IMPROVING THE RESTING STATE EFFICIENCY OF E-LEARNING PROCESS BY USING WEB CONTENT

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Abstract- In order to personalize the e-learning process, it is necessary to model the students in terms of their characteristics and habits of learning, interests, desires, motivations and expectations. Modeling of students can be defined as the process of gathering relevant information, to note the current cognitive state of students, in order to be useful and usable in a system of e-learning, all for the purpose of adapting the system to the Student. In this paper, we presented our case study, using VARK questionnaire, completed by 81 students of ICT College Belgrade, Serbia, to determine whether there is a connection between the certain types of learning and active holidays, or certain types of learning and rest breaks in learning. The aim of this paper is to contribute in improvement of teaching systems at Universities, by defining the resting state efficiency in e-learning.

Index Terms- E learning, teaching systems, modeling of students, resting state.

I. INTRODUCTION

Learning process is quite complex and bears some personal characteristics of professors as well as students. It is influenced by many different factors. These differences design learning environments, which influence the efficiency of learning activities. Many parameters such as general abilities of individuals, their cognitive processes, emotions and tendencies, developmental characteristics, previous information and social environment around them influence their learning.

Traditional e-learningenvironments provided the same content to eachstudent. Nowadays, new approaches led to replacement of traditional e-learning environmentswith individualized e-learning environments. Thanks to these new approaches, individual differences of students such as learning styles, pre-information about subjects and individual needs are took into consideration and are being adopted.

Life is multimodal. There are situations where one mode is used, or is sufficient. Furthermore, there are people, which follow one mode or few sensory modalities, so that is why all these characteristics must be taken into consideration.

There are four modalities that seem to reflect the experiences of the students and professors [1]. Although there is some overlap between them they are defined as follows, and are all unified in one approach, VARK.

VARK is a questionnaire that provides users with a profile of their learning preferences, about the ways that they want to take-in and give-out information [2]. The acronym VARK stands for Visual, Aural, Read/write, and Kinaesthetic sensory modalities that are used for learning process. So, the VARK measures four perceptual preferences: visual (V), aural (A), read/write (R), and kinesthetic (K). According to this learning style, learners who learn visually learn best by seeing. For these learners, pictures, flow diagrams and videos are the best learning instruments. Learners who learn audibly learn best by hearing. For these learners, audible lectures are the best learning instruments. Learners who learn kinesthetically learn best by doing experiencing. For these learners, computer games, interactive animations are the best learning instruments.

In this study we present our case study, using VARK questionnaire, completed by 81 students of ICT College Belgrade, Serbia, to determine whether there is a connection between the certain types of learning and active holidays, or certain types of learning and rest breaks in learning. The aim of this paper is to contribute in improvement of teaching systems at Universities, by defining the resting state efficiency in e-learning.

II. THE VARK MODALITIES

The acronym VARK stands for Visual, Aural, Read/write, and Kinesthetic sensory modalities that are used for learning information [3].

Visual (V):

This preference includes the depiction of information in maps, spider diagrams, charts, graphs, flow charts, labelled diagrams, and all the symbolic arrows, circles, hierarchies and other devices, that people use to represent what could have been presented in words. This mode could have been called Graphic (G) as that better explains what it covers. It does NOT include still pictures or photographs of reality, movies, videos or PowerPoint. It does include designs, whitespace, patterns, shapes and the different formats that are used to highlight and convey information. When a whiteboard is used to draw a diagram with meaningful symbols for the relationship between different things that will be helpful for those with a Visual preference. It must be more than mere words in boxes that would be helpful to those who have a Read/write preference.

