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Didactics: from methodological dichotomies to the new challenge of virtual education

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Abstract

This article proposes a reflection around the dilemmas that didactics present nowadays, those dilemmas turn didactics into a discipline which is inheriting as well as debtor of others. This process is articulated to the research project Characterization of Didactics in Virtuality, based on a theoretical revision, and developed in the framework of the Master Program in Pedagogy and Human Development at Universidad Católica in Pereira. In this research, the didactics implemented by virtual teachers located in the Coffee Region in Colombia, are characterized, and they are analyzed considering three areas: the preparation, the development, and the factors that may be restrictive the teaching process. One of the conclusions is the need to develop new research processes around teaching practices that are being generated in virtual education, in order to avoid the transfer of didactics proposed for face to face education to virtual education.

Key words: virtual learning, didactics in virtuality, teaching, didactic strategies, virtual education, AVAs

Resumen

Este artículo desarrolla una reflexión acerca de las disyuntivas que presenta la didáctica, que la convierten en una disciplina que es tanto heredera como deudora de otras. Basado en una revisión teórica, se articula con el proyecto de investigación Caracterización de las didácticas en la virtualidad, desarrollado en la Maestría en Pedagogía y Desarrollo Humano de la Universidad Católica de Pereira. En dicha investigación se caracterizan las didácticas que implementan los docentes virtuales con sede en el eje cafetero, analizadas a partir de tres ejes: la preparación, el desarrollo y los factores que pueden ser restrictivos para la enseñanza. Una de las conclusiones es la necesidad de desarrollar nuevas investigaciones que giren en torno a las prácticas pedagógicas que se están generando en la educación virtual, a fin de evitar el traslado de didácticas concebidas para el ámbito presencial hacia la virtualidad.

Palabras clave: aprendizaje virtual, didáctica en la virtualidad, enseñanza, estrategias didácticas, educación virtual, AVAs

Resum

Aquest article desenvolupa una reflexió sobre les alternatives que presenta la didàctica, que la converteixen en una disciplina que és tant hereva com a deutora d'unes altres. Basat en una revisió teòrica, s'articula amb el projecte de recerca Caracterització de les didàctiques en la virtualitat, desenvolupat en el marc del Màster en Pedagogia i Desenvolupament Humà de la Universitat Catòlica de Pereira. En aquesta recerca es caracteritzen les didàctiques que implementen els docents virtuals amb seu en l'Eix Cafeter (Colòmbia), analitzades a partir de tres eixos: la preparació, el desenvolupament i els factors que poden ser restrictiu per a l'ensenyament. Una de les conclusions es la necessitat de desenvolupar noves recerques que girin entorn de les pràctiques pedagògiques que s'estan generant en l'educació virtual, a fi d'evitar el trasllat de didàctiques concebudes per a l'àmbit presencial cap a la virtualitat.

Paraules clau: aprenentatge virtual, didàctica en la virtualitat, ensenyament, estratègies didàctiques, educació virtual, AVAs

Information and Communications Technologies have changed knowledge transmission between the inhabitants of the planet, contributing to the increasing growth and extension of distance education, in the virtual form in the present study. This can be seen clearly in cases such as the Indira Gandhi National Virtual Open University with over 4 million pupils[1], the *Universidad Nacional de Educación a Distancia de* España (UNED) in Spain with over 180,000 registrations[2] per year and the *Universidad Nacional Abierta y a Distancia* (UNAD) in Colombia, with 55,000 students in 2010.

Aside from the growing number of learners, it can be said that virtual education and face-to-face learning are scenarios that are contrasting for some or complementary for others. Either of the two cases would lead one to think that teaching practices emerging from this new scenario could not be the same as in real presence learning. Thus, for example, the practices developed by virtual teachers or tutors would have variables or be different, perhaps we would be facing a new dilemma wherein didactics for virtual and presence-based teaching are the protagonists.

Based on the situation described, and having mentioned the growth of virtual education as well as the need to consider the pedagogic aspects concerned in a virtual environment, this research project was developed to characterize teaching practices implemented by the virtual lecturers at higher education institutions located in the three departments that form Colombia's Coffee Region (Caldas, Quindío and Risaralda). Seventy virtual lecturers from seven higher education institutions providing virtual programmes in the region took part in this study.

