoded. If, on the contrary, this process encounters any problems, they will actually block or reduce the intended transfer of information.

In this second case, we can state that a distortion angle (W.G. Benis) of the main communication (teacher's message) has been created, which must lead to a new and different proposition of the same in order to reach its final aim.

The great ability/challenge of didactic communication is to transform the data, information, concepts to be transferred, using the right tools and behaviors, generating a learning context appropriate to the reception of knowledge.

One final, but important consideration on the subject of the distortion angle is that in a learning situation a teacher is responsible, as mentioned, for creating the best conditions for transferring knowledge, but at the same time the student should first of all focus on his listening skills; in fact, *the ability to listen* becomes one of the most important tools in didactic communication.

The importance of listening is equal to the importance of language, with precise rules and equally precise responsibilities. Listening is an activity much more demanding than simply "hearing". In fact, knowing how to listen means understanding clearly, or even understanding "that you have not understood clearly", which then becomes the cornerstone of feedback (we simply remember the essential role of "questions" in this type of process), essential for building effective communication. (Goleman, Bennis, 2009)

Having previously highlighted the importance to create a proper relational environment in a learning context, we could define didactic communication as a set of monologues and dialogues, as Cela and Palou remind us (2004). To this regard, we would like to recall how the adoption of techniques related to emotional involvement, such as storytelling techniques, acquire key importance within the teacher's didactic competences.

In the attitude of learning to build "dialoguing monologues" (it seems like an oxymoron, but actually it is not) lays the essence of effective didactic

communication, which allows us to capture the attention of those who "know" how to listen, and which must become the new competence of the teachers. In this context it is worth mentioning the "pyramid" of Glasser W., where it is indicated that real learning is not based on simple vision or listening: you learn 50% of what you have seen or heard, while interacting with others or direct experience even leads to learning up to 95% of what you "teach".

But which are the competences in the field of didactic communication that a teacher must acquire in order to be truly effective in achieving his objectives that are also, as mentioned above, the objectives of the students.

Among the main competencies, we can outline the importance of the role of "mediator", that is the ability to facilitate the relationship between the students and the complex didactic system in which they are involved, given by the language, the learning tools, and the contents to be transmitted. (Carlson, Thorpe, 1984)

It is necessary, as a consequence, to assign the teacher the role of "facilitator of learning", which helps and accompanies the students in discerning all the stimuli to which they may be subjected; some of them explicit (easier to decipher), others more implicit (more difficult to understand), such as some types of non-verbal communication.

Another fundamental element related to the skills to be acquired by the teacher is the knowledge of the mechanisms of the "learning system" typical of students. It starts from the knowledge of the double modes of thought that every human being has, the focused one and the diffused one.

The focused mode is the one defined by everyone - not always correctly - as "real learning" and it occurs when we are intentionally focused on a problem trying to find the solution and our thoughts move within a network of specific knowledge, already existing and codified in our memory. Often, however, to face problems and to be able to solve them, "our thoughts" need to "space" and not be "frozen" in a perimeter of knowledge and information within which, perhaps, the solution does not exist. In this case, the "diffuse" modality of thought must be activated, when our thought is somehow free to seek solutions within a wider network of knowledge.

Knowing these phenomena and the way they operate allows us to activate languages and didactic strategies that can activate and suitably adapt the two thinking modes in order to support problem-solving. (Oakley, Sejnowski, 2017) Furthermore, it may be worthwhile to understand how, for many categories of students, it is problematic to acquire abstract concepts (e.g. mathematics) and how, in this case, didactic strategies that translate abstract concepts into the real world would make it possible to acquire these concepts in a more solid and permanent form.

Regarding an essential aspect of learning such as Memory, while building their didactic communication model teachers should pay particular attention to the difference between short term and long term memory; especially from a "didactic stimulus" point of view, teachers should concentrate on those practices that allow the "shift" of knowledge from short to long term memory.

If short-term memory allows the recollection of an extremely small amount of information for a very short time before its disappearance (as many scientific studies have shown), long-term memory, on the contrary, has the role of "major storage" where a virtually infinite amount of knowledge can be stored.

Baddeley and Hitch (1995), refer to short-term memory as a working memory that allows creating "a system for the temporary maintenance and manipulation of information during the execution of different cognitive tasks, such as *comprehension, learning, and reasoning*" (Baddeley, 1986).

With regard to these two areas of our brain, both important, there is the need of the teacher to associate to specialized skills linguistic and communicative competencies, which allow both a correct activation of short-term memory (at the exact moment of the transfer of the single information) and a simultaneous series of actions allowing the implementation of information already stored in long-term memory.

For this reason, we cannot help but remember the need, among other activities, when developing the didactic communication strategy, to verify the incoming knowledge and to understand whether or not it is sufficient to process and connect to the knowledge that will be later transmitted.

Actually, we must consider the matter of "transmitting" knowledge not only with a view of the quality of what is being taught but also with a view of the information's quantity. As a matter of fact, if during a lesson the quantitative transfer of information is excessive, there is a risk of overloading the short-term memory and therefore these pieces of information will soon be completely forgotten. If, on the other hand, teachers program an adequate amount of information qualitatively structured in the proper way, they will be able to obtain a context suitable for students, so that knowledge will be assimilated and stored in the long-term memory.

To do this, for example, teachers could:

- transfer knowledge in such a way that allows students to perceive the usefulness and pragmatism of what you are trying to learn, a typical training action aimed at higher education or adult education (Knowles, Holton III, Swanson, 2008)
- reduce as much as possible the knowledge to be transferred during the individual learning time units (frontal lesson, e-learning module, etc.): no more than 3/4 data/information at a time and possibly complementary

- employ visual aspects as support to increase the perspectives of attraction and memorization of concepts (keeping in mind that visual memory constitutes a very important part of the overall memory), in this sense we recall Paivio's theory of "double coding" (Paivio, 1991)
- stimulate some concepts through the use of analogies and metaphors in order to make the concept less abstract and more "real"
- convey images from an emotional point of view("Loci technique" by Cicero), perhaps by incorporating "actions" to make the images more "involving" and facilitating the observer's involvement
- reduce the cognitive load of transmitted knowledge by avoiding all non-essential information (Chandler and Sweller's Theory of Cognitive Load)
- summarise the concepts transmitted at the end of the learning period, trying to recall the same lexicon used during the transmission phase
- make the most of informal learning experiences, which in some areas of higher education are often essential elements of learning

4. Conclusion

In conclusion, we can define communication as an integral part of teaching and state that acquire and adapt one's skills to specialized fields become a particularly complex and difficult task, but indispensable to effectively close the circle of the Teaching-Learning relationship.

This course, besides being indispensable, also becomes interdisciplinary because it involves various disciplines such as psychology, neuroscience, linguistics, visual communication and didactics of course.

These reflections lead us to conceive didactics as an area that puts into play (perhaps better "puts back into play") teachers' knowledge, and different skills needed to come up with a model of educational communication aimed to render sequential and perfectly integrated the activities related to teaching and those related to student learning.

In fact, if didactics is the set of knowledge, communication skills, motivations, contents, verifications, relationships, neuroscientific approaches, all formed in their turn by thousand different "facets", we realize how, to launch an innovative didactic approach in which communication plays an essential role, we need to transmit a model of thought not solely based on the individual traditional problems of didactics, but a model that addresses them while still taking into account the whole educational system into the higher education framework.

We must try to synthesize a "Systemic Thought" aimed to be the common language of all the factors involved in the Teaching-Learning system. This system should become the language, the constant, through which teachers and students can

confront each other constructively, aligning mental models and building shared visions during the formative moments.

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