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GENERATION Z AND LEARNING STYLES

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Abstract

Due to technological evolution and digitalization education has encountered many changes in the last decade. Students as a part of educational system bring their own footprint on it through their learning styles. Therefore, the aim of this study is to evaluate the learning styles of a group of undergraduate and postgraduate students. The achievement of this goal is realized through a questionnaire applied to a sample of 114 students. Particularly, I have used the Felder & Soloman Index (ILS), which is specifically evaluating four learning dimensions: processing information; perceiving information; receiving and understanding information. In order to shape the students' learning styles, the statements were grouped in three categories and had a five - point Likert scale for evaluation. Even if at first glance the problem of learning styles is considered a simple task, through further analysis I realized that it is a complex process. Understanding and defining the students' leaning styles is particularly important because this is the key of their active involvement. In this context, Z generation is identified with an auto-didactic and independent learning type and also with a strong desire to choose what and how to study.

INTRODUCTION

There are different variables that can describe the biography of a human being during its life path, one of these is the birth date, which is directly connected with the generation factor. Generation Z is represented by people that were born between 1995 and 2012, among the representatives of this generation are young people who are between 20 and 22 years old. As it is already known, this generation is also called Facebook generation, because of the great amount of time they spend on these social media channels. Basically, they are the ones that were born and raised with technology, learning from an early age to use technology in their favor in order to be more productive and efficient. Z generation is represented by a lifestyle that is connected with the technological evolution and digitalization. While previous generations updated their digital abilities through learning and adapting to change, Z generation is familiar with using new technologies in a natural manner. They have a passion for technology, speed and efficiency and a learning style specific to online channels. (Howe & Strauss, 2000).

At the beginning of the XXI century, the base of scientific, technological and cultural events is certainly information and knowledge. The economist Roger E. Bohn shows how important is to understand the technology and namely the way that goods and services are produced. It is remarkable also the statement of E. Bohn for the learning concept: "Learning is the evolution of knowledge over time". The development of human society is realized through knowledge and learning.

The sharp demand for learning a lot of things on their own it's another characteristic that should be taken into consideration when talking about the Z generation. The fact that young people are so auto-didactic is reflected in the number of online tutorials. From learning how to play an instrument or how to cook until how to use a certain software or device these tutorials are nowadays used by the young generation all around the world. This characteristic of Z generation of learning by themselves shows that they are ambitious, independent and focuses on personal development.

Communication is another important trait of the Z generation. Young people nowadays feel the need to communicate constantly through any possible mean of communication. From Facebook to Twitter, to going out with friends and meeting each other in classrooms, communication is the most important activity in the lives of young people. Although they are masters in using technology and they spend the greatest part of their time online, Z generation chooses face-to-face meetings as a preferred channel of socialization.

This generation comes after millennials and compared to them they are completely familiarized with new technology and online channels. The availability of information at a click distance might cause the effect of impatience and the difficulty to stay focused for a longer period of time. This era of technology comes also with the phone dependency effect, because Z generation did not experience a turning point in their lives along with technology evolution, they were born with continuous connectivity. Students from Z generation are being auto didactic, meaning that they take the initiative to use the available resources of learning. They are actively seeking activities that make them feel involved, which help them to develop themselves and last but not least that are dynamic and involve creativity.

Education is a process of acquiring new skills, knowledge and abilities and it is considered a life-long activity. This process is being influenced by social, cultural and even psychological factors. Each person has an individualized learning style influenced by its own strengths and weaknesses. Based on this, a very important aspect is finding the way to generation Z students, in order to improve teaching styles and information flow during their study years.

Williams conducted a study which compared the learning styles of three generations: Baby Boomers, Generation X, and Generation Y by using Felder and Soloman Index Learning Style (Williams, 2013), now it is time to find out the generation Z's characteristics. Being influenced also by society, technology and psychology, the learning style of Z generation students is an important topic as they are the ones who once will rule the country, so we have to know what to expect from their side (Smith, 2012; Djiwandono, 2017). Generation Z is characterized by creativity, flexibility, independence and increased care for the environment. For example, the campaign let's do it Romania, has reached more audiences in the last years. More and more young people from preschool pupils until students are voluntary enrolling in activities of environmental cleaning. Other concerns of Z Generation are reforesting campaigns, selective collecting of waste and reduction of CO_2 footprint. This shows the fact that they are preoccupied with their future and also the future of the upcoming generations.

