

## PEDAGOGICAL AND TECHNOLOGICAL STRATEGIES TO IMPROVE THE QUALITY OF TEACHING IN THE CRIMINOLOGY CLASSROOM

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### Abstract

This article addresses the role of the classroom as the space par excellence for pedagogical action in the field of criminology. An exhaustive analysis is made of how classroom design and organization can directly influence student communication and learning, particularly in the criminological context. In this regard, careful consideration is given to how classroom set-up can affect the interaction between students, faculty, and course content, and how this can impact the effectiveness of teaching. It also examines various pedagogical and technological strategies that can improve the quality of teaching in the criminology classroom, such as the use of audiovisual resources, online collaboration tools, and the design of flexible spaces for active and participatory learning. Ultimately, it is concluded that the classroom represents a fundamental spacetime for communicative and pedagogical action in criminology, and that its design and organization can significantly influence the effectiveness of the teaching-learning process in this discipline.

**Keywords:** Criminology; Virtual Classroom; Pedagogical Action.

### INTRODUCTION

For millennia, the conventional classroom has been conceived as a physical/social/symbolic space, where various objects and furniture are arranged for teaching and learning. However, with the advent of virtual education, the classroom disappears as a face-to-face space and is transformed into a symbolic/informational place, known as the virtual classroom, which is implemented through a technological means.

The new concept of virtual classroom breaks with the traditional model of linear space and time to become a symbolic environment in cyberspace, in which educational processes can be interacted with and managed.

Therefore, it is relevant to take a brief look at the transition from the face-to-face classroom to the virtual classroom, to demonstrate that we are experiencing a significant change in educational methods and in the means of production and distribution of information in the educational field.

## The genealogy of the classroom

In the Middle Ages, the use of the word classroom was common in university education and referred to the room where the professor taught the students the faculty he professed, but it was not common for elementary education, which could take place in places such as the teacher's house, rooms provided by the municipality, the church, or a guild. Most of the time, children were educated under the tutelage of a teacher who could barely read and write, in individual contact with the pupils and without being divided by age.

In Modernity, the classroom was configured in accordance with the purpose of educating the emerging states in different areas such as science, religion, politics, economics, among others. It became the space where literacy took shape and where, under the teacher's supervision, they became individuals/citizens. The method applied in their schools was distinguished by maintaining discipline through vigilance and emulation, making pupils maintain a continuous competition. The class was divided into two camps: Roman and Carthaginian, and each camp into decurias (groups of 10 pupils) led by a decurion (meritorious pupil). The classroom was conceived as an organized society and each pupil as a civil servant. The individual assessment of learning consisted of an interrogation equivalent to "passing on a lesson". In this way, effective control was achieved over everyone, but particularly over each individual.

In the 17th century, Lassalle was in tune with collective dynamics and made the classroom a space for individual and collective learning: "Lassalle's virtue", according to Dussel and Caruso, "is the awareness that classroom behavior or management requires both collective and individual moments". Thus, his hypothesis summarizes both tendencies and underpins the notion of a teacher-centered classroom with fixed configurations of pupils according to their merit or behavior: "Each pupil has a specific place, and no one will give up or change unless they change. He has the orders and approval of the head-master of the school" (Dussel and Caruso, 2003). In the 18th century, Lancaster suggested a large classroom (magna). On a single platform, teachers can interact with hundreds of students with the help of tutors who can observe the progress of the class to do as much group work as individual work (Dussel and Caruso 2003).

In the following nineteenth and twentieth centuries, the classroom evolved to meet the needs of industrialized models of technological production: "The school became part of a larger institution, a system of education and a model for the transmission of knowledge about literature and culture" (Dussel and Caruso, 2003). The classroom is standardized as a space of physical (tangible), social and psychological control with equipment that regulates its size, the individual and collective activities of school groups and its decoration/furniture, measures that are part of the modernizing trend "(...) to create a universal criterion against which each individual singularity can be measured and whether each one conforms to or deviates from common parameters" (Dussel and Caruso, 2003).

An industrial society based on factory employment requires training and development of workers; classrooms become privileged spaces of communication and fusion of home and work life, which together with home and workplace ensure education not only for the elite but also

for the majority: "People spend time in school classrooms in almost all industrial societies. Industrial societies treat classrooms like they treat factories. The connection is so strong that organizations such as the World Bank have invested billions of dollars in building classrooms in the belief that factories will be next, that the education system will lead to an industrial society and that this is progress. (classroom design) especially for pedagogical communication..." (Tiffin and Rajasimham, 1997).

