

TEACHER SUPPORT DURING NANO LEARNING FASCINATE THE LEARNING EXPERIENCES OF UNDERGRADUATE STUDENTS: A COMPARATIVE ANALYSIS

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ABSTRACT

The comparative analyses focused on teacher support during nano learning fascinate the learning experiences of under graduate students. The research objectives were; to investigate teacher support during nano learning fascinates undergraduate students learning experiences and to associate the male and female undergraduate students learning experience during nano learning. For this purpose all BS students of Social Sciences Departments of Abdul Wali Khan University Mardan were selected as the population of the study. Number of one hundred and fifty three undergraduate students was selected as random sample technique through online sample calculator. A questionnaire was developed by the researcher with propoer guidelines of the supervisor, and after a thorough review of related literature and validated to collect data from the respondents. The ethical consideration for the process of validity and reliability were followed and the Cronbach's Alpha reliability of the tool were found to be .85. The data was collected and analysed by using SPSS 27 and the mean, standard deviation and t-test for the comparison of male and female undergraduate univeristy students were applied. findings of the research study were illustrated that the suport of teachers during nano learning were highly facinate the learning experiences of undergraduate students. Furthermore, the results illustrated that the support of teachers were equally facinate the male and female undergradute students and the null hypothesis was accepted. The conclusion of the study were elucidated that nano learning provide equal oppurtunities to support the students by teachers and have positive impact on students learning experiences. It was recommended that frequently workshops and siminars should arrange for the students and teachers to promote the modern teaching methodoologies and to meet the international standard of education systm.

Keywords: Teacher Support, Facinate, Nano Learning, Learning Experiences,

INTRODUCTION

Teachers are debatably the most significant members of our society. They give children purpose, set them up for success as citizens of our world, and inspire in them a drive to do well and succeed in life (Skilbeck & Connell, 2004). Nano-learning is a highly targeted learning method designed to help people understand subject topics through smaller inputs in short time frames. Similar to the concept of „bite-size“ learning or „chunking“, it breaks down complex topics into digestible chunks (Khlaif & Soheil, 2021). According to (Gramming et al., 2019) Nano learning describes a method of distributing educational content in the form of tiny, bite-sized pieces. These bite-sized pieces are meant to be consumed in a matter of minutes or seconds, and are frequently offered in the form of quick films or other multimedia. Without devoting an excessive amount of time or attention to a single subject, the goal of Nano learning is to simplify the process of learning new things for people in a quick and effective manner. Khlaif, & Salha, (2021). By giving students concise, laser-focused informational bits with a singular goal, Nano learning is self-contained. It can include many different types of multimedia, including text, sound, video, and graphics, all of which keep students interested. Because Nano learning is responsive, it may be seen on a variety of devices (Vivekananth, 2022; Pritchard, 2017). Digitally transmitted, usually lasting two to ten minutes, and created with certain learning objectives in mind. The goal is to simplify difficult subjects so that young minds may learn them more effectively and with less overwhelm by breaking them down into smaller, more manageable pieces Lundin (Palmerius, Host, & Schonborn, 2012).

Constructivist View on Nano Learning

As discussed by Tarnopolsky, (2012) constructivism holds that students create knowledge rather than merely absorbing it. People create their own representations and assimilate new information into their prior knowledge when they see the world and think back on previous experiences Vygotsky, & Cole, (2018).

According to Minaz, Tabassum, & Idris (2017) Constructivists hold that pupils create new knowledge on their own and use it to expand on what they already know and have experienced. The focus is always on the student, and instructors act as mentors or facilitators by offering pertinent and stimulating resources. This concept provides substantial support for the adult learning style. Constructivist in philosophy, the online instructor acts as a tutor, giving each student the relevant information and skills, and a facilitator, keeping an eye on establishing a secure, productive, and encouraging online learning environment.

