



# Review of the Present Educational Scenario: The Uses and Effects of Nano-Learning

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**Citation:** Suraj Bhattacharjee, et al. (2024), Review of the Present Educational Scenario: The Uses and Effects of Nano-Learning, *Educational Administration: Theory and Practice*, 30(1) 5564-5570

Doi: 10.53555/kuey.v30i1.9111

## ARTICLE INFO

## ABSTRACT

This study provides an overview of the literature on Nano-learning in education, summarizing key historical background theories that have shaped new educational paradigms. We use Nano-learning to accommodate pupils' short attention spans and meet their diverse learning demands. Nano-learning experiences can take the form of information and skill capsules, which serve to recapitulate, understand, or develop subject-specific abilities. During the COVID pandemic, we engaged in self-development and knowledge acquisition through online platforms such as videos, short videos, quizzes, and podcasts. However, some individuals may find longer and complex topics such as math, physics, and chemistry boring. Nano-learning addresses these problems because these quick bursts of knowledge require little time or effort. They may meet the demands of students with short attention spans.

**Keywords:** Nano learning, attention span, microlearning

## Introduction

We have learned a great deal in the twenty-fourth century from a variety of sources, including social media and multimedia. These days, it's as simple as clicking a button to get whatever we need. We also notice that, At the same time, we see that it has become difficult to focus on one thing because now we have so many attention-seeking distractions. It is more difficult to concentrate on a single activity. We become what the Chinese call "monkey minds"—agitated, anxious, and unable to regulate our own thoughts—in today's fast-paced environment. It is more difficult than ever to focus on one's studies in today's fast-paced, technologically sophisticated society due to the abundance of distractions (Bastos, 2022). People in modern era were more interested in seeing short films, clips, and Nano concepts on social media than they were in watching longer concepts. social media and short videos trigger the release of dopamine in the brain, and for that reason, poor students have become addicted and Inattentive. As the wise Richelle Mead once observed, "There are more good things in life to balance out every bad thing." Nano-learning is a way to counteract all the bad aspects. People can readily view and comprehend this short instructional video, According to Mead, (n.d.).

## Concept of Nano learning

A "Nano" is one billionth of a second; the phrase comes from the Greek "Nanos," meaning "very tiny," and there are a million parts to a million bits and a thousand parts to a bit. Can you explain Nano learning? It is easy for us to understand right now: The process of Nano learning does not require any exterior resources. Various forms of multimedia, such as text, audio, video, and graphics, can be included, which captivate pupils (Ali et al., 2023). We also call it bite-sized learning or Nano-learning. The learner learns new material over time without having to put in a lot of time in the library. The most valuable knowledge is condensed into smaller learning capsules through Nano-learning. On the other hand, concise reading materials might be useful for grasping the reasoning behind a formula or idea. Such materials absorb far more readily due to their short lifespan. The human brain becomes too tired to acquire the information needed to understand a subject after a long class with plenty of teacher interaction (Aburizaizah, Albaiz, 2021). Nano-learning is an instructional program that teaches students a subject through short, usually less than two-minute, practice

exercises. Without the benefit of a live teacher, all of this takes place in a virtual classroom. Typically, Nano-learning programs zero in on a single learning goal or topic. Social media sites like Instagram, Snap chat, and YouTube Shorts have contributed to the current trend of young people watching more and more short forms of material. Nowadays, brief films are more popular among younger students than longer, more conventional forms of training. Our country's educational system changed drastically after the COVID-19 pandemic. Blended learning and informal tactics like Nano learning are now standard in all areas of education. Like micro learning, this Nano-learning aims to provide methods for creating, distributing, and applying tiny bits of knowledge.

### **Similarities and Differences between Nano and Micro-Learning**

Two distinct methodologies have arisen from the e-learning technology presently employed. N. Z. Khlaif and Salha Sohei (2021) categorize them as two separate educational methodologies that focus on small learning segments and are linked to connect learning. There exist two categories: Nano learning and micro-learning. Nano-learning is founded on the fundamental principles of nanotechnology, characterized by self-contained, compact, and cohesive components. Micro learning entails concentrating on particular learning objectives using concise segments of information, each lasting a few minutes. Consequently, Nano-learning facilitates the development of micro-learning. Micro-learning entails segmenting micro-content into concise units that can be rapidly disseminated and absorbed. Nano-learning includes concise audio, video, and graphical content. N. Z. Khlaif and Salha Sohei (2021) decompose short-term learning activities into discrete components to attain specified educational objectives. Nano-learning and micro learning are both bite-sized courses, complete in themselves, and both are cost-effective and budget-friendly.

