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Universal Design for Learning: Similarities and Differences from Differentiated Instruction

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Summary: In a world where, at first glance, it seems that humanity has been lost, groups of scientists have attempted to redefine the term "man" by trying to formulate appropriate conditions for approaching and using all the spaces and possibilities that a physical structure provides for each interested. The outcome of this project was Universal Design, a term that initially characterized the science of architecture and that gradually affected many parameters of social life and educational planning. The application of universal planning in education allowed the organization of space and teaching in such a way that the beneficiaries were more, emphasizing the participation in the educational process of social groups whose access, until that moment, seemed impossible. Its operation has minor differences from differentiated teaching and is an important tool for eliminating disadvantages, resulting from any difference or inequality of the student population.
Keywords: universal design, participation, access, differentiated instruction

1. The Basic Principles of Universal Design for Learning (WLD)

The acceleration in people's access to information did not have consequential effects on the way people learned. On the contrary, the technological leaps always left behind the people who could not follow and fatally ended up at the tail end of the new educational processes.

Taking into account the principles of universal design that sought access to natural structures for every human being by making them more functional, educators turned to designing new learning models that would allow the most vulnerable groups to participate in processes of improved access to knowledge. An outcome of this reasoning was Universal Design for Learning (UDL), which was designed at the Center for Applied Special Technology (GAST) in Boston in 1998 (Spooner, et al., 2007).

The goal of the KSM was to renegotiate the curriculum in such a way that it becomes more flexible and allows students with different learning needs to learn equally, regardless of possible disabilities, ethnic, cultural or religious differences (Pace& Schwartz, 2008; Hartmann, 2011). The term "universal" signifies the belief that every student is a unique personality and therefore every particularity that characterizes him must be respected and accepted and taken into account during the planning of the syllabus, so that he too enjoys equal opportunities in learning (Rose& Meyer, 2002).

Recognizing diversity as an active reality allows the CSM to design a structure that takes it into account from the start, so that no further changes or adaptations are required in its lifetime. This results in a higher degree of success than other, piecemeal solutions and universally benefits a larger student population (Erlandson, 2007).

In order for it to be implemented, a condition is considered to be the removal of every obstacle from the places where learning takes place, from the syllabus, the educational material, the teaching methods and the educational software (Arabatzi, et al., 2011). The final goal to which all the above parameters aim is the possibility of perfecting the learning of the students, making them experts (expertlearners), while it is not acceptable for them to possess only one area of knowledge or skills (Rose & Gravel, 2011). To achieve this goal, the KSM is based on four pillars that concern themobjectives, methods, materials and evaluation (Arslan, 2017).

Objectives indicate the final destination of the learning process, with the knowledge, skills and attitudes that all students should acquire, methods refer to the instructional techniques by which teachers seek to stimulate the learning process, materials they concern the means by which a multifaceted presentation of the learning content is sought and must have great flexibility and the assessment is a reflection of the students' efforts in order to measure the acquisition of new knowledge.

The whole idea of the CSM was based on discoveries in the field of neuroscience which accepts that in the large network of neurons of the human brain there are smaller networks, which are used specifically to carry out specific processes (Eysenck, 2010; Dolph, 2016). The three brain networks that enable broad processes are networks for recognizing and understanding concepts, ideas and information (located in the back of the brain), strategies, planning and execution networks (located in the front of the brain) and emotional networks that they affect the individual's assumption of responsibility and commitment regarding learning (they are based in the core of the brain) (Papadopoulou, 2011b; Riviu, et al., 2015).

The three basic principles of the CSM concern:

a. In providing multiple means of representation and presentation of information. The assimilation of information is carried out by students in a variety of ways, as there is no single ideal way to achieve it. In particular, as in today's school education concerns students from multiple starting points, routes and speeds, it becomes necessary to have a framework that will make it easier for these diverse people to be led to learning. From related research it has been established that most students learn with visual learning experiences (65%), fewer with auditory experiences (30%) and only 5% with kinesthetic experiences (Mind Tools, 2002). The KSM concerns all the above learning experiences, but also their combinations, making use of multiple educational media.It can be captured by providing multiple visual or auditory alternatives that will allow the information to be tailored to the learner, by providing clarifications, clarifications or codifications of mathematical symbols, or by creating a cognitive premise that will serve as a starting point for the student for the new knowledge. This role can be replaced by the introductory connection of new knowledge with previous ones.
b. In providing multiple means of action and expression, in order to strengthen the strategic networks of people with disabilities or differences and deprivations. national, cultural or religious differences. These people, depending on the type of learning they belong to, perceive the learning reality differently. Visual learners prefer written information, notes, diagrams and tables, auditory learners perceive information when it is read aloud or spoken word they listen to, while kinesthetic learners transform actions into feelings that lead them to learning (Papadopoulou, 2011a). Strategy networks can be enhanced by providing alternative courses of action and supporting technologies, the availability of multiple means of communication, synthesis, analysis, and testing, or by offering multiple means of information management, strategy development, oversight, and goal guidance.
c. In providing multiple means of engagement, to strengthen emotional networks. Students differ in emotional receptiveness by choosing a different emotional way of accepting and capturing the educational process (eg original and innovative work versus traditional work, individual or group work, spontaneity or routine, etc.). Providing can be captured by providing alternative ways of attracting interest (reduction of "threats", autonomy), by constantly feeding him multiple responses in each area, or, more difficult, by developing "self-regulation" techniques and cultivating expectations of his success. student (Papadopoulou, 2011a;Giannelos& Mathioudaki, 2017).

