

RELAÇÕES INTERNACIONAIS NO MUNDO ATUAL

CENTRO UNIVERSITÁRIO CURITIBA - UNICURITIBA - VOLUME 1 - NÚMERO 33/2021 CURITIBA/PARANÁ/BRASIL - PÁGINAS 224 A 243 - ISSN: 2316-2880

TRUST OF THE GENERATION Z IN ARTIFICIAL INTELLIGENCE IN THE ASSESSMENT OF HISTORICAL EVENTS

CONFIANÇA DA GERAÇÃO Z NA INTELIGÊNCIA ARTIFICIAL NA AVALIAÇÃO DE EVENTOS HISTÓRICOS

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ABSTRACT

Objective: The article considered the degree of trust of Russian and Slovak students of generation Z (Gen Z) in artificial intelligence (AI) in the assessment of historical events in the conditions of digital society.

Methods: The basic empirical methods of the study were a sociological survey and focus group conducted in the context of the COVID 19 pandemic remotely using the resources of the online Google Form and cloud conference platform Zoom.

Results: The study found that the attitude of Gen Z to AI in the context of digitalization of society is ambiguous and contradictory, which affects the degree of trust in the assessment of historical events. The degree of trust of Russian and Slovak Gen Z students in the general issues of the use of AI, the assessment of historical events by AI generally coincide on fundamental issues and have some contradictions on secondary ones.

Conclusion: The analysis of the research data showed that Russian and Slovak Gen Z students have a generally positive attitude to historical information coming from Al. Differences in the degree of trust (not trust) between Russian and Slovak Gen Z students in the presentation of historical information to them by the Al, contradiction in the evaluation of individual historical events were revealed. Gen Z is wary of Al, believing that



All is dangerous for humans and should not be fully trusted in all matters of presentation and assessment of historical events.

Keywords: digitalization; artificial intelligence; generation Z; historical events; trust.

ABSTRATO

Objetivo: O artigo considerou o grau de confiança de estudantes russos e eslovacos da geração Z (Geração Z) em inteligência artificial (IA) na avaliação de eventos históricos nas condições da sociedade digital.

Métodos: Os métodos empíricos básicos do estudo foram uma pesquisa sociológica e grupo focal realizado no contexto da pandemia de COVID 19 remotamente usando os recursos do Google Form online e plataforma de conferência em nuvem Zoom.

Resultados: O estudo constatou que a atitude da Geração Z em relação à IA no contexto da digitalização da sociedade é ambígua e contraditória, o que afeta o grau de confiança na avaliação de eventos históricos. O grau de confiança dos estudantes russos e eslovacos da geração Z nas questões gerais do uso da IA, a avaliação de eventos históricos pela IA geralmente coincidem em questões fundamentais e apresentam algumas contradições nas secundárias.

Conclusão: A análise dos dados da pesquisa mostrou que os alunos russos e eslovacos da geração Z têm uma atitude geralmente positiva em relação às informações históricas provenientes da IA. Diferenças no grau de confiança (não confiança) entre estudantes russos e eslovacos da geração Z na apresentação de informações históricas a eles pela IA, foram reveladas contradições na avaliação de eventos históricos individuais. A Geração Z desconfia da IA acreditando que a IA é perigosa para os seres humanos e não deve ser totalmente confiável em todas as questões de apresentação e avaliação de eventos históricos.

Palavras-chave: digitalização; inteligência artificial; geração Z; eventos históricos; Confiar em.

1. INTRODUCTION

The history of any state is the foundation and a strategic element of the development of society. All generations are brought up on historical events and the achievements of their people. Data on these events are painstakingly collected by specialists, carefully studied by historians, and stored and issued to researchers, politicians, and everyone interested in history in the prescribed manner. Information about



historical events posted on the Internet does not always comply with the established rules of the accuracy of information. It is controversial, sometimes deliberately misleading. The Russian and Slovak Generation Z is an active user of the Internet and AI. However, it often does not yet have a developed system for effectively assessing the reliability of the information received. This creates the danger of misleading the younger generation about their history and undermines the foundations of the future society. The analysis of the conducted studies showed that the nature of Gen Z students' trust in AI in assessing historical events in the context of the digitalization of society has not been sufficiently researched. The general approaches to assessing AI as an assistant in increasing research efficiency and impact on the social environment have been studied fragmentarily. In this regard, it became necessary to research the basis of Russian and Slovak Gen Z students as representatives of societies in which there are common historical roots and in which they are sensitive to their history.