Nano-learning and micro-learning share several similarities; for example, both emphasize the creation, dissemination, and application of small learning units. Both methods promote self-directed learning, reduce cognitive load, and enhance preparedness for future challenges. Conversely, micro learning and Nano learning are distinct in that micro learning comprises small learning units aimed at specific objectives, whereas Nano learning consists of singular learning points within a broader objective. Micro learning modules typically last 15 to 30 minutes, whereas Nano learning ranges from 2 to 5 minutes (Kumer, 2023). A key distinction between micro-learning and Nano-learning is that micro-learning can be utilized in both formal and informal learning environments, whereas Nano-learning is restricted to informal contexts (Katambur, 2020).

### **Literature review**

In February 2022, P. Vivekananth will conduct a study titled "Nano learning: A New Paradigm Shift in Teaching and Learning." "The purpose of this study is to explore the implications of Nano-learning in a variety of fields, including classroom learning, blended learning environments, and remote learning. This document highlights the contemporary obstacles to education, including the difficulty of concentrating on large amounts of material, the length of time required to complete a task, and the short attention span. In order to address the new challenges, the researcher implemented a paradigm transition from traditional learning to the novel teaching method of Nano-learning. This paper additionally indicates the future advancements of Nano learning (Dr. Vivekananth.P, 2022).

Lv Ning and Yin Xue are conducting a study on the application of Nano-learning in business English teaching from the perspective of mobile learning. During the course of this research project, the researcher investigated the advantages of mobile learning in the context of business English instruction. Additionally, the researcher investigated the utilization of the Nano-learning model to develop novel ideas for improving business English instruction. This report concludes with various strategies for enhancing business English teaching through mobile learning. The tactics encompass fostering a conducive learning atmosphere, adapting traditional conceptions of English instruction, enhancing the quality of the taught information, and enhancing the teaching assessment system, curriculum design, and professional development of instructors through mobile learning (Lv & Yin, n.d.).

Khlaif Nzuehir, Salha Soheil April 2021: Execute a research project entitled "Utilizing TikTok in Education: A Method of Micro-Learning or Nano-Learning?" This study discovered that the social media application TikTok may serve as a prospective educational tool, as it facilitates the dissemination of concise learning units in under 60 seconds. The study showed that we can use Tik-Tok to develop and implement Nano-learning strategies. TikTok provides an array of Nano activities, including brief films, ungraded quizzes, and flashcards. A study presents the positive and negative aspects of TikTok's use in education (Khlaif, Salha, 2021).

Aburizaizah Jameel Saeed and Albaiz Abdulaziz Taha In September 2021, researchers undertook a study entitled "Review of the Use and Impact of Nano-Learning in Education," examining the applications, effects, and issues associated with Nano-learning in educational contexts. The principal objective of Nano courses is to deliver a substantial volume of valuable information within a brief timeframe. While an individual may consistently acquire new material with minimal time investment, this does not equip them to become a high-caliber professional. Undertaking research in such a course will not provide a comprehensive

and profound understanding. This study also revealed that during the COVID-19 pandemic, numerous individuals in quarantine sought to enhance their personal development and acquire knowledge in new domains. Nano-learning describes core information to understand and assess one's capacity to comprise it (Aburizaizah & Albaiz, n.d.).

Madan Nidhi In October 2021, Madan Nidhi performed a study entitled Nano Learning: The Futuristic Approach to Education. This study conceptualizes Nano learning in education and interprets characteristics, advantages, and limitations. To achieve the aims, the researcher gathered 106 data points via Google Forms regarding Nano learning in education. The researcher used bar graphs to illustrate the respondents' viewpoints' This research finishes with an explanation of Nano-learning in education and emphasizes the importance of spreading awareness about it in our society (Madan, n.d.).