Aural / Auditory (A):
This perceptual mode describes a preference for information that is "heard or spoken." Learners who have this as their main preference report that they learn best from lectures, group discussion, radio, email, using mobile phones, speaking, web-chat and talking things through. Email is included here because; although it is text and could be included in the Read/write category (below), it is often written in chat-style with abbreviations, colloquial terms, slang and non-formal language.
The Aural preference includes talking out loud as well as talking to oneself. Often people with this preference want to sort things out by speaking first, rather than sorting out their ideas and then speaking. They may say again what has already been said, or ask an obvious and previously answered question. They have need to say it themselves and they learn through saying it – their way.

Read/write (R):
This preference is for information displayed as words. Not surprisingly, many teachers and students have a strong preference for this mode. Being able to write well and read widely are attributes sought by employers of graduates. This preference emphasizes text-based input and output – reading and writing in all its forms but especially manuals, reports, essays and assignments. People who prefer this modality are often addicted to PowerPoint, the Internet, lists, diaries, dictionaries, thesauri, quotations and words, words, words… Note that most PowerPoint presentations and the Internet, GOOGLE and Wikipedia are essentially suited to those with this preference as there is seldom an auditory channel or a presentation that uses Visual symbols.

Kinesthetic (K):
By definition, this modality refers to the "perceptual preference related to the use of experience and practice (simulated or real)." Although such an experience may invoke other modalities, the key is that people who prefer this mode are connected to reality, "either through concrete personal experiences, examples, practice or simulation" [See Fleming & Mills, 1992, pp. 140-141]. It includes demonstrations, simulations, videos and movies of "real" things, as well as case studies, practice and applications.

The key is the reality or concrete nature of the example. If it can be grasped, held, tasted, or felt it will probably be included. People with this as a strong preference learn from the experience of doing something and they value their own background of experiences and less so, the experiences of others. It is possible to write or speak Kinesthetically if the topic is strongly based in reality. An assignment that requires the details of who will do what and when, is suited to those with this preference, as is a case study or a working example of what is intended or proposed.

III. IMPROVING THE RESTING STATE EFFICIENCY OF E LEARNING PROCESS

For the purpose of this study, we have chosen VARK method and VARK questionnaire. The choice of this specific method is based on the previously analyzed system of students' preferences, in order to determine whether there is a connection between the certain types of learning and active holidays, or certain types of learning and rest breaks in learning [4]. The aim of this paper is to contribute in improvement of teaching systems at Universities, by defining the resting state efficiency in e-learning.
The VARK questionnaire, was completed by 81 students of ICT College Belgrade, Serbia. The questionnaire had 36 questions, among which,we consider questions 16 and 33 most important for our study. Questions from 17 to 32 are the questions that have been made on the basis of standardized VARK test. By doing so, every answer under certain number (1,2,3 or 4) corresponds to a particular type of learning. So the answer to question under number:
1 = Visual (visual)
2 = Aural (Sound)
3 = Read / Write (written and spoken word)
4 = Kinesthetic (practical work)

When we analyze the answers looking at the highest response, we can assign the specific style of learning that is conducive to that person [5].

A. Questions
81 students completed questionnaire, of which 56 were male and 25 female. Question were:
Q1 Your gender.
Q2 Your age.
Q3 Your faculty department.
Q4 At what level are your computer skills?
Q5 How much a day you are using the computer?
Q6 The first time you access the Internet daily, the first application or the website that you access will be…
Q7 During what part of the day you have the best concentration for learning?
Q8 Do you prefer to learn in a group or individually?
Q9 I often use imagination in learning.
Q10 I carefully make decisions.
Q11 I am well organized.
Q12 I am emotional.
Q13 Do you learn only material to pass the exam, or you are interested in curiosities from the area?
Q14 You are not interested in learning…
Q15The main reason why I'm learning and studying is…
Q16 You are chatting with a friend over the phone. He tells you that he's been studying for some time, that there is still much to work, and that he feels tired. What would you suggest him to do, to rest actively?
Q17On the street, you are stopped by a person asking how to get to the train station. You will…. (tell

