

Expanding Web and Innovation Skills for 21st Century

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Abstract

Gathering the opinion of educators, education experts and executives collective vision for learning known as the Framework for 21st Century Learning has been constructed. According to this Framework, students must master innovative skills and expertise novel knowledge in order to succeed in comprehensive and competitive work environments and life that becomes more and more complex each new day. An emphasis is made on creativity, critical thinking, communication and collaboration mentioned as essential to adapt students to the future. In that article, we try to figure out how developing the Web content and technology innovations influenced on quality of learning process and help students acquiring the needed skills.

Keywords: Web4.0, quality of education, Framework for 21st Century Learning

1. Introduction

In last decades, the technology innovations enter in all ranges of our life, and in all levels of education. Huge amount of digital data, tools and level of connectivity now exist linking educators to different resources and supporting active and effective learning process (<http://www.innovationsforlearning.org/>). It is proven that the success in life is not tied to IQ (intelligence quotient) but instead to EQ (emotional quotient). Thus, the effective learning systems must present information designed to provoke an emotional response in the learner (Wilson, 2009).

The intention of article is to explain how Web technology innovations support and influence on the quality of learning process and how educators should be prepared for that challenge.

2. Learning innovations and quality of education

Learning is the process that needed clear and well-performed information given to the persons that are involved in. In our days, students have a possibility to choose and be active when accepted and acquire new knowledge. That is way to make your subject attractive to them the creator of website should follow some rules to insure achieving a good results.

Website quality and performance is improving rapidly when we follow some ideas (<http://website-quality.blogspot.com/2009/02/increase-website-page-rank.html>):

- Focus on your aim (subject, business etc.);
- Get response or feedbacks from our students – it can be test relevant to the topic, or survey with simple questions about usefulness of the site, their satisfaction from process of learning and opinion how to improve it;
- Build quality links;
- Build targeted backlinks;
- Try to exchange link with other sites (Not often);
- Do not link to 404 error page;
- Analyze before accepting the links from others.

Today, neuroscientific research leads to the conclusion that, without emotion, there can be no effective long-term memory formation. Study after study confirms that the more emotionality a passage or event evokes, the easier it is to remember (Wilson, 2009).

2.1. Framework for 21st Century Learning

With the assistance of educators, involving education experts, business leaders and students, P21's Framework for 21st Century Learning have been established (fig.1), to define and illustrate the skills and knowledge that students need with main purpose to succeed in their work and life, as well as the support systems necessary for 21st century learning outcomes (<http://www.p21.org/our-work/p21-framework>).

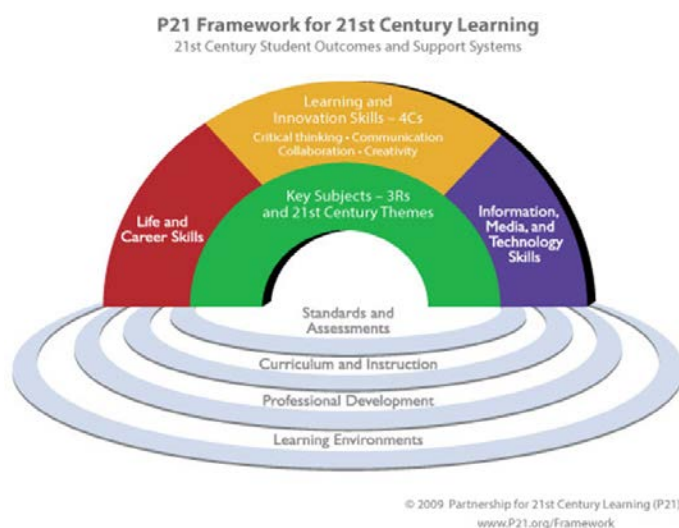


Figure 1. P21's Framework for 21st Century Learning

Earlier we have looked over on the basic characteristics of the different types of Web involving in education as well as for the Web 4.0, which are important for e-learning practice: *development intelligent agents, mobile technologies, cloud computing and services* (Nedeva and Dineva, 2012). In addition, we have assessed how these innovations influence on the student successes and performance during exams (Pehlivanova et al. 2009) and on the quality of learning (Pehlivanova et al. 2011). The major skills achieved from students thought applying Web 4.0 learning innovations leads in developing *critical thinking, communication, collaboration and creativity* (fig.1), and that enhance learning quality.

2.2. Expansion of web content and quality of learning

From its foundation until now the web appears with its main purpose to link information and make communication and exchange of that information easy. The web was growing as **Web 0.0** - *Developing the internet*; **Web 0.1** - *The shopping carts & static web*; **Web 2.0** - *The writing and participating web*; **Web 3.0** - *The semantic executing web*; and until nowadays **Web 4.0** - *"Mobile Web"* - as a space of interconnected web pages, web apps, videos, photos, and interactive content (<http://www.evolutionoftheweb.com/>). The principal differences between all types of web can be clarified as a function of two parameters "degree of information connectivity" and "social connectivity" (fig.2).