Shehhl, and AL A. Ali-Shehhi Mohamme conduct a study (May 2022) was titled "The Use of Technology in Education: A Study About the Impact of Using Nano-Learning in Teaching English as a Foreign Language in Higher Education Institutions in the United Arab Emirates." The researchers in this study identify and analyse the method of Nano-learning in the context of teaching English to students who are studying it as a foreign language. They also scrutinize the strategies associated with this approach. In this study researcher selected ninety students who had learned English as a foreign language at different educational institutions in Dubai, United Arab Emirates, with the help of English tutors. We used various tools and techniques for this study like surveys, interviews, and an online conversation with the expert of Nano-learning approaches. The results of this study are based on the discovery that learning takes place through interaction with various gadgets. These devices function as a novel learning environment, incorporating pre-established teaching strategies and approaches. Additionally, they have established a modernized educational system that relies on data modification and minimizes physical labor. It requires less work from the body (ALI AL-SHEHHI, 2022).

### **Statement of the problems:**

I learned about the applications of Nano learning and how the acquisition of various skills and knowledge in day-to-day life may be impacted and assisted by the usage of small-sized videos after examining the relevant modern literature. In addition, during the COVID-19 pandemic, a significant number of people who were included in the quarantine period showed a desire to improve their personal development and broaden their knowledge in new areas of study. At this point in time, the majority of people who are dealing with a variety of difficulties make use of a number of media avenues. Because of this, researchers have been unable to find any meaningful study mode that correctly reflects the current status of nano learning for the time being. The current researcher has, as a consequence, recognized a huge knowledge deficit in this particular field.

The researcher recognized the following research questions in order to solve the current issues, based on the contextual reading and the study of the literature that was available:

#### **Research question**

- Is Nano learning adequate for the development of learners' concepts?
- Is Nano learning beneficial for individuals with limited attention spans?

#### **Objectives:**

- Learn about the present condition of Nano-learning.
- Nano-learning gives sufficient information for the learner's cognitive developmental Comprehending Nano learning is advantageous for individuals with limited attention spans.

#### **Present Status in Nano learning:**

This study was inspired by the advancement of 21st-century skills in education, which facilitate the integration of new competencies in teaching and enhance the efficiency of learning acquisition. It emphasizes delivering content for 2-3 minutes in a more concise timeframe and with reduced burden on the educator. Every lesson in the nano-learning curriculum integrates the fundamental instructional procedures, comprising the use of an image or short video, case study, question or exercise, response, and feedback. Implementing these tactics will introduce innovations to the domain of education, particularly in the context of pandemics or autonomous learning. Furthermore, the implementation of a hybrid learning system that integrates in-person instruction with online education will prove advantageous (ALLAL-SHEHHI, 2022).

Nano-learning films are concise, simple to produce, and readily shareable. Individuals are progressively using short videos on YouTube, Facebook, and Instagram to showcase their creative abilities and instruct others on diverse subjects, including creating, cooking, athletics, drawing, and vocational and technical instruction. Currently, social media captivates all youthful users. The tool enables teenagers to create innovative educational movies addressing intricate subjects like mathematics, physics, and chemistry that could otherwise be tedious for students. This setting facilitates Nano-learning activities to enhance student

engagement. This Nano content facilitates the development of more captivating material that attracts learners of many age groups.

Nano-learning converts conventional classroom instruction into a self-directed educational experience by alleviating classroom demands and integrating activities into courses. This learning approach utilizes a flipped classroom technique that fosters individual learning and autonomy through the available resources and links. (Nz. S. Khlaif, Salha, 2011).

### **Effect of Nano learning:**

At present, every piece of information is accessible on the Internet. All individuals get access to E-libraries, research materials, video content, audio resources and so on. Nano learning offers concise learning modules that distill the most pertinent information. Conversely, concise reading materials can increase comprehension of the subject (Aburizaizah, Albaiz, 2021). Nano-learning, characterized by succinct and focused learning sessions, can be exceptionally effective, contingent upon the context. Nano learning is an emerging concept of educational technology. The emergence of Nano-learning is among the most exciting advancements. This teaching technique is rapidly gaining popularity, resulting in obstacles across various sectors. Nano learning, with its emphasis on particular skills or information and the learner's goals. However, it may be inadequate for complex topics that require profound comprehension or lengthy practice. It is frequently most effective when employed alongside alternative learning strategies. Nano-learning is an excellent technique when utilized correctly, but it is most beneficial as an element of a comprehensive learning plan (Pritchard, 2017).