It is obvious that the "old way" of schooling is no longer effective with the new generation of students. The values of today's students are not congruent with traditional content and methods. Theoretical approaches that merely focus on textbooks are likely to be perceived as boring. Therefore, students' readiness for new jobs and teacher effectiveness depends on the ability to adapt to the needs of today's learners (Pletka, 2007).

Actually, the quality of the learning outcome is triggered by the learning activities that students usually practice. Therefore, teachers/professors/tutors should encourage

students to use high-quality and proper learning activities. Learning strategies are viewed as activities that the students employ into learning. By knowing the students' learning styles/strategies their overall study experience could be enriched. Cognition of their learning strategies/styles could be a method of improving their learning process and more important the learning results (Popenici & Kerr, 2017). Young and Fry (2008) investigated in their study the relationship between metacognitive awareness and academic results. In their analysis they found out a high correlation between metacognitive awareness and academic achievements. None of the students prefer or use a certain learning style exclusively, they rather prefer a combination of learning styles (Young & Fry, 2008). Of course, one learning style is more predominant and this influences their way of learning/studying and the entire learning process (Jurenka, Starecek, Vranakova, & Caganova, 2018). Often the main concern of the students is to learn the materials very quick and effectively. Therefore, also from the teachers side, it is expected nowadays to prepare students to use and handle different learning strategies and styles. These strategies should be a pillar for lifelong learning education. Through mastering various learning strategies and styles students could receive more information more effectively in various ways.

MATERIAL AND METHOD

The main goal of this study is to identify the strategies and styles of learning of the students from generation Z and to emphasize the differences at the variable level from the perspective of the status of the students (only student or student and hired/intern) and their study program (bachelor or master). The fundamental objective is to determine the degree of variability regarding using learning styles and strategies and to emphasize some characteristics of the learning profile of Z generation. The method used in the study is the survey, and the research tool applied is the questionnaire. Before filling in the questionnaire two mandatory conditions should have been met: to be born after 1995 and to be a Bachelor or Master student, basically to be a student-representative of Z generation.

The research sample is represented by 114 students from the Faculty of Economics and Business Administration, University Alexandru Ioan Cuza, from Iasi. The research sample as shown in figure 1 is represented 32% of master students and 68% of bachelor students.

The research conditions were the same for all of the participants, the affirmations for the inventory of learning styles model were transposed to a Google Form survey and posted on a Facebook group of students from the Faculty of Economics and Business Administration.

The process of testing the validity of Felder-Soloman Index for the students learning styles started with examining the previous versions of this methodology (Lindblom-Ylanne & Lonka, 1998; Vermetten, Vermunt, & Lodewijks, 1999; Roman, 2011). Based on this, the used version of the inventory of learning styles (further ILS) was the one adopted by Roman (Roman, 2011). The authors of this model are Jan D.H.M. Vermunt and A.W.M. van Rijswijk from K.U. Brabant, Educational Psychology Department.

The ILS model is based on a list of affirmations that are formulated in order to obtain an overview of the students learning preferences and perceptions towards the learning process itself (Boyle, Duffy, & Dunleavy, 2003). ILS model is structured on three parts: A1, B1 and B2; each part contains a list of affirmations about learning styles/strategies. For each statement the students had to select the degree to which they relate to it (from 1 to 5, in ascending order). The first part (A1) refers to learning habits and investigates several methods that students use when they learn. The second part (B1) emphasizes the motives, the objectives and the attitudes of the students towards the university studies. The third part (B2) refers to students' opinions about problems related to learning, task sharing between teacher-university-students, students study relationships and basically what they think it's important for studying and learning. All the affirmations from the questionnaire are grouped in categories as shown in Table 1 and their description is available in Appendix B.

The first study hypothesis supposed that there is a significant difference between the learning strategies of students from the bachelor and master programs. The second study hypothesis stated that there is a difference between learning strategies of students that work, and which don't. The *independent variable* is the type of classification. The learning strategies and styles were operationalized based on scores on ILS subscales and scales.

