Knowledge versus content in e-learning: a philosophical discussion!

By Gonçalo Jorge Morais da Costa, Nuno Sotero Alves da Silva and Simon Rogerson

Abstract

Historically education has been supported by technology; however, during the past three decades electronic technologies for educational purposes have been used to achieve better learning outcomes. In fact, there are two main issues in using computers for educational purposes; that is, people learn “from” or “with” technologies.

The e-learning literature reveals that technological and instructional perspectives had been widely diffused, with ethical and cultural issues only being considered more recently.

The aim of this paper is to discuss a blurred distinction, which entails into all these fields of research: how do we define knowledge and content in an e-learning project?

Introduction

Technology as supportive for educational purposes is widely recognized in mankind history, engaging a considerable number of social and cultural tensions with contrasting characteristics. In fact, Crump and Costea (2003) describes that none of these elements are definitive, and so both sides of the argument are themselves continuously moving with the movement of culture.

Moreover, the radical technological change of the past three decades enhanced the importance of technology into the educational process. Many studies have been conducted to scrutinize interactive learning technologies in a multiplicity of forms ranging from the earliest days of mainframe-based computer to modern multimedia learning environments with accessibility via the Internet (Reeves, 1999). It is possible to acknowledge two main realities considering the use of computers for educational purposes; that is, people can learn “from” or “with” technologies. Plus, Jonassen and Carr (2000) plead the idea that when computer technologies are used to deliver pre-programmed instructional lessons, they should be referred as interactive technologies.

In such educational paradigm, learners merely obtain knowledge through the use of technologies as a vehicle. They are mainly considered as forms of “media”, conveyors of information, which use a computer network to present or distribute some educational content (Keegan, 1988). So, learners are unreservedly regarded as the recipients of encoded knowledge in assorted forms of instructional media (Jonassen and Reeves, 1996). In this approach, learners’ interaction with technologies is limited to inputting response and getting reply from them. Learning “with” interactive technologies engages a certain intellectual affiliation between learners and technologies. Therefore, instead of using technologies to guide learners through prearranged interactions, learners may use that function as “the mindful engagement of learners”. When students learn with computer technologies, instead of being restricted by them, their thinking it is increased (Jonassen and Carr, 2000).

Then we have the milestone that promotes the aim of this paper: how can we define knowledge and content, in an e-learning project? Such question may seem simplistic, however the answer entails into an important philosophical discussion, which scrutinizes an important question into the Knowledge versus Content Management level of the presented framework (Nuno Silva PhD research).

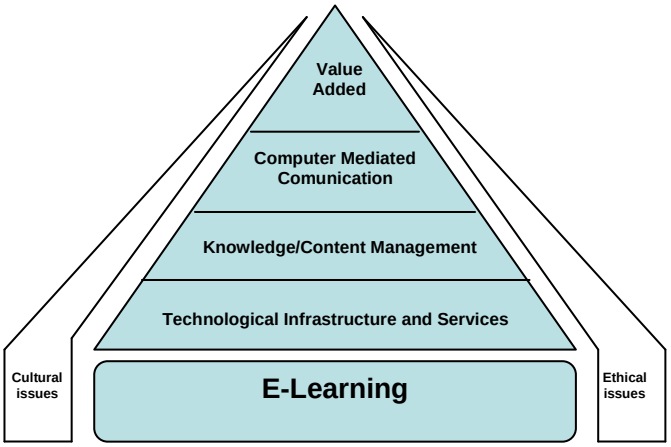

Figure 1- The e-University strategic implementation conceptual framework, adopted from Laudon and Laudon (2004) and Mintzberg (1979)

Plus, such discussion embraces also other two main motives: (1) e-learning literature seems to disregard such debate or, to promote a blurred focus analysis considering both concepts equal; and, (2) e-learning is globally accepted as a prerequisite of future social and economic development, as well as, a impending foundation for improving the admittance to education (Richards, 2003). As a concluding remark, we acknowledge the arguments concerning the paper structure that will allow such debate: the concept of e-learning; defining knowledge; Knowledge Management Systems (KMS); the link between knowledge and e-learning; defining content; Content Management Systems (CMS); the link between content and e-learning; and, finally the philosophical argument.

