Technology Support in Educating Generation Z - a Necessity or an Opportunity? Perspective of European Countries

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Abstract

[Goal] To verify whether, from the perspective of lecturers, there have been changes with regard to Generation Z in terms of the need to diversify classes by implementing a variety of technological tools and applications. The use of technology and perceptions of artificial intelligence in the teaching process were examined. [Methodology] Employing a quantitative research framework, the study used a questionnaire to gather data from a sample of 789 university teachers across 27 European countries. [Results] The findings reveal that there has been a significant positive change in the need for technological tools and applications in the education of Generation Z, which implies the need for differentiated instructional design, activating students in it.

Key words: active learning, generation Z, technology, education

1.   Introduction

Today's students are primarily representatives of Generation Z, whose characteristics, preferences and needs in the educational context are determined by the presence of technology in their everyday routines [2], [17], [19]. To create engagement during class time, active learning (AL) methods seem to be essential. This expression implies a shift from a teacher-centered instructional approach, in which the teacher has control over the content, timing and speed of instruction, to a student-centered approach [1], [5, 6], [13]. This uses methods and tools (including programs and apps) that require specific activities from students. Practical and experiential learning [9], personalizing the process [3], diversifying methods and forms of knowledge transfer, and integrating technology into education are key [14].

The goal of the research is to verify whether, from the perspective of lecturers, there have been changes with regard to Generation Z in terms of the need to diversify classes by implementing a variety of technological tools and applications to activate students. The use of technology and perceptions of artificial intelligence in the teaching process were examined.

Therefore, the research questions stand as follows:

- RQ1: From the perspective of lecturers, has there been a change in the need to use a variety of technology tools and applications to activate Generation Z students in the classroom compared to earlier times?
- RQ2: What student activation technology tools and applications are used in the classroom by lecturers in teaching Generation Z?
- RQ3: How does the development of artificial intelligence affect the education process of Generation Z?

2. Research methodology

In order to achieve the goal of the research, the quantitative research method was used. Academic teachers represented social sciences which justified the purposive sampling to achieve statistical significance sampling in this study (it should be noted that there is some natural distinction in the forms of knowledge transfer within different fields or disciplines - new technologies, laboratories and equipment are an integral part of STEM – science, technology, engineering and mathematics courses, the use of technology in the social sciences, is not always intuitive). We received 789 responses, on a panel of 27 European countries. Survey participants were asked to evaluate different forms of classes beyond traditional lectures. This sample size provided adequacy for thorough analysis, enabling a deeper understanding of the examined area of active learning with academic teacher perspective and generation changes.

The survey questionnaire, in addition to a metric, consisted of 31 closed questions grouped into 7 areas and 1 open-ended question, the most important of which, in the context of the analysis below, were:

1) The active learning methods and applications used;
2) Artificial intelligence in educating Generation Z.

On this basis, a total of 137,286 inputs were obtained and analyzed. After the survey was closed, its variables and data were coded and transferred to an MS Excel spreadsheet. The Statistica 13.3 computational package was used to conduct all quantitative statistical analysis. The statistical significance of the relationship between the studied variables, according to the participants' responses, was determined using the chi-square test, and the results obtained allowed for an assessment of whether there is a statistical relationship between the specified variables (see more detail in: [10, 16]). In the study, a significance level of the p-value $\leq .05$ was adopted.

3. Results

First, university teachers were asked to assess the level of change in the need to use a variety of tools and methods to activate Generation Z students in their classes compared to earlier periods. Respondents overwhelmingly indicated a positive change in this area over the past 10 years (58% of respondents), only 18% of respondents indicated a negative change in this area.

When asked about the impact of the development of artificial intelligence on the educational process, more than 56% of those surveyed believe that this development does not affect teaching work, almost 19% indicated that it is a great facilitator and provides new opportunities, while just over 25% believe that AI in teaching work poses threats.

