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THE IMPORTANCE OF EMOTIONAL ASPECTS IN MEDIA-BASED KNOWLEDGE TRANSFER AND E-LEARNING

ABSTRACT

We do know from neuroscience, cognitive science and pedagogics as well as from information, communication, and media sciences that remembering and even learning something is easier and longer lasting when doing something oneself, or at least when the contents to be learned are linked with emotions. Thus it seems to be reasonable not only to address learners on the cognitive level but also allow them to apply what has to be learned and to make emotional experiences. Results are that learners have to take an active part in the learning process. Inevitably, the ways of how to produce and implement content has to change, focussing on emotional and narrative methods. Digital storytelling, for example, not only enables the involvement of the learner within the learning process by creating suspense, but also explains the content out of different perspectives that might include the learners' perspective, too, and thus helping them to construct their own meaning.

Keywords: Media-adequacy, Emotional-Based Learning, Constructivism, Media-Based Learning, Neuroscience

MEDYA TABANLI BİLGİ TRANSFERİ VE E-ÖĞRENMEDE DUYGUSAL DURUMUN ÖNEMİ

ÖZET

Nöroloji, kavramsal eğitim ve pedagoji alanlarının yanı sıra bilgi, iletişim ve medya bilimlerinde de kabul edildiği üzere, bir konunun hatırlanması ve hatta öğrenilmesi, öğrenenin o konuyu uygulaması ya da en azından o konu ile ilgili duyuşsal bir bağ oluşturması sonucunda daha kolay ve kalıcı olmaktadır. Bu sebeple öğrencilerin sadece bilişsel düzeylerini belirlemek için değil aynı zamanda öğrencilere duygusal deneyimler kazanmaları ve öğrenmeleri gereken şeyleri uygulama fırsatı vermek mantıklı görünmektedir. Sonuçlar öğrenen kişinin öğrenme süreci boyunca aktif bir rol almaları gerektiğini gösteriyor. Şüphesiz duyuşsal ve anlatımsal yöntemlere odaklanarak, içeriğin nasıl oluşturulacağı ve nasıl üretileceğinin yolları değişmek zorundadır. Örneğin, elektronik ortamdaki hikâye anlatımları öğrenen kişinin öğrenme süreci boyunca aktif bir rol almasını sağlamakla beraber öğrenenin kendi görüşlerine ek olarak farklı görüşleri de görmesini sağlamaktadır. Böylece kendi anlamlarını oluşturmada yardımcı olmaktadır.

Anahtar Kelimler: Medya Yeterliliği, Duygusal Öğrenme, Yapılandırmacılık (Oluşturmacılık), Medya Tabanlı Öğrenme, Nöroloji

1. INTRODUCTION (GİRİŞ)

Today, the theory that the social (and technical) 'being' moulds consciousness is widely accepted. However, in some contexts this dictum is frequently ignored, in favor of theories that meanwhile are only valid for 'outdated' social and technical realities. This seems to be the case, for example, when discussing the role of schools (or teaching in general) in the context of 'lifelong learning.

A possible, often overlooked reason for this could be the predominant status of Claude Shannon and Warren Weaver's communication model (1949) among pedagogues, even though current media and social realities seem to point at the superior effectiveness and adequacy of other models. The communication theories of Shannon and Weaver were developed with the aim of finding an answer for various (technical) problems in mass communication with the specific character of ***point to multipoint***-which of course contains numerous analogies to traditional teaching. Consequently, all too often, unreflected transferences of the theories of Shannon and Weber took place, without true verification of their validity for a specific context.

Of course, at first view the direct application of the communication model of Shannon and Weaver in teaching processes can be seen as logical. It describes a person that initiates communication ('encoder/producer') and a person, or several persons, as the target ('decoder/receiver'). Sometimes, the process of communication between encoder and decoder requires an intervening medium (from lat. ***medium***, middle or midst). The inclusion of the 'medium' enables a valid understanding of the encoding-decoding model as a metaphorical concept of communication. Of course, the traditional scientific theories have continuously analysed the function of the medium, and the conditions that have facilitated or influenced negatively the communication flow.

