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NANO-LEARNING: THE PROSPECTIVE OF EDUCATION

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ABSTRACT

From students to professionals, everyone wants knowledge presented in a clearer and exact manner. They prefer innovative learning models over traditional ones in order to up skill themselves and create a more appealing future. Nano-learning meets the needs of this bright and youthful age. By providing learners with brief, precisely targeted informational nuggets with a single goal, nano-learning is self-contained. It can include a wide range of multimedia, which keeps students interested. Because nano-learning is responsive, it may be watched on a variety of devices. Additionally, active participation and information retention are encouraged by nano-learning. Learning content is presented in brief, concentrated bursts to encourage learners to actively engage in the process. This can be responding to inquiries, working through issues, or taking part in interactive exercises that support the course content. By actively participating in the learning process, students are able to retain more material and apply it in practical settings which improve their entire learning experience. Bite-sized, targeted instructional content is introduced by nano-learning, which transforms education for effectiveness and customization. It adapts to the quick pace of today while challenging conventional approaches in the midst of a digital revolution. This article explores fundamental ideas, benefits, and challenges.

Keywords: *Nano Learning, Nano Learning, Prospect of Education, New Method of Teaching*.

Introduction

In order to support learning growth in the twenty-first century, teaching development must identify any gaps that may exist in the current evolution of technology and establish clear organizational procedures. However, there are divergent opinions and a general dearth of research on the use of technology to control classroom development in a highly dynamic setting where the process of learning is constantly and quickly changing. Perspectives about the initial decades of technology integration in education were overwhelmingly positive regarding the field's adoption “One of the most attractive options is that Technology itself will open up more subjects that are roughly along the current curricula trajectories but that are more learnable and provide students and teachers with easier routes to assessing the quality of understanding acquired” (DiSessa 1988).

Technology-assisted instruction is viewed as an expansion of the educational field. Technology utilization has evolved through multiple stages in an effort to improve the caliber of educational outcomes. Early in the 1920s, technical tools were first introduced into education (Cuban 1987). As a result of the decisive feedback, the area of education concentrated on integrating various technological gadgets to support the educational system. The connectivism idea, according to George Siemens, "encourages learners to use technology that leads to decentralization and fragmentation of information in order to form a coherent narrative and connect end point," which forms the basis of this approach. (Pages 49–50, Raymond et al., 1988) To change learning, students must make connections between the curriculum and their real surroundings.

Learning has become a personal attribute. People can learn on their own when there are technologically facilitated educational materials and resources available, as well as when studies

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highlight the role and efficacy of technology in advancing students' learning quickly. The creation of online platforms and apps, which is regarded as a quick learning resource, has confirmed that learners have a positive attitude toward gaining knowledge and experience with real-world scenarios quickly (Basch et al. 2021). The "YouTube generation" is the one that the world is currently dealing with; this generation utilizes websites and social media platforms that offer brief knowledge presentations and function in part as learning resources (Roben, Cole & Armstrong 2013). Students are better able to integrate their subject-matter knowledge with their external intellectual environment and development when technology is used in the classroom.

What Is Nano Learning?

Nano-learning is a highly focused approach to learning that aims to facilitate comprehension of subject matter through brief exposure to smaller inputs. Like "chunking" or "bite-sized learning," it simplifies difficult subjects into manageable pieces. Delivering brief, straightforward ideas in an interesting way is the goal. This has been partially demonstrated to be a successful strategy for social media content consumption in the era of TikTok, SnapChat, and YouTube. People prefer information that is delivered succinctly and rapidly so they can go on to the next. This approach is replicated by nano-learning, which offers modules that, in less than two minutes, teach a single skill within a much bigger topic or theme.

For learners in the twenty-first century who find it difficult to fit lengthy study sessions into their busy schedules, NanoLearning offers a customized approach. It's often referred to as bite-sized learning, since learners acquire knowledge by ingesting brief learning modules or capsules. Programs for nanolearning can be implemented in a variety of ways, including brief online courses that include text, graphics, audio, and video.

Nanolearning modules or capsules are the billionth of the books or hours you must devote to education, training, and other activities. Through the use of electronic media and without interacting with a real-time instructor, the National Association of State Boards of Accountancy (NASBA) has created Nanolearning, tutorial software that allows a participant to learn a specific subject in 10 minutes. It is therefore extremely concentrated with a single learning objective and entertaining bite-sized learning content.