In industrial societies, the classroom remains a privileged and sometimes exclusive place for education. These places diversify and increase: from the intimacy of homes to the public spaces of former monasteries and convents, factories, and administrative buildings, to generalized images and concepts: "Places dedicated to education take many forms, but for most people in almost all countries the classroom is a rectangular room with rectangular tables and rectangular blackboards, this formula for facilitating learning has spread all over the world. This is what we mean by a traditional classroom. It is a system of educational communication that has stood the test of time and has been very successful. If we want to improve it, we need to understand how it survives and reproduces (Tiffin and Rajasimham, 2003). In our time, school refers to a building made up of groups of classrooms: "A classroom simulates a place where people live and work, especially an office work environment. They are designed to teach people to deal with problems that are presented in an abstract way.

Classrooms were created in ancient civilizations to teach reading, writing, and counting (...) classrooms are the first learning system for acquiring basic literacy and numeracy skills, but also have the potential to provide access to a library of written language that is a source of strength" (Tiffin & Rajasimham, 2003).

Its architecture and furniture and tools arrangement is shaped by this communication space, as a gear of space, which allows "... the symbiosis between human and artificial memory and rapid access to knowledge in written form. (...) Its presence can explain (...) the way in which classrooms are integrated into home and workplace education systems" (Tiffin & Rajasimham, 2003). With the advent of ICT and the knowledge society, the traditional face-to-face classroom is transformed into a virtual classroom: teachers report/communicate (direct/supervise/control) from a platform (the school panopticon) to a platform that spatially organizes individual or group work. Group moved to a virtual space, telepresence, where the study group has greater flexibility in time, using technological means, focusing on continuing with the presentation of the guide dictated by the learning script (Rodríguez & Vázquez, 2020).

In virtual classroom, while the concept of spatial isolation disappears, control/rules increase; both students and teachers are limited/restricted by an online education programme that is more closely monitored and supervised by the institution; it can now supervise the whole educational process (bureaucratic panopticon). Teacher minimizes their role of guard/panopticon by participating in forums, e-mails, chats, videoconferences, etc. to conduct, review and monitor tasks/activities. Virtual classroom means non-face-to-face spaces and many virtual spaces, but it is still a multimodal space that guides/modulates learning. The virtual classroom is a holographic improvement of the traditional classroom, especially in terms of managing the learning process, as well as an innovation that breaks the isolation and punctuality of the

traditional classroom, which will undoubtedly have an impact on the family and the workplace (Salinas, 2020).

### **Differences between virtual and traditional classrooms**

The term classroom refers mainly to a physical concept related to a teaching-learning space, its architecture, location, or distribution of people (students/teachers) and structures that inhabit it; it belongs to the educational space. For virtual educational modalities, they mean a constellation of information spaces. Secondly, the classroom is designed as a symbolic space that evokes a place that gives value or meaning to the message to teach and learn, both to discipline and to control. When an educational activity becomes a communicative activity, it requires a place/space traditionally called the classroom, which is the physical space in which the school paradigm is expressed; it is a meaningful space: the objects arranged in this space show the didactic character of the pedagogical activity: a row of chairs in front of a desk and a blackboard, or binary tables and blackboards that move dialogically. In both cases, the traditional classroom, as a physical or symbolic space, is a teaching/learning scenario, a place where expressive and perceptive work is carried out in the first person (face to face or shoulder to shoulder) by the group. From this perspective, the classroom creates a specific environment in which pedagogical activities take place, it is the traditional core of the teaching environment and therefore frames the educational processes; a place that enables learning, information and communication is strongly regulated by the school management, the head of the institution, who assigns its residents/actors, determines the duration of their stay, arranges its furniture and tools.

According to Hall (2001), The Direct Classroom is an institutionally limited space bubble used and shared by the members of the group, it not only has an architectural arrangement in the building called school, which may occupy the most space, whose identity derives from its distinction from the other interconnected bubbles that make up the building: library, canteen, teachers' cubicles, laboratories, workshops, assembly hall, gymnasium... etc. Some consider the learning space as an extension of the curriculum and thus as a link between the physical and the symbolic.

University teaching in Criminology plays a fundamental role in the education of highly trained professionals who are prepared to face the challenges in the field of justice and the study of crime. In this context, it is important to highlight the importance and relevance of effective and quality teaching in this discipline.

Criminology is a multidisciplinary field that encompasses sociological, psychological, legal and scientific aspects related to crime and criminal behavior. Teachers of Criminology are tasked with providing students with the theoretical and practical tools necessary to understand and analyse the factors that influence criminal behavior, as well as to develop research and analytical skills.

In Criminology teaching at university, it is essential that lecturers have a solid academic background and professional experience in the field. This will enable them to teach up-to-date and relevant knowledge, based on scientific research and developments. Teachers must be

aware of changes and trends in Criminology to provide students with a complete and accurate overview of the discipline.

