Passive classes, active classes and virtual classes, ¿transmitting or constructing knowledge?

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Resumen
Para realizar el proceso de enseñanza-aprendizaje existen múltiples estrategias pedagógicas. En las clases pasivas se transmiten conocimientos y el centro de la clase es el maestro y sus saberes. En las clases activas y en el Aprendizaje Basado en Problemas (ABP) se pretende que los estudiantes descubran y construyan el conocimiento. En el ABP el problema precede al aprendizaje. Las clases virtuales y el blended learning (clases pasivas y virtuales) funcionan en el fondo también como transmisión del conocimiento. En el presente trabajo se revisan las fortalezas y debilidades de estas distintas modalidades de enseñanza-aprendizaje.

Abstract
Passive, classes, active classes and virtual classes, transmitting or constructing knowledge?

Many teaching strategies have been developed to achieve the teaching-learning process. In passive classes knowledge is transmitted and the class is centered in the teacher and his/her knowledge. In active classes and problem-based learning (PBL) the intention is to get students to discover and construct knowledge. In PBL the problem precedes learning. Virtual classes and blended learning (passive and virtual classes) also in the end function as a transfer of knowledge. This paper reviews the strengths and weaknesses of these different teaching and learning modalities.

“That education is not a matter of narrating and listening, but an active process of construction is a principle so widely accepted in theory as violated in practice”

John Dewey

The training of undergraduate students in Medicine comprises many pedagogical strategies (9). In the Faculty of Medical Sciences of the National University of Córdoba (UNC) the teaching and learning processes are based, in general, on a tripod: Theoretical class, Workshop and Examination. However, this traditional system to teach is being questioned (5, 6) and in many faculties in the world it is no longer applied -such is the case of McMaster University in Canada (4), Harvard University in the USA (5), Maastricht University in Holland (6) and the Faculty of Medicine of Mendoza in Argentina (7). There is more emphasis on practical learning, on the decrease of encyclopedic knowledge, and on strategies such as problem-based learning (PBL). These strategies would favor significant learning (5, 6) with which the human being is truly willing to learn what he finds meaningful and logical and tends to discard that which has no meaning to him. Any other type of learning will be purely mechanical, rote and temporary and it would mean learning to pass. Significant learning is relational and the meaningfulness of it is given by the relationship between new and old knowledge with life experiences and every day situations (9).

In this paper, we will make a revision of some concepts related to passive class, active class and virtual class, and we will go over the advantages and disadvantages of each modality. Of course this is not all that can be said; these are simply reviewed ideas about what experts say concerning Teaching and Learning processes with some personal contributions and an open door for discussion and exchange of ideas and experiences.

From primary education to university education and in postgraduate courses, we are used to listening to classes and to be transmitted knowledge. When we are asked to clear doubts, debate, or put forward a different point of view, we rarely participate or ask questions. Theoretical lectures are deeply rooted in our education system and it is one of the most widespread pedagogical traditional practices (9, 10). However, there is a great amount of information released daily in the field of Medicine, with more that 20,000 biomedical daily publications and a catalogue of more than 250,000 articles per year –in the United States National Library of Medicine only (11); this demonstrates the impossibility to transmit it all. It is said that up to 75% of medical knowledge is renewed every 5 years; therefore, the University has the duty to arouse students
curiosity and to help them structure abilities for permanent and significant study throughout their lives, optimizing self-learning, critical construction and application of knowledge.

Lectures work as a way to transmit knowledge trying to expand the files of memory and focusing on the content and on the educator’s knowledge \(^{(1)}\). Students are just receptors and it is the teacher who has the truth. The teacher and the content of the class are the centers of educational activity \(^{(2)}\). Students will be rewarded in subsequent examinations if their knowledge matches what has been transmitted to them.

Given truths underlie lectures. Truth is an established and unquestionable fact, transmitted vertically to students, who are isolated, distant and passive receptors. Learning, in this practice, is based on memory \(^{(3)}\) and the disposition of classrooms environments, with the educator as the center of attention, reflects this view of learning \(^{(4)}\).

The educator invests a great amount of time talking and this also contributes to intimidating students and deters them from asking questions, developing critical thinking and promoting abilities to find answers \(^{(5)}\).