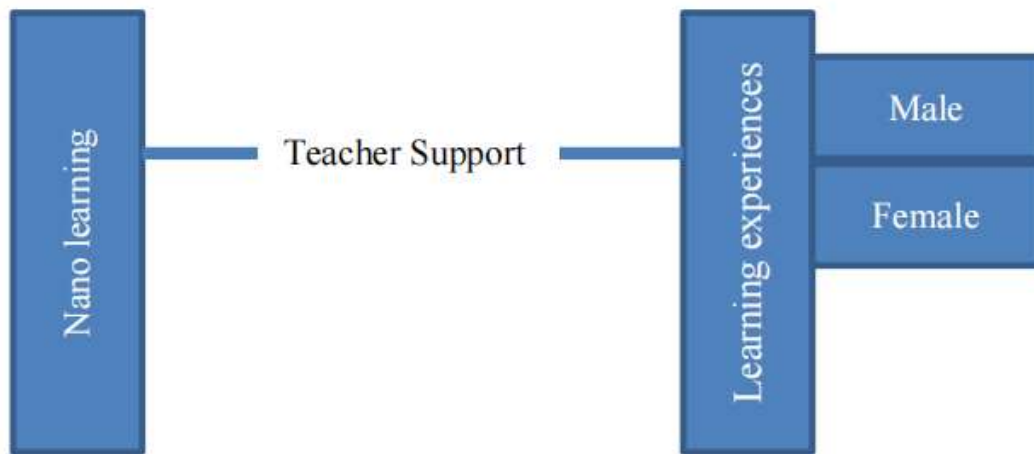
According to (Tarnopolsky, 2012; Pillay, & James, 2014; Ahmad et al., 2021; Villatte, 2022) Blended learning environment as a constructivist approach uses technology to support and enhance traditional in-person instruction while allowing students to access both online and offline materials. It makes use of a wide range of technology, and each school or institution has a very different level of adoption. As a result, this strategy is a descriptor rather than a strict pedagogy or learning paradigm.

According to Vivekananth, (2022); Villatte, (2022) the blended learning is not intended to use technology to take the position of teachers. Rather, educators utilize technology to enhance their instruction and better attend to each student's unique needs. It puts the student at the center of the learning process and opens up a whole new range of flexible and accessible possibilities Al-Huneidi, & Schreurs (2013).

Conceptual Framework of the Study

Figure 1

Conceptual Framework



The above diagram illustrates the constructivist Tarnopolsky (2012) conceptual framework of the research study which shows that during nano learning the teacher provide support to male and female undergraduate Student"s in the result the provision of the teacher support Fascinate the Learning Experiences.

Research Objectives

To investigate Teacher Support during Nano Learning Fascinate undergraduate Students Learning Experiences.

To compare the support of male and female teachers about the Nano learning experience of undergraduate students.

PROBLEM STATEMENT

Students around the world are learning through websites and specific platforms i.e. through online learning. Countries tended to modify their educational systems to a blended learning approach (Hoic-Bozic, Mornar, & Boticki, 2008). Where students are proficient in online learning and can interact with the educational system via a screen. The development of 21st century skills in education and especially the use of new abilities during teaching and learning experiences of the students were emphasized by the national professional standards of teachers in Pakistan. Therefore, the current comparative study was focus on teacher support during nano learning fascinate the learning experiences of under graduate students.

Significance of the Study

The present study is significant for students that they will get benefit from the current research study and implements it in the learning it is significant for teachers and course instructors to identify different levels of Nano learning and apply it in the real classroom environment. Furthermore the study is significant for curriculum development to inculcate Nano leaning experiences in the existing curriculum. Moreover the study is significant with great extent for policy makers to include the Nano learning experiences and related material in the upcoming educational policies.

LITERATURE REVIEW

Teachers may grow disinterested in what is presented as professional training if the curriculum is "one-size-fits- all," addresses some but not all of the specific requirements they see in the classroom take too long to "get to the point," and does not incorporate currently used technology. Short, narrowly focused, and extremely precise learning modules that can be finished in one to five minutes are known as Nano learning, a subset of micro learning (Khlaif, & Salha, 2021; Vivekananth, 2022). Just-in-time, bite-sized learning opportunities that are simple to incorporate into a teacher's hectic schedule are the aim of Nano learning. Nano learning can be a highly effective way to deliver and support teacher professional development because it provides quick, targeted and easily accessible learning opportunities that can be integrated into a teacher"s busy schedule. When teachers feel that their time is valued, then the willingness to participate in this timely, comprehensive and customized learning session is increased Chen, Liu, Yueh, & Sheen, (2010).