This paper is developed in two blocks. The first provides theoretical references concerning the origin of didactics in general and how specific didactics were subsequently devised, which is not foreign to the diverse dichotomies that this discipline has presented historically. The way in which presence teaching is linked to pedagogic models and theory is then set out, and how the emergence of distance education in the virtual mode gives rise to new concepts such as the interactive teaching triangle proposed by Cesar Coll. The second block sets out everything relating to the research project, whose main aim is to describe the didactics implemented by the virtual teachers in the Coffee Region, reflecting on their proximity to what occurs in face-to-face teaching and analysing the probability of a new didactic dichotomy between presence-based and virtual teaching and proposing new lines of research that arise from the conclusions obtained.

1. Didactic or didactics? - a derivation from teaching theory to objects of knowledge

Prior to the dissertation on the use of the terms didactic or didactics, it should be noted that this discipline, like many others in the social sciences, is immersed in multiple theories. Some propose teaching conceived on the basis of a general method (didactic), while others propose a diversity of methods that come close to a particular discipline (didactics). For Camilloni (2004), the controversy still exists regarding whether "a didactic exists as teaching theory, following a secular European tradition... or should be replaced by its objects of knowledge, the curriculum in particular". This serious drawback lies in the fact that didactics, as a discipline, never had a clearly marked field, and was recognised as a teaching theory that was both heir and debtor to many other disciplines.

The German educator Wolfgang Ratke[3], in his pedagogic work *Principal Didactic Aphorisms* (1629) uses the term didactics denoting a doctrine or art of teaching. This term is subsequently used in the outstanding work by John Amos Comenius *Didactica Magna*[4] (1657), wherein the author defines didactics as the method to teach everything to everyone. Comenius (1986) states that this method is "the universal device for teaching everything to both noble and simple, rich and poor, in all cities and towns, villages and hamlets of every Christian kingdom". It is evident that the main object of his work deals with teaching, although not only in school circles but introduced widely in the political and social system, always linked with a humanist philosophy.

In Civarolo's view (2008), Comenius' teaching method "arises from accommodating the norms of this art to the operations of nature, among which he states three fundamentals of teaching and learning that he breaks down into theoretical rules with implications for practice". In this way, Comenius proposes the universal teaching method, structured in three parts: autopsy (comprehend from the senses) autocracy (retain in the memory) and autopraxis (practice), showing a pupil that learns through action and a method that makes the treatment of knowledge itself possible in order to facilitate understanding.

The process mentioned above can be understood as a didactic, for the study of all the principles and techniques valid for teaching any subject or discipline. It poses the problem of teaching from a universal point of view, without resorting to minutiae that may vary between disciplines; it attempts to see teaching as a whole and studies it in its more general conditions. There are special didactics, however, which can be analysed from two points of view: in accordance with the educational level or with the way of teaching each discipline. Davini (2004) considered that this situation "produced a new shift in focus: from the pupil to the organization of the school system. This weakened the epistemological demarcation of the specializations, due to their direct dependency regarding the conventional or arbitrary order of schooling".

For others like Camilloni (2004) this does not mean unreasoned fragmentation in didactics or the disappearance of the general didactic as a discipline, "on the contrary, the global revision of the problem would lead to considering the specializations as didactic developments

[1] http://www.ignou.ac.in/ present in 36 countries through 21 study schools and a network of 67 regional centres, with approximately 3,000 student support centres. The University offers approximately 490 certificates, diplomas, degrees and PhDs [Accessed on 10-09-2013].
[2] Obtained from the Universidad Nacional de Educación a Distancia (UNED) at http://www.researchgate.net/publication/28166467_La_Universidad_Nacional_de_Educacin_a_Distancia_(UNED)_de_Espaa [Accesed on 10-09-2013].
[3] German educational reformer whose teaching system is based on the principle of proceeding from things to names, from the particular to the general, and from the mother tongue to foreign languages.
[4] In this methodical work by Comenius, the central nucleus is teaching (method), used in an institution (school), that together with his work *Pampaedia* draw up a different field for applying the method.

in the different disciplinary fields, rather than in automated disciplines". This lasting dilemma has its roots in the diverse dichotomies that teaching has aroused historically, the most outstanding being the Socratic, Sophist, humanist and scholastic proposals and the psychological and sociological perceptions of Herbart and Dewey respectively.