RESULTS AND DISCUSSION

The Kolmogorov-Smirnov test applied to the learning strategies showed that the distribution of the data is symmetric at the sample level, having a significance level higher than the critical level of .05.

The first hypothesis is sustained for the most part by the strategies and learning styles. The use of individuals' learning strategies differs according to the study program, as well as the preference to use a certain learning style. But there are also dimensions that have proven to be resilient ($p > .05$). These include self-regulated results, learning through

collaboration, testing abilities and knowledge absorption.

An important goal of higher education is to develop ways of advanced and independent academic learning for students. Knowledge gained (accumulation of knowledge)/ knowledge absorption/ using knowledge and memorizing are categories in which the scores decreased from Bachelor to Master. Meaning that as students advance in training, they gain better expertise with regard to approaches to effective learning. Learning by heart or mechanically is probably a strategy crystallized over the high school years (result confirmed also in the studies of Vermetten, Vermunt and Lodewijks) (Vermetten, Vermunt, & Lodewijks, 1999). In contrast with this, the career orientated/personal interest styles increase in terms of score from Bachelor to Master.

So, bachelor students have scored higher in all the subscale categories in comparison with master students. Higher scores in critical thinking imply that bachelor students adopt a critical action towards interpretation and conclusion of the authors, they use to compare the personal opinions with those from the books or materials. Another explanation for this could be that they are more eager to learn as this is the first university level and they are not yet settled in their careers.

The second objective of the study was to realize a comparison between the learning strategies and styles depending on the status of the students. The second hypothesis is also sustained for the most part by the strategies and learning styles. Again, there are some resilient dimensions with $p > .05$, these include: self-regulated results, teaching that stimulates learning, testing abilities and knowledge absorption.

Students that focus only on the study have scored higher in the following groups: self-directed processes, knowledge gain, use of knowledge, testing abilities. Hired students are better in learning through collaboration (they have the experience of real-life work collaboration/ they focus on study peers in lack of time). Intern students excel at knowledge absorption and learning through collaboration.

Students that focus themselves only on study have scored higher than students that are hired or perform an internship in three scales categories (Memorizing, Analysis and Self-regulation of the process). Students that are full time hired have scored lower than students that focus only on study on five categories, this could be triggered by the fact that they have less time left for studying because of their work.

The biggest difference between the groups is in the processing category where students that are also interns have scored almost three points higher than normal students and almost four points higher than hired ones. This means that students that perform an internship adopt a more critical attitude about the material they study and authors' opinions, they compare more often the study materials with their opinions and formulate a personal conclusion on the subjects. Regarding autoregulation of the processes and results all the groups have scored the same, this means that on this topic they are on the same page. Each of them studies in a conscious manner and formulate the main points in their own words.

On the sample level, keeping aside any categorizations the following conclusion could be drawn regarding the students' learning styles. Starting with the cognitive strategies cluster students state that sometimes they interpret critically the study materials or compare it with a personal point of view (meaning that most of the time they study the concepts mechanically, they do not have interest in the materials or rather than that they do not fit to the chosen program). More than that, 50% of the time they learn the information by heart (just doing things to be done). Almost half of the students prefer focusing on details and learning separately each study section and 70% interpret real-life events through the learned concept. The students prefer to have control and to individually apply the learning procedures (a fact that emphasizes the individualism trait and autodidactic characteristic of Z generation). Continuing with motivation for studying cluster - regarding the career-oriented category- 90% of the sample want to be ready for the future career. They would prefer to choose the courses that best fit their interests (freedom of choice – another Z generation trait), therefore more flexibility on the study programs' structure is required. Also, 60% of the sample stated that they want to show that they can finish a study program, meaning that external appreciation is extremely important for them. Only half of the students claim to study for personal development and because they like learning, this shows that the other studying motifs have a greater importance for them; 70% doubt about their fit to the chosen program, this means that they are either not well guided before enrolling or they enroll under the pressure of the society (they are certification oriented rather than knowledge or career oriented).

On the mental learning model cluster, Z generation students stated that they are fans of clear and direct instructions (afraid of uncertainty). The students assume that they should search for more information on subjects that they do not understand but they are not doing it all the time. With regard to the utility of knowledge category, 80% define learning a process of gaining knowledge that could be useful in day by day life mainly focused on practical things, meaning that they always search for the connection with real life (they are not fans of theoretical only concepts).