Classroom was, and still is, the primary school room; and it has remained so since ancient times, albeit with the same basic architecture and decoration: a rectangular room with rectangular tables and a rectangular table. We are now moving towards a new spa-tial bubble: virtual classroom, radically different from the face-to-face classroom; a place without physical location, without existing equipment, but forming a technological network that creates a new information space, changing its traditional concept: virtual classroom loses its presence (a space physically built and inhabited in a monochronic time); and gains, modifies/extends spatiality and temporality. When virtual classroom is relocated, it is transposed into cyberspace, a virtual meeting place of tele present actors, constellations in multiple (polychronic) constellations. This change reconfigures the controlling role assigned to the conventional classroom and transforms the education, or the new agent of educational process management, dissolving the personal space without losing control or discipline, and enhancing and improving it even more efficiently.

The new learning space, while open and diverse, is less able to provide the focus and insulation from outside noise necessary for deep learning tasks, when the virtual occupants of the virtual classroom (teacher/absent learner) are faced with a universe defending the possibilities of information and communication media that distract from deep content learning; acquiring '...linear and deep thinking that encourages creative and not necessarily utilitarian thinking: Internet-induced multitasking takes us away from patterns of thinking that require reflection and contemplation, and with that we not only somewhat dehumanize, but standardize' (Carr in Celis, 2011; b/p). Carr (Celis, 2011; n/p) has emphasized that information and communication technologies put us in many places and entrust us with many tasks from which we have access to vast and varied amounts of information. This is certainly a good thing, but this new gift of ubiquity disrupts or hijacks the processes of isolation and focus necessary for reasoning and creative thinking. By breaking down the walls of the traditional classroom, virtual classrooms gain variety and scale, but lose the atmosphere of isolation and focus that the face-to-face/traditional classroom once offered.

New information technologies and the resulting teaching methods, distance education and e-learning, are dissolving the traditional educational space and transforming it into environments/spaces located in a connected environment, such as place. The same is true for the climate, which becomes polychronic at every turn. Classroom concepts are evolving towards remote, decentralized and virtual spaces. This changes the role of the teacher-student actors and makes the use of their tools more complicated, by exploiting the pedagogical action and focusing it on activities that acquire skills, abilities and knowledge. Face-to-face and virtual lessons need to regulate students' space and time, focus/distribute them to perform individual or collective tasks or activities.

The difference is that in face-to-face education the student group is physically located and subject to strict schedules limited to the physical space, while in virtual education teacher and students are not physically present but delocalized, located in different places and



constellations, with flexible schedules thanks to technical support. The difference between a physical space and a virtual space is that the physical space of a traditional classroom is limited by the organization and layout of the space, as well as by its size and time (segmentation of the activity and its serialization). As there is no physical space in the virtual classroom, it is not limited, but expands to open up to other virtual classroom spaces located in cyberspace.

### Differences Between Traditional and Virtual Classrooms

Feature	Traditional Classroom	Virtual Classroom
Space	Physical, face-to-face	Symbolic, cyberspace
Time	Fixed schedule	Flexible, asynchronous
Interaction	Face-to-face	Forums, chats, video calls
Control	Teacher-centered	Platform and institutional
Resources	Physical tools (board, desk)	LMS, forums, multimedia

### The perfect 21st century classroom

"The 21st century classroom will not be an isolated, immobile room in which a teacher, with meagre teaching resources, makes available to their students the information and knowledge he or she has. It will be a vehicle capable of travelling to any part of the world, exploring its most distant and unknown confines, going back in time, exploring the solar system, and even other galaxies. The instruments capable of transforming these static halls into powerful vessels for exploring knowledge are already available (D'Ignazio, 1990)". A multimedia workstation puts a virtually unlimited reality within the reach of the student.

Information can be collected through CD-ROM encyclopaedias, databases, video discs, sound recordings, video clips, photographs, satellite images, e-mails in specialised centres, books, printed encyclopaedias and other traditional reference materials. It is also possible to use simulation programmes that realistically represent the occurrence of phenomena and processes. All of this can be displayed simultaneously on a single monitor (Hainaut, 1992; pp. 87-96) "It is imperative that educators begin to consider the classroom as a space that transcends all boundaries, and the computer not as an immovable computing device, but as a vehicle that can take us on the wonderful adventure of empowerment" (Hainaut, 1992; pp. 87-96). When telecommunications and multimedia become tools in the teaching process, school space is transformed into a learning environment without spatial-temporal barriers, more lively, impactful, dynamic and creative (Hainaut, 1992).