2. Historical dichotomies in didactic conceptions, the struggle for a teaching methodology

The ideological tensions that permeated the development of didactics led to their meaning, field of action and reason becoming ambivalent.

In the 5th Century BC teaching was torn between absolute knowledge and no knowledge due to Sophists[5] and Socratics. For the Sophists an educator generates discourse, in the hope that students will achieve learning. With discussion as a base, they attach great importance to *rhetoric* and *eristic* which enable them to triumph in public interventions and discussions, even if truth is not on their side. On the contrary, Socratic teachers strive to make pupils aware of their own ignorance, to arouse their interest in knowledge and defy them to conquer the truth (this is known as *maieutics*[6]), as only when aware of our ignorance can we bear the effort required to achieve knowledge (Ciravolo, 2008). To obtain this truth the teacher conceals his knowledge with *irony*, this being the reason why it is believed to be the first teaching strategy, in reality a mere pretence of ignorance by the teacher.

Later, in the 15th Century, scholastics and humanists proposed divergent postulates concerning the teaching process, but at times their aims met, as they shared a period dominated by religious thinking, and education is not apart from this ideology. The scholastics proposed a rote-learning education where the teacher is the central axis and who reads or expounds while students listen passively and try to memorize exactly; their didactic is based on three steps: the *lectio,* which is the reading of the texts guided by the teacher; the *quaestio*, to clarify concepts and positions in order to arrive at the questions; and lastly, the *disputatio*, where there is a debate and the teacher may take sides in solving the conflict.

Humanists however seek a rational, complete person with a conception of education based on three qualities: liberalism, which recognises the authenticity of education and its human status; realism, which considers the pupil's nature and context; and integrity, which identifies the breadth of education. These processes reflect human training and the extent of knowledge within a context, based on the educator's possibilities. Therefore, both scholastics and humanists base their educational proposals on the teacher as the main actor in the process, on reading as the appropriate way to communicate the message and on the pupil as the passive subject.

Finally, beginning with Comenius and his universal teaching method, two currents emerge that recognise this thinking, but also bring new sciences into the teaching debate. From his psychological knowledge, Herbart[7] proposes a conception of teaching in four steps: the degree of clarity, where knowledge is widened; the degree of association, where ideas are compared; the degree of systematization, where an order is generated and lastly the method, where the knowledge acquired is applied. Learning is therefore based on the pupils' interest, leaving to the teacher the responsibility of knowing how they learn.

On the other hand, Dewey[8] includes a sociological view in didactics. His reflections are centred on the reconstruction of experiences through a method based on the individual, which becomes evident in the social good. He proposes uninterrupted teaching in which the teacher prepares an educational atmosphere that promotes significant experiences in the present, so that pupils will relate them with previous experiences and achieve ulterior experiences continuously.

Finally, in recent decades education faces two educational modalities which for some should be considered differentially: face-to-face education and virtual education. These are contrasting scenarios, especially in aspects such as their dependence on technological means, flexibility regarding time, places or meetings, as well as autonomous and self-regulated learning options. These contrasts could lead to thinking of another teaching dichotomy, although there are others who recognise that both modalities, presence-based and virtual, are complementary and not conflicting modes of teaching-learning. B-Learning or bimodal learning is a clear example, although didactic concepts are clearly linked with traditional teaching models created for real presence teaching, as shown below.

3. Presence-based teaching: the illusion of didactics immersed in pedagogic models

Didactics, as well as other education currents, are personified in the sense that they are identified with a renowned individual or academic group that symbolises certain theories and, although they are not a discipline as such, they become schematised in them (Moscovici & Hewstone, cited by Camelloni 2004). This way didactics in face-to-face teaching are dependent on the pedagogic model in which they develop, these being mainly behaviourist, constructivist, problemistic and critical models.

According to Tovar and García (2012), behaviourist teaching has four stages: first it is assumed that pupils arrive at school with a blank mind or with knowledge that is not relevant to their training; secondly it is considered that the teacher, who possesses knowledge, should deposit it in the pupils; the third proposes motivation for learning through reward –punishment behaviour mechanisms and the last instance reinforces the expected or appropriate behaviour in the same way.

