**A COMPARATIVE STUDY OF**

**21ST CENTURY SKILLS OF PROSPECTIVE TEACHERS**

**ABSTRACT**

Indian Education Commission has well narrated it that ‘Destiny of India is now being shaped in her classrooms’ thus teachers are considered as nation builders**.**They can positively influence society by motivating students to pursue their dreams and promoting peace and harmony. Teachers are the backbone of a society. In this context, Prof. Humayun Kabir rightly said “Without good teachers even the best system is bound to fail. With good teachers even the defects of a system can be largely overcome”. It can be stated that the competence of teachers has a major influence on the quality of education. Therefore, it is important to prepare quality teachers fully equipped with skills who can meet the challenges of the 21st Century. The present study included 21st Century skills which comprise life skills, learning skills, and literacy skills. The researcher used purposive sampling techniques to collect data on 100 prospective teachers from two B.Ed. colleges in the East Singbhum district of Jharkhand. The study aimed to compare the 21st Century Skills of prospective teachers about their gender and subject of study. For data analysis, the investigator has used t-test. The study’s conclusions showed that prospective teachers’ 21st Century Skills mean scores did not significantly differ with reference to their gender and subject of study.

**Keywords:** 21st Century skills, Life Skills, Learning Skills, Literacy Skills, Prospective Teachers

**INTRODUCTION**

21st-century education is experiencing a revolutionary transition in the areas of science, technology, globalization, industrialization, privatization and urbanization. Today’s youth faces challenges of fierce competition, unemployment, and lack of job security. To meet those challenges our youngsters should learn the skills to successfully navigate the problems in both their personal and professional lives. Education is the basic need of today's children in India. The younger generation wants all educational institutions to offer skill-based education and job placement. Youth from rural environments typically need better communication abilities. This is also one of the main issues since it stands in the way of obtaining employment and advancement (Aijaz, 2022). There is no doubt that traditional education was beneficial and motivating. But in recent decades both time and environment have altered and progress has stepped in. Children are meant to be prepared for unforeseen obstacles through the development of skills. The COVID-19 pandemic has recently presented hurdles for man to deal with its effects. It appears that in these circumstances, a distinct skill set is required to assist man in overcoming life's challenges, resulting in his overall advancement. These abilities are referred to as transversal competencies/learning skills/21st-century skills. ‘The Glossary of Education’ defines 21st Century Skills as, “The 21st Century skills refers to a broad set of knowledge, skills, work habits, character traits that are believed—educators, social reformers, college professors, employers, and others—to be critically important to success in today’s world”. There are three main components of 21st-century skills namely Life Skills. Learning Skills, Literacy Skills.

**Figure 1: Components of 21st-century skills**

**FLIPS**:

* **F**lexibility & Adaptability is the skill of a person to adapt to changing circumstances. If a person knows how to adapt, when to adapt, how to respond to a particular situation then it will be quite beneficial for the long –term success in his career.
* **L**eadership & Responsibility refers to being capable of manage a team effectively when faced with obstacles and to guide a group of people.
* **I**nitiative & Self-direction skills refer to the ability to operate ethically on self-motivation and taking the initiative. This is regarded as one of the most difficult skills to acquire and use.
* **P**roductivity, can be understood as the fulfillment of any task within a given time period. In other words, productivity is to get more done in less time.
* **S**ocial and Cross-cultural skills are necessary for effective communication and teamwork in a variety of social and cultural contexts. In a world that has become a global village, this skill is crucial for the ongoing success of any professional.

**4Cs:**

* **C**ritical Thinking is the capacity to analyze facts. In any classroom, this skill develops problem-solving interest among students, which ultimately leads to discoveries.
* **C**reativity and Innovation skills relate to fresh perspectives or methods of operation. Thinking creatively demands one to develop thinking out of the box.
* **C**ollaboration is a skill to collaborate with others in an efficient manner.
* **C**ommunication skills refer to those abilities help to convey one's thoughts, requirements, wants, etc, verbally & non-verbally. Communication is the glue that binds all the education attributes together.

**IMT**:

* **I**nformation Literacy is a skill that aid pupils in comprehending information that they may come across online. In the era of digitalization, finding truth online is crucial.
* **M**edia Literacy is that skill to access, evaluate, and create media messages moreover to reflect, act, and use information for communication.
* **T**echnology Literacy means the knowledge and skills to use technological tools and resources efficiently and responsibly.