Media-based learning has usually been considered an element that clearly promotes and enables communication in several situations. In a learning process, this could apply when the 'encoder' (the teacher) is not adequately prepared; it also could apply in a loud and straining group atmosphere; or maybe in a situation where a teacher is confronted with perceptual, emotional or cognitive difficulties. In such situations, media support as a complement of teaching can probably deliver a certain easement in the learning process, or sometimes even make it possible.

In order to ensure the communication flow between 'encoder' and 'decoder' in an environment of technical constraints and factors of disturbance, the 'encoder' is frequently forced to standardize the information flow, expecting that a high number of participating 'decoders' will be integrated. Standardization thus was a necessary element in Shannon and Weaver's communication model so as to exclude factors of disturbance in the communication process. Here, it seems to enable an adequate reception of learning contents. Furthermore, it creates an 'internal correlation' between the (assumed) validity of the information provided by the 'encoder-decoder metaphor' and the idea of an effective teaching process.

However, even in the times when mass communication media (still) was predominant, it became evident that the 'decoder' showed a differentiated response to media messages. Since the second half of the past century, constructivist learning theories have tried to consider this factor. Recent brain research is now able to explain this phenomenon. Meanwhile, new technical (and consequently medial) developments offer efficient alternatives to 'authoritarian' approaches in communication strategies. In the following, further aspects of this development shall be explained in more detail.

Digital media is evidently not characterized any more by a *point-to-multipoint* quality. This fact exposes signifying implications of the communication model of Shannon and Weaver and its problematic applications, because of its specific connection to a limited *point-to-multipoint* situation. Giving up the rather authoritarian 'encoder-decoder' communication model opens new perspectives for alternative scenarios that differ from traditional forms of teaching, specially in their attempt to involve narrative, emotional and action-oriented representations of knowledge. Since these developments were initiated by, or were reactions particularly to the use of new (digital) media, this article refers to media-based teaching situations.

2. RESEARCH SIGNIFICANCE (ÇALIŞMANIN ÖNEMİ)

My article thus will explain the reasons for it, and will exemplify the methods of production of emotionally and narratively interesting learning materials.

3. BACKGROUND: MEDIA THEORIES, MEDIA IMPACT RESEARCH, THEORETICAL ASPECTS OF MEDIA-BASED LEARNING (ALTYAPI: MEDYA TEORİLERİ, MEDYA ETKİ ARAŞTIRMALAR, MEDYA TABANLI ÖĞRENMENİN TEORİK DURUMLARI)

Teaching is obviously a communication system. Furthermore, teaching has traditionally been defined within a correlation between learner and learning content, where the relevance and connotations of contents are transmitted to learners. In this context, the teacher provides not only the presentation of contents, but its interpretation as well. The interpretation's aim is to provide the intellectual accessibility of contents. According to this understanding of teaching, the teacher is the expert and guardian over values and significance of learning contents, and has an interpretation sovereignty that the learner has to accept.

Generally, a multimedia object is perceived as a time-lapsed individual expression, or a time-lapsed speech. Regarding its function, it seems to be experienced as a valid equivalent to authentic or spontaneous personal communication, if only limited by technical effects. In fact, the prevailing opinion persists that authentic communication can be technically emulated and be used in diverse applications. In this context, media is an illustration or representation of experiences and personal contact with people. As a result, media and direct communication (at least in its tendency) have largely identical functions. When a teacher uses didactical aids like books, images, or films, in order to promote a better comprehension of learning contents, it is always intended to provide the teacher's specialized knowledge to the learner, which in consequence reinforces a clear teacher-learner (encoder-decoder) relation.