Nanolearning is considered "bite-sized" learning. In contrast to lectures, nanolearning is the delivery of a condensed, "digestible" succession of information in a time frame of less than ten minutes, usually in several digital media. Typically, students engage with content in lectures by listening to the teacher, reading words on a screen, and taking notes; they do not apply critical thinking abilities beyond recognition and recall. While lectures might concentrate on more general ideas and theory, nano learning breaks up the material into manageable chunks that are reinforced by a ton of real-world examples. Students view a brief film explaining the scientific method, for example. Precisely timed pauses occur throughout the film, and students are asked to respond to a question pertaining to every segment.

This integrates the assessment and the lesson into one, however minimally. This lesson's more "digestible," concentrated sections provide students more opportunity to evaluate, understand, and remember the material. The rise in popularity of nanolearning has coincided with a current wave of innovation in educational technologies. The traditional, in-person classroom is no longer the only place where learning occurs in an era where anyone can obtain new information with a short Google search. Students can move at their own speed, get differentiated feedback, and learn using various combinations of tactile, visual, and aural modalities in a classroom of the twenty-first century.

Origin of Nano Learning

Clive Shepherd is a Learning and Development consultant who coined the term “nanolearning”. This phrase was originally used by him in a blog post he wrote in 2005. He used it to characterize learning that entails content delivery in brief, concentrated doses. Even though he is credited with creating the phrase, this approach to dissecting difficult subjects into manageable chunks of knowledge has long been used in the educational field, particularly when studying languages. One excellent illustration of this is the use of flashcards.

According to a study (2017) that was published in the Journal of Applied Psychology, participants in nanolearning interventions were able to retain and apply their knowledge more effectively than those in traditional long-form training, which ultimately resulted in better performance and outcomes. An further study that corroborates this claim was released in the International Journal of Engineering

Education and discovered that nanolearning resources helped engineering students score better on tests. The reason for this, according to the researchers, is that the materials were more concentrated and targeted, which improved pupils' retention of the knowledge.

Nano Learning Vs Micro Learning

Small is powerful. With the use of more efficient methods, such as shorter but more potent communication channels and smaller surgical incisions, innovation has made it possible to achieve beneficial results. The computers now have 10- to 13-inch screens instead of being the size of a room. The winds of change have not spared the field of learning facilitation. In the digital age, training has changed in light of the demanding work schedule.

While the universe of knowledge has grown, there are fewer ways to communicate meaningful ideas. A few things to consider are Twitter, YouTube Shorts, and other apps that condense the best news stories into 60 words. The workplace learning ecology has also changed over time. Learning trends have shifted to include bite-sized courses to support learning in the flow of work (LIFOW) in this fiercely competitive world.

Characteristics of Nano Learning

Characteristics:

- The goal of nano learning is to build up information gradually into little, memorable chunks.
- A single learning objective is the focus of nano learning. However, because of its even shorter run duration, nano learning is more concentrated on a very narrow learning objective.
- In nano learning, the learners are in total control and determine what, when and how much they study.
- The "learn on the go" capability is supported by nano learning.
- Nano learning assists students in receiving prompt feedback and addressing errors immediately, there by bridging the knowledge gap.
- Rich multimedia elements like text, video, photos, artwork, and sound are all included in nano learning.
- A common foundation for Nano learning is the Pareto principle, which states that 20% of an effort yields 80% of the results.
- Because of the versatility, nano learning is appealing to a wide range of learners and participants of all ages.
- Nano learning supports students in finishing the modules quickly, which raises retention rates and improves course completion.

Similarities between Nano Learning and Micro Learning

They are comparable to each other. They are as follows:

- Assist in preparing the teams for the future.
- Allows the learners into LIFOW. (Learning In the Flow Of Work)
- Encourage learning reinforcement.
- Encourage students to learn at their own speed.
- Offer reasonably priced or low cost training options.
- Pay attention to the learning goals.
- Share information when it's needed.
- Let students take charge of their education.
- Lessen the mental strain.
- Adhere to the Pareto principle: 20% work yields 80% effect.
- Making information available as needed.
- Encourage learning reinforcement.
- Provide extensive multimedia content.
- Make content accessible even beyond business hours.

Differences between Nano Learning and Micro-Learning

Although bite-sized learning can take the forms of nano learning and micro learning, there are several key distinctions between the two.

