Izvorni znanstveni rad

VISUAL PEDAGOGY PRACTICES: AN INSTITUTIONAL EXPERIENCE

VIZUALNA PEDAGOGIJA U PRAKSI: INSTITUCIONALNO ISKUSTVO

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Abstract

Visual pedagogy as a new concept slowly penetrates academic world. Visual content is very important part of learning as it creates unique experience based on the previous experiences, memories and emotions connected with them. By incorporating visual pedagogy in educational process of teachers it is meant to influence development of visual teaching and learning in their field. By connecting ICT and other technology courses prospect teachers learn how to produce their own visual content, from images to animations and videos. First experiences give high level of satisfaction in learning through visual content and applying underlying Multimedia design principles. Not to be neglected is that students were having very creative and fun time in learning by creating their own individual or team projects as part of curriculum. One of the challenges we are facing continually is that of proper evaluation.

Keywords: *Visual Pedagogy, Higher Education Practice, Visual Learning Outcomes*

Sažetak

Vizualna pedagogija kao novi concept polagano prodire u visokoškolsko obrazovanje. Vizualni sadržaji su važan element učenja jer stvaraju jedinstvena iskustva koja se temelje na prijašnjem iskustvu, sjećanju i osjećajima povezanima s njima. Uključivanjem vizualne pedagogije u obrazovni proces učitelja i nastavnika, cilj je utjecati na razvoj vizualnih elemenata u poučavanju i učenju u njihovom području. Povezivanjem IKT i drugih tehnološki orjentiranih predmeta mogućim nastavnicima i učiteljima omogućuje se stvaranje vlastitih vizualnih sadržaja, od fotografija do animacija i videa. Prva iskustva govore o visokoj razini zadovoljstva učenjem kroz vizualne nastavne sadržaje i primjenu osnovnih načela dizajna multimedije. Ne treba zanemariti da je studentima bilo zabavno kroz kreativnost u stvaranju vlastitih ili timskih uradaka u nastavi. Jedan od izazova s kojim se kontinuirano susrećemo je ispravna evaluacija tako nastalih sadržaja.

Ključne riječi: *vizualna pedagogija, iskustva iz visokog školstva, vizualni ishodi učenja*

1. Introduction

1. *Uvod*

The renowned psychologist and philosopher of the art, Rudolf Arnheim, stated that “vision is the primary medium of thought”[1]. Vision is not only a sensory process, but also a cognitive one: the human mind is actively involved in interpreting visual representations according to the individual life experiences, memories and emotion of the viewer and generates a great variant of associations. Integrating visual representations into teaching and learning materials has a proven potential on knowledge acquisition, comprehension, retention and transfer of knowledge. As academic teaching strives finding engaging learning experiences that also encourage high-level thinking skills, those characteristics of the visual language have the potential to turn it into such a practice. Furthermore, current technologies make visual representations available, accessible and easy to manipulate and integrate into teaching materials.

Despite this proven potential and ease-of-use, data of Visual Pedagogy practices in academic teaching is still limited. Over the past three years, the ICT & Learning Graduate Program of The College for Academic Studies

Or Yehuda in Israel, has gradually incorporated Visual Pedagogy into its curriculum and teaching methodologies. This paper will present our institutional experience with Visual Pedagogy practices.

2. Theoretical Background

2. *Teoretska podloga*

Humans have a remarkable ability to remember pictures compared to words [2,3,4]. Words and pictures that are coherent and presented spatially close to each other, are retained in our memory even longer[5,6], improve comprehension – effect called by Mayer "The Multimedia effect" [6]create interest and have a positive effect on learning, knowledge acquisition, retention and transfer [7,8,9]. Based on these characteristics, educators can much benefit from integrating Visual Pedagogy practices into teaching and learning. But using Visual Pedagogy practices requires first to acquire Visual Literacy skills.

Visual Literacy, a term coined by John Debes is 1969, is a set of abilities that enables an individual to effectively find, interpret, evaluate, use, and create images and visual media. [10]. It involves a set of skills ranging from simple identification to complex interpretation on contextual, metaphoric and philosophical levels [11]In Higher Education, student's academic work with images and visual materials requires research, interpretation, analysis, and evaluation skills specific to visual materials. These abilities cannot be taken for granted and need to be taught and integrated into the curriculum [10]. Once taught and practiced, these skills can be developed and enhanced [12,13,14,15].

