

**CONTENT MANAGEMENT SYSTEMS VIEWED FROM A BEHAVIORISM,  
COGNITIVISM, CONSTRUCTIVISM & CONNECTIVISM PERSPECTIVE**  
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***Abstract:** The knowledge based organization is the organization in which production and consumption of knowledge is the most important type of activity, knowledge is recognized as a key resource, information and communication technologies are core technologies and information environment, together with the social and the ecological ones, constitute the human existence. The information society allows broad access to information for its members, becoming a new way of working and knowledge. The new digital technologies essential reduce the cost of access, storage and transmission of information. IT systems play an important role in processes that speed up the exchange of information within the organization and between organizations and in effective dissemination of information to the consumer or, if we are talking in the context of education, student. In this context, where there is an ongoing need for education and training, the Web has become a new medium for publishing the information. So, websites are used to promote businesses and products, provide services and information, and facilitate communication. For medium and large sites, the question of their content management occurs. Therefore content management systems have been implemented (CMS). The system inputs are information to be published, and the outputs are the pages that will be seen by visitors. Content management is the systematic and structured supply, creation, processing, management, presentation, publishing and content reuse. There is a wide range of CMS, but no solution is able to manage all types of content. Referring this in the field of education and learning, the article aims to analyze the types of CMS systems consistent with known theories and models of learning: behaviorism, cognitivism, constructivism & connectivism.*

**Keywords:** CMS, behaviorism, cognitivism, constructivism

### **1. Prototype models of learning**

Learning is the acquisition process of knowledge and skills through study, training, practice, or experience. The well known movements that have shaped current thinking about how people learn, are generally considered behaviourism, cognitivism, and constructivism. Each model is a system of scientific statements that define the essence, content, conditions and foundations for learning. According to the behaviorist theory [1] - learning is the mechanical process of association of a stimulus with a response, which will produce a new behavior. The new behavior

will be reinforced through reward. Proponents of behaviorism consider the student as a passive person responding to stimuli, whose behavior is shaped by reinforcement. Positive and negative reinforcement increases the likelihood of recurrence. Therefore, learning is defined as a change in student behavior. So, this model can be viewed as pure transfer of knowledge, where the origin of knowledge depends and relies on the knowledge of the teacher. Professors know what students should learn, therefore their duty is to convey as closely this knowledge.

The knowledge transmitted is especially prepared to allow students a fast adoption of long duration (the so-called didactic training). There is a link between this model and the behaviorist theory, but this is an outdated theory of learning considering that the teacher is not interested to control or observe specific activities of the learning process, only checking the final result.

The next theory, the cognitivism, came as a response to behaviourism. From the teacher point of view, this model involves an active process of learning which have to be planned, verified and well thought. On the other hand, the person who learns is an active person, his activity being considered as a prerequisite for learning. The students are involved in reflection and metacognitive activities which directs them in monitoring their own learning. This model is suitable for solving problems when concepts are complex and require being separated in smaller parts. Here, the concepts, ideas of the problems are related to prior knowledge, which in turn helps the student develop a stronger understanding. The whole learning process with all the steps, all the problems and all the provisional results are under the supervision of the

teacher, his aim being to assist in the process of thinking of the students and help them build a consistent mental model. The student's mind could be viewed as a computer, it processes the information that comes as an input, and then the processed information is stored away to be retrieved later, when needed.

When knowledge is constructed through personal experience and interactions with the outside world, students are active participants in constructing knowledge and the teacher is just a facilitator, then it comes to the theory of constructivism. Here, the student is the builder of its own knowledge and learning, and the teacher is the manager of training situations, autonomy being actively supported and encouraged.

The model of constructivism focuses on the way learners create meaning through a series of individual experiences or interactions, placing emphasis on providing a suitable learning environment which allows students to acquire, explore, and test new knowledge on their own. Each one can create their own mental models in order to deal with new situations and experiences (see Table 1 that concludes the models) [3].