The interpretations transmitted in the teacher-learner interaction are basically forced acts imposed by means of a system of sanctions. Refusal of interpretations result in poor evaluations for the learner, which provokes a low self-esteem and poses an obstacle in professional prospects. Most importantly, the use of a system of sanctions (for both, the teacher and the learner) often ignores the integration of a different perspective of learning as a voluntary and agreeable act of identification with the learning contents.

Thus, in analogy to a much quoted line in communication science, it seems to be necessary to shift from 'what teaching does for the learner, to what the learner can do for teaching (and its contents)' (in analogy to Sturm, 1971). In this alternative view, the learner is not solely a consentive, passive element reduced to a receptor role, but an active participant. The changes brought by the new digital

media have in the main enforced the insight that the specific character of ***point to multipoint*** is only technically conditioned in various types of media (and in consequence, in its contents), and does not possess general validity. Certainly, the current prevalent forms of media are not limited to it. The use of digital media applications has lately been intensified in teaching situations (partly actively, as an improving complement to illustrate teaching contents, and to some extent passively, as a result of social or political decisions). Their major properties (multimediality, interactivity, openness, democratic participation), offer new perspectives for other forms of communication.

The modality and effectiveness of information transfer in media, invariably depends on the medium to be used and its specific characteristics (Giessen, 2004). Thus, the use of digital media brings inevitably more open (that is, increasingly networked) as well as more intense interactive communication, and also more active reception. Furthermore, when compared to the situation in the 80's, current media users are now much more accustomed to a wider diversity of media, networks, and a stronger consideration of their personal needs and interests. The attributes and features of computers have a steadily growing influence on other media, sometimes of a mere aesthetic quality (for instance, the use of ***roll down menus***, from graphic user interfaces, in program announcements from television networks: so, computer aesthetics are being taken up and used by the television media, an until now dominant medium); frequently, however, dominant media also influences contents. For example, literary scholars have pointed in this context at new tendencies in literature (for instance, since the second half of the past century, apparently caused by the dominance of other media, in this case the cinema, a form of writing to some extent visual and then again emphasized modular took place; see, for example, Poppe, 2007).

Often, such tendencies can be a temporary trend, because the respective new media with its characteristics and aesthetic qualities are presumed to be more 'fashionable'. However, due to its multimedia properties, the digital media is not only more 'up to date' but certainly makes specific forms of information transfer more significant, while other specifics, rather typical for more traditional media, is loosing some of its importance.

This development becomes apparent in situations that some might perhaps regard as minor aspects. So, the openness of the digital media (choice between different sorts of media, as well as the use of feedback channel options) brings in an increase of ***feedback*** communication with the user (readers, or learners) by means of questionnaires, or simply an e-mail address. This is now not only possible, but almost expected, and today can be considered a standard. Likewise, the phenomenon of interactivity, made possible or at least intensified by the digital media, conducts inevitably to a stronger consideration of the users' needs and interests. This is apparent for example in the process of navigation, where a user can play a more active role, such as following or ignoring hyperlinks, according to his personal interests. Such an active form of reception has an effect not only on the reception behavior but also on the users' production of meanings.

The characteristic users' situation, as well as the properties of multimediality, have further contributed to increase the importance of visual conditions. A computer monitor hinders the complete overview of longer texts, allowing only a view of the current screen page. When a text is longer, ***scrolling*** has to be done: that is, bringing the non-visible part of the text over the scroll bar that usually is located

on the right edge of the screen. This might be considered a similar proceeding as the turning of pages in books or magazines. However, turning back pages or reading back and forth between a table of contents and the text is much more complicated when using a monitor. Experiments and surveys have shown that almost all computer users concentrate their attention on the current page when reading longer texts, trying to keep in mind preceding pages and an overview of the text that has been read (Giessen, 2004, 29). The exact localization of parts of a text on a screen is a too strenuous task for many. All-too often, it is nearly impossible to find the exact position of a desired text passage; and this problem grows when the size of a text increases. Furthermore, page numbers do not exist in ***HTML*** documents, as the representation of pages depends on the user's settings (the numbering of paragraphs, often used in legal texts, has not been accepted as a standard). When the overview of a text is not feasible – a probability that increases with longer texts–few users restart the reading of a text from the beginning, because it is usually perceived as a frustrating experience.