Development

E-learning

Through out literature review process e-learning definitions abound, and therefore we underpin the beliefs of the following authors: “e-learning will here be defined as the use of ICT in higher education, which aims mainly at independent use of technology by students” (Stahl, 2005: 21); and finally, e-learning is defined as the online delivery of information for purposes of education, training, or KM, and is different from formal education that takes place off campus, usually, but not always, through online resources (distance learning) (Turban et al., 2006).

E-learning describes four general categories of e-learning technology systems:

- Learning Management Systems (LMS)- support administrative tasks such as registration, scheduling, and learner tracking;
- Managed Learning Environment (MLE)- includes the whole range of information systems and processes “that contribute directly or indirectly to learning and learning management”;
- Learning Content Management Systems (LCMS)- allow developers to store, manage and provide access to pieces of content used in e-learning;
- Virtual Learning Environments (VLE)- “the components in which learners and tutors participate in on-line interactions of various kinds, including on-line learning” (JISC, 2000).

So, the major elements in an e-learning project are: lecturer, content, student, place, time and interactivity (Amaral and Leal, 2004). However, an important question arises: how can we define “good” e-learning? Following Turban et al. (2006), the key characteristics of effective e-learning are:

- visual- use relevant images, video, audio, and other media, rather than simply text, when appropriate to provide information to learners;
- concise- written information should be concise, because is an important element of e-learning;
- interactive- learners can interact with the courseware through quizzes and multimedia activities allowing let them to practice their skills, demonstrate knowledge, discover relationships and new information, and reinforce learning;
- engaging- appeal to the learner's professional experience and their emotions);
- relevant- should address a learner's current needs or learning gaps;
- feasible- the technological infrastructure for enabling e-learning should be feasible for learner's;
- empowering- provide access to additional resources may allow that the self-directed learner can explore content relevant to their interests and learn more.

So, the quoted references do not allow a conclusion concerning the research question, which once again entails the need for this paper.

Defining knowledge

According to the Concise Oxford Dictionary knowledge is a result or product of knowing; information or understanding acquired through experience; practical ability or skill; and, cognition. This wider definition can be more narrowed in accordance to our analytical focus. For example, the Standards Australia (2003) provides a definition of knowledge as a body of understanding and skills that is constructed by people. Knowledge is increased through interaction (typically from other people). Or still, in accordance to Kuhn (1970) knowledge is a construction by individuals and is relative to the current context (community), rather than representing some correspondence to external reality.

Stacey (2001) focuses the paradoxical nature of knowledge, which is simultaneously a thing and a flow or, a process, in which he emphasizes that we have to see it as both- not the one or the other. Stacey still points out some key heuristics: knowledge can only be volunteered and "we only know what we know when we want to know it", referring the value of narrative. Knowledge is embedded- it is what we would call "just-in-context". This means that it is specific to time, place, sequence, timing, position, and relationships- within communities discourse. It follows that knowledge cannot be abstracted from context- physical or social. Snowden (2000) acknowledge that to manage knowledge we need to focus more on context and narrative, than on content. Regarding e-learning or distributed learning, what is important is that we do not restrict learning to abstracted procedural information, and call that knowledge. Learners need to develop their own knowledge, through a process of learning that will include procedural information, but which they must relate to different contexts- contexts in which it is generated, learnt, used, and in which they can use it.

Therefore, in Knowledge Management (KM) we need to distinguish tacit knowledge and explicit knowledge. Explicit knowledge is a formal knowledge, which can be articulated and transferred easily to others. It includes policies, procedures, theories facts etc. Tacit knowledge or implicit knowledge is informal knowledge, which is deep rooted in a person's mind. It is highly personal making it difficult to formalize and communicate to others. This type of knowledge is difficult to extract or articulate. The phases or processes involved in KM are acquisition of knowledge, knowledge elicitation, knowledge organization and representation, knowledge transfer, distribution and knowledge retrieval.

The important components of KM are people, content, culture, process, and technology (Phillips, 2000). People produce, use and share knowledge. Content include knowledge,

information and data about the subject to be shared and managed. Finally, a culture of sharing is crucial to the success of KM and Internet based learning.
The KM principles if applied to management education will enhance the quality of academic learning process. The term KM is used to describe everything from the application of new technology to harnessing of the intellectual capital of an organization (Sallis and Jones, 2002). In conclusion, KM emerged as a recognizable field of practice as a result of a practitioner-based response to three important social and economic trends: globalization, ubiquitous computing and the shift towards a knowledge-centric view of the organization (Prusack, 2001).