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[5] Group of intellectuals called the "professional wise men" due to their preparation and influence. The movement degenerated and became a mere lucrative means, manipulating Greek society with relative arguments and even false notions.

[6] Socrates used to say that he used the art of *maieutics* to draw an analogy with his mother's work as a midwife assisting women at childbirth, as he considers that a teacher must seek the birth of truth.

[7] German philosopher and educator who attempted to study psychic phenomena in depth, especially in the pedagogic aspect. Herbart's dream was the production of a psychological science with a mathematical base that would make it possible to know the general laws of psychic phenomena through mathematical formulae.

[8] American philosopher, pedagogue and psychologist. Dewey considers the purpose of education in human training to be adaptation to and reconstruction of the environment to make it more suitable to human wishes and needs.

In the constructivist model, according to Tovar & García, (2012), didactic instruction is characterised by assuming that subjects build their knowledge. The processes are based on a subject who learns, and the teacher not only transmits, but also develops abilities and teaches ways to learn them. Prior knowledge is also important to guide consistent development, together with assessment as a process that regulates and promotes learning, and the use of strategies to motivate learning and techniques focused on the learner.

However, problematic didactics consists in problematizing knowledge and culture to boost and develop capacities. The steps followed begin with the presentation of the problem chosen and the identification of learning needs and continue with the consultation of the necessary information, followed by problem solving and the identification of other problems that will enable a new cycle to begin. Thus, for De Zubiria (2012) "in problematic didactics the teacher is a cultural mediator between the pupils' knowledge and the domains of knowledge and culture as an intellectual tradition".

Finally, for Peleteiro (205) critical didactics is a "participatory, critical practise that favours debate, reflection and discussion in small groups. It uses symposia, round tables, interviews, role simulation, knowledge games, affirmation, confidence, cooperation and dispute resolution". Therefore, in the critical model teaching and learning are inseparable, the training process enables people to be free, to solve problems; creativity, solidarity and cooperation are reinforced, strengthening values.

These stances confirm the variety of positions in the field of didactics within face-to-face teaching because "didactics receive and reflect many theoretical crises as it is a discipline characterised by being a domain where some or all of the others meet" (Camilloni, 2004). This construction, self-construction and re-construction of didactics, linked with prevailing teaching models, affects education at all levels because in spite of changes, it leaves the relation of these models with the new form of virtual education without an apparent solution.

4. From face-to-face education to virtual education. A new teaching paradigm?

The Virtual Education model[9] replaces some of the elements of real presence education by elements that are *not real*. This statement applies simply because one of the agents is not present, usually the teacher, or because some of the means are not *real* in the form that they are traditionally known, e.g. written notes or the pencil. But students cannot be replaced; the other agents can, like the classroom or the book among others. According to Salinas (1996), "every technology or combination of them configures coordinates of their own that do not only affect the location and time of the learning but also all of the elements in the education system."

Thist is why the new teaching systems based on telecommunications and interactive technologies require traditional teaching and learning models to be redefined so as to generate a more flexible teaching process in line with the needs of virtual education. In this model, most of the interaction takes place in virtual learning environments. Bello (2005) calls them "classrooms without walls" and defines them as a virtual space "whose current best example is the Internet: it is not presence-based but representational, not proximal but distal, not synchronous but multi-chronous, and it is not based on spatial enclosures with an inside and an outside with boundaries; it is dependent on electronic networks "(cited by Fernández & González 2009).

Although it must be noted that virtual education goes beyond the use of technology –as technology alone does not yield the expected outcome– it is necessary to consider the "creative appropriation" that Feenberg (1999) describes as the "process by which users take resources and create their own procedures and operation standards for existing technologies, and which are often different from those attributed by technological design" (quoted by Coll 2007).

Not only students and technological resources are players in this appropriation; contents and teachers also intervene in order to achieve the expected impact, and it is at that moment that teaching plays a vital role in the educational process, although, of course, all the factors that make virtual education different must be taken into account. In his analysis of this new scenario, Coll (2010) goes beyond the classical didactic triangle that characterizes teaching and, thinking about the new role that its actors may play, suggests a *didactic interactive triangle*.