2. Benefits of KSM and its fields of application in education

The benefits of implementing the KSM are obvious from its design, as the variety and diversity of the information provided make it accessible to a larger part of the student population with or without disabilities. The variety of methods used by KSM allows information to be presented in so many ways that one of them will surely meet the needs of every student. According to Arabatzi (2008), the educational activities to join the KSM must meet a set of conditions, such as:

- be directly accessible to all and fair,
- be flexible in their use, participation and presentation;
- be clear and understandable and not be influenced by the user's previous experience, level of knowledge, language ability or level of concentration;
- manage to effectively convey information to the student independently of his own perception and concentration and without being influenced by the conditions prevailing in the environment where the student is,
- to accept the mistake,
- minimize the physical effort or conditions required for the student to be able to use the facilities offered, and
- ensure appropriate learning spaces that will facilitate students and allow the development of the teaching methods that will be used in teaching.

From these conditions, the benefit resulting from the implementation of the KSM in the educational process is perceived, as it concerns all students without exclusion, with the removal of all restrictions that prevent access to learning. The KSM intervenes in the detailed study programs and modifies them, so that they respond from the beginning to all cases, without seeking to change the student's status in order to be able to respond to them. The CSM is presented multimodally and multisensory with the use of many different methods and techniques, it makes use of new technologies and STEM, which allows it to easily transform information from one form to another so that it can be understood by students. At the same time, due to the removal of exclusions for every group of students regardless of disabilities or multiracial, ethnic and religious discrimination, it creates an environment of values, where the different is accepted and is allowed to participate

in every activity, while cultivating respect for otherness and the human being as an entity, it fights racism and xenophobia, enables intercultural approach and education. Also, due to the use of multiple stimuli, it awakens and motivates the development of all forms, or at least most of them, of multiple intelligences (Gardner, 1983).

Building structures with easy and safe access (ramps, elevators, automatic doors, etc.), the multimodal combination of presentations (visual, audio, using video, etc.), constant explanations and clarifications, minimization of distractions are areas of application of the KSM. (e.g. soundproof classroom), polymorphic use of New Technologies that will allow a different approach, perspective and energy in the learning process (e.g. videotaped or multiple-choice quizzes on the PC rather than written assignments), interactive whiteboards, internet, educational software, role playing, sign language interpreting, enabling individual choices by granting autonomy.

3. Similarities and differences of KSM from differentiated instruction

Differentiated instruction is an approach to teaching that, like SEN, addresses students with different learning needs, addresses the overall design of instruction, and emphasizes the student and the curriculum to ensure that "what he learns, how he learns it and how he shows us that he has learned it, each student must match his level and learning readiness, his interests and his preferences regarding the way of learning" (Panteliadou & Antoniou, 2008).

Both methods require flexible and multiple approaches to teaching, both during its planning and during its implementation, aiming to accept and integrate the diverse needs of students in order to enable their greater participation in the curriculum (Nikoloraizi, 2013). Their common characteristics make them complementary and supportive of each other. The basic characteristics of one method seem to correspond to basic characteristics of the other, and by making use of one, multiple basic principles that characterize the other method can be implemented.

More specifically, CSM focuses on multiple media of representation, multiple media of participation, and multiple media of expression that can be paralleled with the content, processing, and end product that differentiated instruction focuses on. More specifically, KSM focuses on the many and varied ways of representing information, while differentiated instruction focuses on the variety of content and the ways in which this content is given to the student. The KSM favors the active participation of the student through the multiple incentives it provides, while the differentiated teaching is a consequence of the assessment of his needs. The KSM is characterized by the flexibility of the environment in which learning takes place and by the use of New technologies, while the differentiated teaching comes from the formation of the learning environment. Both methods seem to pursue multiple ways of action and expression of the students (Giannelos & Mathioudaki, 2017).

The essential difference between the two methods lies in their perception of interventions and retroactive adjustments to the curriculum. The KSM considers that all the different needs of the students should be taken into account from the beginning of the planning, which will co-shape the parameters of the syllabus in such a way that it will not need to be adjusted afterwards, which differentiated teaching it does not consider it a prerequisite, since it considers teaching as an evolutionary process of constant modifications (Akritidis, 2017).

However, the essential difference between the two methods stems from their structure in terms of the reason for which they were created. Differentiated teaching as a method went from general education, in order to serve needs that are close to or belong to the subject of special education and education, while KSM initially framed the needs of special education and later generalized its content and targeting (Tzivinikou, (2015)).

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