According to Schonborn, Host, & Palmerius, (2016) Nano learning is a kind of education that provides brief, targeted, and bite-sized information. This method of instructional design helps learners quickly pick up new information or abilities, making it ideal for people who learn best in short bursts. It's critical for instructional designers to provide a variety of learning opportunities in order to satisfy the needs of a diverse student body. For this reason, adding Nano learning to our arsenal for instructional design is a terrific idea. It can be used in conjunction with micro learning, which concentrates on even more concise material, in addition to enhancing more extensive learning modules. It's crucial to keep in mind, though, that Nano learning is supposed to supplement bigger learning modules, not to replace them. It can be an excellent tool for reinforcing knowledge and maintaining student engagement, but it cannot be used in its whole as a curriculum because it lacks the depth and breadth of knowledge that a comprehensive curriculum would Walker (nd).

When dealing with a generation raised on the availability of electronic devices that provide easy access to needed information via approved search engines or websites, this research presents a mechanism for using an electronic curriculum instead of paper at a time Minaz, Tabassum, & Ahmad (2018). New learning methods and learning experiences such as online learning, blended learning, and distance learning are being addressed. The COVID-19 pandemic has forced educators to emphasize e-books and online platforms more in order to foster self-learning in a clear, concise, and

direct digital environment (Joshbersin, 2018).

Given its remote format, progressive nature, and ease of use, Nano-learning is a big trend in education Walker (nd). Distance learning took over as the main educational approach in 2020 when people were forced to remove themselves from society in order to prevent contracting COVID-19 Bower, & Hardy (2004). Since Nano-learning uses an internet medium, it has also become much more divisive. Furthermore, a lot of people throughout the quarantine desired to grow as individuals and learn about new topics. Through brief courses, Nano-learning allows them to experiment with new subjects and gauge their aptitude for learning them. This element has contributed to the public's increased interest in Nano-education. Furthermore, this style provides enough time to dedicate to completely distinct subjects, such as a lesson. According to Joshbersin, (2018) the learning process may be streamlined and structured to make it simple for everyone to deal with even big volumes of data, thanks to analytics and special algorithms. A significant benefit during a pandemic is the ability to personalize learning with the use of Nano-learning Walker (nd).

There are opinions that the learning management system (LMS) has grown antiquated and is more of a platform for record keeping than for learning, and that many LMS deployments have been constructed with a top-down rather than a community-based style of learning. According to (Chamorro-Premuzic, & Bersin 2018; Bower, & Hardy, 2004; Dabbagh, 2004) most people believe that the most likely future paradigm to provide flexibility for institutions is a network of optimized and connected learning systems. Therefore, it appears likely that the LMS as a discrete system will diffuse toward a more linked model of technologies encompassing both new and old technologies.

Research Hypothesis

There is no significant teacher support during Nano Learning Fascinate under Graduate Students Learning Experiences.

There is no significance of difference of the support of male and female teachers about the Nano learning experience of undergraduate students.

METHODOLOGY

The study was quantitative in nature. According to (Creswell, 2014) the quantitative research is the process of collecting and analyzing numerical data. It can be used to find patterns and averages, make predictions, test causal relationships, and generalize results to wider populations. Quantitative research is the opposite of qualitative research, which involves collecting and analyzing non-numerical data (e.g., text, video, or audio).

Procedure of the Study

For this purpose all BS students of Social Sciences Departments of Abdul Wali Khan University Mardan were selected as the population of the study. Number of one hundred and fifty three undergraduate students was selected as random sample technique through online sample calculator. A questionnaire was developed by the researcher with proper guidelines of the supervisor, and after a thorough review of

related literature and validated to collect data from the respondents. The ethical consideration for the process of validity and reliability were followed and the Cronbach's Alpha reliability of the tool was found to be the questionnaire were circulated among one hundred and seventy five undergraduate male and female university students. Nevertheless after the collection of the tool the total number of one hundred and fifty three was returned the questionnaire. The collected data from the university students previously experienced nano learning was and analysed by using SPSS 27 and the mean, standard deviation and t-test for the comparison of male and female undergraduate university students were applied accordingly. The analysed that a further tabulated and interpreted accordingly. Furthermore for making the analysis more demonstrative the graphical representations were also prepared through SPSS 27.

