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Instructional design principles for 21st century learning skills

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Abstract

In the 21st century, people have to have high level thinking skills called 21 century learning skills in order to solve new problems of the new world. They should know how to use their knowledge and skills. These learning skills can be summarized under the three main subtitles; information and communication skills, thinking and problem-solving skills, interpersonal and self-directional skills. When educational problems are changing, at the same time solution proposals to these problems are also changing. Therefore to achieve the goals for 21 Century Learning Skills require the new approaches and new methods. Postmodern instructional design principles appear to meet the needs of the 21st century. In this paper   21 Century Learning Skills will be explained and postmodern instructional design principles will be given as solution proposal.
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Keywords: Instructional design; postmodernism; 21st century learning skills; high level thinking skills; digital natives

1. Introduction

"We need to educate our children for their future, not our past." —Arthur C. Clarke

As the world moves into the Twenty-First Century, a massive change, along the lines of a global paradigm shift is occurring. It is affecting frames of reference about the ways of life, work, and society, and how they are viewed and organized. There is a big transition of society that at the heart of the transition is the globalization of economic activity, political relations, information, communications, and technology. This transition has major implications for the profession of teaching (Milliken, 2004). Similarly, Hood described the new world as; "In the 21st Century we have a much better understanding of how things work, or how they don't work, to a prescribed set of rules. Societies, parents, the workplace, students, are all different. So are the problems. The answers, or the rules, need to be different" (Hood, 1999). Since the production of information has appeared more important than industrial production, the driving force for the 21st century has become the intellectual capital of citizens.

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2. Literature Review

The changing world is called as postmodern world and postmodernism as a main stream philosophical approach spread around the world and become influential. There is not a common definition about postmodernism that majority of the authors arrive at a consensus on, in the literature. However, postmodern thinking could be described as "A critique or distrust of big stories meant to explain everything. This includes grand theories of science, and myths in our religions, nations, cultures, and professions that serve to explain why things are the way they are" (Wilson, 1997). Hence, in order to summarize this term, it can be said that; postmodernism is the criticism of modernism and postmodernism is especially against one-fits-for all gigantic approaches and panacea systems. Hlynka and Yeaman emphasize some key features of postmodern thinking: (Wilson, 1997)

1. A commitment to plurality of perspectives, meanings, methods, values-everything.
2. A search for and appreciation of double meanings and alternative interpretations, many of them ironic and unintended.
3. A critique or distrust of Big Stories meant to explain everything. This includes grand theories of science, and myths in our religions, nations, cultures, and professions that serve to explain why things are the way they are.
4. An acknowledgment that-because there is a plurality of perspectives and ways of knowing-there are also multiple truths.

2.1. New learners in the twenty first century

As the world changed down to the ground the students also are affected from the change. Prensky highlights the technology effects on the new students surrounded by digital media and characterized the new students with their habitat-technology impact environments. In the 21st century, students have changed radically. Today's students are no longer the people our educational system was designed to teach. Today's students – K through college – represent the first generations to grow up with the new digital technologies. They have spent their entire lives surrounded by and using computers, videogames, digital music players, video cams, cell phones, and all the other toys and tools of the digital age. Today's average college grads have spent less than 5,000 hours of their lives reading, but over 10,000 hours playing video games and 20,000 hours watching TV. Computer games, email, the Internet, cell phones and instant messaging are integral parts of their lives (Prensky, 2001). Prensky called these new students as Digital Natives. But in the related literature different sources labeled them differently. For example, Millennials, the Net Generation, the IM Generation, which stands for Instant-Message Generation, the Gamer Generation, for the obvious reference to video games, or even the Homo Zappiens for their ability to control simultaneously different sources of digital information. Finally, all these terms are combined under a new name as New Millennium Learners in the OECD-CERI resources (Pedro, 2006).

These differences in student generations lead the educational institutions to work according to the varying needs of students. Since the students are changed, the instructional designers also started to redesign their courses to focus on being student centered and interactive (Oblinger, Oblinger, 2005).

Throughout human history, education has been shaped by the societal needs of the societies in which it is set. Because the information and technology are important for the new society, the new learning skills occurred as needs of the new society. Therefore, in recent years, educators at almost every level have focused on improving students' high level thinking skills and technology literacy. These learning skills are called 21st century learning skills and will be explained through the following section.

2.2. Twenty first century learning skills

To cope with the demands of the 21st century, people need to know more than core subjects. They need to know how to use their knowledge and skills — by thinking critically, applying knowledge to new situations, analyzing information, comprehending new ideas, communicating, collaborating, solving problems, making decisions. Learning skills are cognitive skills that the Partnership defines in three broad categories; information and communication; thinking and problem solving; and interpersonal and self-directional skills (Partnership for 21st Century Skills, 2008). These learning skills and including are as follows;

2.2.1. Information and communication skills;
  a) **Information and media literacy skills:** Analyzing, accessing, managing, integrating, evaluating and creating information in a variety of forms and media, understanding the role of media in society.
  b) **Communication skills:** Understanding, managing and creating effective oral, written and multimedia communication in a variety of forms and contexts.