In addition to having expertise, Criminology teachers must also have the pedagogical skills that enable them to effectively convey content to students. This implies the ability to adapt teaching methods to students' needs and characteristics, to encourage critical thinking and to promote participation in the classroom. The use of innovative pedagogical strategies, such as problem-based learning, teamwork and the use of educational technologies, can contribute to enriching the students' learning experience. Besides the transmission of theoretical knowledge, teaching in Criminology should also encourage the practical application of the concepts learned. Teachers should provide students with opportunities to investigate, participate in practical projects and collaborate with professionals, who work in this discipline.

## **Educational spaces of the future**

Learning spaces and their classrooms are now face-to-face spaces that coexist with new virtual spaces known as mixed or hybrid modalities. This classroom space encourages dynamic and interactive ways of carrying out educational tasks.

In face-to-face classes, room bubbles refer to different rooms in the building (libraries, classrooms, work-shops, data centers, classrooms, sports facilities, leisure areas, administration rooms, etc.); in virtual education, spatial bubbles refer to symbolic/informational environments related to a website, digital network or virtual library, information search engine, television, or radio, etc.

The difference between face-to-face and distance learning requires, on the one hand, an in-depth analysis of what it means to teach in a shared physical space (present) to another, to learn at a distance (absent), to lead the break with the proxemic law of coexistence, which demands physical proximity, and on the other hand the revision of ideas and prejudices about the natural and the artificial in learning processes: "(...) The material/real aspect of the notion of class was challenged by the advent of virtuality, where physical proximity is no longer necessary to be 'together', or to use Heidegger's terms (1996): 'all distances' diminish in time and space. 3-11), within a disciplinary approach that has organized not only the school but also retreats that are changing today with the advent of new information and communication technologies, technologies of intelligence that propose new production methods that transform the concepts of space/time in today's understanding (from Euclidean space to topological space); that announce the transition from the disciplinary societies of previous centuries to societies of control.

Classroom dynamization in the teaching of Criminology at university level involves the implementation of pedagogical strategies that encourage active student participation.

Rather than adopting a passive approach to teaching, teachers use interactive methods such as debate, discussion groups, case studies and role-plays. These activities allow students to apply theoretical knowledge to practical situations, promoting critical thinking and analysis of real problems in the area of Criminology. On the other hand, virtualization in the teaching of Criminology in university involves the adoption of virtual tools and environments to facilitate online teaching and learning.

Through online learning platforms, lecturers can provide reading materials, videos, activities, and assessments in an environment accessible to students anytime, anywhere. This allows for greater flexibility and autonomy in the learning process, as students can review content at their own pace and adapt it to their individual schedules. Virtualization also encourages student-faculty and student-student interaction through discussion forums, chats, and videoconferencing, which promotes the exchange of ideas and collaborative learning.

## **Communication in the classroom**

An educational space, whether in person or online, needs a platform to fulfil its communicative functions. Decoration refers to a set of elements in a classroom that facilitate communicative

interaction within a group. Physical and virtual classrooms are places that consist of an organised set of objects arranged in a real or virtual space.

### **Classroom dynamization and virtualization**

A traditional classroom consists of a rectangular, largely enclosed space with an audience area and a teacher's presentation area. This room is essentially equipped with three objects: a blackboard, a table/bench (for students) and a table/desk (for a teacher), it can be complemented with other objects and devices: multimedia projectors, televisions, video recorders, DVDs, electronic whiteboard, computer, etc.

Virtual classroom environment consists of a computer environment equipped with specific resources (multimedia content, virtual libraries, information resources, etc.) and specific tools (communication and interaction spaces, such as forums, noticeboards, chats, ...etc.). It is the interface of the virtual environment that has a platform (LMS) or re-source manager and tools to keep track of both the students and the teacher.

Classroom dynamization and virtualization in teaching Criminology at the university offer a series of benefits. These methodologies allow for greater student participation and motivation, as students are actively involved in the learning process.

In addition, the diversity of online resources and the possibility of accessing up-to-date research and real case studies in the field of Criminology enrich the content and students' understanding. Dynamic classrooms and virtualization also prepare students for today's work environment, which increasingly uses digital and collaborative technologies.

In conclusion, classroom dynamization and virtualization in university Criminology teaching are pedagogical strategies that have transformed the way Criminology is taught and learned. These methodologies encourage active participation, collaborative learning, and access to online resources, thus improving the quality of Criminology education.

On the other hand, virtualization provides flexibility and accessibility to learning content, allowing students to adapt their study process to their individual schedules and access up-to-date resources anytime, anywhere.