Another decisive fact is that, compared to printed matters, computer-aided media creates physiological difficulties and constraints. Unlike printed matters, an image flickers on a monitor. Although this problem does not occur on ***LCD*** displays any more, the character resolution on both ***LCD*** and ***CRT*** displays is relatively low. Moreover, physiological studies have shown that when watching a computer screen, a lower eye-blink frequency occurs, which causes the eyes to be moisturized less frequently and, as a consequence, the eyes tend to fatigue more rapidly. This aggravates the previously mentioned disadvantages of image flickering, low character resolution and also, the effects of screen reflection. Finally, the body posture is almost unchangeable because the computer monitor can not be easily relocated when the sitting position becomes uncomfortable. Especially when reading, the body posture tenses up strongly, which clearly intensifies fatigue effects? Of course, users have to sit relatively close to the monitor because they normally work with a keyboard and a mouse, and icons or hyperlinks need to be clicked exactly.

For authors, the consequences that result from these specific receptive situations are a cause of concern. The reading rate is between one-fourth and one-third slower than with printed matters. The memory retain performance is clearly lower than with the same text in a printed version. There is even the impression that many computer users tend to avoid texts, and often it has been argued that the traditional concept of 'reading' should not be used when referring to computer-aided media. This is emphasized, for example, by Jakob Nielsen, who wrote already at an early stage that longer texts on a computer monitor usually are avoided, at best 'overflown' or, as he called it, '***scanned***' (Nielsen, 2000).

Thus, it is clearly asserted that texts in the context of computer-aided media are read differently than print media from a book or magazine. Hence, they should be written and displayed on a different manner. Of course, this refers as well to texts with learning contents.

Most importantly, authors are to avoid longer texts. A text should only need a single screen ***scroll*** or even better, it should be read without scrolling. According to this, the length of a text should not exceed the size of a single screen page. This creates the necessity of ***fragmenting a text in single sense-steps*** or ***modules.*** Some consider this proceeding of ***modularisation*** of multimedia texts an indispensable step. Here in turn, the representation of strands of argument are much harder to achieve than in a written text.

Argumentative progressions are not easy to represent; here are books or ***time-based media,*** like films or cartoons, the better alternative.

When previous knowledge about visualized objects exist (this would be a premise, since the images can not be at first described or explained, but have to be recognized and integrated at once), visual representations allow a much faster transfer of information (because different forms of information are simultaneously present and can be handled without a decoding phase (see Sowa, 1983). Additionally, new specific overvalues arise. Specially, connections between the objects shown, as well as temporal progressions, are easier to understand.
For this reason, an instruction manual for a machine in graphical representation is usually more effective than a written manual (see Grob & Breger, 2002).

The digital media continues a development that has already been observed as films or television were used to transfer information. Studies then took place on how a more emotional transfer of information influences an observer.

Already in the 1970's it was found out that emotional impressions are dependent from the type of media, for example when comparing emotional responses of television viewers and radio listeners (Sturm, 1978). Other early results (for example, Sturm, Habler & Helmreich, 1972) suggest that emotional responses last clearly longer, and are more detailed than knowledge acquired with cognitive means, which usually gets lost in temporal progression, but can be more easily remembered or reactivated when associated to emotional connotations.