The search for evidence in investigations to justify the permanency and broad diffusion of lectures as a pedagogical strategy is useless. Most papers arising from classroom observations and personal experiences suggest new strategies to revitalize classes, making them more active for students. This attitude towards lectures reveals the need experienced educators feel to introduce changes when it comes to teaching strategies. However, there are arguments in favor of lectures: some people believe that professors add a motivating and formative value to each class and that they act as a figure of identification; others argue that attending classes can foster a sense of discipline in the student, who is obliged to follow a schedule; others say it can promote multiple forms of social interaction, or that its content can communicate knowledge that is significant to students. They focus on information that is significant to students. They focus on knowledge as a given fact, but as an element in the concept of the teaching process \(^{(6)}\).

There are other studies that state that educators give lectures according to their own particular way of knowing and understanding, but students have different learning styles; therefore, educators should consider varying the teaching strategies \(^{(7)}\).

Those who advocate the construction of knowledge seek more participation, interaction and information that is significant to students. They focus on students as an artifice of their own knowledge within the concept of the teaching process \(^{(8)}\).

Ideas of constructivism come from research on Piaget’s cognitive development. He considers that knowledge is not a mere recording of knowledge without a constructive activity by the student in interaction with the object, and that innate cognitive structures do not exist \(^{(9)}\). Piaget did not understand knowledge as a given fact, but as an element in progress that builds on itself through action.

Vygotsky’s contribution is also important in constructivism since he states that intellectual development of an individual can not be understood without reference to the social context, and that learning and development are interrelated from the first day of life. He named the zone where learning takes place as “zone of proximal development”. In that zone, the student can handle learning with the help and support of more advanced students who work as guides. He pointed out the importance of social interaction in the process of knowledge construction \(^{(10)}\).

Ausbub’s significant learning is another basic concept of constructivism. Learning depends on existing relationships between new knowledge, the knowledge the learner already possesses and his conscious desire to establish those connections \(^{(11)}\). Disconnected knowledge, which tends to be memorized, can not be used for reasoning or solving problems in new contexts.

Perkins establishes understanding as a priority for learning to take place. People understand something when they can think and act flexibly with what they known about it. He calls this “performances of understanding” \(^{(12)}\). Understanding is recognized through action, which generates advances in that understanding.

Teachers’ roles also change in constructivist practices: they are a guide who establish goals, stimulate students, foster self-learning and assess and redirects the process constantly without adopting the role of expert on the topic \(^{(13)}\).

Current available literature on Education in Medicine insists in pedagogical practices based on constructivism, even for large groups of students with tasks such as answering questions, solving cases, designing and reviewing projects, and solving problems. All these activities can be done individually or in small groups.

One of the best known, structured and assessed suggestions for participation is Problem-based learning (PBL). It started in McMaster University in Canada in 1960 and it spread around the world. There is group work, activity, cooperation, feedback, adjustment to individual preferences, and student’s responsibility \(^{(14)}\). PBL is based more on understanding than on memorizing concepts.

In 2001, Van Berkel and Schmidt \(^{(15)}\) published a
research of the role that lectures had within a PBL curriculum, with 1,500 undergraduate students in Maastricht University in Holland. They worked on the hypothesis that due to the quality of lectures, they could have a positive influence on the management of study time by students, on the increase of their intrinsic interest for the subjects, and on the desired goals in general. When each learning unit was finished, they made an individual questionnaire were the following aspects were analyzed: the adaptation of content to prior knowledge, the quality of problems dealt with, instructors’ performance, and the quality and coherence of the classes. From the statistical analysis the conclusion drawn was that the quality of the classes did not affect any of the aspects under study, although it was noticed that students conceived of classes as organizers to guide studying and to expand their perspectives on the topic.

In Colombia, Amaya (24) published a paper on the teaching of Semiotics with participation activities and recommended reading in advance, obtaining a greater academic achievement which was reflected in the grades.

There are two classical meta-analyses which analyzed available evidence comparing PBL in Medicine with more traditional methods of education (25, 26). Leaving some differences aside, both analyses arrived at the conclusion that PBL is better valued in the assessment of both students and teachers and in the performance of students in clinical examinations. However, the classical method is more valued in basic levels. Vernon states that there is general evidence on the superiority of PBL, while Albanese suggests caution when it comes to its implementation until there is more conclusive evidence on its advantages.