Recent years have witnessed a lack of the depth and understanding offered by larger, more extensive learning sessions. Due to the brevity of Nano-learning, learners may struggle to retain the information acquired. Furthermore, learners may lack the opportunity to thoroughly comprehend and assimilate the material, leading to inadequate retention. The learning is identical for When all participants in the system engage in the same course concurrently, the learning process becomes This strategy may not cater to the distinct areas of improvement required by each learner due to their particular learning needs.

### **Nano learning and short Attention span**

In recent years, attention spans appear to be shortening, interest in their courses. In this fast-paced world students can accommodate the need of the learner. Thankfully, micro learning and Nano learning both are indeed innovative approaches in the field of education, aimed at delivering bite-sized, focused learning content to learners. We also intended to refer to micro learning as bit-sized, rapidly digestible knowledge chunks. These can be short videos, quizzes, or even info graphics, on the other hand. Nano learning is a tinier version of micro learning, breaking information down into even smaller bits. Because these quick bursts of knowledge don't need a lot of time or effort, they may meet the demands of students with short attention spans. Let's explore the causes of this unexpected loss of attention and why Nano-learning is the solution (Pappas, 2024).

### **Causes of short attention span:**

**Information overload:** The Internet has numerous advantages, including the ability for learners to access material at any time and from diverse sources. This surfeit of information can occasionally overwhelm our cognitive capacities, rendering us unable of coping and possibly leading to disengagement. **Lack of Engagement:** It is typical for one's mind to drift when the educational material lacks engagement or relevance to personal interests. When a subject fails to engage your interest, redirecting your attention is effortless.

**Psychical obstacle:** Our environment may hinder our capacity to focus. Intense illumination, cacophonous noises, and persistent disruptions might hinder concentration, leading to diminished attention spans (Hadsvik, 2023).

**Access to multiple technologies:** Currently, we rely on diverse technology. Technology has revolutionized education, enhancing its engagement and accessibility. Computers, tablets, and online platforms facilitate personalized learning and access to diverse resources; however, as accessibility expands, individuals face several challenges, including heightened distractions, equity issues, reduced physical activity, and the erosion of traditional skills, among others.

**Uses of social media:** Social media platforms frequently present content in swift, concise formats, including short videos, memes, and succinct posts. This disorder occurs rapidly and often, perhaps resulting in diminished attention spans during prolonged or intricate work (Madan, n.d.).

**Solutions for short attention spans:** There are several challenges that we face in our attention span, which has an impact on our day-to-day life; nevertheless, Nano-learning provides methods for reducing short attention spans, these include the following.

**Time-efficient:** The essence of Nano-learning is the ability to absorb information in small bites that are designed to be rapid and easy to digest. This type of learning is ready to be absorbed at any moment. It is possible to start a video that is only one minute long and read a fact about it, even if you only have a minute

with you. Through this method, even the most complicated concepts can be simplified and comprehended even in the most remote locations. **Easy to access.** A variety of mediums, such as videos, podcasts, and interactive modules, can be utilized to provide information on Nano-learning. It is extremely helpful for students who live in rural areas and are frequently on the go to have the ability to conveniently access learning materials from a number of devices and locations.

**Engagement:** Because Nano-learning modules are often brief and engaging, they assist students in maintaining their motivation and maintaining their concentration on the subject matter.

**Motivation: Due** to the fact that it does not demand prolonged periods of attention, Nano learning is a short and controllable process that can assist in the maintenance of motivation and the prevention of burnout.

**Favourable Environment:** It is possible for the environment to play a significant effect in enhancing attention span. When we are in a setting that is cool, clean, and quiet, it is much simpler for us to concentrate our attention.

**Take a short break:** There are methods that can assist you in concentrating, such as the Pomodoro technique, in which you work for a predetermined amount of time and then take a brief rest (Lv & Yin, n.d.).

