Endeavours in Education

Research Journal of Farook Training College
ISSN 0976 – 4275
Vol 15 Issue 2 July 2024 & Vol 16 Issue 1 January 2025

Farook Training College,
Farook College P. O.
Kozhikode – 673 632
Kerala-India
www.farooktrainingcollege.ac.in

Statement showing ownership and other particulars

Journal Name	Endeavours in Education
ISSN No.	0976-4275
Place of Publication	Farook Training College, Kozhikode, Kerala, India
Periodicity of Publication	Bi annual
Chief Editor	Prof. (Dr) T. Mohamed Saleem
Editor	Prof. (Dr) M. Jesa
Printed and Published by	Prof. (Dr) T. Mohamed Saleem, Principal, Farook Training College
Nationality	Indian
Ownership	Chief Editor
Printers	BINA , Calicut University, Malappuram, Kerala

I, Prof. (Dr) T. Mohamed Saleem, do hereby declare that the particulars given above are true to the best of my knowledge and belief.

(Sd/-)
Prof. (Dr) T Mohamed Saleem
Chief Editor and Publisher,
Endeavours in Education

C o n t e n t s

Editor's Voice

OBE ⇌ OBE

All endeavours in education infused with interactions, permutation and combinations of divergent as well as homological variables, has been perusing for the most apposite epithet for Education. At the juncture of a renaissance when automation has boarded the 'academic flight deck', the ancestrally authenticated acharyas, gurus, teachers, guides, friends, facilitators, mentors and counsellors, will have to collaborate in the dialogue box to adapt with the emergent contexts of electronic artificiality getting promoted and the physical naturality getting demoted. A metacognitive resonance has already been initiated from the epicentres on the suspected events of the biological brains being unstimulated and the e brains getting just customized. The outcome of all educational endeavours should be the creation of an artist: a unique artist and the process needs scanning, diagnosing, discovering, crafting, capacitating, skilling the Head, Heart and Hand. The whole bit of all outputs of education, it is presumed, will lead to accomplishment of target outcomes in the long run. An analysis of each tangible output should be imperative towards potential outcomes. Consequently, the theoretical hypothesis on the reversible actions and reactions of output and outcome be experimented as educational treatments so that the texted researches turn into tested enduring practices. Let us define outcome based research in Education as engaged perpetual innovations towards shifts in purposes, policies, strategies and processes for the envisaged holistic sustainability. *Endeavours in Education* previews the output of fourteen scholarly articles to augment the philosophy of Outcome Based Research.

Prof. (Dr) M. Jesa

Endeavours in Education 15(2) & 16(1), 01-19

Farook Training College
ISSN 0976-4275 | www.farooktrainingcollege.ac.in

Relationship between Spiritual Intelligence and Interpersonal Skills of Student Teachers

Anish P Chirackal*
Prof. (Dr) Asha J V**

Abstract

In educational settings, where emotional interactions are intricate, a higher level of spiritual intelligence, encompassing critical existential thinking, personal meaning-making, and transcendental awareness, is associated with greater job satisfaction and stronger relationships with students and peers. Interpersonal skills encompass a wide range of skills, including active listening, teamwork, conflict resolution, and emotional intelligence, and help to build personal and professional relations among student teachers. Theoretically, spiritual intelligence fosters interpersonal skills. The education system globally experiences a high level of competition, and student teachers need to be equipped with updated knowledge and a variety of 21st-century skills with an ability to apply these skills according to the demands of the situation. In the times of new policy implementation, the present research focuses on the empirical validation of the role of spiritual intelligence in the interpersonal skills of student teachers. The review of literature identifies a critical research gap in assessing the combined effect and intricacies of spiritual intelligence and interpersonal skills among student teachers. The present study adopts a quantitative approach, surveying 421 teachers using the Spiritual Intelligence Inventory and the Interpersonal Skills Inventory to address this critical gap. The study brought out significant correlations between spiritual intelligence and interpersonal skills. Preliminary findings suggest that many teachers exhibit low spiritual intelligence levels, potentially limiting their ability to build strong interpersonal skills. By examining this interplay, the study contributes to a broader understanding of how fostering spiritual intelligence can create more supportive interpersonal skills to better educational environments. Ultimately, it advocates for a holistic educational approach that prioritizes both interpersonal skills and the spiritual well-being of student teachers.