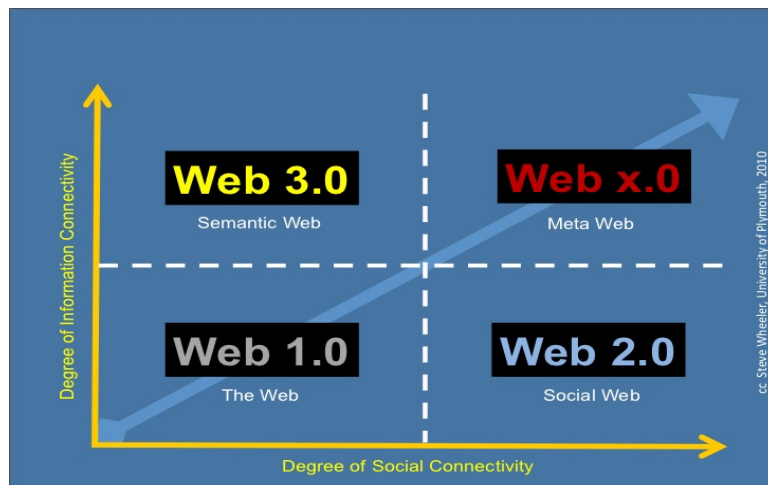


Figure 2. Developing of Web as degree of information connectivity and social connectivity

Web 1.0 is merely a data gateway where users passively receive information without opportunity to post reviews, comments, and feedback. Web 2.0 references as a social web; it encourages participation, collaboration, and information sharing. Examples of Web 2.0 applications are YouTube, Wiki, Flickr, Facebook, and so on. The innovative in Web 3.0, is that the computers can interpret information like humans and intelligently generate and dispense useful content personalized to the needs of users (Cookie, 2012).

Nevertheless, there is no clear definition for Web 4.0 in the internet, but it can be expresses as $Web\ 3.0 + Artificial\ Intelligence = Web\ 4.0\ technology$ (<http://website-quality.blogspot.com/2010/01/web-40-new-web-technology.html>).

In fact, Web 4.0 connects all devices in the real and virtual world in real-time (<https://flatworldbusiness.wordpress.com/flat-education/previously/web-1-0-vs-web-2-0-vs-web-3-0-a-bird-eye-on-the-definition/>). Our previous surveys showed that students liked the opportunities to use lecture information, multimedia and self-exanimated tests all over the time when they have it and that improve their motivation for learning and study quality (Pehlivanova et al. 2009, 2011).

Currently web is “emotionally” neutral and does not perceive the users feel and emotions, but soon followed Web expansion willappears **Web 5.0 – emotional web** (fig.3), which is about the emotional interaction between humans and computers. In the future, with headphones on, users will interact with content that interacts with their emotions or changes in facial recognition (<https://flatworldbusiness.wordpress.com/flat-education/previously/web-1-0-vs-web-2-0-vs-web-3-0-a-bird-eye-on-the-definition/>).

Innovativeodds that offer Web-based learning made the education process more attractive and pleasing to students. In our previous study 80% of students confirmed that e-learning is more outstanding and interesting than ordinary one and cause positive emotions (Dineva and Duchevea, 2011). In modern society, emotions have ceased to be a negative element to become a positive one that facilitates action and decision-making. In case, studyon the enjoyment of the Web 5.0 activities, gained full agreement from all students with a mean of 4.85 (out of 5). The students’ responses about their willingness to access Web activities outside class time showed agreement from all students with a mean of 4.42(out of 5). Overall, the students showed positive attitudes toward the use of the Web 5.0, agreed that they enjoyed the Web 5.0 activities and would like to use more activities during and outside class time(Benito-Osorio et al., 2013).