5. Coll's interactive triangle[10], a view of teaching conceived in the virtual model

In virtual education, as in face-to-face learning, student, teacher and contents are key elements of the teaching and learning models. Coll (2010) talks about an *interactive triangle* whose vertices correspond to "the contents, that is, the object of teaching and learning, the educational and instructional activities of the teacher, and the learning of students." Four basic categories of relationships mediated by technology can be present in the triangle: the relationship between teachers and the teaching and learning contents; the relationships between students and the learning contents; the relationships between teachers and students or between students; and the joint activities undertaken by teachers and students in teaching and learning activities.

But Coll (2010) proposes a fifth category, different from those suggested for the traditional triangle, one directly linked to technology: "this category clearly illustrates and makes concrete the... ability of ICTs to transform education through the creation of especially

[9] Authors like José Silvio (2002) refer to virtual education as a system in which players interact through numerical representations of teaching and learning elements though they are in different places and at different times.

[10] Spanish psychologist, PhD at the University of Barcelona and an expert in education psychology. He has written numerous academic articles and books about teaching and personal learning with a focus on Constructivism. Psychologists, pedagogists and educators support his theses. Between 1973 and 1978, he was a contributor in the research team of the International Centre for Genetic Epistemology in Geneva, headed by Jean Piaget. His current interests focus on the analysis of the educational discourse, the use of ICTs to boost learning and improve teaching, the articulation of learning contexts and the learner's identity construction..

powerful and specific semiotic environments[11]." But Coll & Monereo (2008) also clarify that the novelty behind the new technologies and their resulting educational modalities is the fact that they go beyond the technologies that humans have always used, from smoke signals or stone carving to the telephone or the television, as well as beyond a new symbolic system to handle information, as semiotic resources on screens are not too different from those in written texts, pictures or sounds.

As already mentioned, the impact of these technologies on virtual education transcends the nature and features of the technological tools used, as the pedagogic use made of them is definitive. This is why Coll calls on the convergence of techno-pedagogical design which, together with *creative appropriation* and *effective educational uses*, generates a true *interactive triangle*. To that end, technological resources and their use in teaching and learning must go hand in hand with the virtual teacher's educational practices.

One might think, then, that teachers' particular teaching styles bring about different didactic strategies that are used or applied depending on the teaching style they identify with, or the needs (or constraints) of the educational process in which they are involved. Characterizing the didactics used in virtual education is the aim of the research conducted in the three departments (Risaralda, Quindio and Caldas) of the Colombian coffee-growing axis. The virtual lecturers of the universities in this region took part in the characterization.

6. Virtual teaching, a characterization by the virtual lecturers of the universities in Colombia's Coffee Region

In recent years, higher education institutions in Colombia's coffee-growing axis have explored the possibility of developing and offering distance learning programmes using virtual methodology. The virtual boom caused the Masters on Education and Human Development offered by the Catholic University of Pereira to reflect about the way teaching processes (didactics) are developed in virtual environments, as new technologies by themselves neither resolve educational problems nor improve quality or innovation.

Faced with this new reality, to which the coffee-growing region is not immune, the question was: What didactics are virtual university lecturers in the coffee region implementing? Our research seeks to characterize the teaching practices implemented by virtual educators working in the universities of the Coffee Region.

To fulfil this objective, an investigation with the characteristics shown in Table 1.

The population studied consisted of virtual teachers from higher education institutions in the Coffee Region (Caldas, Quindio and Risaralda). Sampling was randomised, this meaning "a sample in which all elements in the population are equally likely to be chosen" (Albert 2007). Since the population is finite, the formula proposed by Latorre Rincón (quoted by Albert 2007) was applied to determine sample size.

$$n = \frac{Z^2 \cdot p \cdot q \cdot N}{e^2 (N - 1) + Z^2 \cdot p \cdot q}$$

where
n: number of elements that the sample must have
Z: chosen confidence level (95%, then Z = 1.96)
p: estimated percentage or proportion (50%)
N: number of subjects in the population (127)
e: error permitted (8%)
q: 100 – p (100 – 50 = 50)

Then:

$$n = \frac{(1{,}96)^2 * 0.5 * 0.5 * 127}{(0.08)^2 (127 - 1) + (1{,}96)^2 * 0.5 * 0.5} = \frac{121.9708}{0.8064 + 0.9604} = \frac{121.9708}{1.7668} = 70 \text{ docentes}$$

Thus, the sample included 70 virtual teachers from the universities in the Coffee Region. Each teacher in the total population (127) was equally likely to be part of the sample.