Knowledge Management Systems

Knowledge Management Systems (KMS) are technologies that support KM (knowledge generation, modification and transfer) in organizations (Marwick, 2001). The use of KM in organizations is now widely recognized and expected to be an important part of organizational practices in the future.
However, we should refer that such practices or initiatives may present different outcomes, depending on the technological generation of KM. In accordance to Marwick (2001), the first generation focused on the quest for technologies that could support the development of learning communities, and so, technologies capable of supporting threaded and synchronous discussions, and collaborative software. Plus, second generation technologies was conceived in order to shift towards the accumulation of organizational knowledge: capturing knowledge, synthesizing new knowledge, spreading knowledge, and organizing and making it available (Malhotra, 2001).
Given the above, KMS is an emerging stream of research, and several writers have provided general explanations of KMS to lead future research (Alavi and Leidner, 2001; Dilnutt, 2002). Moreover, in an effort to detail specific features and functionalities, these writers have acknowledged quandaries in organizational KMS use (Alavi, 1997; Wickramasinghe and Mills, 2002). Finally, a small number of studies have started to develop theory regarding the design of KMS and have scrutinized the effects of diverse KMS features (Poston and Speier, 2005). Although the emerging KMS literature has speculated about the transfer of knowledge related to a KMS, this stream of literature has yet to actually investigate any implications of KMS use and knowledge transfer (Alavi and Leidner, 2001).
Intelligent decision aid literature, on the other hand, has examined knowledge acquisition and the corresponding impact associated with the use of various intelligent decision aids. Murphy (1990), followed by Eining and Dorr (1991) pioneered a now well-developed stream of literature that investigates the effects of intelligent decision aids and their components on knowledge acquisition (Smedley and Sutton, 2004; Rose 2005).

Knowledge and e-learning

Understanding how to structure learning experiences with a specific consideration for quality of engagement, social context, and conditions, is the core of new modes of learning styles (Reynolds, 1997). Expanding traditional definitions of literacy and learning methods into “immersion-centred” experiences of interacting with information and the on-line community is fundamental to preparing ourselves for full participation in post-industrial society. Three forms of expression are shaping the emergence of distributed learning as a new pedagogical approach: knowledge webs complement experts, texts, libraries, and archives as sources of information; interactions in virtual communities that complement face-to-face relationships in teams and classrooms; immersive experiences in shared Internet environments extend learning experiences in real world settings.

In spite of the separated evolution of KM and e-learning, the truth is that recent initiatives give evidence of a beginning convergence of these two fields of research (Efimova and Swaak, 2002). In fact, such link is characterized by a mutual feedback process that entails into two levels of analysis:

- the influence of e-learning into KM processes- at high level of understanding the desired outcome of learning should be knowledge acquisition and a combination with some practical skills gained through out the educational process which must represent some type of competence. Therefore, communication and collaborative work will be improved and free exchange of competencies will be provided;
- e-learning and KM common characteristics- collaboration is a extremely critical process for each or both activities. Means for communication and collaborations are one of the most important characteristics of successful education and team work. They could include synchronous and asynchronous communication and different tools (chats, discussion forums, faqs) related to work in groups or different types of virtual communities, which encompasses informal training. Plus, free exchange of knowledge and data, as well as, capabilities for collaborative editing of documents become even more critical when different members of the team are at distance. Given such realities, there is a strong tendency to see informal and formal learning as separate. Superficially, this sometimes reads as if there are two separate paradigms- informal (learning through everyday embodied practices; horizontal knowledge; non-educational settings) and formal (acquisitional and individual learning; vertical or propositional knowledge).

All efforts to implement e-learning will eventually move towards total automation of managing teaching and learning processes through Learning Management Systems (LMS). E-learning is a fairly recent phenomenon but the underlying pedagogical principles have been under debate. In fact, pedagogical principles must form a basis to include LMS features accompanied by explicit guidelines on the best method. In conclusion, the integration of KM and e-learning technologies engages and justifies a new theoretical conceptualization: Learning Knowledge Management Systems (LKMS), in spite of the existence of research concerning such issue (for example: Hall, Paradice and Courtney, 2003). Such authors plead the concept of Learning Oriented Knowledge Management Systems (LOKMS), which only entails into the instructional level and technological level, disregarding the social interaction.