*Table 1 Behaviorism, Cognitivism, Constructivism & Connectivism*

Questions	Behaviourism	Cognitivism	Constructivism	Connectivism
How does learning occur?	Black box - observable behaviour main focus	Structured, computational	Social, meaning created by each learner (personal)	Distributed within a network, technologically enhanced, recognizing patterns
What factors influence learning?	Nature of reward, punishment, stimuli	Existing schema, previous experiences	Engagement, participation, social, cultural	Diversity of network
What is the role of memory?	Memory is hardwiring of repeated experiences - where reward and punishment are most influential	Encoding, storage, retrieval	Prior knowledge remixed to current context	Adaptive patterns, representative of current state, existing in networks

How does transfer occur?	Stimulus, response	Duplicating knowledge constructs of "knower"	Socialization	Connecting to (adding nodes)
What types of learning are best explained by this theory?	Task-based learning	Reasoning, clear objectives, problem solving	Social, vague	Complex learning, rapid changing core, diverse knowledge sources

In the twentieth century, the largest technological and social event at the same time, was the emergence of the Internet. Mihai Drăgănescu [1] states that "in essence the information society is the society based on the Internet". Having this in view, we can consider that in the web world the learner is surrounded by information and it is up to him to makes connections between information in order to build knowledge. This connected web offers learners the opportunity to stay up-to-date with all sort of content as it changes. The following statements [2] illustrate the concept of connectivism: "Learning and knowledge rests in diversity of opinions; Learning is the process of connecting specialized nodes or information sources; Learning may reside in non-human appliances; Capacity to know more is more critical than what is currently known; Nurturing and maintaining connections is needed to facilitate learning; The ability to identify connections between concepts is important; Maintaining current and accurate knowledge is the purpose in connectivist activities; Decision-making is a learning process as information can change and what is viewed as correct one day may be incorrect the next". The digital era allows learners to set up RSS feeds, follow organizations on Twitter, link to certain sites, search all kind of available resources, with which they can build a learning network that is constantly growing.

## 2. Teaching types inferred

From the discussed models, there could be inferred accordingly, three types of teaching - in connection with which will be

presented the different types of CMS. So, the first type, corresponding to the behaviourist model, could be defined as pure knowledge transfer: the origin of knowledge depends and relies only on teacher knowledge; he knew what students should learn, his only obligation being to transmit this knowledge as closely. Students receive compulsory response to any type of information they want, while teacher checks and are only interested in the final answer/result.

The acquisition, processing, and collecting knowledge could be the second type of teaching, corresponding to the cognitive model, where all tasks and exercises are designed and presented by teacher, his purpose being to help students overcome their unfair premises and wrong attitude, to assist student's thinking process and help them build a consistent mental model.

Developing, inventing, and building knowledge is the third type of teaching, corresponding to the two last discussed models. There, the teacher with the students, they have the task of understanding a situation where the result is not previously determined. They need to better control the situation, and there is a very little difference between teacher and student, in terms of teacher's experience and knowledge about the way of thinking in complex situations. Professor has the role of facilitator, teaching students to take control and direction, to invent new things and to generate new knowledge, and provides them a supportive environment. That environment should be a place of inspiration, something sufficiently complex,

uncertain, instable and unique that traditional learning could not help and even count.

### **3. Types of CMS in terms of models**

From user interaction, be it websites administrators or everyday users, to new forms of technology and the ability of websites to obtain and efficiently process their feedbacks, resulted a set of new concepts where the content management one has boosted the development of high performance content management systems. Given the complexity of web sites and the lack of a standard model, uniform definition of CMS and its constituent parts is very difficult. CMS is based on the web 2.0 concept which states that the importance of the internet will be increasingly given to the user-created content.

#### **3.1. “Traditional” CMS**

In terms of education, copyright can map the educational functions: the position of the professor, the assistant, the guest-professor for content and of the main professor or administrator for the organizational issues. The person to whom it is offered contents is the student learner. It should be quite clear that this type of CMS represents, in this view, a knowledge transfer model of the first type of teaching. The software is installed on a web server while users access the system from any location with their web browser. Typical examples of this type of CMS are: OPEN CMS <http://www.opencms.org/>, Plone <http://plone.org/>, Typo3 <http://typo3.org/>, ZMS <http://www.zms-publishing.com/>.

#### **3.2. Weblog Content Management Server**

Being a web publication that contains periodic announcements or different pieces of information that are displayed, usually in reverse chronological order, i.e. from the most recent to the oldest, weblogs can be used as discussion tools for personal thinking. Here are two functions that are important in the educational context: TrackBack - it is an automatic notification mechanism that allows authors referencing one of the open discussions on the Internet, and Web Syndication - it is a way of

introducing the online service, which is in a special format (RSS = Rich Site Summary) to which authors can subscribe and integrate text to the source from which they have subscribed.

Weblogs can produce worldwide discussion's distribution. With its characteristic of writing short personal comments, weblogs animate discussion within the place the comment occurred, but also supports a kind of meta-understanding weblog, so as to broaden the discussion around the world. In this sense weblogs are suitable for the second type of teaching. Illustrative in this respect are: <http://weblogg-ed.com/>, <http://edublogs.org/>, <http://b2evolution.net/>, <http://www.blogger.com/start>, <http://www.typepad.com/>.