direction, write direction, draw direction…)
Q18 You are watching a video clip on the YouTube, where confectioner explains how to make donuts. The clip is composed of 4 parts. Firstly, confectioner orally gives the recipe, then displays the entire text that describes the process of making a donut, then shows visually what confectioner works to make donuts at the end of the whole process of making donuts shows through a diagram which includes a key condition of the cooking process. From above 4 parts of clip, which do you find most useful?
Q19 You are going on a trip with friends and you are tasked to plan a trip. You have made travel plan and want to hear opinion from your friends. To explain the plan to your friends you will… (verbally explain, e mail them, give them copy of the route…)
Q20 You are inviting friends over for dinner and you want to make a special dish that will leave a good impression. You will cook… (well known dish, look for recipe on the Internet, ask a friend for recipe…)
Q21 A group of tourists want to be more informed about the monasteries of Serbia. You will… (give them a book, tell them about, take them there, give them map)
Q22 You are buying a new cell phone. Apart from the price, which will influence the decision that you will buy, you will think about… (the esthetics, phone features…)
Q23 You need to learn a lesson from the history of the beginning of World War II. How will you learn a lesson? (read from the book, watch a clip on YouTube, ask somebody to tell me…)
Q24 You are the dentist. Dentist should implement a specific intervention atone tooth. You need to ask him to explain a tooth problem and what procedure will be carried out. You will… (ask him to verbally explain, to draw, to show you on a model…)
Q25 You bought a new camera and want to learn how to use the advanced options and additional settings of your device. You will… (read manual, ask a friend to explain, try to figure out on your own)
Q26 I love Web sites that… (have a lot of text, have nice design, are interactive…)
Q27 You are at the book fair and want to buy a book. Not taking into account the price, what criteria will be to choose which book will you buy? (prettiest one, by recommendation, quickly read some parts and decide…)
Q28 You bought a new camera. The important thing is that manual has… (good examples, good photos, nice text…)
Q29 When a professor teaches a lesson, you like that he… (uses graphs, discuss with students, gives them written materials…)
Q30 You have completed the exam and the professor gives you the result. You would like to know his opinion by… (talking with him, getting written expression, seeing excel table with marks…)
Q31 You are in the restaurant and choosing a meal. You will… (ask a waiter for recommendation, read menu, take something you have already eaten…)
Q32 You are preparing a speech for the important event. You will… (repeat loud, read few times concept, think about it…)
Q33 During lab exercises, while working on your computer, which web pagewould you keep open in the background to check periodically, for the purpose of resting? (YouTube, Facebook, news…)
Q34 During your course, or lectures, or laboratory exercises, short rest should be made every… (30 minutes, 45 minutes, 60 minutes…)
Q35 Are you tired with this questionnaire?
Q36 The questionnaire would be more interested if…

B. Results

Among 36 above-mentioned questions, we find questions 6, 15, 16, 33 and 34 most important for the purpose of our research. Answers are shown in Figures 1-5.

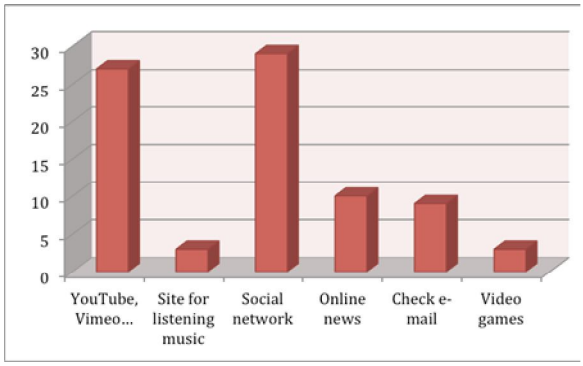


Fig. 1, Q6, The first time you access the Internet daily, the first application or the website that you access will be