K. Kasturiranjan, ISRO chief and head of the National Education Policy has submitted a draft of it in December 2018, which was opened for public feedback after the Lok Sabha election in May 2019 (India Today, September, 11/2020). The National Education Policy 2020 is seen as a revolutionary step in the Indian education system. The policy aims to make education more inclusive, holistic, and equitable. Enhancing students' cognitive abilities, character building, and developing well-rounded individuals with essential 21st Century skills is the main aim of education (NEP 2020, p12). According to Clark (2009), students in the twenty-first century must not only be tech-savvy but also possess other skills that employers value in the workplace, like problem-solving abilities, leadership qualities, thinking and working competencies, tools for the workplace, and living skills. According to Michaels, Roshandel, Truesdell, and Urbani (2015), there is a global shift in recognition of the importance of critical thinking, problem-solving, communication, and teamwork in today's dynamic culture. The development of 21st Century skills is essential for enabling children and adolescents to take charge of their lives and address the problems that arise. The task of developing these 21st Century Skills among students is upon the shoulders of the teaching community.  Training, educational qualifications, and efficiency of teachers together form the whole structure of education (Dash & Dash). In the words of the Kothari Commission, “Of all different factors which influence the qualities of education and contribution of national development, the quality, competence, and character of teachers are undoubtedly the most significant”. The 21st-century teachers will genuinely create the 21st-century future citizens.

**SIGNIFICANCE OF THE STUDY**

The 21st century is bringing an era of endless opportunities, which requires the education system to be revolutionized completely. Traditional learning methods won’t work, and every child needs to equip themselves with 21st Century Skills. Thus, it has seemed necessary for teachers to stay up-to-date on the most recent advancements in their fields and acquire 21st Century Skills necessary to teach in the classroom.

**Objectives**

1. To compare life skills of male and female prospective teachers.
2. To compare learning skills of male and female prospective teachers
3. To compare literacy skills of male and female prospective teachers
4. To compare 21st Century Skills of male and female prospective teachers.
5. To compare life skills of arts and science prospective teachers
6. To compare learning skills of arts and science prospective teachers
7. To compare literacy skills of arts and science prospective teachers
8. To compare 21st Century Skills of science and arts prospective teachers.

**Hypotheses**

Ho1**.** There is no significant difference in the life skills of male and female prospective teachers**.**

Ho2**.** There is no significant difference in the learning skills of male and female prospective teachers**.**

Ho3**.** There is no significant difference in the literacy skills of male and female prospective teachers.

Ho4.There is no significant difference in the 21st Century Skills of male and female prospective teachers

Ho5**.** There is no significant difference in the life skills of arts and science prospective teachers.

Ho6**.** There is no significant difference in the learning skills of arts and science prospective teachers.

Ho7.There is no significant difference in the literacy skills of arts and science prospective teachers.

Ho8.There is no significant difference in the 21st Century Skills of arts and science prospective teachers.

**REVIEW OF RELATED LITERATURE**

**Rekha (2022)** studied on Digital Online Media Literacy (DOML) among Higher Education Students and found no significant difference in DOML on the basis of religion, stream, gender, ICT experience but significant difference on the basis of work experience, marital status, and educational qualifications were found in DOML.

**Kundu, et.al. (2022)** conducted a study on ‘Reflective teachers: a probe into the 21st-century skills among Indian trainee teachers’. It was discovered that although some of these items were poorly integrated, others were just moderately integrated. There were notable distinctions in the skills of learners from government and private training institutions.

**Laar, et.al. (2017**) reviewed a literature on ‘Relationship between 21st Century Skills and Digital Skills’. After synthesizing the relevant academic concerned literature concluded that Digital skills are not the same as 21st century abilities. Furthermore, ICT does not always assist 21st Century Skills, in contrast to digital skills.

**Sümen & Çalişici (2017)** while examining the ‘21st century skills of Secondary School Students: A Mixed Method study’ and its quantitative results reveal that students have high levels of 21st Century skills, with female students having better developed skills than male counterparts. Students in the fifth grade had, on average, higher 21st century skills than students in other secondary school classes. In line with the quantitative findings, the eighth graders in the interviews were the group that stated that the school environment had the least impact on the development of 21st century skills.