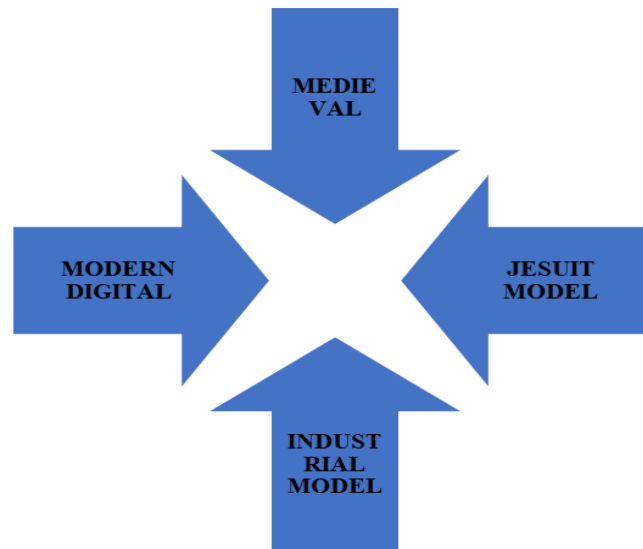
Criminology teaching at the university benefits from classroom dynamization and virtualization by providing a more interactive, participatory and personalized learning experience. These methodologies encourage student engagement and motivation, while providing them with the opportunity to develop the digital and collaborative skills that are so necessary in today's world of work.

Furthermore, classroom dynamization and virtualization make it possible to use various technological tools and resources, such as simulations, online databases, forensic analysis software and e-learning platforms, which enrich the educational process in Criminology.

These tools allow students to practice and apply theoretical concepts, conduct more thorough research and access up-to-date and relevant information in the Criminology field.



## Evolution of the Classroom



## Communication in the different kinds of classrooms

### Dynamized vs non-dynamized classrooms

Traditional classrooms can be divided into limited (poor) or extended (enriched) classes. Poor classrooms have the three basic elements listed above (board, table/benches, and table/desk), while enriched classrooms have these three elements and more. In the first case teaching partners decrease, in the second case they increase. Obviously, a small-er or larger variety of object devices would determine the extent to which group expression and perception expand and improve while listening, writing and seeing are enhanced: Narrow classrooms/poor classrooms would be less loaded because the communicative limitations of media objects do not facilitate the work of group expression and perception; Poor supervision indicates that the educational activity is limited to using the teacher's oral/gestural skills and that the students' perceptual skills (writing and taking notes, summaries and recording or filming the teacher's presentation) will have noisier perspectives.

Classroom decoration and physical environment only facilitate and/or support educational activity, but do not determine it. They are either supportive or atoning environments. In the virtual classroom, bad attitudes are mainly related to poor information environments, not only because of the use of media, but also because of lack of expression, e.g., moving a traditional/face-to-face curriculum to a website or recreating a traditional classroom. In a low-quality virtual classroom there is no place for communication and interactive contents and efficient management of resources and tools, no multitasking, linear, etc.; on the contrary, rich decoration in the classroom refers to the usability of interfaces and the interoperability and interactivity of contents, when the systems or platform and their performances offer services and tools that promote interactivity, multitasking, fo-rums and virtual libraries, messaging, all placed in a pleasant/friendly organized way.

## Active Vs passive classroom

A passive classroom is a classroom in which the space is arranged for the lesson: the teacher, seated or standing, asks the students to make a presentation.

The following model is used: there is the actor, the teacher-self who plays the leading role, and the spectators; the teacher establishes his position as a presenter in the open space, the territory arranged as a stage in front of the pupils. The teacher-self defines its didactic character and delimits the students' space (audience/audience).

This use of space is educational and is oriented towards information rather than communication, but does not necessarily inhibit, limit, or weaken dialogue simply due to the relatively short duration of the session. An active classroom means exchange of information and therefore more interactivity; the design of the room is dialogue oriented.

## Features of Active vs Passive Classrooms

Classroom Type	Characteristics	Interaction Level
Passive	One-way communication, teacher-led	Low
Active	Student participation, dialogue-based	High
Passive Virtual	Info-focused, limited interactivity	Very Low
Active Virtual	Forums, assessments, peer communication	Very High

A two-way or multidirectional interaction model is created where conversational networks are more important than mere teacher exposition. This spatial arrangement is oriented towards communication, not just information transfer.

However, the teacher still has a primary role: facilitating and leading discussions, setting the timetable, summarising and pointing out what is happening in the curriculum. In the case of virtual classrooms, passive classrooms denote an informational environment where interactivity is weak: no or little interaction with peers and the teacher through forums, wikis, chats, emails, etc.; they have little or no time to assess their knowledge, skills, or abilities.