Learning experiences that last five to fifteen minutes or more are sometimes referred to as micro learning experiences. These experiences are usually centered on a particular learning goal and are meant to be completed in one sitting. Micro learning activities include gamified tasks, interactive tests, and brief movies.

Conversely, nano learning encounters are even more condensed, frequently lasting under five minutes. They are made to impart extremely precise knowledge, typically focused on a particular notion or idea. Infographics, brief lectures, and informational bursts are a few instances of nano learning.

The primary factor which is influencing a person's decision is to select one type of bite-sized learning over another is the context and particular learning requirement. For example, nano learning may be more ideal for brief reminders or refreshers on a topic already taught, where as micro learning may be more suited for more complicated topics requiring more in-depth education.

Micro learning and nano learning are becoming more and more common solutions for training and development as a result of the rise of digital learning design. Bite-sized learning opportunities are easier to include into hectic workdays, especially with the growing popularity of remote work and the requirement for flexible training schedules. Furthermore, institutions can customize the learning process to meet the unique requirements of every learner by using digital learning design.

The decision between micro learning and nano learning ultimately comes down to the particular learning environment and requirement. Both can be useful in training and development initiatives if done so correctly. (Gautham AS, 2020).

Uses of Nano Learning

The following points describe the expectations regarding Nano-Learning's survival and rise to prominence as a teaching style among students in the near future:

- **Enhanced engagement and retention:** Nano learning is allowing students to concentrate on a single idea at a time, nano learning can improve retention.
- **Flexibility:** Nano Learning may be accessed by learners with diverse learning styles. It can be provided in a variety of formats, including text, audio and videos.
- **Convenience:** Because Nano Learning can be accessible from anywhere at any time. It is a practical option for learners with hectic schedules.
- **Cost-effective:** Compared to standard educational methods, Nano Learning can be provided at a lesser cost.
- **Gamification:** Games can be incorporated to make it more participatory and interesting.

There are numerous applications for nano learning. Students will be able to grasp cutting-edge sciences like A**dvanced math, Robotics, Game Development and App Development,** and much more with the support of nano learning, which meets the needs and demands of a quickly evolving technological environment.

Why Nano Learning?

- **Standardized Courses**

Utilize the standardized courses just as they are, or let us modify them to meet our unique requirements.

- **Measurable Outcome**

Outcomes are quantifiable, ranging from the percentage of completion to the outcomes of surveys and evaluations, both overall and for each individual.

- **Continuous Learning**

You can learn effectively without taking a lot of time with nano learning. Courses enable to study continuously and quickly throughout the entire year without taking much time.

- **Organizational Effect**

Employee performance will increase as a result of group improvement that can be observed in doing different activities.

- **Usability**

Nano learning makes learning simple, fun and enjoyable for both facilitators and also the end users.

Inferences for Practicing Nano Learning

- **Meets the exact learning needs of the student:** Nano learning is laser-focused on fulfilling the needs of the learner. When learning progression—moving from what to why to how—it is quite helpful. For instance, the modules can concentrate on particular learning progressions in manageable chunks to teach users how to construct apps.
- **Effective Applying the Pareto Principle:** The Pareto principle is effectively applied to learning effectiveness in the nano-learning approach. Even while they are involved in other activities, learners can actively pursue learning with the support of the low effort/high returns models.
- **Promotes reinforcement of learning:** Learning agility is made possible by nano learning. Due to their briefness and speed, they are ideal for repetition to strengthen learning in bursts of time. Nano modules can be arranged in a convenient way to give the student a personalized sticky learning environment.
- **Assists in setting and monitoring:** Because nano learning is centered on specific learning needs, it encourages teachers to establish, monitor, and assess learning goals in conjunction with the deliverance of a learning module. One platform-neutral particular learning objective is to construct a chat component within the app-building course module.
- **Offers delivery in various modes:** According to science, learners prefer four distinct learning styles: visual, kinesthetic, auditory, and reading/writing. Different learning styles are facilitated by nano learning since it is supported by different learning channels. While auditory learners might choose to learn via podcasts, visual learners can opt for video-based delivery methods. It facilitates learning through voice, video, text, and picture.
- **Overcomes learning fatigue:** By lowering learning anxiety and over whelm, a brief, goal-oriented content module creates the opportunity for a more "ready" approach to learning.
- **Encourage affordable learning options:** Because the module is brief and geared toward particular learning objectives, it can also work out to be a fairly affordable learning resource, assisting the student in selecting precisely what they need to fulfill their learning objectives.