To collect the data, a survey administered by the open-source system *Limesurvey*[12], hosted on the platform of the Catholic University of Pereira, was used. The survey comprises a total of 39 structured questions from six axes (sociodemographic data, teacher preparation, virtual education experience and/or appropriation, institutional requirements and monitoring, didactic strategies linked

Descriptive	According to the function or purpose of the research, study in which "the characteristics or features of the situation or phenomenon under study are reported." (Salkind 1998, quoted by Bernal 2000)
Non-experimental	Based on the level of compliance with the assumptions of the experiment, as in this study "no situation is built; rather, already existing situations –not intentionally caused by the researcher– are observed. In this type of research, independent variables have already occurred and you cannot manipulate them" (Albert 2007)
Cross-cutting	Based on the treatment of the variable over time, here "data are collected at a particular moment in time only. Its purpose is to describe variables and analyse their impact and interaction at a particular moment" (Albert 2007).

Table 1. Type of research

[11] The new technologies can be used as mediators in the intra and inter-mental processes involved in teaching and learning and thus become psychological instruments when –thanks to their semiotic potential– they are used in planning and regulating your own activity and that of the others.
[12] https://www.limesurvey.org/en/, open-source licence type, used for the design and administration of data collection instruments.

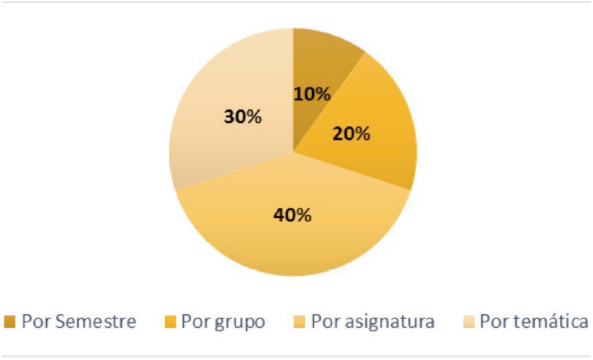

Figure 1. Preparation of didactics

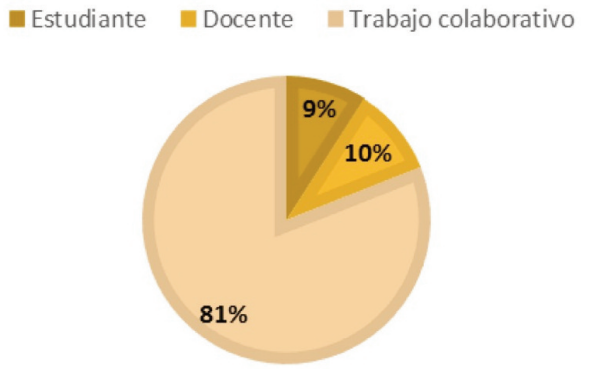

Figure 2. Bases of the didactics

to virtual teaching and adaptation to virtual learning environments). This instrument can be seen at http://es.slideshare.net/dantek8/instrumento-didcticas--en-la-virtualidad.

53% of subjects were women and 47% were men, from both public and private universities based in one of three departments of the Coffee Region. 47% were aged under 40, 31% had undergraduate studies and 69% a graduate degree, and from the latter 30% were specialised, 36% were MAs and 3% PhDs.

For Adell and Sales (2013), "each teacher may have a particular teaching style, more student-centred and more self-centred." It is the teacher who determines his/her didactics, strategies and tools to be used for his/her way of teaching to be consistent with the challenges brought out by virtual education. His/her teaching style may change based on the time available for the didactics, or on the students to be taught. Figure 2 shows the aspects from which virtual teachers prepare their didactics.

Figure 1 suggests that virtual teachers using tools and techniques for their virtual didactics do not follow a definite order in their application, which makes their methodologies unspecific: they may vary every semester or for each subject, depending on the contents of a course or a unit, if they are concerned with their students or not, when developing them according to the group, or just at the beginning of a semester.