In today's Higher Education, using Visual Pedagogy practices is both effective, as well as up—to-date and relevant to the 21st century learners. As current stated goal in education is providing all learners an engaging and empowering learning experiences, focusing on learning activities that are meaningful and relevant to learners, Visual Pedagogy provide Higher Education relevant practices that cannot be ignored.

3. Description of the Institutional Experience

3. *Iskustva iz prakse*

At The College of Academic Studies Or Yehuda Graduate School of Education in Israel, the ICT & Learning Program faculty have initiated a gradual incorporation of Visual Pedagogy into the teaching and learning practices. With 85 students per class, over 90 percent of the students are teachers. Thus, we percieve Visual Pedagogy not only as a teaching and learning practice but also as modeling for future leaders in education in their field.

3.1 Constructing a theoretical base of knowledge

3.1 *Konstrukcija teorijske baze znanja*

Being aware of potential contribution of Visual Pesagogy, our jurney started in reviwing the relevant literature and building our theoretical base of knowledge. As a Graduate Program, it was important to create a sound theoretical basis, which will provide the scientific and academic rational for the practical uses (table 1).

Table 1 *Visual Pedagogy theoretical base - the ICT & Learning Graduate Program of The College for Academic Studies*

Tablica 1 *Teorijska baza vizualne pedagogije – diplomski program za IKT i učenje Koledža za akademske studije*

1. Visual Literacy
2. Visual Thinking
3. Vision & the brain
4. Vision as a cognitive process
5. Vision, intuition and emotions
6. Visual metaphors and higher-level visual thinking skills
7. Components of visual language: content, graphic execution, context and format (Avgerinou & Pettersson, 2011, Pettersson, 2012)
8. Multimedia Cognitive Theory (Mayer, 2009)
9. Multimedia Learning & Multimedia Design
10. Social clues in the Multimedia learning environment and Personalization
11. Video and animation in learning process
12. Visual Pedagogy – Pedagogical considerations

As we acquired this knowledge, we belived it important to share it with both collegues and students. A seminar was presented to the staff of the Graduate School pf Education, and a new course was designed for our students and added to the curriculum. The objective of the course was to present the above theoretical base of knowledge to the students, enabling them to create visual learning products thoughtfully.

3.2 Visual Pedagogy practices in teaching

3.2 *Praksa vizualne pedagogije u podučavanji*

Based on our growing theoretical knowledge, we incorporate even more intensively visual pedagogy to different courses in our program in lectures, teaching materials and learning activities:

Visual representations are incorporated into teaching materials for organizing information (figure 1).

Images and videos are widely used for visualizing and realistically present data and process (figure 2).

Visual representations are also integrated as visual metaphors into the teaching materials: using images that symbolically communicate an abstract concepts, visual messages that are used to facilitates understanding. Some examples of visual metaphors are shown in figures 3 & 4. The metaphors are always accompanied by precise explanations in order to avoid misunderstanding of the visual message. Those images are very helpful simplifying complex and abstract ideas.

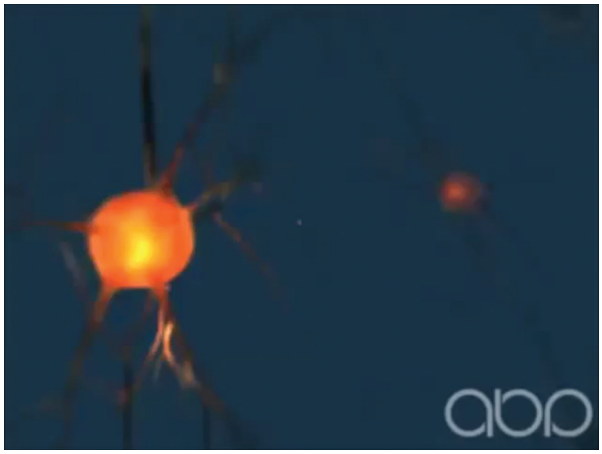

Figure 2 *3D Animation of a Neural Network by Animated Biomedical Productions©. (https://youtu.be/-SHBnExxub8, ABP Youtube channel). This animation was used to teach neural brain function in Sciences of Education in the 21st Century course.*