The promotion of Gen Z in the educational environment with the entry into the labor market is almost synchronized with the digitalization of society and the introduction of Al into the social and economic environment. The future of civilization is directly linked to how Gen Z will be prepared, how well it adapts to innovation, how well it can interact and trust Al.

According to the generational theory, Gen Z has significant differences from previous generations (Howe & Strauss, 1992). This theory has been constantly tried to be adapted in various countries for a long time. Due to the uneven development of society, there is some gap in determining the timing of identification of one or another age social group. In Slovakia young people born after 1995 are more likely referred to Generation Z (Grenčíková & Vojtovič, 2017), in Russia - after 2000 (Ozhiganova, 2015).

Work with Gen Z begins at school. The modern vector of modernization of the Russian school actualizes the search for new tools and learning technologies that would ensure the growth of Gen Z competencies in the context of digitalization (Frolova, Ryabova, & Rogach, 2019; Libin, 2020; Vinichenko, Chulanova, Bolotov, Melnichuk, & Melnichuk, 2018). In the course of learning, working with information, educators are



looking for the most appropriate educational technologies. Game-based learning methods are actively used at all stages of learning, both at schools and universities (Demchenko et al., 2018; Kirillov, Vinichenko, Melnichuk, Melnichuk, & Vinogradova, 2016), digital forms are used (Köhler & Rösel, 2019; Rösel, 2020), Al is used in various ways (Nikiporets-Takigawa, Afonin, Krivova, & Otyutskiy, 2020). Teachers have access to virtual (Ovtšarenko, Makuteniene, & Timinskas, 2020) and cloud technologies (Saorín, De la Torre-Cantero, Melián Díaz, & López-Chao, 2019), innovations are introduced into the educational process (Bayhan & Karaca, 2020; López Zafra, de Paz Cobo, & Queralt, 2020). Digitalization and AI have a significant impact on human development in all forms of its manifestation (Timmis & Munoz-Chereau, 2019; Zimenkova, Paramonova, & Lobacheva, 2018). All actions of university teachers are aimed at developing those competencies that are most in demand in the labor market (Demchenko, Karácsony, Ilina, Vinichenko, & Melnichuk, 2017; Matraeva, Rybakova, Vinichenko, Oseev, & Ljapunova, 2020; Shi, 2019). It is important that students of Generation Z are ready to accept the challenges of the digital age, skillfully using AI for the development of the economy, society as a whole (Deeva, Nikiporets-Takigawa, Lustina, Podsevalova, & Didenko, 2020; Vinichenko, Frolova, Kabanova, Kozyrev, & Evstratova, 2016). The problems of the digital economy are compounded by economic crises and ethnic problems (Nikiporets-Takigawa, 2018; Oseev, Dudueva, Karácsony, Vinichenko, & Makushkin, 2018).

Young people born in the era of virtual reality are characterized by a significant transformation of their values, lifestyles and skills. Digitalization is one of the most significant factors characterizing the process of information perception. At the same time, it is important to take into account the needs and demands of learners, the level of their motivation, the specificity of digital knowledge and skills (Frolova, Rogach, & Ryabova, 2020). The labor market is usually aggressive, so there is a need for a system of protection and assistance for young workers who have graduated from universities.

Trust in information is formed on the basis of young people's social experience, specifics of interaction in small groups, characteristics of one's own identity (Rybakova et al., 2019). The development of trust is the most important factor in improving the quality



of the educational process, strengthens students' cognitive attitudes, and shapes organizational cooperation (Rogach, Frolova, & Ryabova, 2018). Information about contemporary events and historical facts is obtained by young people from the Internet, social networks, YouTube (Alegre-Martínez, Martínez-Martínez, & Alfonso-Sanchez, 2020). The speed of acquisition and the quality of perception of digital information are important (DiMattio & Hudacek, 2020).