2.2.2. Thinking and problem solving skills;
  a) **Critical thinking and systems:** thinking exercising sound reasoning in understanding and making complex choices, understanding the interconnections among systems.
  b) **Problem identification, formulation and solution:** Ability to frame, analyze and solve problems.
  c) **Creativity and intellectual curiosity:** Developing, implementing and communicating new ideas to others, staying open and responsive to new and diverse perspectives.

2.2.3. Interpersonal and self-directional skills
  a) **Interpersonal and collaborative skills:** Demonstrating teamwork and leadership; adapting to varied roles and responsibilities; working productively with others; exercising empathy; respecting diverse perspectives.
  b) **Self-direction:** Monitoring one's own understanding and learning needs, locating appropriate resources, transferring learning from one domain to another.
  c) **Accountability and adaptability:** Exercising personal responsibility and flexibility in personal, workplace and community contexts; setting and meeting high standards and goals for one's self and others; tolerating ambiguity.
  d) **Social responsibility**: Acting responsibly with the interests of the larger community in mind; demonstrating ethical behavior in personal, workplace and community contexts.

2.3. How can we best prepare students to succeed in The 21st Century?

According to The Partnership for 21st Century Skills, the following six elements to be followed are recommended to achieve the 21st century learning skills (Partnership for 21st Century Skills 2008);
1. Emphasize core subjects.
2. Emphasize learning skills.
3. Use 21st century tools to develop learning skills.
4. Teach and learn in a 21st century context.
5. Teach and learn 21st century content.
6. Use 21st century assessments that measure 21st century skills.
    To follow these elements may not be enough to get successful results. Because the postmodern instructional design is suitable for the new world. In the postmodern instructional design process, instruction should be designed based on individual needs. Constructivist theory emphasizes the individual learner. In postmodernist view, when developing instruction, instructional designer should focus on the learning process rather than the content or information because information changes rapidly.

2.4. Postmodern Instructional Design

Although Instructional Design is based on a scientific, systematic and quantitative paradigm, postmodernists perceive it as an art as well as a science. Andrew Yeaman (1994) outlined nine ideas for postmodern instructional design as follows:
1. Accept that there are several workable solutions to every design problem.
2. Expect that students or trainees will interpret instruction in different ways.
3. Examine and learn from instruction that fails as well as instruction that succeeds.
4. Metaphors, symbols and models should be used cautiously.
5. Determine if technological fixes have improved problems or created more.
6. Avoid idealism that all students/trainees will have absolute correspondence in their understanding - there is never a true meeting of the minds.
7. Avoid authoritarian approach - give some control to learners.

8. Look for contradictions in your messages and in other's.

9. Plan instruction based on learners' needs not just technologies.

Culture, language and societal contexts create contextual meaning. Culture not only affects how we learn, but determines how we think, and how we think about learning. Instructional designers need to think more holistically about the design of instruction. This is especially important for achieving 21st century learning skills.

2.5. *Instructional Design Principles for 21st Century Learning Skills*

The traditional educational approaches cannot be met to the educational needs of the new society and do not recognize new learner characteristics of the 21st century, therefore it is better to modify instructional design principles according to these points. Besides, principles of the postmodern instructional design are used to create an instructional design proposal explained below briefly;

Goal analyses: Define the goals and associate them with 21st century learning skills.

Define Learners: Consider the "digital native" characteristics of the learners.

Instructional strategy development: Choose the strategies with students that force them to develop the 21st century learning skills

Implementation: Focus on the learners and learning not the instruction. Create a student centered, collaborative and technology intense learning environment.

Media selection: Choose the state-of-the-art technology and media with learners. Ensure the media make the learner active and productive.

Student evaluation: Use e-portfolios and let the students evaluate themselves and each other.

In addition to all of these, there are some main characteristics of these postmodern instructional design principles to be considered for all phases and conditions;

1. **Plurality**: In every phase and condition of the design, include both teachers and students as part of the design team.

2. **Flexibility:** In every phase and condition, consider different points of views, media, strategies, etc in case of the failure.

3. **Humanity:** In every phase and condition, give priority to the learner needs and preferences over goals, procedures and activities etc.

3. Conclusion and Suggestions

Under the lights of the idea mentioned in this paper; considering the characteristics of the new generation students and using the principles of the postmodern instructional design, can be a solution proposal to achieve the 21st century learning skills. As a conclusion, it is better for an instructional designer to consider these points to be successful when working on high level thinking skills.

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