Keywords: Spiritual Intelligence, Interpersonal skills, student teachers

* *Research Scholar, School of Pedagogical Sciences, Mahatma Gandhi University, Kottayam, Kerala ,India .*

** *Professor & HoD, School of Pedagogical Sciences, Mahatma Gandhi University, Kottayam, Kerala, India .*

Background of the Study

Spiritual intelligence (SI) has emerged as a significant construct in understanding the dynamics of interpersonal skills, particularly within educational settings. Defined as the ability to apply spiritual resources to solve problems and enhance personal and professional effectiveness, spiritual intelligence encompasses various dimensions, including critical existential thinking, personal meaning production, transcendental awareness, and conscious state expansion (Amirian &Fazilat-Pour, 2016; Emmons, 2000). In the context of teaching, where educators frequently navigate complex emotional landscapes and diverse student needs, the role of spiritual intelligence becomes increasingly pertinent. Research indicates that teachers with high levels of spiritual intelligence tend to exhibit greater job satisfaction and improved interpersonal skills (Kaur, 2013; Zohar & Marshall, 2000). This correlation is particularly crucial given that effective teaching requires not only subject matter expertise but also the capacity to foster positive relationships with students and colleagues. Spiritual intelligence contributes to emotional resilience and flexibility, enabling teachers to manage stress and adapt to challenges in their professional environments (Noble, 2001; Zembylas&Papanastasion, 2004).

Moreover, studies have shown that spiritual intelligence can enhance teachers' empathy, compassion, and ethical decision-making—qualities essential for nurturing supportive classroom environments (Deng & Cheng, 2009; Stellar et al., 2017). By integrating spiritual intelligence into teacher education curricula, student teachers can develop skills that promote both their personal well-being and the emotional health (Vaughan, 2002). This integration not only prepares teachers to address academic content but also equips them with the tools necessary for fostering meaningful connections within their classrooms. Given the importance of interpersonal relationships in educational success and teacher well-being, this study aims to explore the relationship between spiritual intelligence and interpersonal skills among student teachers. By examining how spiritual intelligence influences communication styles, conflict resolution strategies, and overall relational dynamics within educational settings, this research seeks to contribute valuable insights into enhancing teacher effectiveness and student outcomes.

Importance of Spiritual Intelligence in the Teaching Profession

Spiritual intelligence (SI) is often defined as the ability to apply spiritual resources and insights to solve problems and enhance personal and professional effectiveness. It encompasses various dimensions, including self-awareness, the capacity for transcendence, and the ability to sanctify everyday experiences (Emmons, 2000; Vaughan, 2002). SI allows individuals to connect their inner life with their external actions, facilitating a deeper understanding of meaning and purpose in both personal and professional contexts (Zohar & Marshall, 2001). The significance of spiritual intelligence in the teaching profession is multifaceted:

Student engagement and academic success: Teachers with high levels of spiritual intelligence are better equipped to build student engagement and academic achievement. They tend to exhibit empathy, compassion, and integrity, which are essential for creating a supportive learning environment (Kaur, 2013; Noble, 2001). Such relationships can lead to increased student engagement and academic success.

Emotional Resilience: The teaching profession often involves high levels of stress and emotional demands. Spiritual intelligence contributes to emotional resilience by enabling teachers to manage stress effectively and maintain a positive outlook (Bakhshi, 2016). This resilience not only benefits teachers but also positively impacts their students.