CONCLUSIONS

This paper is investigating the learning styles of students grouped by study program and by taking into consideration their hiring status. Diving into the subject, I have found out that there are certain differences between the bachelor and master students. Perhaps, as they advance into studying their learning style is shaped along the way. Students that focus themselves only on study and are not hired or performing an internship have a slightly different profile. Lack of time and work experience shape their style of learning.

Each student needs to realistically perceive his/her skills, strengths and also priorities before trying to learn new ways of learning. A proper perception will always increase self-confidence and well-directed efforts that lead to success. Z generation students are focused on practical study methods with direct implications or connection to real life. A real helping hand on this matter would be career orientation programs for avoiding ambivalence and uncertainty when deciding to enroll in a study program and choose the specialization.

In learning, just as in real life, performance and success do not appear at the first attempt, therefore perseverance is required. The students need to receive the support and motivation from professors that will get them motivated to research more, to be more involved and take initiatives for studying additional materials. Generation Z students have an affinity for flexibility, they want to be given the privilege to choose the courses that are of interest to them.

A limitation of this research is the small sample of students that participated, for more in-depth research the sample could be extended. Also, the extent of the study could be enlarged with regard to the clusters of students analyzed (gender, cultural environment, social status).

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LIST OF TABLES & FIGURES

Table No. 1
Standards for ILS scales for the study sample

	I Very bad	II Bad	III Medium	IV Good	V Very Good	Mean	Std.Dev	N
Structural-relational scale	15	16-20	21-24	25-28	29	21.97	4.57	114
Critical thinking	6	7-9	10-13	14-17	18	12.94	3.73	114
Memorizing	6	7-9	10-14	15-18	19	15.22	4.55	114
Analysis	11	12-15	16-18	19-21	22	15.66	4.59	114
Processing	10	11-15	16-19	20-22	23	16.78	3.79	114
Self-regulation of the processes	12	13-17	18-22	23-26	27	21.41	5.00	114
Self-regulation of the results	5	6-8	09-12	13-16	17	11.50	3.78	114
External regulation of the processes	9	10-13	14-17	18-20	21	17.16	3.73	114
External regulation of the results	11	12-15	16-19	20-21	22	16.27	4.22	114
No regulation	10	11-12	13-15	16-19	20	16.28	3.50	114
Personal interest	16	17-19	20-23	24-28	29	16.14	2.34	114
Certification oriented	16	17-19	20-23	24-28	29	17.40	3.97	114
Testing the abilities	8	9-12	13-17	18-22	23	16.87	4.13	114
Career oriented	10	11-13	14-16	17-18	19	20.71	3.23	114
Ambivalence	6	7-8	09-12	13-17	18	14.51	4.48	114
Knowledge gaining	15	16-18	19-21	22-23	24	18.56	3.68	114
Knowledge absorption	15	16-18	19-21	22-23	24	20.16	3.09	114
Using the knowledge	18	19-20	21-22	23-24	25	21.76	2.57	114
Stimulated teaching	12	13-17	18-21	22-23	24	19.14	4.04	114
Learning through collaboration	7	8-12	13-18	19-21	22	14.78	4.90	114