At the same time, young people see certain risks that come from the digitalization of society and education, the use of artificial intelligence (Cellan-Jones, 2014; Neri et al., 2019; Saoud & Jung, 2018; Xu, Raymond Choo, Dehghantanha, Parizi, & Hammoudeh, 2020).

In addition to negative aspects, a number of scientists associate AI with good (Bostrom, 2012; Singler, 2020). Most often, this is due to medicine taking the brunt of the COVID 19 pandemic (Das, Sanyal, & Datta, 2020). Trust in information is formed on the basis of the preached culture of civilization, which has come under the pressure of the digitalization of society, changes in behavior patterns, and interaction between people (Anderberg, 2020; European Commission, 2020; United Nations Conference on Trade and Development [UNCTAD], 2019). This pressure extends to historical information, which is very important for shaping the world view of Generation Z. Today it is necessary to understand how the youth of Gen Z value historical information and what place AI occupies in their information work. How much Generation Z trusts the AI in gathering, processing historical information. Whether Gen Z sees the danger from the AI, how much it trusts the AI at all.

2. METHODS

The use of artificial intelligence in information activities, assessment of historical events by Generation Z required to identify the extent to which we can trust this technology of digitalization of society. The aim of the study is to identify the degree of trust in artificial intelligence in the assessment of historical events by Generation Z under the conditions



of digitalization of society. For evaluation by Gen Z, historical events related to the emergence of the state, the main stages of its development, socio-economic and cultural aspects, and participation in world wars were selected. The selection of events was made according to their significance in the fate of a particular country (separately Slovakia and separately Russia) in the course of an expert assessment by specialists in the field of history using a matrix of pairwise comparisons. The assessment was carried out in Russian and English.

Scientific objectives:

- 1. Study the categorical-conceptual apparatus on the question of trust of artificial intelligence in the evaluation of historical events by Generation Z under the conditions of digitalization of society.
- 2. Determine the degree of trust in artificial intelligence in the evaluation of historical events by Generation Z.

In the study the hypothesis was put forward:

- **H1.** The attitude of Generation Z to artificial intelligence in the context of the digitalization of society is ambiguous, contradictory, which affects the degree of trust in the assessment of historical events.
- **H2.** The degree of trust of Generation Z in artificial intelligence in general questions, in the assessment of historical events in Russia and Slovakia coincide on fundamental issues and have some contradictions on secondary ones.

This article uses the concept of artificial intelligence and digitization. Prior to the sociological survey, respondents were informed about the meaning of these concepts in the study. Artificial intelligence (AI) should be understood as intelligent computer programs, systems that are designed to recreate intelligent reasoning and action. They can also be robots in the form of humans or other objects. Digitalization is the process of introducing information and communication technologies into all spheres of social life (Vinichenko, Frolova, Nikiporets-Takigawa, & Karácsony, 2021).



Instruments, research procedure

The study was organized and conducted with Russian and Slovak students of Generation Z between May and December 2020. The main empirical research methods were a sociological survey and a focus group. Likert approach and methodology were used for the questionnaire design. Due to limitations imposed by the COVID 19 pandemic, the study was conducted remotely. The survey was conducted using Google Form online resources.

The developed questionnaire contained closed questions and included four parts. The first part reflected the demographic aspects of the respondents (gender, age, work experience). The second set of questions related to the general threats posed by AI and the degree of trust in it. In the third part, information was requested on whether it is worth trusting AI in historical information. In the fourth block, the possibility of trusting AI in assessing historical events was considered.

Before the final survey, a pilot sociological survey was conducted to test the compiled questionnaire on a sample of Gen Z students from three Russian universities. To determine the most important (main) questions (variables), the experts ranked them using a matrix of pairwise comparisons. As a result, the following were chosen as the main questions in the questionnaire: Al is dangerous to the person and should not be trusted; Al should be trusted to bring them historical information; Al should be trusted in assessing historical events.