Data Analysis

Table 1

Teacher Support (Female)

Teacher Support as learning Experience of Nano Learning	Gender	N	Mean	Std.
Male and female student are encouraged to participate in Nano learning.	Female		1.92	.823
I feel that male students are more confident in Nano learning than female students		153	2.02	1.067
Female students have also equal opportunities and resources to access in Nano learning.			1.79	.824
Nano learning resources are tailored to the specific needs and learning style of male and female students.			1.82	.831

The above table that the teacher support female university students Nano learning at university level is high mean and standard deviation. The statement related to the feel that male students are more confident in Nano learning than female students showing high mean (M=2.02, SD=1.067). The student Male and female student is encouraged to participate in Nano learning shows (M=1.92, SD=.823), statement related to Nano learning resources are tailored to the specific needs and learning style of male and female students shows (M=1.82, SD=.831).furthermore the statement Female students have also equal opportunities and resources to access in Nano learning shows (M=1.79, SD=.824). All of the above statement results showed that the university female students were equally teacher support about Nano learning, the following table represents the above data results. According to the categorization of mean all of the above statements showed very high mean score which means that the teacher supports of Nano learning at university level is high.

Teacher Support during Nano Learning Fascinate the Learning Experiences of Undergraduate Students:
A Comparative Analysis

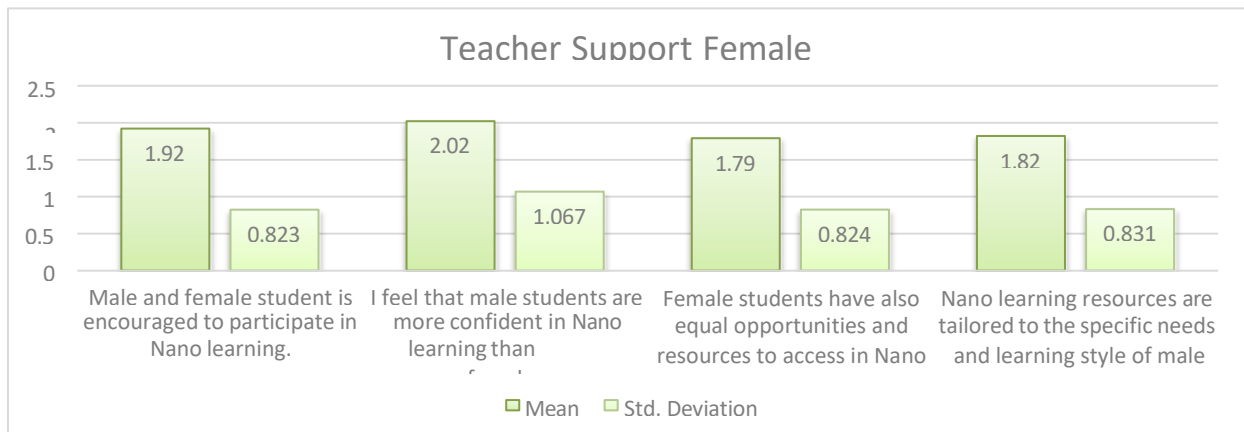


Table 2
Teacher Support (Male)

Teacher Support during learning Experience of Nano Learning	Gender	N	Mean	Std.
Male and female student is encouraged to participate in Nano learning.	Male		1.98	.970
I feel that male students are more confident in Nano learning than female students		153	1.97	.963
Female students have also equal opportunities and resources to access in Nano learning.			1.86	.932
Nano learning resources are tailored to the specific needs and learning style of male and female students.			1.88	.934