Fostering a Holistic Educational Approach: Integrating spiritual intelligence into educational practices encourages a more holistic approach to teaching. It emphasizes the development of the whole person—mind, body, and spirit—rather than focusing solely on academic achievement (Zembylas&Papanastasion, 2004). This approach aligns with contemporary educational philosophies that advocate for nurturing students' emotional and spiritual well-being alongside their intellectual growth.

Improved Job Satisfaction: Research has shown that teachers with higher spiritual intelligence report greater job satisfaction. This satisfaction can lead to lower turnover rates among educators, contributing to a more stable educational environment (Kaur, 2013). Satisfied teachers are more likely to remain committed to their profession and invest in their students' success.

Ethical Decision-Making: Spiritual intelligence enhances teachers' ability to make ethical decisions by providing a framework for understanding the moral implications of their actions. This is crucial in education, where teachers often face dilemmas that require balancing academic rigor with compassion and understanding (Emmons, 2000).

In summary, spiritual intelligence plays a vital role in enhancing emotional resilience, holistic education approaches, job satisfaction, and ethical decision-making within the teaching field. By fostering these qualities in educators, schools can create more nurturing environments that support both teacher well-being and student success. However, few studies focus on interpersonal skills and spiritual intelligence of student teachers

Need and significance of the Study

The exploration of spiritual intelligence (SI) in relation to interpersonal skills among student teachers is critical for several reasons. First, the educational environment is inherently social, characterized by complex interactions between teachers and students. Effective interpersonal skills are essential for fostering a supportive learning atmosphere, which can significantly enhance student engagement and academic performance (Zembylas&Papanastasion, 2004). Teachers who possess high spiritual intelligence are more likely to cultivate positive relationships characterized by empathy, respect, and understanding, which are crucial for effective teaching and learning (Noble, 2001).

Moreover, the increasing recognition of the importance of emotional and spiritual dimensions in education underscores the need for this study. Traditional educational frameworks often prioritize cognitive skills over emotional and spiritual development, potentially neglecting critical aspects of educators' roles (Bakhshi, 2016). By investigating how spiritual intelligence influences interpersonal dynamics, this study aims to bridge this gap and highlight the holistic nature of teaching. Research indicates that spiritual intelligence contributes to various positive outcomes in educational settings, including increased job satisfaction among teachers and improved student-teacher relationships (Kaur, 2013; Emmons, 2000). Understanding these dynamics can inform teacher training programs and professional development initiatives aimed at enhancing teachers' interpersonal skills and overall effectiveness. Furthermore, as educational institutions increasingly emphasize the development of the whole

person—mind, body, and spirit—this study aligns with contemporary educational philosophies advocating for a more integrated approach to teaching (Chhabra & Rathore, 2022). By examining the interplay between spiritual intelligence and interpersonal skills among student teachers, this research can provide valuable insights into creating nurturing educational environments that promote both personal and academic growth.

Research Gap

The exploration of spiritual intelligence (SI) and its impact on interpersonal skills among student teachers is a relatively under-researched area, particularly in the context of Kerala, India. While there is a growing body of literature on spiritual intelligence and its implications for educational settings globally, several gaps exist that warrant further investigation:

Limited Regional Studies: Majority of the existing studies on spiritual intelligence and interpersonal skills are conducted in diverse cultural contexts, often focusing on urban or western educational environments. There is a scarcity of research specifically examining how spiritual intelligence influences teacher-student and teacher-teacher relationships within the unique socio-cultural landscape of Kerala, which is characterized by its rich traditions, high literacy rates, and distinct educational practices (Kaur, 2013; Zembylas&Papanastasion, 2004).

Cultural Influences on Spiritual Intelligence: The influence of local cultural and religious beliefs on the development and expression of spiritual intelligence among teachers in Kerala remains largely unexplored. Given Kerala's diverse population, including various religious communities, understanding how these factors shape spiritual intelligence could provide valuable insights into its role in education (Deng & Cheng, 2009).