To conduct a focus group, a plan was drawn up, the basis of which was formed by problematic questions, which were clarified at all stages of the study. Before the focus group, the moderator made an acquaintance with the focus group participants and performed organizational, socio-psychological, and emotional preparation of experts. The following methods were used for the focus group: quotation, redirection, balancing of participation. At the end, the results of the expert discussion were summed up. The focus group was held on September 18, 2020 for 2 hours. The discussion was conducted in Russian and English with simultaneous translation by the moderator.



1849 students from 35 Russian universities took part in the sociological survey. The survey participants and universities were identified by the "snowball" method. From Slovakia, 316 Generation Z students from two Slovak universities took part. A student's participation in the survey automatically added his university to the survey. During the course of the study, the organizers and participants strictly adhered to the ethical standards for scientific research. The survey was conducted among Russian students in Russian and Slovak students in English.

The quota criteria for the selection of participants in the study were: gender, age, work experience. The approach of defining the affiliation of students to Generation Z was unified according to the European standard. This included young people up to the age of 22.

As a result, more female respondents (36.2% Russian; 37.1% Slovak) than male respondents (63.8% Russian; 62.9% Slovak) participated in the survey. In terms of age, students over the age of 20 were more active. There were slightly more Russian students in this cohort (78.1%) than Slovak students (73.4%). Among the most important indicators was work experience, allowing a more thorough assessment of the nature of the impact of the digital economy on the development of young people, obtaining information, assessing historical events, including AI. There were more Slovak students of Generation Z with work experience (75.5%) than Russian students (53.3%).

The focus group was conducted to clarify the issues and test the hypotheses of the study, to identify the degree of trust in artificial intelligence in the assessment of historical events by Generation Z under the conditions of digitalization of society. The selection of experts for the focus group was made based on their scientific and professional achievements in the studied problem by sending invitations. In total, 20 invitations to participate in the focus group were sent and the consent of eight scientists and practitioners was obtained, which amounted to 40%. The experts were presented with requirements, the essence of which boiled down to competence, stability, and reliability in the assessment.



The degree of trust in artificial intelligence on the part of Generation Z was conducted according to three main indicators: the degree of trust in AI in general, in the delivery of historical information and assessment of historical events.

Statistical analysis

The study compared the populations of Russian and Slovak Gen Z students by qualitative characteristics (Pearson's chi-square test for arbitrary tables). The statistical significance was revealed between the factorial and the resultant signs with a certain correlation.

3. RESULTS

The obtained results are generally in line with the predictions made by some experts prior to the start of the study. However, to a certain extent, the answers of the Slovak Gen Z students turned out to be unexpected, the overwhelming majority of whom trust in communicating with AI and evaluating its historical information.

The study found that Russian students are almost equally divided in their trust in AI, with a slight preponderance in favor of distrust - the trusting respondents - 40%, not trusting - 49% (Figure 1).



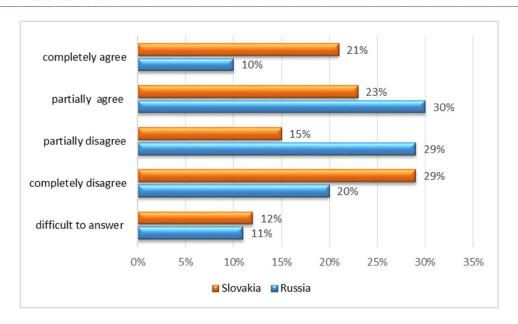


Figure 1. Choice of response to the statement: "Al is dangerous to the person and should not be trusted"

About the same proportion was found in the responses of Slovak students Gen Z: trusting respondents 43%, distrustful respondents 44%. Those who found it difficult to answer among the Russian and Slovak students also turned out to be approximately equal. Certain differences were identified for some indicators. Significant differences between Russian and Slovak students of Gen Z turned out to be in complete agreement that AI is dangerous for humans and should not be trusted: Russian 10%, and Slovak - 21%. There was also a difference in the complete denial of this position: Russian 20%, and Slovak - 29%.

When comparing the aggregates of Russian and Slovak Gen Z students according to qualitative characteristics (Pearson's chi-square test for arbitrary tables), it was found that the number of degrees of freedom is 4; the value of the criterion x^2 is 62.721; the critical value x^2 at a significance level of p = 0.01 is 13.277. The relationship between the factorial and effective indicators is statistically significant at a significance level of p < 0.01.