4. ISSUES, CONTROVERSIES, PROBLEMS (KONU, TARTIŞMA, SORUNLAR)

Recent research studies in neuroscience have confirmed these findings. Even more, current neuroscience research has shown that information and knowledge are assimilated with different degrees of effectivity, depending on mood and tendency of emotions (for example, Erk et al., 2003). According to this, information associated with positive emotions is assimilated through the hippocampus and further processed in the cerebral cortex, while the information associated with negative emotions is incorporated through the amygdala, a region situated on the top of the temporal lobe, directly ahead of the hippocampus. The amygdala conditions the organism when quick reactions are needed, for instance in situations that involve conflicts, or fleeing. When activated, it produces an increase of blood pressure and acceleration of the pulse rate. Likewise, an entire muscular tension can be determined. This condition enables quick reactions, since the activation of the amygdala occurs simultaneously with a number of other physiological processes. In the history of evolution, being able to flee rapidly or defend oneself in hazardous situations always has been an advantage. In these cases, too long periods of reflection would not be useful (and even contra-productive). Here, the amygdala is not of avail when recalling experiences and factual knowledge, or when knowledge is processed (Phelps, 2006).

The amygdala should not be considered in this context a evolutional relict of no present-life importance–in fact, it still protects us in 'modern' hazardous situations, for example, in road traffic. In diverse types of decisions, it is even indispensable as it contributes to assess potential dangers and promotes critical faculties. In this field, a number of impressive case histories have been compiled by the Portuguese-American neurologist Antonio Damasio. They refer to patients whose amygdala was calcified and (apparently because of that) had problems managing a 'reasonable' behavior (Damasio, 1999). Scientists researching simulation of intelligence

also confirm the theory that critical faculties, including fear, are elementary aspects of ***intelligent*** conduct (for example Minsky, 2006).

During a learning process, the mode of functioning and the tasks fulfilled by the amygdala are very often problematic. Thus, in a complex society, where interrelations and other mechanisms have to be comprised and understood, fear and aggression, or authoritarian models of communication, are the wrong advisors. Activation of the amygdala can even be contra-productive, because the amygdala is not able to handle information on a creative manner. It is a known fact that stress can not promote good analytical achievements. Neuroscience has now determined the causes for it (for example Cahill et al., 1994). According to this, learning is a less effective process when boredom, lack of motivation and hostility prevail. In this context, explicit positive emotions should be evoked.

Therefore, it makes sense to adapt every form of information transfer to the neurological needs of information receivers. This happens ideally, when connecting information to positive emotions. These positive emotions can be achieved through participation and integration of the information receiver (user, reader or learner), giving persons the feeling that they are taken seriously, in order to promote their personal engagement. Thus, the individual reactions that the digital media allows are an ideal frame to achieve this.

In a pleasant emotional context, not the amygdala, but the hippocampus will be activated; however this cerebral region is apparently not involved in quick responses (neither physical nor mental). Though, in the context of successful transfer of information and knowledge, this is an advantage. The hippocampus passes on the recorded information to the cerebral cortex, where it is storaged on a long-term basis (this is the case, for example, with dreams that people experience while they are sleeping). Consequently, 'learning' functions effectively only with the hippocampus, in spite of, or because of its 'slowness'. Creativity as well can only be generated in this form. Therefore, there are neurological reasons why learning contents should not be presented neutrally but in an emotional, interesting and exciting manner.

Creativity relates less to facts that are supposed to be learned by heart (like historical facts) or must be followed (like mechanical sequences). It rather relates to relations and associations. Meanwhile, there is a prevalent opinion that our networked and complex modern times demand aptitudes that are not basically related to fixed processes, or factual knowledge that becomes increasingly faster obsolete. It rather demands flexible answers to permanently changing situations.

Apparently, the media presence is a decisive reason for this broad transformation process, from a static, to a more dynamic society (Innis, already in 1950), because they are able to transfer information rapidly, and so, alter social, economical and even technical realities in constant ***feedback*** processes. Specifically the digital media and its relevant forms of knowledge integration, transfer, and representation, facilitate such a creative approach in a changing environment.

So can this concept be summarized: digital media is less suited for the presentation of facts and rational analysis than for the representation of connections and relations. But, the more the digital media influences our environment, the whole society, economic life, and so on, the less influential some traditional (perhaps only socially) relevant facts will be (the classical 'education'), allowing a more flexible and task-appropriate acquisition and application of relevant information.