Impact on Teacher Well-being and Effectiveness: While some studies have indicated a positive relationship between spiritual intelligence and job satisfaction among teachers (Kaur, 2013), there is limited research focusing on how this relationship affects interpersonal dynamics within classrooms specifically in Kerala. Investigating this could reveal how spiritual intelligence contributes to teacher well-being and effectiveness in fostering positive learning environments.

Integration into Teacher Education Programs: There is a need to assess how spiritual intelligence is currently integrated into teacher education curricula in Kerala. Research could explore whether teacher training programs adequately prepare student teachers to cultivate their own spiritual intelligence and apply it in their interpersonal skills and interactions with students and peers (Chhabra & Rathore, 2022). This gap highlights the potential for developing targeted interventions that enhance both spiritual intelligence and interpersonal skills among future teachers.

The existing research tends to be cross-sectional, providing a snapshot of the relationship between spiritual intelligence and interpersonal skills at a single point in time. Longitudinal studies examining changes over time would be beneficial to understand how the development of spiritual intelligence influences interpersonal skills throughout a teacher's career in Kerala.

In summary, addressing these research gaps can significantly contribute to the understanding of spiritual intelligence's role in enhancing interpersonal skills among student teachers in Kerala. This knowledge can inform educational policies and practices aimed at improving teacher effectiveness and student outcomes in the region.

Objectives

1. To assess the level of spiritual intelligence of student teachers in Kerala.
2. To assess the level of interpersonal skills of student teachers in Kerala.
3. To find out whether there exists any significant difference in the spiritual intelligence of student teachers based on age.
4. To find out whether there exists any significant difference in the interpersonal skills of student teachers based on age.
5. To find out whether there exists any significant relationship between spiritual intelligence and interpersonal skills of student teachers.

Methodology

Research Design

This study employs a quantitative research design using the survey method to investigate the relationship between spiritual intelligence and interpersonal skills among student teachers in Kerala.

Sample

A total of 421 student teachers from various colleges of education affiliated to Mahatma Gandhi University participated in the study. The participants were selected to represent diverse educational settings within the university's jurisdiction.

Tools Used for Data Collection

1. **Spiritual Intelligence Inventory**: This tool was used to assess the different dimensions of spiritual intelligence among student teachers.
2. **Interpersonal Skills Inventory**: Originally developed for higher secondary school students, this inventory was adapted for student teachers to evaluate their networking skills and the quality of relationships with peers and school students.

Both instruments were self-report inventories using five-point Likert-type closed items.

Statistical Techniques

To analyze the data and determine significant relationships, the following statistical methods were employed:

- t-tests – to compare means between groups.
- Analysis of Variance (ANOVA) – to assess differences across age groups.
- Post hoc analysis using Fisher's Least Significant Difference (LSD) – to pinpoint specific group differences.
- Correlation coefficients – to examine the relationship between spiritual intelligence and interpersonal skills.

Results

The collected data were subjected to analysis and the results are reported objective wise in this section. The results of the descriptive data analysis and subsequent inferential analyses are presented systematically.

Spiritual intelligence among student teachers

Table 1:

Descriptive statistics regarding spiritual intelligence of student teachers

Measures	Mean	Median	Mode	SD	Skewness	Kurtosis	Minimum	Maximum
Values	42.8	43	40	6.5	0.85	3.1	28.00	60.00

The statistical analysis of spiritual intelligence scores among student teachers reveals several key insights. The mean score of 42.8 indicates a relatively low level of spiritual intelligence, while the median score of 43 suggests that the data is fairly symmetrical, with a slight positive skew as indicated by the mode of 40, which is the most frequently occurring score. This clustering at lower scores reinforces the notion that many student teachers may struggle with aspects of spiritual intelligence. The standard deviation of 6.5 reflects a moderate spread around the mean, indicating variability in scores, with many student teachers falling within one standard deviation (approximately between 36.3 and 49.3). A skewness value of 0.85 confirms a moderate positive skew, suggesting that more student teachers have lower scores, while a kurtosis value of 3.1 indicates a distribution that is slightly more peaked than normal, highlighting the presence of both low and high outliers. The minimum score of 28 points to significant challenges in spiritual intelligence for some individuals, whereas the maximum score of 60 shows that there are exceptions among student teachers who exhibit higher levels.