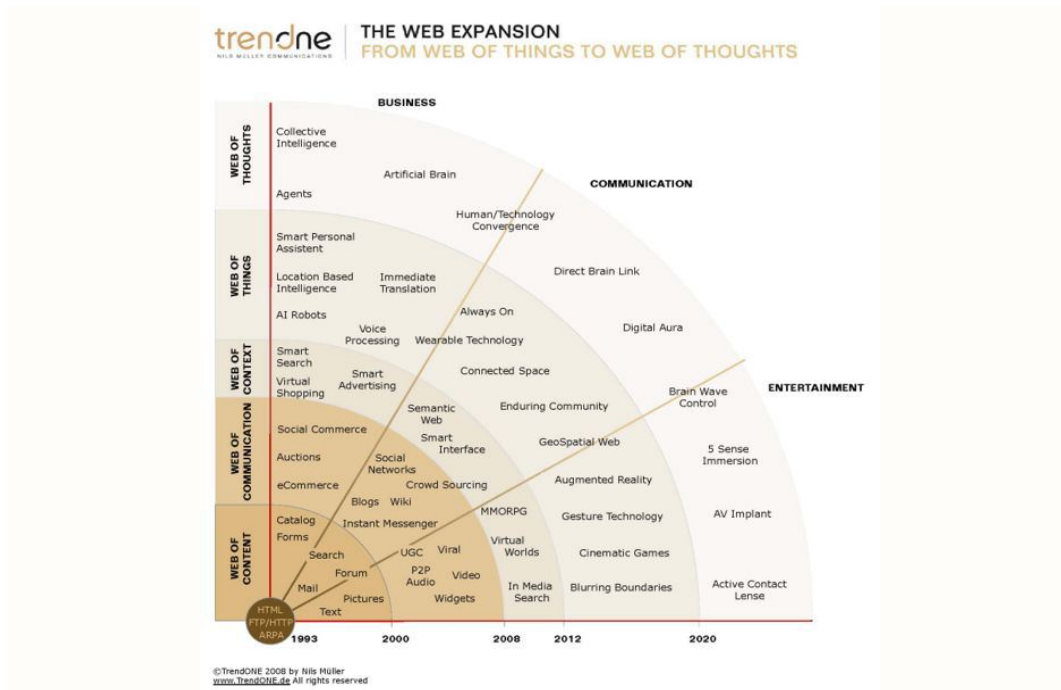


Figure 3. Web expansion from Web.1 to Web.5

(<https://flatworldbusiness.wordpress.com/flat-education/previous/web-1-0-vs-web-2-0-vs-web-3-0-a-bird-eye-on-the-definition/>)

2.3. Emotions Affect Learning

In fact, if the information that perceive in the situation fails to provoke an emotional response, it will fail to be perceived as meaningful and will consequently have little chance of being selected into our long-term memory sets (Wilson, 2009). As a result no learning appears. Emotions are often thought of as irrational or “nonintellectual” feelings that are beyond our control. However, emotions are complex states of mind and body, consisting of physiological, behavioral, and cognitive reactions to situations that can be managed and directed (Darling-Hammond et al., 2015), taking into account that:

- ✓ **Emotions affect learning** – students' emotions affect learning, interfering with or supporting learning.
- ✓ **Emotional intelligence** – that is the ability to manage feelings and relationships. There are five aspects of "emotional intelligence", and educators should develop strategies to help themselves and their students become aware of and manage their emotions.
- ✓ **Creating emotionally safe learning environments** – students can take risks intellectual risks without penalties for failure, because learning environment is supportive. Thus, they develop self-confidence grow emotionally and academically.

Emotions are important part in education, because they drive attention and push learning and memory. There is no fully understanding of our emotional system, so it is difficult to regulate it in school, but some general principles and their applications to the classroom can be listed (Sylwester, 1994):

- ✓ *When trying to solve a problem, carry on the dialogue with continuous emotional input* - developing forms of self-control among students and staff that encourage non-judgmental, no disruptive and perhaps even inefficient emitting of emotion.

- ✓ *Focus more on metacognitive activities that encourage students to talk about their emotions, listen to their classmates' feelings, and think about the motivations of people who enter their curricular world.*
- ✓ *Activities that emphasize social interaction and that engage the entire body tend to provide the most emotional support - games, discussions, field trips, interactive projects, cooperative learning, physical education and etc..*
- ✓ *School activities that draw out emotions - simulations, role playing, and cooperative projects - may provide important contextual memory prompts that will help students recall the information during closely related events in the real world.*
- ✓ *Avoiding emotionally stressful school environments that are counterproductive because they can reduce students' ability to learn.*

3. Conclusion

Applying Web 4.0 activities in the learning process cause achieving from students the major skills listed as important in the Framework for 21st Century Learning. Web technology innovations support acquiring and developing *critical thinking, communication, collaboration and creativity*.

Emotions are important part in education and communication. For effective pedagogy in Web 5.0 environments, teachers need to become active and critical Web 5.0 users and develop their own skills and strategies for selecting and managing Web 5.0 materials and emotions (Diana Benito-Osorio et al., 2013). It is very important to develop advanced emotional intelligence in students and academic stuff. Institutions and educators should pay attention to the coming challenges with expansion of the Web (emotional web – web 5.0) and create emotionally safe learning environments, maintain activities that emphasize social interaction- games, discussions, field trips, interactive projects, cooperative learning.

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