**Gupta (2016)** investigated ‘Life Skills of Pre-service teachers: A Comparative Study’ and discovered no discernible difference in the life skills of the pre-service teachers, male or female.

**Deivam (2016)** investigated ‘Computer Literacy among B.Ed Teacher Trainees-An Exploratory Study’. This study found moderate level of computer literacy among B.Ed teacher trainees. There is no difference based on gender wise in the computer literacy among them. But significant difference was found in the computer literacy of Tamil and English medium teacher trainees.

**Bakir and Öztekin (2014)** while studying on ‘Creative thinking levels of preservice science teachers in terms of different variables’ found that creative thing levels of preservice science teaches do not significantly differ in terms of gender, year of study, schooling, socio-economic status of parents.

**RESEARCH METHODOLOGY AND SAMPLE**

**The investigators have used the Descriptive survey method for the present study. Purposive Sampling technique has been used to draw out the representative data of prospective teachers. The data of 100 prospective teachers (35 male & 65 female, 40 science & 60 arts) were collected from two B.Ed colleges of East Singbhum district of Jharkhand affiliated to Kolhan University Chaibasa.**

**Tool Used**

For the present study the researcher has used a self-constructed research tool (21st Century Skills Scale) to explore the presence of 21st century Skills among prospective teachers. The 21st Century Skills Scale comprises of 44 statements on life skills, learning skills and literacy skills.

**Statistical Technique Used**

For data analysis, t-test was calculated to compare the 21st century skills of prospective teachers.

**Data Analysis and Interpretation**

Ho1. There is no significant difference in the life skills of male and female prospective teachers

**Table 1**

Gender wise variation in life skills of prospective teachers

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | N | Mean | S.D | df | t-value | Significance |
| Male | 35 | 66.60 | 6.35 | 98 | -2.22 | Not Significant at 0.05 level |
| Female | 65 | 70.30 | 8.69 |

Table no. 1 shows that there is no significant difference in the life skills of male and female prospective teachers as the t value is -2.22 which is not significant at 0.05 level of significance. Therefore, the null hypothesis was accepted. However, the mean score of female prospective teachers is greater than the mean score of male prospective teachers which is 70.30 and 66.60 respectively that shows female prospective teachers are more skilled than male prospective teachers.

**Ho2.** There is no significant difference in the learning skills of male and female prospective teachers**.**

**Table 2**

Gender wise variations in learning skills of prospective teachers

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | N | Mean | S.D | df | t-value | Significance |
| Male | 35 | 55.54 | 5.87 | 98 | -0.56 | Not Significant at 0.05 level |
| Female | 65 | 56.15 | 4.75 |

Table no. 2 shows that there is no significant difference in the learning skills of male and female prospective teachers as the t value is -0.56 which is not significant at 0.05 level of significance. Therefore, the null hypothesis above was accepted. However, the mean score of female prospective teachers is greater than the mean score of male prospective teachers which is 56.15 and 55.54 respectively that shows female prospective teachers are more skilled than male prospective teachers.

Ho3.There is no significant difference in the literacy skills of male and female prospective teachers.

**Table 3**

Gender wise variations in literacy skills of prospective teachers

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | N | Mean | S.D | df | t-value | Significance |
| Male | 35 | 46.82 | 11.10 | 98 | 0.36 | Not Significant at 0.05 level |
| Female | 65 | 46.20 | 6.22 |

Table no. 3 shows that there is no significant difference in the literacy skills of male and female prospective teachers as the t value is 0.36 which is not significant at 0.05 level of significance. Therefore, the null hypothesis above was accepted. However, the score of male prospective teachers is greater than the mean score of female prospective teachers which is 46.82 and 46.20 respectively that shows male prospective teachers are more skilled than female prospective teachers.

Ho4.There is no significant difference in the 21st Century Skills of male and female prospective teachers**.**

**Table 4**

Gender wise variations in the 21st Century Skills of prospective teachers

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | N | Mean | S.D | df | t-value | Significance |
| Male | 35 | 168.97 | 16.73 | 98 | -1.21 | Not Significant at 0.05 level |
| Female | 65 | 172.66 | 13.12 |

Table no. 4 shows that there is no significant difference in the 21st Century skills of male and female prospective teachers as the t value is -1.21 which is not significant at 0.05 level of significance. Therefore, the null hypothesis above was accepted. However, the mean score of female prospective teachers is greater than the mean score of male prospective teachers which is 172.66 and 168.97 respectively that shows female prospective teachers are more skilled than male prospective teachers.