### Discussion:

All media industries rely heavily on Nano content, which most people now prefer for entertainment, daily needs, information gathering, and learning purposes. Sometimes small learning content is more effective than large learning content. These small pieces take about 2–3 minutes for learners to develop their knowledge, and short reading materials can help them understand the logic of a concept or formula. After COVID-19, a drastic change occurred in our entire educational system. Today, every education sector employs a combination of formal and informal learning strategies, including Nano learning. Several studies have revealed that people are currently using social media applications as educational tools to gain diverse skills and knowledge in their daily lives. The primary purpose of Nano-learning is to accommodate a large amount of helpful information in a short time. Additionally, we can observe that while a person can constantly receive new information without investing much time, its effectiveness is not always consistent. Here, these studies show the positive and negative implications of using media in education. In another study, we saw how Nano learning supports teachers and applies in real classroom environments. The results of this study show that male students are more confident in Nano learning than female students. In this study, we discuss the present status of Nano learning, whether it is sufficient for students, and how it helps learners with short attention spans. These 2- to 3-minute videos are mostly popular among youth, and this type of educational video involves activities to foster learner engagement. This Nano content allows for more engaging material to attract learners of different ages. Also, we observed people focusing on multiple media items, which led to individuals with short attention spans losing interest in broader topics. However, some studies show that Nano learning is very effective for quick understanding, as people can use it anytime and anywhere.

**Conclusion:** In conclusion, Nano learning serves as an innovative and transformative approach in the field of education, providing a wonderful solution to the challenges posed by traditional learning design. In this type of learning, we can break down large and complex concepts into digestible modules, and their flexibility and accessibility help a diverse group of learners learn at their own pace and convenience. Researchers are investigating the impact of Nano learning on various research papers. This has shown promising results for a variety of learning outcomes. Therefore, researchers conclude that Nano-learning can identify specific learning needs and provide timely updates, making it a valuable tool for various types of learning environments. In this modern era, technology continues to advance. Therefore, we must enhance the potential of Nano learning. The integration of Nano learning with artificial intelligence, virtual reality, and augmented reality can create more personalized and innovative learning experiences. Therefore, both Nano learning and traditional learning approaches are essential to meet the diverse needs of learners and enhance their learning outcomes. However, a recent study revealed that Nano learning alone was insufficient for in-depth conceptual understanding. This type of learning could not give deep knowledge to a student.

### Nano learning is Future Learning

Nano-learning is the future of education, and it's straightforward to see why. Its adaptability, customization, and cost-effectiveness make it an attractive choice for students of all ages and backgrounds. Furthermore, nano learning's bite-sized courses and individualized approach help learners remain engaged with the topic and remember what they've learned. As technology advances, so nano-learning is becoming more accessible and valuable. Nano-learning will be an essential part of the educational environment. Nano-learning has one of the significant characteristics: flexibility. Due to the hectic schedules of modern life, it can be difficult to find time to enroll in an entire course. Nano-learning provides an option that allows students to access and consume knowledge at any time and place. Students can more easily adapt the brief content to their hectic

schedules, which makes a student more attentive toward studying. (Dr. Vivekananth.P, 2022) Nano-learning makes more customized content for a student based on their need and experience. Additionally, traditional education can be costly, whereas nano-learning is relatively inexpensive and accessible from any location (Singh, 2023). Nano-learning is a learning approach that focuses on a single topic or skill that breaks into small chunks. This type of instruction provides a high-level, attentive environment and increases student participation. Nano-learning enhances the student's ability to understand, remember, and acquire new topics or skills. Nano-learning increases productivity in cognitive, psychological, and social aspects of the brain of a young scholar.