Figure 2 shows the bases of the teachers' didactics: the student (seeks his/her self-learning, individual work), the teacher (activities created and directed by the teacher, only what he/she proposes is done) or collaborative work (teamwork, students come together in small groups and the teacher guides them without giving them all the resources), the latter being the most widely accepted by the virtual teacher in the Coffee Region.

All this shows the lack of clarity that teachers have in linking didactics to a teaching methodology; what they do instead is to bring it close to an isolated use of tools and techniques without an order, trying to teach but without a clear learning purpose. This subject is under discussion in the didactics debate, as some seem to have a simplified view of the methodological dimension. According to Díaz (1985), the latter consider the teacher as a behavioural engineer who is expected to have command of the model rather than the discipline or field of knowledge in which he/she works; he/she is a central mediator in the student's processes of appropriation (cited by Edelstein 2004).

Others, on the contrary, see the teacher as the "subject responsible for preparing a teaching proposal in which methodological construction becomes the result of a singularly creative act of articulation between the disciplinary logic and the subjects' possibilities of appropriating it" (Edelstein 2004); the recognition of these peculiarities in didactics makes more visible how virtual lecturers teach in the Coffee Region; and they are certainly far from the figure.

Both the distance from the methodological level and the closeness to a singularly creative act in virtual teachers in the coffee-growing area can be the result of two aspects: first, the different tasks that they must do in a setting different from that of face-to-face education: over 90% of these teachers confirm that they must prepare contents for the course, produce learning activities, revise and mark the activities, feed them back, clarify doubts, as well as set rules, instruct and motivate students in the virtual learning environment; besides, about 59% of teachers declare that more than 30 students sign up for each individual course. All this may hinder the ideal blending of didactics into methodologies, and the creative use of appropriate techniques for virtual learning.

The teacher is responsible for reflecting on didactics that fit in with virtuality, his/her challenge "is not limited to transforming presence-based courses into hypermedia formats to be developed on the Internet; rather, he/she must take on a new teaching model that allows us to reconceptualize teaching and learning processes and knowledge construction" (Fandos, & González Jiménez 2002).

To achieve this educational breakthrough –linked to knowledge and the educator's reflection– virtual environments must generate new teaching strategies in line with a changing educational context. For Salinas & De Benito (2005), these teaching strategies are "the creation of conditions for developing the ability to learn and adapt in both organizations and individuals ... basically, it is all about the creation of didactic situations or learning contexts."

In order to generate these conditions, teaching, evaluation and communication tools must be innovative. It is not a matter of merely transferring presence-based education tools to the virtual world. It must be noted that the discussion should not solely focus on the use of technological means; concerns with the implicit and explicit variables in the act of teaching in virtual environments are paramount.

Teaching	Evaluation	Communication
Forums (94%) Online Presentations (75%) Blog and websites (70%)	Submission of assignments (94%) Marking forums (94%) Online Test (79%)	Internal mail (93%) Notice board (60%) Chat (54%) External mail (53%)

Table 2. Teaching, evaluation and communication tools

Table 2 shows the teaching, evaluation and communication tools most widely used by virtual teachers in the higher education institutions of the Coffee Region.

Accordingly, the tools used by virtual lecturers in Colombia's coffee-growing axis for teaching do not seem to be particularly novel (forums, presentations, blog and web), which is directly related to the 65% of teachers who admit to having command of some technological tools, while audio-forums (24%) and simulations (27%), which may require more advanced technological knowledge, are less used.

If we analyze evaluation, it is clear that teachers choose asynchronous tools, as they allow both the teacher and the student not to necessarily be in the same place and at the same time when the evaluation takes place. Papers or assignment submission –a largely used evaluation tool in face-to-face education– is one of the most employed. One wonders why newer, more suited tools for the virtual model are not part of the educational horizon.

Finally, for communicating with students, the most important tools are asynchronous (mail and notice board), although a synchronous tool such as the chat is also reported. Clearly, all these tools can improve teaching practices in virtual learning environments, but it is also evident that "the element that should facilitate these optimum forms of construction is the educational assistance offered by the teacher" (Onrubia 1994).