Thus, the growing use of media in our society, and in consequence in our daily life, has almost inevitably focused attention to forms of information and knowledge acquisition connected to emotions in the human psyche. With it, there is a growing public awareness about new and more effective forms of learning and teaching.

One media-adequate form of presentation is the integration of information in stories, games and communicative situations. In the ideal case, the media users participate in the narration of a story that they consider subjectively interesting, or a game in a context where information is transferred and knowledge acquired. For this reason, the emotional forms of *gaming* and *storytelling* are adequate alternatives.

5. SOLUTIONS AND RECOMMENDATIONS: A BRIEF LOOK AT THE CONSTRUCTIVIST LEARNING THEORY (ÇÖZÜM YOLLARI VE TAVSİYELER: YAPILANDIRMACI ÖĞRENME TEORİSİNE KISA BİR BAKIŞ)

Constructivist learning theory suits to this demand. This theory already gained strong influence during the second half of the past century. It endorses the idea that the human perception of the environment is not to be seen as a reproductive process of knowledge. Thus, it does not represent a projection but an active constructive process (see, for example Harms & Voermanek, 1994, 248).

Ultimately, the constructivist learning theories go back to neurological findings, too. Already in the 50s, the biologist and psychologist Humberto Maturana formulated theoretical statements that attempted to explain how living organisms gather and process external sensations. Apparently, this process is not always identical, or at least, we do not know yet how other organisms gather, process, interpret or understand reality. So, there is a possibility that every living organism experiences its existence differently. The assumption that living systems must be understood as autonomous and dynamic entities goes back to Maturana (to this, and the following, see: Maturana & Varela, 1972).

These entities are not static, but rather develop themselves continuously. That means that on one side they are open, so they can gather and process information about the world. On the other side, the gathering and processing of information occurs against the background of individual capabilities and specific experiences. This means, in the first place, that an objective image of the real world does not exist, but only subjective constructions that relate information to present experiences and processing capabilities. Since an objective and comprehensive image of the world is not feasible – if all present sensations were processed simultaneously our brain would be overstrained –, this also contributes to achieve a certain efficiency, or rather allows the creation of a manageable image of the surrounding reality, in order to enable a reasonable processing of the incidental sense data. Furthermore, this concept implies that information is not processed passively. In fact, the brain processes and modifies it actively (comparing, and sometimes 'adapting' it to previous information).

In the 'radical' interpretations of the constructivist theory, expressed particularly by von Glaserfeld (see von Glaserfeld, 1995), it is even postulated that the brain does not enable perception, but (simply) organizes the own realm of experience. This would imply, that the brain (also) 'constructs' meaning in a 'real world' where meaning actually does not exist (or maybe only other meanings, beyond its subjective abilities and possibilities of perception).

So, the subjective and contextual character of information is underlined, and the binding objective reality replaced with the

learner's cognitive reality. This theory corresponds with the previously exposed neurological findings, whereby information is always processed in a different way, depending on the emotional connotations they are related to. In some cases they might be easily kept in mind and actively used. In other cases, probably not.

Another concept related to this theory refers to the fact that the brain constantly strives to keep its 'sensory construction' consistent. In this context, Niklas Luhmann has introduced in Germany the term 'self-reference', that he incidentally also uses in an analogical mode in other systems (the media system, and the educational sector, see Luhmann, 2006). 'Self-referential' means that a system seeks to preserve its sensory construction. This is given up only when it absolutely does not apply to reality, and even in that case, with a certain resistance. (Incidentally, this also would explain why educational establishments adhere so strongly to their prerogative of interpretation. On the other side, it would also explain why learners are so hardly reachable when teaching does not fulfil their needs and expectations).