Ho5.There is no significant difference in the life skills of arts and science prospective teachers.

**Table 5**

Stream wise variations in the life skills of prospective teachers

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | N | Mean | S.D | df | t-value | Significance |
| Science | 40 | 69.15 | 5.28 | 98 | 0.14 | Not Significant at 0.05 level |
| Arts | 60 | 68.91 | 9.60 |

Table no. 5 shows that there is no significant difference in the life skills of science and arts prospective teachers as the t value is 0.14 which is not significant at 0.05 level of significance, Therefore, the null hypothesis above was accepted. However, the mean score of science teachers is greater than the mean score of arts teachers which is 69.15 and 68.91 respectively that shows prospective teachers of science stream are more skilled than the prospective teachers of arts stream.

Ho6**.** There is no significant difference in the learning skills of arts and science prospective teachers.

**Table 6**

Stream wise variations in the learning skills of prospective teachers

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | N | Mean | S.D | df | t-value | Significance |
| Science | 40 | 56.15 | 4.63 | 98 | 0.33 | Not Significant at 0.05 |
| Arts | 60 | 55.80 | 5.50 |

Table no. 6 shows that there is no significant difference in the learning skills of science and arts prospective teachers as the t value is 0.33 which is not significant at 0.05 level of significance, Therefore, the null hypothesis above was accepted. However, the mean score of science teachers is greater than the mean score of arts teachers which is 56.15 and 55.80 respectively that shows prospective teachers of science stream are more skilled than the prospective teachers of arts stream.

**Ho7.** There is no significant difference in the literacy skills of arts and science prospective teachers.

**Table 7**

Stream wise variations in the literacy skills of prospective teachers

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | N | Mean | S.D | df | t-value | Significance |
| Science | 40 | 47.77 | 10.10 | 98 | 1.35 | Not Significant at 0.05 level |
| Arts | 60 | 45.51 | 6.60 |

Table no. 7 shows that there is no significant difference in the literacy skills of science and arts prospective teachers as the t value is 1.35 which is not significant at 0.05 level of significance, Therefore, the null hypothesis above was accepted. However, the mean score of science teachers is greater than the mean score of arts teachers which is 47.77 and 45.51 respectively that shows prospective teachers of science stream are more skilled than the prospective teachers of arts stream.

Ho8.There is no significant difference in the 21st Century Skills of arts and science prospective teachers.

**Table 8**

Stream wise variations in the 21st Century Skills of prospective teachers

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | N | Mean | S.D | df | t-value | Significance |
| Science | 40 | 173.07 | 12.97 | 98 | 0.95 | Not Significant at 0.05 level |
| Arts | 60 | 170.23 | 15.46 |

Table no. 8 shows that there is no significant difference in the 21st Century skills of science and arts prospective teachers as the t value is 0.95 which is not significant at 0.05 level of significance, Therefore, the null hypothesis above was accepted. However, the mean score of science teachers is greater than the mean score of arts teachers which is 173.07 and 170.23 respectively that shows prospective teachers of science stream are more skilled than the prospective teachers of arts stream.

**DISCUSSION OF RESULTS**

* Male and female prospective teachers have not shown significant difference in life skills. This finding is supported by **Gupta (2021)** who found ‘no significant difference in the life skills mean scores of male and female pre-service teachers’.
* Male and female prospective teachers have not shown any significant difference in learning skills. This finding is supported by **Bakir and Öztekin (2014)** who found that found that creative thing levels of preservice science teaches do not significantly differ in terms of gender, year of study, schooling, socio-economic status of parents.
* Male and female prospective teachers have not shown any significant difference in literacy skills. This finding is supported by **Deivam (2016)** who found that ‘gender wise there is no difference of computer literacy among B.Ed teacher trainees’.
* Science and arts subject prospective teachers have not shown any significant difference in life skills. While a study done by **Sangwan (2019)** found that female science and commerce teachers have scored significantly higher on life skills than male teachers
* Science and arts subject prospective teachers have not shown any significant difference in learning skills. This finding is supported by **Ranganath (2012)** who found that male and female prospective science teachers are with average creativity with no significant difference between them.
* Science and arts subject prospective teachers have not shown any significant difference in literacy skills. This finding is supported by **Rekha (2022)** who found no significant difference in Digital Online Media Literacy (DOML) among students on the basis of religion, stream, gender, ICT experience.