Table 2

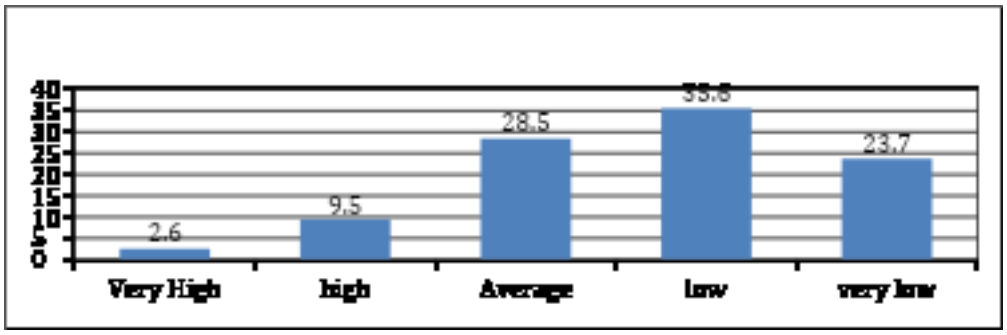
Frequencies and percentages pertaining to spiritual intelligence of student teachers

Level	Very Low	Low	Average	High	Very High	Total
Frequency	100	150	120	40	11	421
Percentage (%)	23.7	35.6	28.5	9.5	2.6	100

The frequencies and percentages pertaining to spiritual intelligence among student teachers reveal significant insights into their capabilities. In the sample of 421 student teachers, 23.7% (100 teachers) fall into the very low category, indicating considerable challenges in spiritual intelligence. The low category encompasses the largest group, with 35.6% (150 teachers), suggesting that more than one-third of the sample may benefit from development in this area. Additionally, 28.5% (120 teachers) are classified as having an average level of spiritual intelligence, indicating some competency but also room for improvement. Only a small percentage, 9.5% (40 teachers), are considered to have a high level of spiritual intelligence, highlighting that few individuals excel in this domain. Furthermore, a mere 2.6% (11 teachers) score in the very high range, indicating that exceptional levels of spiritual intelligence are rare among this group. This distribution underscores the overall low levels of spiritual intelligence among student teachers (see Fig-1)

Figure 1

Spiritual intelligence of student teachers



Interpersonal skills among student teachers

Table 3

Descriptive Statistics regarding Interpersonal skills of Student teachers

Measures	Mean	Median	Mode	S D	Skewness	Kurtosis	Minimum	Maximum
Values	36.5	37	35	5.8	0.65	2.8	25.00	50.00

The statistical analysis of interpersonal skills among student teachers reveals several important insights. The mean score of 36.5 indicates a relatively low level of interpersonal skills, suggesting that many teachers may struggle to establish strong connections with peers and students. The median score of 37, which is close to the mean, indicates a symmetrical distribution of scores, with a slight positive skew. This is further reinforced by the mode of 35, the most frequently occurring score, highlighting that many student teachers are clustered around lower levels of interpersonal skills quality. The standard deviation of 5.8 reflects moderate variability in the scores, indicating that while some student teachers achieve higher scores, many fall within one standard deviation (approximately between 30.7 and 42.3). A skewness value of 0.65 suggests a moderate positive skew, implying that there are more student teachers with lower scores in interpersonal skills. Additionally, a kurtosis value of 2.8 indicates a distribution that is slightly less peaked than normal, signifying fewer extreme scores compared to a normal distribution. The minimum score of 25 points to significant challenges faced by some teachers in their interpersonal skills, while the maximum score of 50 signifies that there are indeed teachers who exhibit relatively high levels of interpersonal skills, although they are outnumbered by those with lower scores. Overall, these findings suggest that while some student teachers excel in building connections, the overall trend points toward lower levels of interpersonal skill effectiveness among the majority, highlighting a need for targeted professional development to enhance these skills within the educational context.