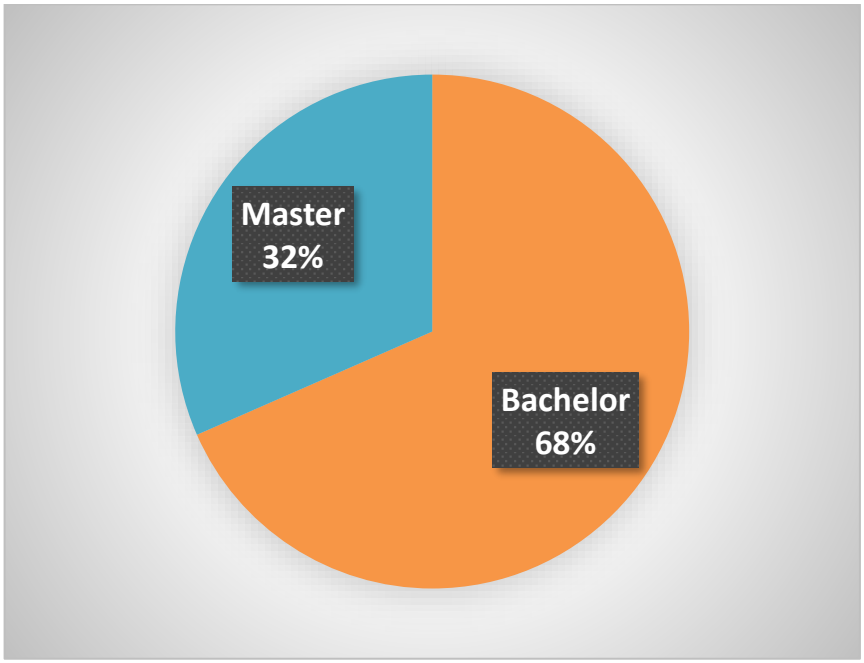

Figure No. 1
Students distribution per study level

Appendix A

ILS rating – summing up the replies according to the affirmation group

Section A1
Structural-relational scale: 6, 10, 13, 24, 33, 34
Critical thinking: 28, 36, 40, 46
Memorizing: 2, 7, 9, 25, 32
Analysis: 1, 17, 22, 37, 42
Processing: 3, 14, 21, 45, 4
Self-regulation of the processes: 20, 23, 30, 35, 43, 47
Self-regulation of the results: 16, 27, 39, 49
External regulation of the processes: 11, 12, 29, 41, 50
External regulation of the results: 4, 5, 18, 31, 44
No regulation: 15, 8, 19, 26, 38

Section B1
Personal interest: 52, 60, 64, 69, 73
Certification oriented: 55, 58, 63, 65, 75
Testing the abilities: 53, 56, 59, 67, 72
Career oriented: 57, 51, 62, 66, 68
Ambivalence: 54, 61, 70, 71, 74

Section B2
Knowledge gaining: 79, 81, 85, 92, 98
Knowledge absorption: 77, 80, 87, 91, 94
Using the knowledge: 76, 83, 88, 90, 97
Stimulated teaching: 84, 89, 93, 96, 99
Learning through collaboration: 78, 82, 86, 95, 100

Appendix B

Description of ILS scales

Cognitive strategies
Structural-relational scale – making connection between the materials taught and existent information, bringing up different concept together and making logical connections.
Critical thinking – adopting a critical attitude towards the interpretations and conclusion of the authors compared to personal opinions and formulating personal conclusion.
Memorizing – repeating and learning by heart facts, definitions and lists of characteristics.
Analysis – processing the material studied section by section, focusing on details and analyzing the most important components of the theory.
Processing – using the content of the studied information in day by day life and focusing on the utility of the content taught, connecting the themes studied with personal experience.

Metacognitive strategies
Autoregulation – being in charge of individual regulation of the learning process, which includes: planning, monitoring, evaluating and testing.
External regulation – the regulation of a learning process is realized by an external force through the questions, objective of the courses, tests and helping materials provided by the professor.
Unfocused regulation – observing the difficulties with which students confront when they try to control their learning process, appreciating how well they know the study materials.

Motivation for learning
Personal interest – studies with interest all the materials because he/she wants to develop personally and likes to study and learn.
Certification oriented – the goal is to pass the exams and to accumulate credits.
Testing the abilities – they want to test their personal abilities and to discover their qualities, also they are eager that demonstrate that they are good and prove it to others.
Career oriented – choosing the subjects and courses with the intention to obtain a future qualification; the desire to be prepared for the future career.
Ambivalence – students are not sure about their future career and are concerned about their fit to the program they follow.

Mental models of studying
Knowledge gaining – their vision over learning is a succession of memorizing and reproducing facts, they prefer clear instructions and on certain context or task.
Knowledge absorption – a vision in which every student is responsible for what he or she learns by: putting questions, providing personal examples, searching for connections, consulting other bibliography sources.
Using the knowledge – each learned concept is useful in the day by day life, with practical application possible.
Stimulated teaching – characterizes the students that wait for the professor to encourage them to use strategies like liking the concepts or auto evaluation.
Learning through collaboration – students who prefer to work in a group and who think that they are more productive when doing so.