**CONCLUSION**

Teachers are the role models of the society.  ‘The status of teacher reflects the socio-cultural ethos of a society. It is said that no individual can rise above the level of their teacher’ (NEP, 1986). By these words, the National Educational Policy puts great confidence in the role of teachers in society. The role of teachers in 21st-century is even more challenging than before. They are expected to be competent in all dimensions of one’s personality. They should be equipped with life skills, learning skills, and what today’s technological world demands- literacy skills. This study was done on the prospective teachers of the East Singbhum district of Jharkhand. Jharkhand is considered an educationally backward state of India. According to census 2011, the literacy rate of Jharkhand is 66.41%, which is lower than the national literacy rate of India. Without developing the skills of teachers it is impossible to improve the educational status of Jharkhand. Prospective teachers of Jharkhand must lead the educational campaign in the state with the help of the required set-off skills. This study found prospective teachers able to deal with the challenges of 21st Century. It revealed that both male and female prospective teachers did not significantly differ in 21st Century Skills. This study also found no significant difference among arts and science prospective teachers in reference to 21st Century Skills. The results of this research work is also supported by Kuloglu and Karabekmez (2021) where they discovered that there was no discernible difference in male and female participants' 21st Century teaching skills., however in Deviam (2016) the mean computer literacy scores of teacher candidates in the arts and sciences differed significantly.

Disclaimer (Artificial intelligence)

Option 1:

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

Option 2:

Author(s) hereby declare that generative AI technologies such as Large Language Models, etc. have been used during the writing or editing of manuscripts. This explanation will include the name, version, model, and source of the generative AI technology and as well as all input prompts provided to the generative AI technology

Details of the AI usage are given below:

1.

2.

3.