#### **3.3. Collaboration-oriented CMS (C-CMS or Groupware)**

One essential thing about these systems is the development and management of shared resources. Here there is a kind of protected interaction of the specific groups. Where these interactions appear, there is no public. Also, there is no explicit purpose for the specific objective of learning: learning members of this group learn by working and collaborating together. Even if there may be differing systems of copyright, a prototype application treats all members of the working group equally. In our theoretical framework this type of CMS is the perfect model of the third type of teaching. Typical examples of this category are:

BSCW: <http://bscw.fit.fraunhofer.de/>, and <http://www.bscw.de/>, Convea: <http://www.convea.com/>, EGroupware: <http://www.egroupware.org/>, IBM Lotus Notes: <http://www-306.ibm.com/software/lotus/>, PhpGropupware: <http://www.phpgroupware.org/>.

#### **3.4 Content-Community-Collaboration Management (C3MS)**

These CMS enables virtual communities to develop domain specific content. They use collaborative mechanisms and many specialized modules (e.g. who is online, ratings, surveys, reviews, quotes, etc.), being very community oriented. The

C3CMS may feature traditional CMS and collaborative weblogs. Combining all the possibilities of a web site, C3CMS can be used to build a specific storage area. The perfect match for C3CMS is, as its name means, the third type of teaching. Typical examples of this category are:

PhpNuke:<http://phpnuke.org/>

PostNuke: <http://www.postnuke.com/>.

### 3.5. Wiki Systems

Wiki systems' features are contrary to the central features of the traditional CMS systems that provide different rights for different categories of users. The basic principle of Wikis can be expressed with the phrase: everybody can change everything! Behind this simple approach is hidden, in terms of teachers, the assumption of an ideal consensual communication structure. CMS-Wiki is a group of applications (WikiWebs) that uses their system of publishing special markup languages (WikiWords). The interface is extremely simple and this is one of the main reasons for their rapid and extensive distribution. Like Groupware, Wikis is collaboration oriented-software, but it pushes the notion of collaboration to the limit. Wiki break the boundaries of a specific group (everyone on the planet has the freedom to collaborate) and a of a clearly defined rights system (everybody can write, read, add, revise and edit and even delete a particular article). Nobody is the owner of the item that he initiated. In this theoretical framework, Wiki is positioned in the third type of teaching. Typical examples are: Wiki: <http://c2.com/cgi-bin/wiki> (the original Wiki), Twiki: <http://twiki.org/> (for business use), Swiki: <http://minnow.cc.gatech.edu/swiki> (based on the Squeak programming system), Zwiki: <http://www.zwiki.org/FrontPage> (based on Zope), JSPWiki: <http://www.jspwiki.org/Wiki.jsp> (based on Java Server Pages).

### 4. Conclusions

The use of CMS systems viewed from one of the theories and models perspective could be very effective having in view the addressed situations and the specific users.

Depending on the given situation, every model and the corresponding type of CMS can prove their usefulness, strengths and weaknesses too.

Thus, the first model and type of CMS could be used to promote desirable behaviour of the learners and to combat certain disorders. Despite the obvious shortcomings of this theory, certain situation results have shown it to be remarkably effective because it guarantees specific learning, is ease to apply and the success of outcomes is easily measurable.

The second model and type of CMS proves its utility in problem solving situations; the very organized structure to learning leads to a harmonious learning where learners are not overwhelmed with incoming information and have necessary time to process smaller parts on the one hand, but on the other hand, it may become difficult to adjust to changes in what has already been processed and learned.

The area of use of the third model and type of CMS folds on problem-based learning; learners advance a comprehension of the importance of the problem, perceive the relevance of the topic, and build knowledge via their experiences. The strength resides in the fact that students construct knowledge and meaning, as the new information, facts, situations may relate their experiences, beliefs and attitudes. The weak part could be that individual attitudes and experiences generally vary. A determined, peculiar result may not always be achieved when different individuals move toward to the problem or task. A closer look into the CMS system's world, prove to be fascinating, because there are types that combine features from all discussed here, allowing thus the suitable mix for everyone, in terms of education, teaching and learning. One specific example is the eFront CMS system that is installed and used in our academy [4], and at least so far, it met the educational requirements in a complementary way at both the undergraduate program and the master and graduate studies.

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