Unlike a widespread misunderstanding within constructivism, the individual construction of reality is of course not arbitrary, but (also) determined by social consensus that develops through interactive communication (Harms & Voermanek, 1994:249). Applied to the educational sector, it means that the relevance of learning contents is determined jointly between teacher and learner. Here, it is important to integrate the learners' interests, knowledge, and previous experience, because they affect the learning behaviour and the willingness to assimilate new information. It must also be considered that previous experience and knowledge can be drastically heterogeneous. Nevertheless, they pose the decisive points of connection for the transfer of learning contents, since learners basically tend to look for familiar items of information. The consequence for the constructivist learning theory is the concentration to the frame of reference in which the learning contents are shown and interpreted. A learning experience occurs when a learner can relate the new information to previous experience and knowledge, and order the learning contents in a personal structure of knowledge.

6. FUTURE TRENDS: EMOTIONAL-BASED, ACTION-ORIENTED AND NARRATIVE INFORMATION AND KNOWLEDGE TRANSFER (GELECEK EĞİLİMLERİ: DUYGU TABANLI, EYLEM ODAKLI VE ÖYKÜSEL BİLGİ VE MALUMAT AKTARIMI)

Games and story telling are widespread and old established forms of knowledge transfer. This has been confirmed by the recent findings in neurological research. They are deeply human-rooted forms of knowledge transfer, and their particular character is that they are present at all times, in every culture and in every medium.

In every culture, narrated stories have had the function of transferring knowledge between individuals, groups and generations. They appear in all sorts of media that has been developed in our society. The knowledge transmitted is not only limited to facts but implicitly includes cultural values, opinions, emotions and problem solutions. A story provides a structure for a narrative representation of content in sequences, as well as a timeline represented with a linear language. Furthermore, successful stories are in essence transmitted structures of dramaturgical contents rooted in ancient myths, and related to emotional needs based on depth psychology. Thus, a coexistence of traditional forms of oral story-telling, multimedia narration in mass media and digital storytelling in internet might occur–but this does not diminish the attraction of traditional storytelling for narrator and listener.

The attraction of a story is based on its subjective perspective that enables the construction of an interesting thematic frame, and that can interact on a vivid and captivating level, so that audiences feel attracted and are able to feel with the story. The same categories can also be applied to games and other forms of action-oriented group learning.

Narrative and emotional forms of information and knowledge transfer have always been confronted with the objection of relativism. This criticism can be addressed, for example, with the constructivist concept of history, which stresses the constructive character of history, as well as its resulting controversies. Probably, narrative structures might be able to offer a closer access to the 'truth', since they contribute to achieve a stronger empathy and participation, and so, to an 'inner insight'.

Narrative, and consequently emotional, media-based forms of representation also allow interaction, and thus not only lead to emotional participation, but also (via specific action-oriented and networked forms of information and knowledge transfer) to an exchange with other learners.

The participation of the recipient (learner) as co-author is at the same time an essential element of the hypertext-theory (Dillon 1994, pp. 125). Emotional, narrative and action-oriented forms of information and knowledge transfer are thus a media-adequate answer (initiated by the digital media) to current challenges – that, not least supported with digital media, can be achieved with a particularly effective and convincing standard of production and representation.

7. CONCLUSION (SONUÇ)

The current state of knowledge in the areas of pedagogics, neuroscience and research on the effects of media suggests the use of action-oriented, narrative and emotional approaches for the information and knowledge transfer. Cognitive learning achievements appear stronger and are more enduring when combined with emotional connotations and personal involvement. Furthermore, it intends to include the learner in the process of development of knowledge, consciously and as much as possible. This, in turn, has implications in the modalities of conveyance. When excitement and interest are aroused, learners will rather be willing to include their own experiences, and to construct their own interpretations. Emotional, narrative and action-oriented forms of involvement for learners as co-authors – for instance, using *gaming* or *storytelling*, are essential elements in the hypertext-theory that can be transferred to media-based learning scenarios.

NOTICE/NOT

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