That group of respondents perceiving a threat in teaching work from AI, prior to the pandemic were significantly less likely to prefer that students create presentations (47% vs. 63%; p-value=.0190) and use the Prezi application during classes (9.6% vs. 15.4%; p-value=.0414). Today, while working with Generation Z students are significantly less likely to use various apps during class, including Mentimeter (17% vs. 25%; p-value=.0194), Padlet (3.5% vs. 11.5%; p-value=.0009), Jamboard (4.5% vs. 10%; p-value=.0183), Whiteboard (24% vs. 33%; p-value=.0115), Prezi (18% vs. 25%; p-value=.0433), Moodle (49% vs. 60%;

p-value=.0073), Canva (18.7% vs. 29.1%; p-value=.0040) or Lucidchart (0% vs. 3%; p-value=.0130).

Respondents who believe that the use of AI in teaching is a great facilitation and provides new opportunities were significantly more likely to indicate that students' own work outside the class now and 10 years ago has not changed (32% vs 23.5%; p-value .00654), while they were less likely to note positive changes in the need to use a variety of technological tools/apps (6% vs 15%; p-value=.0050). At the same time, before the pandemic, they used Kahoot (6% vs. 15%; p-value=.0050) and Canva (2.7% vs. 9.8%; p-value=.0054) less often in their classes. Currently, they use Kahoot less often (20% vs. 29%; p-value=.0327).

At the same time, these respondents, convinced that AI has no impact on teaching work, feel a very positive (18% vs 7%; p-value=5.0E-7) change in the need to experience a variety of tools over the past 10 years.

4. Conclusions

The results of the survey indicate that, according to academics, there has been a significant positive change in the need for technological tools and applications in the education of Generation Z. Generation Z students exhibit a special feature that identifies them, i.e. technology. This characteristic cannot be ignored in the teaching process. There is a need to include technological tools and applications as well as artificial intelligence in the educational process.
Our research confirms the findings of Cain, who indicates that the Generations Y and Z expect technology to be integrated into their educational experience [2]. The increase in the use of technological tools and applications in the education process during the period under review confirms the change in the needs for educating Generation Z students. Tools such as Mentimeter, Prezi, Moodle, Kahoot and Canva were the most popular among academics representing the social sciences. These tools engage students in class in a simple way, add variety to classes, including the way knowledge is transmitted, and shape skills. Therefore, it is not hard to disagree with the statement that the use of technology can help create a more interactive and dynamic learning environment [7, 8].

The research indicates the necessity for educators and academic administrators to develop their teaching competencies through training and applications of technology-based solutions in educating Generation Z. It is also important that educators have the ability to recognize the positive effects as well as the potential risks of implementing innovative technological solutions including artificial intelligence into the education process.

The results of our analysis suggest the need to train lecturers in the application of artificial intelligence in the teaching process, increasing their knowledge and ability to identify potential benefits and risks of its application. As early as 1978, it was written: adopting new ideas about teaching can be a burden for some teachers, requiring them to change their teaching philosophies, course organization and the ways students learn. But for others, it can bring relief and help solve long-standing teaching problems [11]. This is also confirmed by Thuneberg [15] in his current research on the rapidly changing landscape of education in the 21st century.

At the same time, according to Zirev [20], engaging in active learning requires learners to reflect on their experiences and break away from the monotony of daily routines, so it is related to their involvement. Teachers need to modify their thinking, foster ingenuity and cultivate pioneering educational resources to enhance the learning procedure [8]. This is consistent with the results of Chen [4], who indicates that teachers must adjust teaching methods for Generation Z students due to their unique characteristics, and the conclusions of Purwantara et al. [12] according to which academics should adapt teaching methods to meet the needs of Generation Z students, integrating digital learning materials and interactive tools in the classroom.

Today, an effective education process is a process tailored to the needs of Generation Z students, a new approach to active learning. The main point is that it should not be based on "formal" participation, and therefore confirmed by, for example, attendance at classes, but an engaged-active participation, which is to contribute to the fluidity of the knowledge transfer process. This will only be possible if students are convinced of the legitimacy of learning and interested in the knowledge transferred to them [18].

Funding

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