The above table that the teacher support male university students Nano learning at university level is high mean and standard deviation. the statement related to the male and female student is encouraged to participate in Nano learning showing high mean (M=1.98, SD=.970). The statement I feel that male students are more confident in Nano learning than female students shows (M=1.97, SD=.963), statement related to Nano learning resources are tailored to the specific needs and learning style of male and female students shows (M=1.88, SD.932). Furthermore statement female students have also equal opportunities and resources to access in Nano learning shows (M=1.86, SD=.932). All of the above statement results showed that the university male students were equally teacher support about Nano learning. The following table represents the above data results. According to the categorization of mean all of the above statements showed high mean score which means that the teacher supports of Nano learning at university level is high.

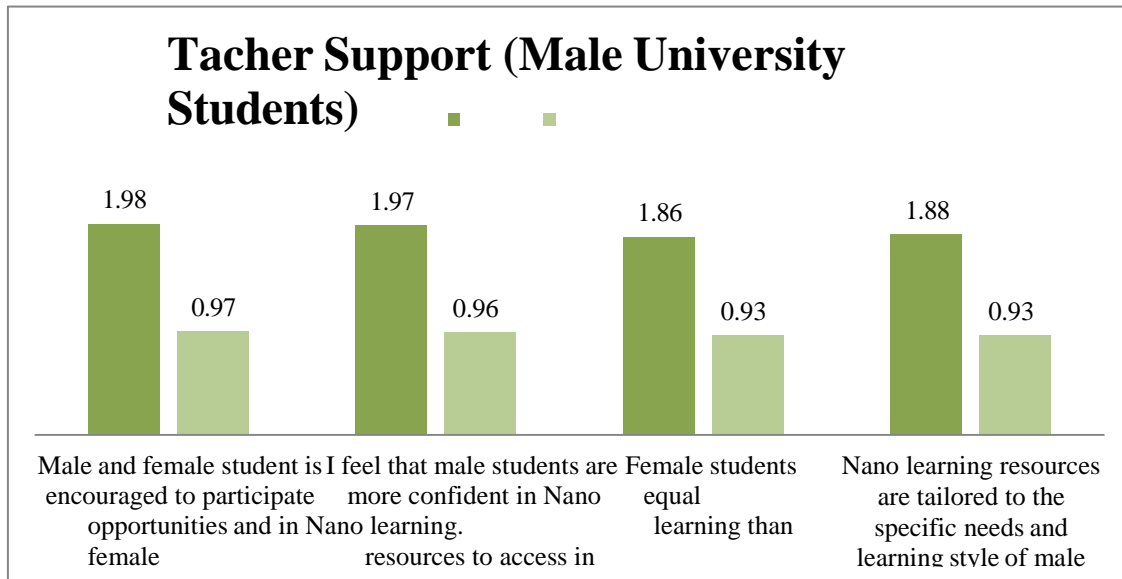


Table 3
Descriptive Statistics

Descriptive statistics		t-test for equality of mean					
Teacher Support during nano learning experiences	Gender n	Mean	Std.	df	t-test	sig	Cohen's d
	Female	7.55	2.27	304	.534	.60	2.246945
	Male	7.69	2.23				

Significant at 0.05 t-table value 1.645

Independent sample test was applied to know the difference in the mean of experiences score of male and female of BS 6th semester students. The value of Levine"s test of equality showed that variance assumption was equal. Female students (M=7.55, SD= 2.27) respectively indicate that the experiences of female are more than male (M=7.69, SD=2.23). It showed a very little significant difference between mean achievement score of male and female t-test results .534 which was less than the t-table value 1.645. Therefore null hypothesis "there is no significance difference of the support of male and female teachers during the Nano learning experience of undergraduate students" was accepted. The effect size also supports the results.