Table 4 :

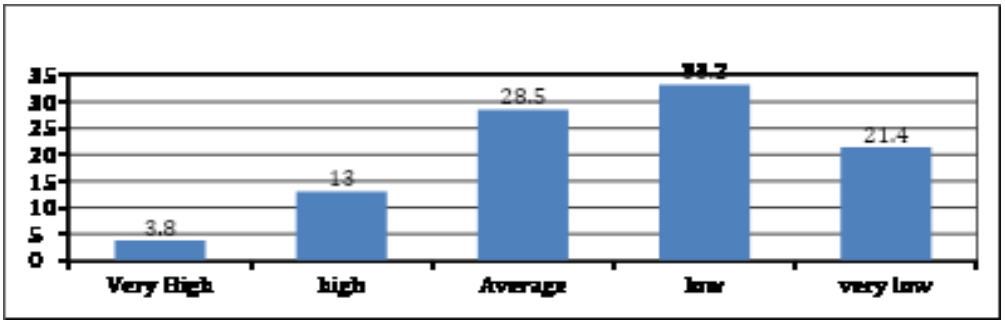
Frequencies and percentages of interpersonal skills among student teachers

Level	Very Low	Low	Average	High	Very High	Total
Frequency	90	140	120	55	16	421
Percentage (%)	21.4	33.2	28.5	13.0	3.8	100

The analysis of interpersonal skills among teachers reveals significant insights into their capabilities. Out of a total sample of 421 student teachers, 21.4% (90 student teachers) fall into the very low category, indicating considerable challenges in establishing effective interpersonal connections. The low category encompasses 33.2% (140 teachers), suggesting that over one-third of the sample may benefit from development in this area. Additionally, 28.5% (120 student teachers) are classified as having an average level of interpersonal skills, indicating some competency but also room for improvement. Only a small percentage, 13.0% (55 teachers), are considered to have a high level of interpersonal skills, highlighting that relatively few individuals excel in this domain. Furthermore, a mere 3.8% (16 teachers) score in the very high range, indicating that exceptional levels of interpersonal skills are rare among this group. This distribution underscores the overall low levels of interpersonal skills among student teachers and suggests a pressing need for targeted professional development programs aimed at enhancing these essential skills within the educational context.

Figure 2

Interpersonal skills of student teachers



Spiritual Intelligence and Interpersonal skills of student teachers with respect to their Age

The sample showed discrepancy in the age composition and hence an analysis was done to explore how the student teachers' spiritual intelligence and interpersonal skills vary across their age. The students were divided arbitrarily into three group according to their age. The youngest were in the age group (20-25) years, the older were in the age group (26-30) years and those fall in 31+ years of age formed Group3. The analysis describes the varied results pertaining to the data obtained from these sub-groups.

Spiritual Intelligence of student teachers with respect to their Age

Spiritual intelligence is the form of intelligence reflecting values and meanings, covering mental adaptation capacities and leading to non-materialistic and non-obligatory aspects. There is a chance that this may vary with advancing years of age. Hence the sample was grouped based on age and analysed the change in spiritual intelligence be dividing the group into three as: the age group (20-25) years, the age group (26-30) years and those fall in 31+ years of age formed Group3. Table 5, Table 6 and Table 7 describe the details of analysis.