The level of significance is p <0.001, which shows the statistical significance between the factorial and effective signs with a strong positive correlation.

A more detailed clarification of the question of trust in AI on a specific issue - the presentation of historical information - showed that the answers of students in both countries are in the positive zone (Figure 2).

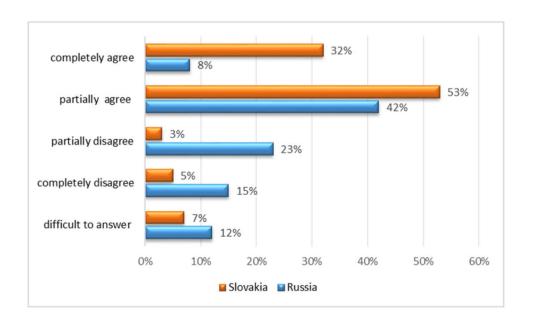


Figure 2. Choice of response to the statement: "Al should be trusted to bring them historical information"

However, there were significantly more Slovak students (85%) than Russian students (50%). At the same time, a special difference turned out to be in the position of completely agreeable: 32% of the Slovak respondents versus 8% of the Russian ones. The position of partially consonants is also highlighted. Gen Z students surpass their Slovak colleagues (23% vs. 3%).

In assessing historical events, Russian and Slovak students of Gen Z showed both similar and different positions in a certain sense (Figure 3).



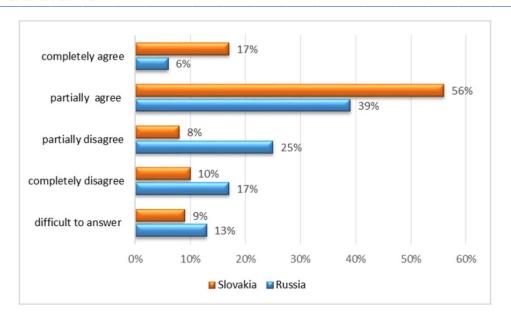


Figure 3. Choosing an answer to the statement: "Al should be trusted in assessing historical events"

1) There are significant differences in specific indicators: completely agree (17% of Slovak respondents and 6% of Russian) and partially disagree (8% of Slovak respondents and 25% of Russian). In these cases, the results of the answers of Russian and Slovak students of Gen Z differ almost threefold.

4. DISCUSSION

In the course of a sociological survey, it was possible to establish that in the issue of assessing the danger posed by AI and trusting it, the number of Russian and Slovak Gen Z students turned out to be approximately the same in both the positive and negative aspects. The fact that you need to be careful in using AI in your activities, to be afraid of it, turned out to be 40-49% of respondents. The number of Russian and Slovak Gen Z students who trust AI turned out to be approximately in the same range - 43-44%. At the



same time, some differences were revealed for some indicators, which correlates with some studies (Vinichenko et al., 2021). This, to a certain extent, confirms both hypotheses of the study.

At the focus group it was possible to establish that the main issues of distrust among Russian and Slovak Gen Z students were: the lack of real and systemic control by society over developments related to AI in various scientific fields, including management systems, information technology, the military and medicine; improper use of personal data about a person; the possibility of harm to a person. At the same time, the experts at the focus group expressed the positive aspects of the use of AI that Gen Z students can take advantage of. This is a more in-depth study of information technologies, physical and mathematical models, control systems for active participation in the digitalization of society, self-creating elements or completely new types of AI. These findings are consistent with those of Elena Libin (2020). In-depth exploration of the potential of AI and AI management systems to be used effectively in their operations to enhance their effectiveness.

Concretization of the use and trust of AI in communicating historical information made it possible to establish that Russian and Slovak students of Gen Z, on the whole, have a positive attitude towards historical information coming from AI. The similarity in general terms on this issue differs in particular aspects. The opinions on the degree of trust (not trust) between Russian and Slovak students of Gen Z were especially different. The overwhelming majority of Slovak respondents (85%) trust AI to some extent in delivering historical information. Apparently, the main source of historical information for them is the digital environment, which is increasingly equipped with search engines based on AI. Half of the Russian students of Gen Z also commented positively on the attitude towards AI in terms of obtaining historical information from it in various scientific areas. This correlates to some extent with the research by Mary DiMattio and Sharon Hudacek (2020).