Slika 2 *Animacija neutralne mreže autora Animated Biomedical Productions©. Ova animacija korištena je u poučavanju neuralne funkcije mozga u kolegiju Znanst edukacije u 21. stoljeću*

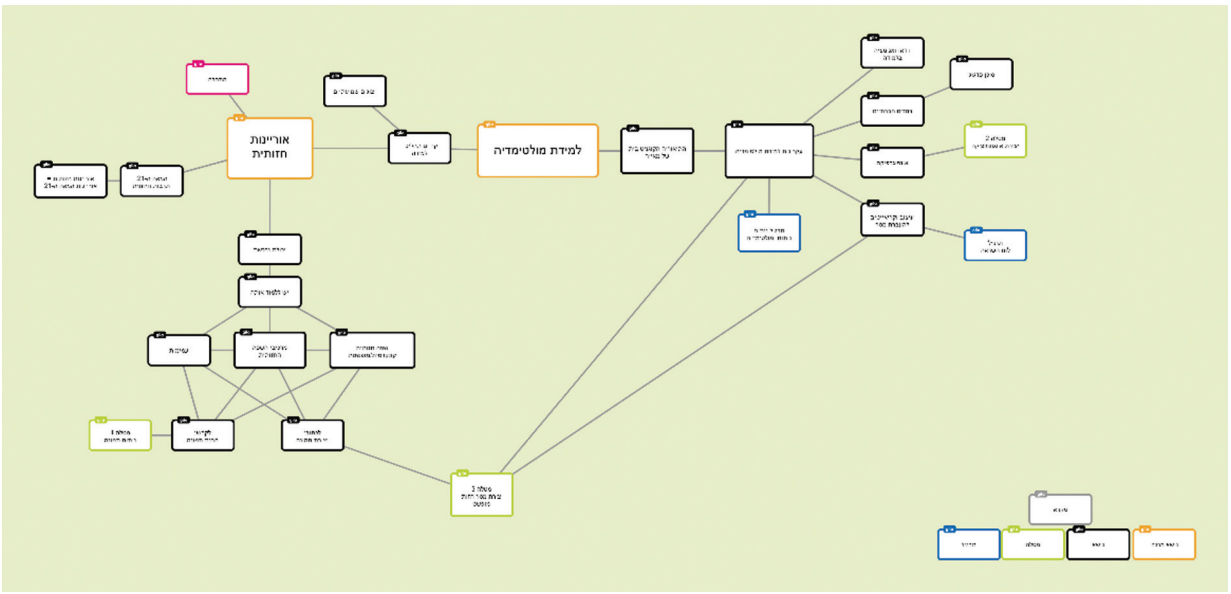

Figure 1
Course map (created by Gila Levi Atzmon with Popplet)

Slika 1
Mapa kolegija (izradila Gila Levi Atzmon pomoću alata Popplet)

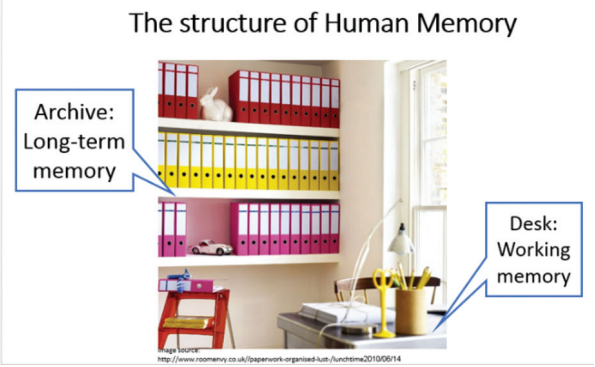

Figure 3 *The structure of human memory is not easily understood. This image was used as a visual metaphor to explain the primary characteristics of working memory and long-term memory and the flow of information between them (all tags translated from Hebrew).*

Slika 3 *Strukturu ljudskog sjećanja nije lako razumjeti. Ova slika korištena je kao vizualna metafora za objašnjenje primarnih karakteristika radne memorije i dugoročne memorije i tijeka informacije među njima (prevedeno s hebrejskog)*