Step-by-step guide on implementing Nano Learning

- **Choose Appropriate Courses:** Selecting courses that could profit from nano learning is the first step. Not every subject will work well with this teaching strategy. For example, things that are experiential or practical may call for a more conventional, hands-on approach. The essential knowledge or abilities you want your students to possess at the end of the course should be reflected in the objectives. Every goal can function as the cornerstone of a Nano Learning module.
- **Break Down the Syllabus:** After choosing a course, start creating succinct, stand-alone modules for each one. Make a concise, bite-sized module covering a single idea for every learning aim. Make sure these modules are clear, interesting, and targeted so they fully address the learning aim without overwhelming the student. Every one of these goals might serve as the foundation for a Nano Learning program.
- **Make Use of Technology:** The Nano Learning modules are delivered through the use of digital learning platforms. Incorporate a variety of multimedia components within the sessions to keep the students interested. Interactive tests, infographics, audio files, and videos can all enhance learning and accommodate various learning preferences. For instance, an interactive quiz may assess understanding and reinforce lessons learned, or an animated video could clarify a difficult subject.
- **Design an Intuitive User Interface:** An intuitive digital interface should make it simple to access the Nano Learning courses. Clear and simple design will motivate students to engage with the material. Recall that the learning process can be greatly impacted by how simple it is to navigate.
- **Ensure Flexibility:** One of Nano Learning's major benefits is its adaptability. Give your students access to the modules whenever it's convenient for them, and let them retake any sections they need to better grasp. This flexibility honors the unique schedules and learning preferences of varied learners while meeting their needs.

- **Assess Progress:** After every module, provide tests and quizzes to see how well the pupils understood the material. These evaluations could be in the form of examinations, activities, or quizzes. This will assist students in consolidating their knowledge while also providing educators with an understanding of the efficacy of each module.
- **Collect Feedback:** Invite students to share their opinions on their educational experience. To make the Nano Learning modules better and more suited to the requirements and preferences of the learners, regular input is essential. To find out what learners enjoy, what they find difficult, and how they feel the learning process could be improved, use surveys or casual conversations.
- **Iterate and Improve:** Be ready to make changes and enhancements to the Nano Learning modules in light of the feedback you get. The creation of an effective, interesting, and student-centered learning environment is the ultimate goal. High levels of interest and successful learning will be maintained by ongoing improvement of the Nano Learning courses based on input from the actual world.
- **Promote Faculty Training:** Educate faculty members about nano learning through training and resources. Give them the abilities and know-how to create and present successful Nano Learning programs.
- **Encourage Multidisciplinary Learning:** Another way that Nano Learning may support interdisciplinary learning is through its modular design. The ability for students to select modules from many subject areas promotes a comprehensive, well-rounded education.

Conclusion

In summary, the idea of nano-learning is to absorb knowledge in little chunks. Professional talents can be acquired through this method. Systems for assessing nano-training outcomes consider a wide range of variables and can be modified to meet the requirements of a particular training session. Each micro-course focuses on developing a single ability, with brief explanations given. Nano-courses are a practical training model that adapts to contemporary needs. The instructional objectives should be the primary focus of nano-training, rather than its time. It is intended to completely meet the educational aims and objectives rather than cut down on the amount of time spent studying any one subject.

Breaks, topical diversions, and superfluous material are not necessary during nano-training. Repetition at predetermined intervals fixes the material. Nano-learning is a mode of delivering instructional materials, not the materials themselves. Depending on the specified learning objectives, any content—including texts, videos, pictures, tests, games, and much more—may be included. Any level of material complexity can be handled with nano-learning. What educational objectives are achieved with the aid of micro training is more crucial. Assume that one accurately determines the needs of the students, establishes a target and employs the appropriate tactic. No matter how complex the material is, nano learning can be a real friend. Nano-training is tailored and flexible. It is appropriate for all students since it caters to their individual needs and changes accordingly.

Nano Learning appears as a ray of hope in a time of information overload and constant time constraints. By utilizing the power of bite-sized learning, it transforms the conventional paradigm of education and makes it more effective, efficient, and inclusive. As India continues its relentless quest of academic greatness, Nano Learning may help lead the nation to a day when education is a right and not simply a privilege for all.