**REFERENCES**

1. Kuloğlu, A., & Karabekmez, V. (2022). The Relationship Between 21st-century Teacher Skills and Critical Thinking Skills of Classroom Teacher. International Journal of Psychology and Educational Studies, 9 (1), 91-101. Retrieved on 03/07/2024 From <https://dergipark.org.tr/en/pub/pes/issue/68410/1067539>
2. Bakir, S & Öztekin, E (2014) Creative Thinking Levels Of Pre-Service Science Teachers In Terms Of Different Variables. *Journal of Baltic Science Education,* 13 (2) 231-242 Retrieved on 03/04/2024 From <http://dx.doi.org/10.33225/jbse/14.13.231>
3. Bell, S (2010) Project- Based learning for the 21st Century: Skills for the Future. The Clearing House: A Journal for Educational Strategies, 83 (2) 39-43 Retrieved on 06/04/2024 From <https://doi.org/10.1080/00098650903505415>
4. Bellanca, J. & Bradant, R (2010) *21st Century Skills: Rethinking How Students Learn,* Solution Tree Press, United States. ISBN-1935249908 Retrieved on 06/02/2024 From http://dspace.vnbrims.org:13000/jspui/bitstream/123456789/4209/1/21st%20Century%20Skills%20Rethinking%20How%20Students%20Learn.pdf
5. Dash, M & Dash, N (2008). *School Management: A Comprehensive Guide for School Improvement*, Atlantic Publishers and Distributors Pvt. Ltd ISBN- 9788126909070, 8126909072
6. [Muniyandi](https://www.researchgate.net/profile/Deivam-Muniyandi-2?_sg%5B0%5D=wViuOTc0LcYaPJSuHisP6wNVhUDHC1XxONVawzo9vm4XoQwNE9hQ-0-ggv7L8c_ZLAgBmdk.I6OjsKZZsLJuAMhZSCH4_aB8fXRP-HpsIEWrnCUEl4wcUn5egJLauctQ80JTqf2ZeB-gnx45fsUCS_6jGYT6Yw&_sg%5B1%5D=G82-qN80GG4M2xUR0n5Lx_1Hb8pivdgJeUiB-IinLbLi3wBJBGIdFvXiiRUIFaR1QeKxCZw.hyThOixTrmI_TNkTcT78NzgHuLUs8XKg5Vhm-nxA3Ddj4h5FBpZeoBcWFWarcIROnXVjPyX2eC_NnOycN5DeFw&_tp=eyJjb250ZXh0Ijp7ImZpcnN0UGFnZSI6InB1YmxpY2F0aW9uIiwicGFnZSI6InB1YmxpY2F0aW9uIiwicG9zaXRpb24iOiJwYWdlSGVhZGVyIn19), D (2016). Computer Literacy among B.Ed. Teacher Trainees-An Exploratory Study. *International Journal of Academic Research and Development* 1 (5) 13-16 Retrieved on 13/02/2023 From <https://www.researchgate.net/publication/303017275_Computer_literacy_among_BEd_teacher_trainees'__An_exploratory_study#:~:text=There%20was%20significant%20difference%20of,moderate%20level%20of%20computer%20literacy>.
7. Fatmawati, A (2018) Students’ perception of 21st century skills development through the implementation of project-based learning. Pedagogy Journal of English Language Teaching, 6 (1) DOI: [10.32332/pedagogy.v6i1.1111](http://dx.doi.org/10.32332/pedagogy.v6i1.1111)
8. Gupta, S. ( 2021) Life Skills of Pre-Service Teachers: A Comparative Study, *Research Inspiration: An International Multidisciplinary e- Journal* (II) 6 13-25 Retrieved on 13/02/2023 From <https://doi.org/10.53724/inspiration/v6n2.04>
9. Laar, E.V., Deursan, A.J.A.M., Dijk, J. A. G.M & Haan J.D. (2017) The relation between 21st-century skills and digital skills: A systematic literature review, *Computers in Human Behavior*, 7(2), 577-588 Retrieved on 03/07/24 from <https://doi.org/10.1016/j.chb.2017.03.010>
10. Jaganathan (2020) Awareness of Life Skills Among Prospective Teachers. Journal of emerging Technologies and Innovative Research 7 (2) 1229-1231.
11. Kan. A.U & Karaturk. A.M (2018). Investigation of Prospective Science Teachers’ 21st Century Skill Competence Perceptions and Attitudes Toward STEM, International Online Journal of Educational Sciences, 10 (4) 251-272. Retrieved on 03/07/24 from <https://doi.org/10.15345/iojes.2018.04.014>
12. Kundu, A & Tripti. B (2022). Reflective teachers: a probe into the 21st-century skills among Indian trainee teachers, *International Journal of Teacher Education and Professional Development.* DOI: 10.4018/IJTEPD.2022010106
13. Kumar, A. (2021). New education policy (NEP) 2020: A roadmap for India 2.0. University of South Florida (USF) M3 Center Publishing, *3* (2021), 36

Retrieved on 03/07/24 from <https://www.doi.org/10.5038/9781955833042>

1. Larson, L.C. & Miller, T.N (2011) 21st Century Skills: Prepare students for the future, Kappa Delta Pi Record, 47 (3) 121-123 Retrieved on 03/07/24 from <http://dx.doi.org/10.1080/00228958.2011.10516575>
2. Lukose, M and Sharma P (2013) A Study on the Role of NEP 2020: Skill Development of Students, (ISSN :2395-616X) Amity International Journal of Teacher Education (AIJTE), 9 (1) Retrieved on 03/07/24 from <https://www.amity.edu/aien/aijte/articles2023/9.%20A%20Study%20on%20the%20Role%20of%20NEP%202020_%20Skill%20Development%20of%20Students.pdf>
3. Ranganath (2012) A study of creativity scientific attitude and attitude towards science of prospective science teachers of Andhra Pradesh. Ph.D. Thesis, Department of Education, Acharya Nagarjuna University Retrieved on 03/07/24 from <http://hdl.handle.net/10603/127013>
4. Rekha, C (2022) Digital Online Media Literacy (DOML) among Higher Education Students, *Educreator Research Journal*, 8 (4), 2394-8450
5. Saavedra, A. R., & Opfer, V. D. (2012). Learning 21st-Century Skills Requires 21st-Century Teaching. Phi Delta Kappan, 94 (2) 8–13.
6. Sumen, O.Z & Çalişici, H (2017**)** Examining the 21st century skills of Secondary School Students: A Mixed Method Study, *Journal of Education and Social Policy*, 4(4), 2375-0782 (Print) 2375-0790 (Online) Retrieved on 12/01/24 <https://jespnet.com/journals/Vol_4_No_4_December_2017/10.pdf>