### Reference:

1. ALI AL-SHEHHI, M. A. M. (2022). The use of Technology in Education: A Study About the Impact of Using Nano-Learning in Teaching English as A Foreign Language in Higher Education Institutions in the United Arab Emirates. may 2022.
2. Bastos, F. (2022, December 2). Mindowl. How to Train Monkey Mind.
3. Dr. Vivekananth.P. (2022). Nanolearning: A New Paradigm Shift in Teaching and Learning. *International Journal of Engineering and Management Research*, 12(1), 112–114. <https://doi.org/10.31033/ijemr.12.1.14>
4. Hadsvik, A. (2023, January 17). prons and cons of Nano learning: How to maximize efficiency and Effectiveness in organizational Training. *Circleimpact.Se*.
5. Katambur, D. (2020, March 10). What are the Micro learning and Nano learning. *Cpmmlab India*. [log.commlabindia.com/elearning-design/microlearning-nanolearning-differences-infographic](http://log.commlabindia.com/elearning-design/microlearning-nanolearning-differences-infographic)
6. Khlaif, Salha, N. Z., Sohei. (2021). Using TikTok in Education: A Form of Micro-learning or Nano-learning? *Interdisciplinary Journal of Virtual Learning in Medical Sciences*, 0(3). <https://doi.org/10.30476/ijvlms.2021.90211.1087>
7. kumar, S. (14 February Kumar). eLearning Industry. *Microlearning And Nanolearning in The Flow of Work: Explore Similarities and Difference*. <https://elearningindustry.com/microlearning-and-nanolearning-in-the-flow-of-work-explore-similarities-and-differences>
8. Kumer, S. (2023). *Microlearning And Nanolearning in The Flow of Work: Explore Similarities and Differences*.
9. Lv, N., & Yin, X. (n.d.). A Study on the Application of Nanolearning in Business English Teaching from the Perspective of Mobile Learning.
10. Madan, D. N. (n.d.). NANO LEARNING - The Futuristic Approach to Education. 8(5).
11. Pappas, C. (2024, May 8). *Microlearning Vs. Nanolearning: The Solutions to Learners' Short Attention Spans*. eLearning Industey. <https://elearningindustry.com/microlearning-vs-nanolearning-the-solutions-to-learners-short-attention-spans>
12. Pritchard, A. (n.d.). *Learning Theories for the Classroom*.
13. Singh, R. (2023, April 14). Why Nano Learning is the Future of Education. *Higher Education*. <https://www.thehighereducationreview.com/universities/news/why-nano-learning-is-the-future-of-education--nid-3958.html>
14. Turner, Z. (2023, June 19). *Nano Learning—The Future of Education*. The Pennsylvania Leadership Charter School. <https://www.palcs.org/nano-learning-the-future-of-education/>
15. Aburizaizah, S. J., & Albaiz, T. A. (n.d.). *Review of the Use and Impact of Nano-Learning in Education*.
16. ALI AL-SHEHHI, M. A. M. (2022). *The use of Technology in Education: A Study About the Impact of Using Nano-Learning in Teaching English as A Foreign Language in Higher Education Institutions in the United Arab Emirates*. may 2022.
17. Bastos, F. (2022, December 2). Mindowl. *How to Train Monkey Mind*.
18. 18Dr. Vivekananth.P. (2022). Nanolearning: A New Paradigm Shift in Teaching and Learning. *International Journal of Engineering and Management Research*, 12(1), 112–114. <https://doi.org/10.31033/ijemr.12.1.14>
19. Hadsvik, A. (2023, January 17). prons and cons of Nano learning: How to maximize efficiency and Effectiveness in organizational Training. *Circleimpact.Se*.
20. Katambur, D. (2020, March 10). What are the Micro learning and Nano learning. *Cpmmlab India*. [log.commlabindia.com/elearning-design/microlearning-nanolearning-differences-infographic](http://log.commlabindia.com/elearning-design/microlearning-nanolearning-differences-infographic)
21. Khlaif, Salha, N. Z., Sohei. (2021). Using TikTok in Education: A Form of Micro-learning or Nano-learning? *Interdisciplinary Journal of Virtual Learning in Medical Sciences*, 0(3). <https://doi.org/10.30476/ijvlms.2021.90211.1087>
22. kumar, S. (14 February Kumar). eLearning Industry. *Microlearning And Nanolearning In The Flow Of Work: Explore Similarities And Difference*. <https://elearningindustry.com/microlearning-and-nanolearning-in-the-flow-of-work-explore-similarities-and-differences>
23. Kumer, S. (2023). *Microlearning And Nanolearning In The Flow Of Work: Explore Similarities And Differences*.
24. Lv, N., & Yin, X. (n.d.). *A Study on the Application of Nanolearning in Business English Teaching from the Perspective of Mobile Learning*.

25. Madan, D. N. (n.d.). *NANO LEARNING - The Futuristic Approach to Education*. 8(5).
26. Pappas, C. (2024, May 8). Microlearning Vs. Nanolearning: The Solutions To Learners' Short Attention Spans. *eLearning Industey*. <https://elearningindustry.com/microlearning-vs-nanolearning-the-solutions-to-learners-short-attention-spans>
27. Pritchard, A. (n.d.). *Learning Theories for the Classroom*.
28. Singh, R. (2023, April 14). Why Nano Learning is the Future of Education. *Higher Education*. <https://www.thehighereducationreview.com/universities/news/why-nano-learning-is-the-future-of-education--nid-3958.html>
29. Turner, Z. (2023, June 19). Nano Learning—The Future of Education. *The Pennsylvania Ledership Charter School*. <https://www.palcs.org/nano-learning-the-future-of-education/>