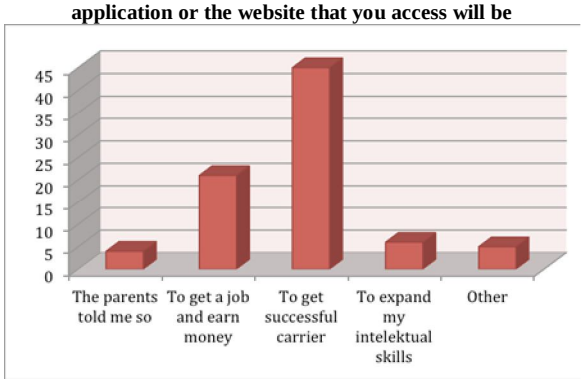


Fig. 2, Q15, Q15The main reason why I'm learning and studying is

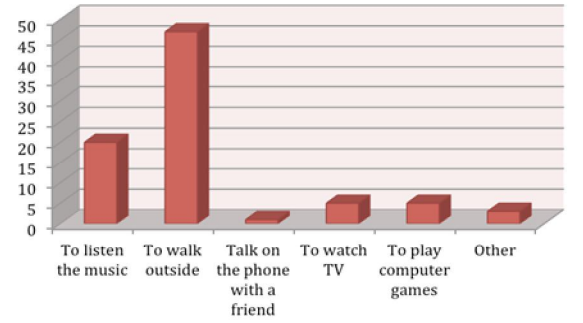


Fig. 3, Q16, You are chatting with a friend over the phone. He tells you that he's been studying for some time, that there is still much to work, and that he feels tired. What would you suggest him to do, to rest actively?

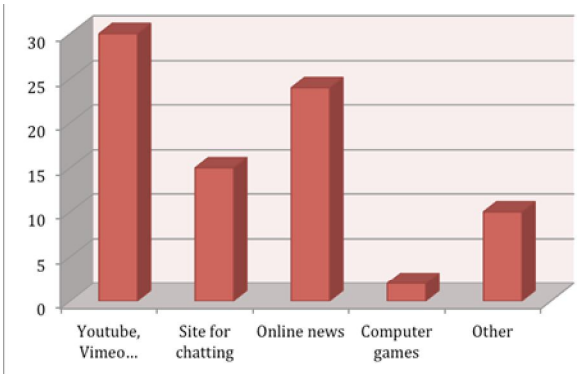


Fig. 4, Q33, During lab exercises, while working on your computer, which web page would you keep open in the background to check periodically, for the purpose of resting?

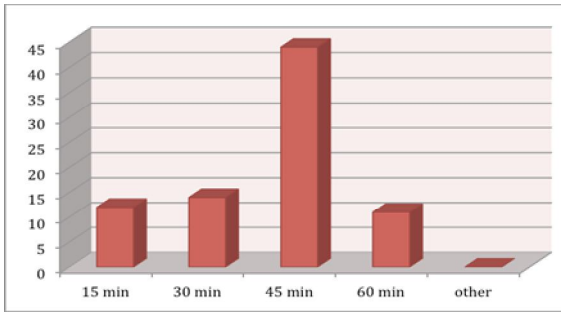


Fig. 5, Q34, During your course, or lectures, or laboratory exercises, short rest should be made every _____ minutes.

CONCLUSION

Our research shows that a personalization of e learning process of students is very easily achievable by giving them questionnaire at the beginning of the course. This questionnaire will classify them in one of the categories, Visual, Aural, Read/write, or Kinesthetic. Each category can be approached separately and differently. This could increase their overall results during studies.

The research also showed that the connection between the type of learning and specific way of spending active resting time doesn't exist. Also, interesting is, research showed that there is no connection between the type of learning and duration of rest during learning. The result of our research is that the appropriate model, which belongs to the student itself, has nothing to do with the way of resting. It turned out that all students, regardless of affiliation to a specific model, in order to efficiently rest, use an active resting time without computer. Most of them reported that their best resting was walking outdoors. As an alternative, for resting, they will use computer, web content, mostly YouTube or social networks.

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