In a passive virtual classroom, information is scarce and flows more slowly. In the active classroom, on the other hand, interactivity abounds with dedicated resources, full interactivity between teachers and students, and continuous learning assessment based on access to repositories and other information networks (Martínez & Gairín, 2019).

More information is available and travels faster. An active virtual classroom creates many conversation networks that help facilitate teamwork and create a learning community, while a passive classroom creates few or no virtual conversation networks and relies on individual and self-directed student work.

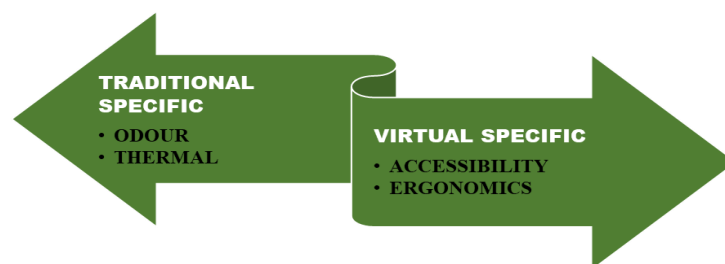
## Kinaesthesia

Kinaesthesia, understood as a mixture of the sensory system (vision, hearing, smell, touch, taste, etc.).

The kinaesthetic elements of the face-to-face classroom are:

- **Visibility:** this means that even from a distance, students can clearly see what is being drawn/written, displayed orally/gesturally or shown (print, video, film, website, etc.), etc.
- **Acoustics:** means students and teachers coming from all parts of the classroom and hearing well. The classroom should be noise-free with good sound to hear both the teacher's ego and students' alternate voices, as well as recorded audio fragments or phonemic information.
- **Thermal:** The classroom should be at a comfortable temperature; neither too hot nor too cold, so that the weather conditions do not disturb or distract the work of the group.
- **Aesthetic Functionality:** The combination of dynamic objects in the classroom to make the space functional and aesthetically pleasing.
- In the virtual classroom we identify the following kinaesthetic elements:
  - **Visibility:** a functional and aesthetic office environment.
  - **Accessibility:** Ability to adapt the user interface to different groups of users (visually impaired people, keyboard customizations, software for the blind, etc.).
  - **Ergonomics:** Ability of an interface to be user-friendly and intuitive.
- **Interactivity:** accessibility of communication mechanisms. Therefore, the greater the kinaesthesia, the greater the communicative richness and vice versa: the less kinaesthesia, the less communicative richness.

### Kinaesthetic Elements Comparison



### ICTs and education

One of the characteristics of the developed and technological societies' thinking at the end of the 20th century is the questioning of the capacity of engineering science as a crucial and unique strategy to improve and solve social, economic and natural problems, that are currently developing (Cabero, 2001). The concepts of asynchronous learning without geographical restrictions and capable of multiplying learning environments reflect the circumstances under which higher education is changing in the modern world. This change sows the seeds of a real pedagogical revolution towards mobile and flexible structures. However, it must be

emphasized that the university must keep its important role in the construction of knowledge in the service of distributed collective intelligence (Didriks-son, 2004). The concept of virtual university implies the use of ICT and the combination of different technological tools, allowing the development of a new paradigm conducive to lifelong learning in a new relationship between the actors and their training (Delgado & Muñoz, 2020).

According to Cabero (2001), a continuum between science and technology is increasingly accepted, as both strive, or at least should strive, to improve the quality of life, one is based on a speculative theoretical framework and the other on a theoretical framework. In other words, the latter must rely on the former to solve the practical problems that arise. There are still many structural barriers hindering the adoption of ICT in higher education: the recognition system for teaching achievements is insufficient, obsolete methods of working with ICT are outdated and their presence in curricula and the average age of university teaching staff is still very high, as well as the stereotype that the new generations of students, much better prepared for the new educational challenges of the 21st century than teachers.

For his part, Bates (2001) argues that simply going with the flow of technology into education may be a dangerously costly and ineffective policy. Strategic planning is a relatively well-known and standardized management approach, and most universities have a strategic plan of one kind or another, usually applied at the level of the institution as a whole. Esains (2005) explains that this is a trend that has intensified in recent decades towards a crescendo of integration of technology into everyday human use. Learning is one of the basic human needs. Almost all innovations in information and communication technologies have been adapted for educational purposes.

The beginnings of the introduction of technology in education date back to the beginning of the last century. Since 1900, various technologies have made people's work easier, including the media, which have had a deep impact on society in many ways. There is a rare association of media with formal human educational processes, and this is apparently a purposive relationship, as media are means used by different paradigms in teaching-learning processes (ITESM, 2001). Therefore, technology is the systematic application of knowledge that can be applied to teaching. For Escamilla (2002), educational technology refers to the artificial means (tangible technologies), natural means and teaching methods (intangible technologies) that can be used for education. This is a study that has traditionally received much attention in the discipline of instructional design.