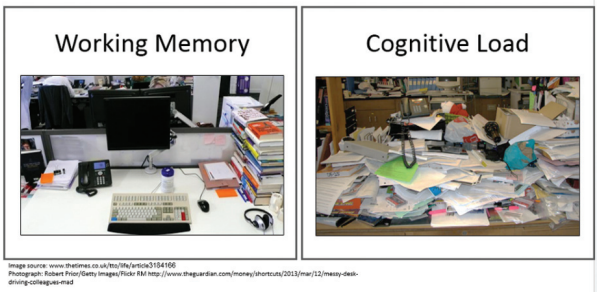

Figure 4 *Continuing the previous metaphor, the concept of Cognitive Load was demonstrated by an overloaded office desk.*

Slika 4 *Nastavak prethodne metafore, concept kognitivnog zasićenja je prikazan pomoću pretrpanog uredskog stola*

Videos are used to create interest in our lessons, emphesize points of view, orgenaize and add coennctivity between ideas and perceptions. For example, the Pink Floyd's clip, "Another Brick in the Wall", was presented to demonstrate a percieved industrial model of schooling. This video was used as a learning anchor while provoking student interest and providing macro-context (Bonk, 2008). The combination of a powerful visual metaphorical images and the familiar and intensive soundtrack, made a memorable impression.

4. Visual Pedagogy practices in learning

4. *Prakse vizualne pedagogije u učenju*

Gradualy we gained confidence to require our Graduate student to produce visual learning outcomes (figure 5 to 9). An emphesize was made to use the visual representation thoughtfully, commmunicating a precise message and applying their knowedge of the visual language and the Cognitive Theory of Multimedia Learning principles. Students products include creative images as photos, scatches, posters etc. (figures 5 to 7), animations (figure 8) and video (figure 9). Some of the video products are filmed and edited by the students and some are an integration of available materials.

Figure 5 *Group visual outcome:. The students have explored the 21-century skills in a collaborative learning process. They were asked to visually present part of them. All images were taken by the students on campus.*

Slika 5 *Grupni vizualni rezultat: studenti su istražili vještine za 21. stoljeće kroz kolaborativan proces učenja. Bili su upitani da vizualno prezentiraju neki njihov dio. Sve slike su izradili studenti u kampusu.*

All products are the final outcomes of a comprehensive individual or collaborative learning process. As students of the ICT & Learning Graduate Program, different digital tools are used to produce most of these products. It is therefore important for the faculty to collaborate and synchronized the technological courses with the requirments of the courses that have incorporated visual learning outcomes. As our students advance with their learning, higher requirments are presented for higher standarts of their technological performance as well as

Figure 6 *Students were asked to reflect on their learning experience and present it as a visual message. Students Aida Badarne & Imann Mahamid titled this image "We have discovered a whole new world!"*

Slika 6 *Studenti su upitani da reflektiraju na svoje iskustvo učenja i prezentiraju ga kroz vizualnu poruku. Studenti Aida Badarne & Imann Mahamid ovoj slici dali su naziv: "Otkrili smo čitav novi svijet".*

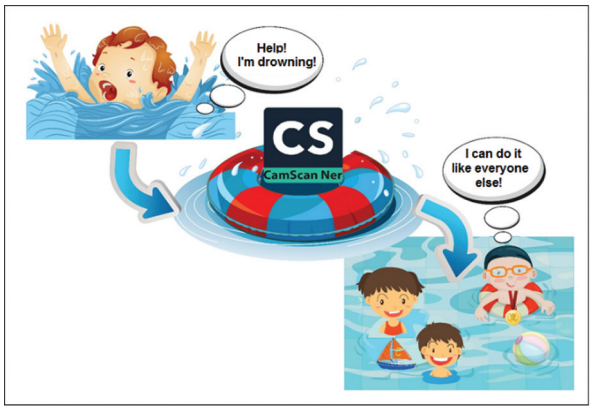

Figure 7 *As a part of their Master's degree final project, students are asked to present their findings visually. This qualitative research by Michal Inon and Galit Zawi, evaluated a technology which assisted a CP student. The technology was described as a life vest, saving the child with special needs.*

Slika 7 *Kao dio magistarskog završnog projekta, studenti su zamoljeni da vizualno prezentiraju svoje rezultate. Ovo kvalitativno istraživanje Michal Inona i Galit Zawi evaluira tehnologiju koja je pomogla CP studentima. Tehnologija je opisana kao pojas za spašavanje, koji spašava dijete s posebnim potrebama.*

their ability to produce visual contant of higher-order thinking skills and implement the rules of Multimedia design.