Sometimes, responsibility –which is assumed to be the teacher's duty– does not depend on him/her, as the virtual environments in which this educational model is developed can become constraints to free education, and the same goes for the use of teaching, evaluation and communication tools: 37% of teachers think that the platforms they use condition their teaching practices. This fact is also evident when inquiring about the freedom given from platforms to teachers for them to create new contents and learning and evaluation activities (see Figure 3), where only half of the teachers report to be free enough to make such changes.

This perception is confirmed by Coll (2007): "technologies designed to support virtual learning environments are not neutral; to some extent they reflect a particular conception of teaching and learning". Onrubia (1994) adds: "Neither the technological environments of teaching and learning nor the learning objects designed for their use are or can be educationally neutral." This is so because every platform poses various technological constraints and possibilities, which results in either promoting or hampering certain actions versus others by the learners.

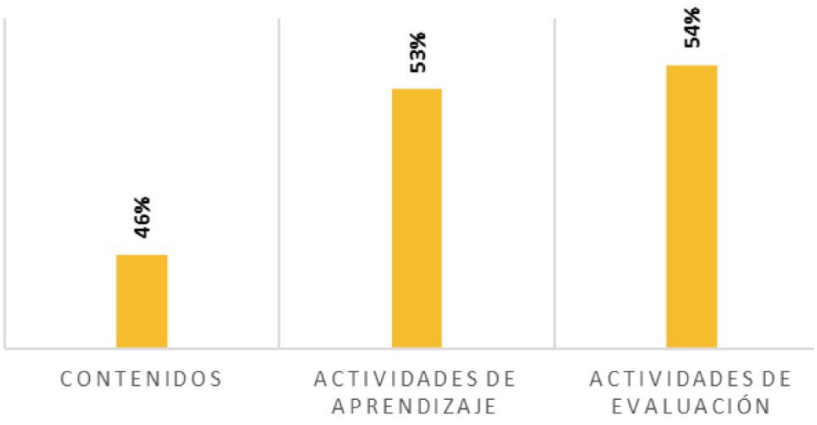

Figure 3. Perception of freedom to change things

This scenario about didactics in virtual education, with its conflicts and new light for further investigation, was presented by the Institute for Higher Education in Latin America and the Caribbean. In their report on virtual higher education, produced in 13 countries including Colombia, one of the concluding remarks reads "virtual education is undergoing development; the academic community is concerned with its perception of usefulness and its ability to help solve an important part of the problems faced by higher education now and in the future."

7. Some final conclusions and recommendations

The path towards a single definition or characterization of didactics shows how historically concepts modify or extend previous ideas, all concepts therefore being enriched. How to teach rather than what to teach is becoming more and more important; but the discussion has branched out, leading the great theoreticians to put forward proposals that are sometimes meaningless and neglect the thematic axis of quality in education.

Virtual and face-to-face education are two contrasting scenarios, especially in aspects such as technology, time, space, meetings, autonomy and self-regulation. Therefore, one would think that we are experiencing or about to experience a new teaching dichotomy between these two education modes. It is true, though, that the two modalities are to be approached in different ways: from presentiality and virtuality, but before that, the focus must be on education.

To Coll & Monereo (2008), the novelty of ICTs, virtuality and the new semiotic system lies in expanding to "unsuspected limits the human capacity to (re)present, process, transmit and share large amounts of information with less and less space and time limitations, almost instantaneously and with shrinking economic costs." But we should not forget that formulating and opening up to virtual programmes does not only lead to a change of educational environment (from physical to virtual), but it also requires a transformation of education stakeholders –in-

stitution, teachers and learners– in all areas so that the change is not understood as a change in format but as a new opportunity for education assurance. Although the teacher is primarily responsible for teaching, there are factors such as platforms and even emerging theoretical bases for virtuality didactics which prevent the educator from performing more suitably in this modality.

Finally, it is important to underline that this study is intended to open up avenues for new research proposals aimed at problematizing on institutional behaviours concerning: training (particular characteristics of the virtual tutor), teaching (languages used to transmit knowledge to multimedia and networking minds), learning spaces (how platforms enhance or restrict the teacher's work), evaluation (formulas ensuring the student's comprehensive independent learning and ethics), teaching strategies (teaching techniques and methodologies developed in virtual environments), and other related topics, on the basis of which different treatments should be promoted when faced with forms of education like virtual teaching, without overlooking, of course, discussions about education in general.

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