References

1. Bertaux, D., & Thompson, P. (Eds.). (2020). Between generations: Family models, myths & memories (1st Ed.). Routledge. https://doi.org/10.4324/9781351314084
2. Bloor, C. (2017). The Process of Learning: Some Psychological Aspects of Learning and Discipline in School (1st Ed.). Routledge. https://doi.org/10.4324/9781315270159
3. Cope, B., & Kalantzis, M. (Eds.). (2017). e-Learning ecologies: Principles for new learning and assessment (1st Ed.). Routledge. https://doi.org/10.4324/9781315639215
4. Corbeil, J. R., Khan, B. H., & Corbeil, M. E. (2021). Microlearning in the digital age: The design and delivery of learning in snippets (1st Ed.). Routledge. https://doi.org/10.4324/9780367821623
5. Crompton, H., & Traxler, J. (Eds.). (2017). Mobile learning and higher education: Challenges in context (1st Ed.). Routledge. https://doi.org/10.4324/9781315296739

6. Dingler, T., Weber, D., Pielot, M., Cooper, J., Chang, C., & Henze, N. (2017). Language learning on-the-go: Opportune moments and design of mobile microlearning sessions. Proceedings of the 19th International Conference on Human-Computer Interaction with Mobile Devices and Services, 28(1), 1–12. https://doi.org/10.1145/3098279.3098565

7. Dolasinski, M. J., & Reynolds, J. (2020). Microlearning: A new learning model. Journal of Hospitality & Tourism Research, 44(3), 1-13. https://doi.org/10.1177/1096348020901579

8. Drakidou, C. (2018). Micro-learning as an alternative in lifelong eLearning. ResearchGate.https://www.researchgate.net/publication/335834850_Microlearning_as_an_Alternative_in_Lifelong_eLearning_httpikeelibauthgrrecord298133lnen

9. Gramming, A., Ejemyr, E., & Thunell, E. (2019). Implementing nano-learning in the law firm. Legal Information management, 19(4), 241-246. 10.1017/S1472669619000562

10. Hamilton, J., Hall, D., & Hamilton, T. (2021). Micro learning in the workplace of the future (1st Ed.). Routledge.

11. Khaif, Z. N., & Salha, S. (2021). Using TikTok in education: A form of micro-learning or nano-learning? An Najah National University Press. 0.30476/IJVLMS.2021.90211.1087

12. Kapp, K. M., & Defelice, R. A. (2019). Microlearning: Short and sweet. American Society for Training and Development.

13. Kirschner, P.A., De Bruyckere, P., & Hulshof, C. (2018). More urban myths about learning and education: Challenging eduquacks, extraordinary claims, and alternative facts (1st Ed.). Routledge. https://doi.org/10.4324/9781351132435

14. Lee, Y. M., Jahnke, I., & Austin, L. (2020). Mobile microlearning design and effects on learning efficacy and learner experience. Education Tech Research Development, 69(1), 885–915. https://doi.org/10.1007/s11423-020-09931

15. Marks, J. (2021). Shaping Reasonable Students. In Let's Be Reasonable: A Conservative Case for Liberal Education (pp. 113-140). Princeton University Press. 10.2307/j.ctv15r58qj.8

16. Pritchard, A. (2017). Ways of learning: Learning theories for the classroom (4th Ed.). Routledge. https://doi.org/10.4324/9781315460611

17. Railean, E. (2019). Meta systems Learning Design of Open Textbooks: Emerging Research and Opportunities. IGI Global. 10.4018/978-1-5225-5305

18. Redondo, R. P., Ktena, A., Kunicina, N., Zabasta, A., Patlins A., & Mele, D. E. (2020). Advanced practices: micro learning, practice oriented teaching and gamified learning. 61th International Scientific Conference on Power and Electrical Engineering of Riga Technical University, 1-7. 10.1109/RTUCON51174.2020.9316555.

19. Serret, N., &Gripton, C. (Eds.). (2020). Purposeful Planning for Learning: Shaping Learning and Teaching in the Primary School (1st Ed.). Routledge. https://doi.org/10.4324/9780429489266

20. Simons, M., & Smits, T. (Eds.). (2020). Language education and emotions: Research into emotions and language learners, language teachers and educational processes (1st Ed.). Routledge. https://doi.org/10.4324/9781003019497

21. Wright, J. (2018). Learning to learn in higher education (1st Ed.). Routledge. https://doi.org/10.4324/9780429442551.