Norman et al. (27) reviewed available evidence from experimental studies carried out in the field of psychology of learning and they demonstrated that activation of knowledge facilitates subsequent processing of the new information, and that the discussion of a problem in small groups is an efficient method to activate relevant prior knowledge.

It is surprising that, in spite of theoretical and empirical support of PBL, many faculties have not started to apply it. It is also surprising that students do not seem to be aware of the advantages of these teaching and learning processes.

When courses on teaching strategies are assessed, students put more emphasis on the administrative aspects, on the quality of lectures and on the integration of content. Only few highlight the importance of “active” learning practices. This shows a tendency in students to maintain a traditional position when it comes to the educational process (28).

Group work also exerts great influence on the formation of undergraduate students. Collaborative work makes students find common goals with their classmates and see them as colleagues and not as competitors. Magney (29) shows evidence that higher levels of learning, communication abilities, problem solving and collaborative work can be achieved through group work.

It is important to point out that PBL is a learning strategy that has nothing to do with the “Case presentations”, in which the general resolution is individual and depends greatly on the “Google” brain of each student.

With PBL the student learns through dealing with a problem and the educator becomes a consultant more than an information provider.

In the 60s, an advertisement appeared in the counter cover of the magazine “Patoruzito” offering courses by mail. The courses I remember the most were those of Drawing, Detective, Photography, and Dress making for women. I enrolled in the Photography course. In the first letter I received, they send me a great amount of information and fees; that was when I learned that the course was not free, as the advertisement read. I dear to say that those courses at home in isolation, with a lot of material are the predecesors of a new reality: virtual classes.

These classes allow for the optimization of time since they can be listened to according to the needs and availability of students (30). Each student in his own home could get all the information needed. Gathered as learning tools, information technology, the CD, The Internet, and the new software will broaden unusual horizons for students’ educational tasks. The CD, capable of storing a great amount of information -texts, images, graphs and sound-, will allow the student “to surf” through his information. At the same time, the Internet will provide students with current knowledge about any topic they can imagine and it will offer them endless possibilities of collateral data about that knowledge (31).

In virtual classes or “classrooms without walls”, the student opens up to a great amount of information and can make that knowledge his own.

The social and community aspect of education has always been regarded as a value. Schools exist for a practical purpose -to teach many students in the same physical space-, but they also exist for a pedagogical purpose –it is a place for socialization and group interaction.

Undoubtedly, virtual classes mean a great progress from the technological point of view, but does it mean progress from the pedagogical point of view? Doesn’t this look like the banking education Paulo Freire was so against, now in a new version of ATM? Vigotsky said “We learn from others and with others” (32). Virtual classes favor individual and isolated teaching which inhibits self-expression (32). Paulo Freire said that it is much easier to learn in the company of classmates than in solitude and that the group is the basic cell of education.

Sarramona (1992) stated that in distance education, the student only communicates with himself and that it is really difficult to establish a teacher-student...
bidirectional communication when there is distance. Although virtual classes are used in discussion forums, e-mail, etc, they work mainly by “transmitting knowledge”, something we have already questioned when we talked about passive classes.

With the height of virtual classes, e-learning and ICT (Information and Communication Technology), and according to reviewed criticism, a new term in Education and ICT appears: “blended learning”. This modality responds to a social context that needs a new pedagogical organization relating the social and technological process of change with educational innovation. According to this perspective, the blended learning “blends” e-learning with face-to-face learning, introducing a modality that is flexible in the construction of knowledge as regards time, space and content (30).

A bit of virtual classes, a bit of classroom training, stir for five minutes and you are ready to go.

If “transmission of knowledge” remains the paradigm of education, blended learning is more modern, but it is just more of the same old thing. Something changes so that everything else stays the same. Since I feel I am also part of this, I repeat John Dewey’s quote: “That education is not a matter of narrating and listening, but an active process of construction is a principle so widely accepted in theory as violated in practice”.

No type of class can be limited to transmitting knowledge. Learning is an active process of constructing knowledge and not a passive process of accumulating information. The student is the protagonist and the one who has to learn. We educators are responsible for arousing our students’ interest and pleasure in learning. We learn by doing, making mistakes, thinking and rectifying, almost always with the help of classmates and experts.

We learn by constructing and by discovering knowledge.

We must train critical, constructive and thoughtful citizens and not citizens who do not participate and remain passive.

Bibliography

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