Defining content

In accordance to the etymological analysis, content is: “something contained as in a receptacle, being also the meaning or significance of a literary or artistic work” (The Free Dictionary, 2008). Moreover, such conceptualizations allow us to plead the idea that content has three major characteristics: can be text matter of a document or publication in any form; is the essence of a communicated message or discourse, as comprehended or received by its intended audience; the “glue” that makes a website “sticky”.

The preceding characteristics refers to content in a digital sense, and in accordance to the OECD (2008), such specific content is progressively a more significant ingredient in OECD economies, being delivered by numerous stakeholders: content/entertainment industries (whose primary activity is the production and sale of physical or digital content); industries (that are not content industries *per se*, but which increasingly produce digital content as secondary or secondary activities); governmental (government activities in areas such as research, education, health and culture); users (content created by network users).

Clearly, it becomes necessary to draw a first argument concerning the difference between knowledge and content. Budin (2002), in a modest attempt at distinguishing the different

conceptual levels, concludes through an iterative and recursive value-adding chain that: data + interpretation = information + cognitive appropriation = knowledge + collective representation and utilization = content. Knowledge in order to be justifiable underpins an important condition: cognitive appropriation. Knowledge is constantly the outcome of cognitive operations, still not limited to the personal, individual or subjective level.
Budin (2002) still points out that content refer to any piece of information that exists within an organization! In fact, such author pleads the following four categories concerning content: controlled (content and relations that are under reconsideration control. Controlled content may be structured or unstructured); uncontrolled (content that is not under amendment control. It may exist in any information storage system); structured (usually considered as data stored in databases); unstructured (typically refers to documents and other electronic or physical media containing the information).
And which are the characteristics of educational content? The content of education is extremely important to the future of our society, and for that a considerable number of content standards arise (Switzer, Callahan and Quinn, 1999). A content standard in education is a statement that can be used to judge the quality of curriculum content or as part of an evaluation method (Kendall and Marzano, 1997). Clearly, content standards define only the core elements of education that should apply to all students without regard to their specific career and academic plans. Every student is expected to achieve goals that are broader than those outlined by the standards. Therefore, through out the educational process the focus shifts from the core standards (what goes into the educational system) to the results of the content standards (what comes out of the educational system).
Content standards can accomplish three primary goals (Content Standards, 2008): give learners and lecturers a clear and challenging target; help focus energy and resources on the main purpose: learners achievements; give a tool for evaluating how learners are learning, and how schools are performing. Therefore in contrast, a considerable number of communities within universities, produce, store and share miscellaneous content, spanning from syllabi and lecture notes to articles, papers, simulations or research results stored in databases, which is used by the community members. Such statement demonstrates that content must be created in accordance to the context and needs of the learning environment, given the fact that, learning and resource allocation for learning will differ among cultures, but to pre-determine its design may indulge ethical issues. So, we need also to explore in this research the impact on content regarding the context of such specific learning environments.

Content Management Systems

Inglis (2003: 5) pleads the following definition: “Content Management Systems (CMS) are systems for reorganization and simplifying the loading of content into websites. In higher education, CMS represent a new type of software technology for supporting the delivery of subject matter information (i.e. content) in Web-based courses”; or, Svarre (2006: 1): “A content management system (CMS) is a system used to manage the content of a Web site. Typically, a CMS consists of two elements: the content management application (CMA) and the content delivery application (CDA)”.
Given the absence of a clear definition of CMS we plead our vision: CMS is a tool that enables a variety of centralized technical and (de-centralized) non technical staff to create, edit, manage and finally publish a variety of content, whilst being constrained by a centralized set of rules, process and workflows that ensures a coherent and validated appearance. In that sense, a CMS should engage the following features (Anttila, 2001):

- web document management- manage and publish Web content for intranet, extranet, and Internet sites. Plus, features such as library services and administration, Web

content management tools specialize in content authoring, template design, and Web publishing workflows;

- document management- includes document life cycle management, which means creation, editing, approval and review, publishing, search and view, archiving and deleting of a document;
- digital asset management- used when sites contain large amounts of rich media. Digital asset management is specialized in supporting the aggregation, storage, and indexing of rich media.