However, the experience of communication of quite a large number of Russian Gen Z students with the older generation, veterans of World War II allows us to doubt the



reliability of the information coming from the Internet, media, and social networks. This explains quite a large percentage of those who negatively assessed the historical information coming from the AI. The experts of the focus group drew attention to the increasing incidence of contradictory historical information in the media and on the Internet. Rewriting the history of both individual countries and civilizational events evokes contradictory feelings and sometimes radical judgments in young people. The replacement of concepts and factual material with tendentious arguments in the information space and on the media platforms alarms Russian Gen Z students. Here the differences between Russian and Slovak Gen Z students are apparent. In Russia there are stronger supporters of historical information on the leading role and place of the USSR in the victory over fascism. In their own way they see the reasons, course and outcome of World War II. In other issues, there are no particular differences between Russian and Slovak Gen Z students. This confirms the first hypothesis that the attitude of Generation Z towards artificial intelligence in a digitized society is ambiguous and contradictory, which affects the degree of trust in the assessment of historical events. The second hypothesis is also largely confirmed. The results of the sociological survey showed that in assessing historical events, Russian and Slovak students of Gen Z have both similar and opposite judgments. The similarity is observed in the conceptual approach (Bostrom, 2012). However, according to factual data, there are differences, especially in the full confidence of AI in assessing historical events and partially disagreeing. The difference is almost threefold. This is essential, however, it concerns individual indicators. Although the general picture with the positions of Slovak students also tends to favor the Al's trust in assessing historical events. This position, in a sense, is a continuation of the options for answering the previous question, which indicates the stability of Slovak students in working with historical information. They are more likely to trust both the information itself, coming from the digital environment with the participation of AI, and the assessment of it by AI.

The views of Russian students were distributed more evenly, with a deviation in favor of partially agreeable ones.



At the focus group, it was noted that the assessment of historical information is difficult to formalize if it concerns the essence of historical events, and not the time axis, formal criteria. The approach preserved in a number of Russian schools in the deep and systematic study of history, not aimed at passing the exam, allows a more critical approach to the assessment of historical events. Trust in other people's assessments, especially AI, is low here. On this issue, it can be stated that both hypotheses were confirmed to a certain extent. A significant discrepancy was revealed in the degree of trust and distrust in the AI in the assessment of historical events between Russian and Slovak students of Gen Z.

5. CONCLUSION

The study found that the attitude of generation Z to artificial intelligence in the context of digitalization of society is ambiguous, contradictory, which affects the degree of trust in the assessment of historical events. This confirmed the first hypothesis of the study. For example, the assessments of the danger posed by AI, in trusting it, the number of Russian and Slovak Gen Z students turned out to be approximately the same in both positive and negative aspects. There is also ambiguity and contradiction in the assessment of historical events by AI on the part of Russian and Slovak students of Gen Z.

The second hypothesis was not fully confirmed. The degree of confidence of Russian and Slovak students of Gen Z in general issues of using AI, assessing historical events by AI coincide on fundamental issues and have some contradictions on secondary ones. Along with this, significant contradictions emerged in the assessment of such historical events as the results, course and outcome of World War II, the role and place of the USSR in the victory over fascism.

Analysis of the research data showed that Russian and Slovak Gen Z students have a generally positive attitude to historical information coming from Al. Differences in



the degree of trust (not trust) between Russian and Slovak Gen Z students in the presentation of historical information to them by AI were revealed.

In general, it should be noted that Russian and Slovak Gen Z students have a certain trust in artificial intelligence in the delivery and assessment of historical events. However, they are wary of Al. Gen Z believe that Al is dangerous for a person and should not be fully trusted in all matters of reporting and evaluating historical events.

The study can serve as a basis for the formation of a systematic approach to the use of AI in historical research and issues of educating young people to ensure sustainable national development and preserve the traditions and culture of their people based on reliable historical data and their competent interpretation. This study can also become the basis for further research on the nature of the influence of AI on the social environment, education, and upbringing of young people.

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