Findings

The finding indicate that female respondents are acquainted with the Male and female student was encouraged to participate in Nano learning which mean 1.92 and standard deviation .823, this confirms the presence positive learning at university level. The result of the data was showed mean 2.02 and standard deviation 1.067.which was indicate I feel that male students are more confident in Nano learning than female students. The result of the study revealed that as the respondent regarding the female students have also equal opportunities and resources to access in Nano learning which was mean 1.79 and standard deviation 0.824.which was affirms the positive Nano

learning at university level. The result of the revealed shows that confirm the statement as the respondent regarding the Nano learning resources are tailored to the specific needs and learning style of male and female students which mean 1.82 and standard deviation is 0.831. The finding indicate that male respondents are acquainted with the Male and female student is encouraged to participate in Nano learning which mean 1.98 and standard deviation 0.970, this confirms the presence positive learning at university level. The analysis shows that confirm the statement as the respondent regarding the I feel that male students are more confident in Nano learning than female students shows mean 1.97 and standard deviation .963. which was affirm the positive on Nano learning activities at university level. The result of the study revealed that as the respondent regarding the female students have also equal opportunities and resources to access in Nano learning which was mean 1.86 and standard deviation 0.932. which was affirms the positive Nano learning at university level. The analysis revealed that respondent's confirmation regarding Nano learning resources aware tailored to the specific needs and learning style of male and female students which was mean 1.88 and standard deviation 0.934. Results illustrated a very little significant difference between mean achievement score of male and female t-test results .534 which was less than the t-table value 1.645. Therefore null hypothesis "there is no significance difference of the support of male and female teachers during the Nano learning experience of undergraduate students" was accepted. The effect size also supports the results.

CONCLUSION

It was concluded on the basis of the above findings that the perception of female student is high positive response regarding the statement of "teacher support as learning experiences of Nano learning" It was concluded the perception of male student is high positive response regarding the statement of "teacher support as learning experiences of Nano learning (Vivekananth, 2022). Furthermore, it was used to support instructions, as an instructional delivery method, as part of the curriculum, and as a tool to improve the learning process as a whole. Education has changed from being passive and reactive to becoming participatory and combative as a result of technology. Both in academic and corporate environments, education are crucial. In the former, workers are assisted in doing tasks in a different way than they previously did through education or training. In the latter case, the goal of education is to pique pupils' curiosity. In any scenario, technology utilization can improve conceptual understanding and retention in students.

RECOMMENDATIONS

It is recommended that nano learning as an emerging trend of education should implement at elementary level for the betterment of future of educational system of Pakistan. Furthermore continuous professional development courses should be prescribed on priority bases to apply the nano learning technology in the real classroom situations. It was recommended that frequently workshops and seminars should arrange for the students and teachers to promote the modern teaching methodologies and to meet the international standard of education system.

REFERENCES

- Ahmad, W., Minaz, M., Habib, M., Shah., Baig, N. G., Rashid, A. (2021). An analysis of the effectiveness of blended learning on pedagogical skills of elementary school Teachers of Khyber Pakhtunkhwa. *Multicultural Education*. 7(11). 549. <https://doi.org/10.5281/zenodo.5760040>
- Al-Huneidi, A., & Schreurs, J. (2013). Constructivism based blended learning in higher education. In *Information Systems, E-learning, and Knowledge Management Research: 4th World Summit on the Knowledge Society, WSKS 2011, Mykonos, Greece, September 21-23, 2011. Revised Selected Papers 4* (pp. 581-591). Springer Berlin Heidelberg.
- Bower, B. L., & Hardy, K. P. (2004). From correspondence to cyberspace: Changes and challenges in distance education. In B.L. Bower & K.P. Hardy (Eds.) *from distance education to e-learning: lessons along the way* (p. 5-12). San Francisco: Jossey-Bass.
- Chamorro-Premuzic, T., & Bersin, J. (2018). 4 Ways to create a learning culture on your team. *Harvard Business Review*.
- Chen, T. L., Liu, Y. L., Yueh, H. P., & Sheen, H. J. (2010). Identifying the threshold concept of learning nano- science and nano-technology in material engineering by curriculum map. *International Journal of Technology and Engineering Education*, 7(3), 25-32.
- Creswell, J. W. (2014). *A concise introduction to mixed methods research*. SAGE publications.
- Dabbagh, N. (2004). Distance learning: Emerging pedagogical issues and learning designs. *The Quarterly Review of Distance Education*, 5(1), 37-49.
- Gramming, A., Ejemyr, E., & Thunell, E. (2019). Implementing nano-learning in the law firm. *Legal Information management*, 19(4), 241-246. [10.1017/S1472669619000562](https://doi.org/10.1017/S1472669619000562).
- Hoic-Bozic, N., Mornar, V., & Boticki, I. (2008). A blended learning approach to course design and implementation. *IEEE transactions on education*, 52(1), 19-30.
- Joshbersin, (2018). A new paradigm for corporate training: learning in the flow of work. JOSH BERSIN. <https://joshbersin.com/2018/06/a-new-paradigm-for-corporate-training-learning-in-the-flow-of-work/>
- Khlaif, Z. N., & Salha, S. (2021). Using TikTok in education: a form of micro-learning or nano- learning?. *Interdisciplinary Journal of Virtual Learning in Medical Sciences*, 12(3), 213-218.
- Kruger, P. (2015). Corporate goodness and shareholder wealth. *Journal of Financial Economics*, 115(2), 304–329. <https://doi.org/10.1016/j.jfineco.2014.09.008>
- Lab, R. I., & Lab, R. I. (2023, June 16). Exploring Nano learning, its implications and implementation in education Ryan International School.
- Lundin Palmerius, K., Höst, G., & Schönborn, K. (2012). An interactive and multi-sensory learning environment for nano education. In *Haptic and Audio Interaction Design: 7th International Conference, HAID 2012, Lund, Sweden, August 23-24,*