Moreover, CMS must enable users to collaborate and interact on the creation and management of trusted content through the portal and allow users to import or create new content and edit existing content or properties. The required features must be aligned with the business goals to be achieved with the help of content management. In conclusion, features are categorized into three content management areas: creation, management and publishing and presentation (Robertson, 2002).
However, we have pointed out in the previous section that content management and cultural diversity determines this practice. Since the audience of any content product is always culture bounded, content management must always have into account cultural factors in content design and all other processes and tasks of content management. Therefore, Global Content Management (GCM) must assume several dissimilar materializations, and so Cultural Content Management (CCM), in accordance to Bergstedt et. al (2003) is:

- cultural heritage technologies- digital libraries, digital archives and digital museums);
- e-publishing- single source methodologies;
- e-learning- managing teaching content;
- cyber science- collaborative Content Creation, digital cities and other virtual communities' projects.

Content and e-learning
In simple terms we have observed that content management is just the attempt to manage content. In an e-learning project, content is simultaneously digital or physical; however we will draw our attention to digital content.
Digital content presents six phases during its life cycle. Such phases are: creating, updating, publishing, translating, archiving and retire. For example, if an author or a group of authors write a paper it is content creation. Such paper will be edited (update phase), so the editor may approve the publication (publishing phase). Providing the digital access to others is also called publishing, however the same content can be outdated and removed (retiring phase) (Sehring et al., 2006).
However, such process is complex and not purely technological, because e-learning is a collaborative technology. Therefore, some basic responsibilities and roles as far as content management is concerned are necessary to address (Content Management Junction, 2008):

- author of the content- creating the content and editing the same is the primary responsibility of the content author. Another attribution of the author is to decide the style of delivery, localization and translation of such content;
- publisher- the responsibility entails only in publishing;
- manager- the permission for accessing the content will be managed by someone. Such person will also manage the access to files and folders in which the content is stored;
- consumer- everyone that views the published content, however manage the existing versions of content is not easy. To allow an easiest version control authors need to store the older version of contents that are edited.

We should still refer that a recent study published by Schulmeister (2003) reveals some interesting points: content is stored as full pages or modules; didactic models are chosen when content is being created, and therefore the decision is irreversible; and also, exist few concepts regarding quality management and support of the editorial process.
In that sense, an e-learning project implementation undergoes immediate transformation regarding the role of content developers. E-learning content must be designed and developed in smaller manageable chunks known as learning objects (LO) as illustrated into instructional design (Horton, 2000). LOs are the small units or building blocks of instruction that can be taken as stand-alone units of instruction even when it is not embedded within a larger structure of content.
Content or the content format, location and type of electronic support, assumes much more importance in e-learning (Amaral and Leal, 2004). In this new paradigm the content is no longer "in the lecturer", in "is brief case" or, still in "the teaching support materials", but to be a LO accessible 24 hours a day, 7 days a week. However, the social process of acquiring knowledge is rarely taken into consideration.
Given such, while CMS are able to support processes and control their single steps, LMS are not able to check the learning effort of students while they use the system. So, CMS offer a feature that is urgently needed, but not yet available in LMS, because such systems can react on change and usage of content present in their system. Therefore, we plead that literature must engage a new philosophical conceptualization regarding Learning Content Management Systems (LCMS).

Conclusion

In order to present the arguments concerning this debate, we will engage three levels of arguing in an e-learning project: ethical challenges; pedagogical challenges; and the focus knowledge versus content. Because, the relationship between ethics and e-learning is a complex one, to achieve a responsible use of e-learning, the participants need a considerable amount of education, referring to the facts of life, as well as the norms (Stahl, 2002), and therefore, we must address professional practitioners and users perspectives (content factory, lecturers, students and staff). Nevertheless, it is important to minimize unethical practices (Nagi, 2006) and for that, to account professional responsibility (Bynum and Rogerson, 2004).
Stahl (2002), specifically identifies some moral problems (power; privacy; monitoring, surveillance, access, opportunity cost, awareness). Although, we need also to refer that humans beings learn to reason morally in a sequence of stages like Kohlberg (1981) explains, and naturally education plays an important role through that process. Plus, Williams (2002) and Nagi (2006) still identify other ethical problems: cheating; intellectual property; plagiarism and copyright violations; and learning practices, personal integrity and accountability.
Knowledge in an e-learning environment was introduced by Shulman in 1988; and Gudmundsdottir (1990), states that pedagogical content knowledge is a combination of subject matter knowledge and pedagogical knowledge, and these is what constitutes teaching expertise. In this way, "content" in pedagogical content refers to subject organization. In his theoretical framework, lecturers need to master two types of knowledge: content, also known as "deep" knowledge of the subject itself; knowledge of the curricular development.
Content knowledge encompasses what is called the "structure of knowledge"- the theories, principles, and concepts of a particular discipline. Especially important is content knowledge, because it deals with the teaching process, including the most useful forms of representing and communicating content and how student's best learn the specific concepts and topics of a subject. If beginning lecturers are to be successful, they must wrestle simultaneously with