Figure 8 *Animation by students Limor Ben-Ari & Ronit Ya'acov, presenting diversity in education (https://youtu.be/toLu_RJz7ME)*

Slika 8 *Animacija studenata Limor Ben-Arija i Ronita Ya'acova, koja predstavlja raznolikost u edukaciji (https://youtu.be/toLu_RJz7ME).*

Figure 9 *Student Inbal Smith edited a video as a learning product. The learning task was to describe an educational paradigm with its related theoretical background. Inbal, a teacher and an architecture, presented a visual metaphor of a dynamic building with a static core (https://youtu.be/VUILzATNo-M)*

Slika 9 *Student Inbal Smith obradio je video kao projekt za učenje. Zadatak učenja bio je opisati obrazovnu paradigmu sa povezanom teorijskom pozadinom. Inbal, učitelj i arhitekt, prezentirao je vizualnu metaforu dinamičke zgrade sa statičnom jezgrom (https://youtu.be/VUILzATNo-M)*

5. Discussion

5. *Diskusija*

Our institutional experience have led us to believe that the use of Visual Pedagogy practices enable us to provide our Graduate students a better learning process. Although still considered unconventional in other Graduate programs, taking this path in our program allows

our students to better understand and remember complex concepts, be engaged with tasks that requires creativity, collaboration, careful planning and high-level thinking skills. Preliminary feedbacks from the students show very high satisfaction level from their visual outcomes. One repeated feedback is the appreciation and enjoyment from a creative and fun learning activity, which is flexible and allows the diversity of the students to shine through. Feedbacks like these strength our belief that Visual Pedagogy practices not only promote high-level thinking skills but provide all learners an engaging and empowering learning experiences.

A challenge for the near future will be to categorize the different types of visual representations used for teaching and learning and focus on those supporting abstract thinking.

As we continue to incorporate more Visual Pedagogy practices, we carefully consider the required evaluation methods. We gradually extend these practices to more courses and to other programs in the Graduate School of Education. This requires constant pedagogical and technological collaboration with our colleagues.

We continue evaluating the advantages of Visual Pedagogy and we look forward continuing this path and gain more knowledge on its impact on the learning process.

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After graduating Hadassah Dental School at The Hebrew University in Jerusalem with B.Sc.Med. and D.M.D degrees, Gila took part for over 12 years in the innovative development of Virtual Reality Dental Education Simulators (DentSim) with DenX and Image Navigation as Vice President and Dental Simulator Product Manager. In 2009 she joined the UDENTE (Universal Dental E-learning) project, led by Professor Patricia Reynolds from King's College London Dental Institute. After many years of developing and implementing innovative dental technologies, Gila completed a Masters with distinction in Education. She then joined the faculty of the School of Education at the College of Academic Studies Or Yehuda in Israel. Her current position is Senior Lecturer and Coordinator of the ICT & Learning Graduate Program.

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Nakon što je diplomirala na koledžu Hadassah na Hebrejskom sveučilištu Jeruzalem, Gila Levi Atzmon je preko 12 godina sudjelovala u inovativnom razvoju simulatora dentalne edukacije u virtualnoj stvarnosti (DentSim) sa DenX and ImageNavigation u svojstvu dopredsjednicce i projektne menadžerice. Godine 2009 priključila se projektu UDENTE (Universal Dental E-learning) pod vodstvom profesorice Patricia Reynolds sa King's College London Dental Instituta. Nakon mnogo godina u razvoju i primjeni inovativnih dentalnih tehnika, Gila je magistrirala edukaciju. Nakon toga se zaposlila u Školi za edukaciju pri Koledžu akademskih studija Or Yehuda u Izraelu. Trenutno je zaposlena kao viša predavačica i koordinatorica diplomskog programa IKT i učenje.