From virtuality's point of view, the curriculum should be treated as a networked connection whose main axis is the development of the management of this process. The network curriculum is implemented through ongoing practices and activities, using technology as a resource, tool and means. Teaching is about enabling the learner to follow motivated paths, in open learning, but with specific content. Technology (Melarè, 2007). For the reasons above, learning with virtuality means making connections and opening spaces for the learner to develop a kind of autonomy in terms of access.

Educational technology integrates and develops theories, experiments, and dissemination technologies to improve the education system and provides methods for the curriculum as teaching becomes more effective with new technologies. So why is it necessary? In fact, inadequate teaching strategies are currently used (Yukavetsky, 2001). Nowadays, students have the ability to develop their knowledge acquisition skills. However, there are many students who do not continue their studies in school, for example, due to constant learning needs, and the lack of effective teaching by teachers leads to increased student dropout.

Cabero (2001) points out that educational technology as a field of study and profession has developed significantly in recent years. All this conquers mass media and new information and communication technologies due to social development and the importance of the new postmodern times. At the same time, their development clearly reflects the relevance that technology has achieved over the past century, and their development has kept pace with a constantly changing society. Ideally, therefore, every teacher should also develop and know how to create an effective learning environment in which the student can learn effectively through innovative methods and means; using educational technology. However, this can only be achieved by being aware of the fact that there are teaching methods other than the traditional ones.

On this matter, some international organizations are actively involved in disseminating and maintaining alternatives to the traditional teaching method, as Sarramona (1990) explains that in 1971 UNESCO organized an international seminar on Appropriate Technology in Education in Bogotá, where he explained the concept as a certain way of life and social organization: it was considered appropriate technology that contributes to the construction of the educational goals of each group.

Specifically, it was concluded that:

- Appropriate technology in education is not a set of didactic materials for doing things, but a specific process for a concept aiming at a new economic and social order.
- One focus area for the application of appropriate technologies is non-formal education, which is more flexible and open to innovation and offers more opportunities to reach disadvantaged sectors.

Technology is described as a phenomenon as old as the relationships that can be forged between communities of different cultures. This phenomenon refers to the adoption of techniques from one community to another. Changes are more easily perceived and continued. There are two ways of approaching the use of technology in the classroom. The one is to use it as a teaching tool, the second is to use it for distributed learning. They should be understood as two parts of a continuum, not as separate approaches (Bates, 2001). In to-day's world, however, few things are changing as rapidly as educational technology, which is having a major impact on the way we teach and the methods of training. In Dale's (2001) words, when educational technology is used appropriately, its power becomes evident. In a recent study of a six-year statewide initiative in West Virginia, one third of the practice-related improvement in reading and mathematics was due to the use of new technology.



## ICT Tools and Educational Applications

Tool/Technology	Application in Education
LMS (e.g., Moodle)	Course delivery, assignments
Virtual libraries	Research and reading
Forums & Chats	Student interaction, peer feedback
Multimedia Simulations	Scenario-based learning

Due to the Internet and e-learning development, traditional education is changing. As educators and those who make policies monitor these changes, educational reform is imperative, and the value of technology in education is one of its pillars (Morgridge (2001). E-learning is one of the learning wonders as it is a never-ending process and according to Morgridge (2001), who expresses his concept that people have the opportunity to continue learning, it enables the educational process to continue, to grow and new opportunities to be discovered. In the current context of globalization, we find that the transformations carried out at the end of the last century are essentially characterized by the rapid passage of time, by the quantity and variety of technologies, by the breaking down of cultural barriers and by the constant immersion in the cyber world, which have provided the current environment conducive to progress.

According to Cabero (2001), educational technology is described as a vibrant, dynamic, contradictory, and important discipline throughout the history of education. Vibrant and dynamic in the sense that it has evolved gradually, from its first moments of simple inclusion of audiovisual media in the classroom, to its current conceptualization as mediated learning situations, applying laws and principles for subsequent training measures, without forgetting its pretension to organize and design a complete educational system.

The adoption of e-learning as a complement to the teaching-learning process is characterized by the possibility of a specific type of user interaction with the environment. Electronic media, and in particular information and communication technologies, are fast becoming a very powerful means that offer a wide horizon of solutions to these challenges, increasingly allowing us to communicate and collaborate, create, manipulate, model, simulate, compute, analyze, visualize, synthesize and present while minimizing time and space boundaries (ITESM, 2001).

Technological influence has also reached the manual and its organizational processes. However, barriers persist due to a lack of flexibility to adapt and respond to these challenges. Ignoring the fact that technology is already part of a globalized society is reflected in reductionist practice and organizational theory.