issues of pedagogical content (or knowledge), as well as, general pedagogy (or generic teaching principles)" (Ornstein, Thomas and Lasley, 2000). So the pedagogical dilemma revolves around how the changing role of the lecturer is linked to the oppositional view of new student-centred, which means constructivist approaches to teaching and learning in contrast to, traditional notions of the authoritative lecturer as transmitter of information or a modeller of skills.

Of course, there are cultural considerations regarding the high quality of e-learning content aligned to the national curriculum design, because people inevitably speak in term of different contexts, values and perspectives making dialogue difficult if the same formal language is used. Yet this is achievable since people share enough commonalities of experience and motivation to somewhat off-set cultural differences and achieve degrees of mutual understanding (Furstenberg et al, 2001). In short, cross-cultural dialogue is possible to the extent to which people in practice are able to reconcile what is common or similar and what is contextually-different in human experience and practice (Clifford, 1988). Another possible issue arises regarding curriculum requirement: if a lecturer has preferences on verbal knowledge, communication and oral discussions, with little or minimal documentation, the contents must be created with respect to the context and the needs concerning the learning and cultural environment.

Finally, in the third level of arguing we acknowledge the conceptual differences between knowledge and content. In that sense, we entail some existing perceptions concerning such debate: Gergen (1995) explores the use of a dialogue as a metaphor to evaluate a number of educational practices. Particularly, he pleads knowledge as fragments of a dialogue, "knowledgeable tellings", at a given time within an ongoing relationship. This relationship can be between learners, between a learner and a lecturer, or between a learner and an environment experienced by the learner. Gergen (1995) still describes a lecture conversation where, because the lecturer has already set the content, the student enters part-way through the dialogue and finds that have no voice within it. Or, Budin (2002) concludes through an iterative and recursive value-adding chain that: data + interpretation = information + cognitive appropriation = knowledge + collective representation and utilization = content.

However, in our opinion such definitions entail once again the need for this paper. Gergen´s perception concerning content can be classified as reductionist, because clearly in e-learning learners have voice regarding the conversation level, through out chats. Moreover, Gergen´s view of content is similar to its etymological meaning: "something contained as in a receptacle, being also the meaning or significance of a literary or artistic work" (The Free Dictionary, 2008), which means static, enclosed. In spite of, the improved perception of Budin (2002) concerning such debate, the truth is that content is not a synonymous of collective representation and utilization of knowledge. Such fact is inevitably tied to content quality, because it depends on knowledge, experience, or both: the content creator and reader. Apart from content relativity, its value is also comparatively determined due to its possible weakness when compared to other contents. Plus, there is also a contextual determinism when it is delivered by experts.

Therefore, we plead the following definitions for knowledge and content in an e-learning project: knowledge is dependent on conceptual skills and cognitive abilities, trough action oriented and systematic tasks in contextual practices, or through social interaction. Content refers to the encoded "raw material" which succeeds in achieving the objectives that the content creator has set for it. Therefore, content is no longer measured by the personal content creator or audience opinion, but rather if fulfils end goals through the following characteristics: thought-provoking (should present new ideas or offer a critical and new look at ideas or assumptions commonly held by others); well researched (should provide multiple linkages to related discussions. Plus, extensive research also denotes value because this

signifies an investment of time); unique (innovative content concerning research fields draws the attention of the audience); comprehensive (comprehensive content may outshine others "content providers" regarding the same theme); highly interactive (a piece of content can come not only in the form of written text but also in multimedia); ethical (anti-plagiarism design and structure).

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