2012. Proceedings 7 (pp. 81-90). Springer Berlin Heidelberg.
- Minaz, M., Tabassum, R., & Ahmad, A. (2018). Gender Wise Comparison of Flipped Classroom Strategy on the Performance of Prospective Teachers. *Advances in Social Sciences Research Journal*, 5(3) 578-588.
- Minaz, M., Tabassum, R., & Idris, M. (2017) An Experimental Study of the Performance of Prospective Teachers of Flipped Classroom and Non-Flipped Classroom. *Pakistan Journal of Education*. Volume 34, Issue No 2, 2017, retrieved <https://www.prdb.pk/article/an-experimental-study-of-the-performance-of-prospective-teac-9943>.
- Pardo, A., & Kloos, C. D. (2011). Stepping out of the box. *Learning Management System*. <https://doi.org/10.1145/2090116.2090142>
- Pillay, S., & James, R. (2014). The pains and gains of blended learning—social constructivist perspectives. *Education+ Training*, 56(4), 254-270.
- Pritchard, A. (2017). *Ways of learning: Learning theories for the classroom* (4th Ed.). Routledge. <https://doi.org/10.4324/9781315460611>
- Simonson, M. (n.d.-b). *Flora of Middle-earth* (2017) by Walter S. Judd and Graham A. Judd. ValpoScholar. <https://scholar.valpo.edu/journaloftolkienresearch/vol4/iss2/9/>
- Schonborn, K. J., Höst, G. E., & Palmerius, K. E. L. (2016). Nano education with interactive visualization. *Nano Today*, 11(5), 543-546.
- Skilbeck, M., & Connell, H. (2004). *Teachers for the Future: The Changing Nature of Society and Related Issues for the Teaching Workforce*. Ministerial Council on Education, Employment, Training and Youth Affairs (NJ1).
- Tarnopolsky, O. (2012). Constructivist blended learning approach: to teaching English for specific purposes.
- Walter de Gruyter. Villatte, J. (2022). What is Blended Learning? View Sonic Library. View Sonic Library. <https://www.viewsonic.com/library/education/what-is-blended-learning-definition/>
- Vivekananth, P. (2022). Nanolearning: A new paradigm shift in teaching and learning. *International Journal Of Engineering And Management Research*, 12(1), 112-114.
- Vygotsky, L., & Cole, M. (2018). Lev Vygotsky: Learning and social constructivism. *Learning theories for early years practice*, 66, 58.
- Walker, K. (n.d.). *Teacher Professional Development: The Benefits of Nano Learning*. <https://blog.mimio.com/teacher-professional-development-the-benefits-of-nano-learning>.