Essentially, to establish the application field of technology in educational institutions, with which it will be possible to understand the current educational offer, created in electronic media and oriented to academic processes (Navarro, 2004). According to Escamilla (2002), technology is like a sensory channel that involves both the teacher and the student, and the influence of the teacher on the environment, the influence of the student on the environment, and the benefits of the environment for small or large groups of students.

Likewise, the focus of the mass media should not be on individuals, but on the contrary be general. These factors should be considered when making choices. At a time when educational

paradigms are shifting from teacher-centered to learner-centered learning; in the creation of knowledge-based rather than productive societies, in flexible and dynamic educational models and, among other things, in the integration of information and communication technologies; it is necessary to rethink teaching practice, the role of learners and the learning environment in which it takes place (Palloff, 2000). These teaching methods are open learning environments.

We can already note that two main trends are shaping the direction of education in the new millennium: the accelerated development of new telematics technologies and their impact on educational processes, with a greater emphasis on student learning and guidance. The quality of education now has further elements of validation based on pedagogical theories that underpin pedagogical practice and teacher development processes in areas related to the new technologies that have become a key issue in education. UNESCO (1998a) recognizes their influence (the influence of new technologies) on the development and transmission of knowledge without supplanting teachers, but rather modifying their traditional role by facilitating their work in new learning environments. New technologies are of such importance that the Plan of Action for the Transformation of Higher Education in Latin America and the Caribbean includes a specific chapter on the academic management of new information and communication technologies (UNESCO, 1998b).

### **Pedagogical time: exposition and dialogue**

In classroom, time is conceived in two ways.

1. As a sample of activities with a beginning and an end, i.e. they are considered as course, course following the next line, and segments ending with a session of one hour, two hours or three hours, connected in the school cycle: week, month, semester, semester, academic year. An object or shape implies a part of ordered time. This conception of time corresponds to the use of direct occupations, which inhabit time (real time: synchro-nous/monochronous) defined by the institution.
2. As a continuous process of constellation, as mentioned above, in multiple times, real or not, corresponding to a virtual, delocalized classroom, where the actors are in cyberspace at different times (synchronous or asynchronous/polychronic). In both cases, time is the organizer of the relationships in the group that take place in the live and virtual learning space, its activities and experiences:

"Time organizes our personal lives, the relationships between human beings, social activities and also what concerns education. In turn, time (including school time) takes on meaning thanks to the experiences we have while it is passing ("The value of time in education - Google Books") What time do we talk about when we refer to education? Is it the time of school organization (calendars and timetables)? ("Our #recommended book: What time do we talk about when ... - Facebook") Is it the time that a pupil spends looking anxiously at the slow movement of the hands of the clock? Is it the time of the teacher's dedication? Is it the real time of learning? Is it the time of the morning and afternoon or the time of the continuous day? Time in education is worth the impact, significance, and enrichment it has for those who experience it". ("El valor del tiempo en educación | Red AGE") (Gimeno, 2008).

However, the organisation of the teacher's pedagogical work in monochronic time or in polychronic time involves following the string of time, before-during-after:

- Before: the preparation of the lecture.
- During: the presentation and dialogue of the content of the subject.
- After: the learning and evaluation of what has been presented through exams or assignments.

Before and after are polychronic times. Whereas the exhibition and dialogue are in a monochronic or polychronic sequence. Exhibition and dialogue should be seen as weights or discursive knots that unravel in real or virtual time. The temporal educational cycle has three moments in the pedagogical space: opening, development and closing. It takes more time to develop and less time to open and close. However, these times are required in both virtual and face-to-face space. It is an immutable ritual that guarantees continuity and coherence. The difference would be that times in virtual space are not only real, synchronous, but also polychronic: they are used asynchronously or synchronously; however, they follow the ritual of linear time: open-expand-close. This is your time bubble.

In this bubble, lectures and dialogues are intertwined; that is, there will be opening, developing, and closing lectures and dialogues. Time in the virtual classroom can disappear, become timeless, although, as we notice, virtual education also establishes monochronic start and end times for its lessons.

It is important to note that the transition to virtual classrooms also involves challenges. Teachers need to ensure that students are properly supported and feel engaged in the virtual environment. This involves establishing clear and consistent communication, providing timely feedback and offering support resources such as online tutoring and counselling services.

In conclusion, the transition from analogue to virtual classrooms in teaching Criminology has transformed the way criminological education is delivered. Virtual classrooms offer digital resources and tools that enrich learning, broaden access to education and provide flexibility for students. However, it is essential to address the challenges associated with this transition and to ensure adequate support for students in the virtual environment.

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