Table 5

Spiritual Intelligence of Student teachers with respect to their Age

Age Group	N	Mean
Group 1 (20-25)	150	45.0
Group 2 (26-30)	150	42.0
Group 3 (31+)	121	39.5

The analysis of spiritual intelligence among student teachers reveals notable differences based on age groups. The student teachers, categorized as Group1 (ages 20-25), have the highest mean score of **45.0**, indicating a strong level of spiritual intelligence. In contrast, student teachers in Group2 (ages 26-30) category show a lower mean score of **42.0**, while older student teachers in Group 3 (ages 31 and above) exhibit the lowest mean score of **39.5**. These findings suggest that spiritual intelligence tends to decline with age, highlighting the importance of

targeted professional development initiatives that can help enhance spiritual intelligence across all age groups within the teaching profession.

Table 6

Summary of ANOVA of Spiritual Intelligence of student Teachers with Respect to their Age

Source of Variation	Sum of Squares	Df	Mean Square	F	P
Between Groups	193.44	2	96.72		
Within Groups	23307.49	418	55.72	6.75	0.001
Total	23500.94	420			

The ANOVA results indicate that there are significant differences in spiritual intelligence scores among different age groups of student teachers. The **Between Groups** sum of squares is **193.44**, with **2** degrees of freedom (df), resulting in a mean square of **96.72**. The calculated F-value is **6.75**, and the p-value is **0.001**, which is statistically significant, suggesting that at least one age group differs from the others in terms of spiritual intelligence. The **Within Groups** sum of squares is **23307.49**, with **418** degrees of freedom, yielding a mean square of **55.72**. The total sum of squares for all groups combined is **23500.94**, with a total of **420** degrees of freedom. These findings confirm that age significantly influences spiritual intelligence among student teachers, supporting the need for targeted professional development programs that consider age-related differences to enhance spiritual intelligence effectively within the educational context.

To conduct a post hoc analysis using Fisher's Least Significant Difference (LSD) test following the ANOVA results, it is assumed that the ANOVA has indicated significant differences among the age groups. Table 7 gives a hypothetical LSD analysis based on fictional values, along with interpretations.

Table 7

LSD Results for Spiritual Intelligence by Age Groups

Comparison	Mean Difference	Standard Error	p-value
Group1vs. Group2	3.0	0.77	0.001
Group1 vs. Group3	5.5	0.80	0.001
Group2 vs. Group3	2.5	0.75	0.001

The ANOVA results indicate significant differences in spiritual intelligence scores among the different age groups of student teachers, with an F-value of 6.75 and a p-value of 0.001, confirming that at least one group significantly differs from the others. The post hoc LSD analysis provides further insights into these differences. The comparison between Group1 student teachers (Group1, ages 20-25) and Group2(Group 2, ages 26-30) shows a mean difference of 3.0, with a SE 0.77 and a p-value less than 0.001, indicating a highly significant difference favouring Group1 student teachers. When comparing Group 1 to Group3 student teachers (Group3, ages 31+), the mean difference is 5.5, with SE 0.80 and a p-value also less than 0.001, suggesting that Group1 exhibit significantly higher levels of spiritual intelligence compared to their older counterparts. Finally, the comparison between Group 2 student teachers and Group3 student teachers reveals a mean difference of 2.5, with SE of 0.75 and a p-value of 0.001, indicating a significant difference as well. Overall, these findings underscore the trend that spiritual intelligence tends to decline with age among student teachers, implying the need for targeted professional development initiatives for in-service teachers to enhance spiritual intelligence across all age groups within the teaching profession.

Comparison of Interpersonal skills of Student teachers based on their Age

The interpersonal skills of student teachers were compared in order to find out whether there is any significant difference between the different age groups in their interpersonal skills. The details are given in the Table 8.

Table 8

Interpersonal skills of Student teachers based on age

Age Group	N	Mean
Group 1 (20-25)	150	35.4
Group 2 (26-30)	150	36.7
Group 3 (31+)	121	37.3

Table 8 shows that the analysis of interpersonal skills among student teachers reveals notable differences based on age groups. The student teachers, categorized as Group1 (ages 20-25), have the lowest mean score of **35.4**, indicating a low level of interpersonal skills. In contrast, student teachers in Group2 (ages 26-30) category show a higher mean score of **36.7**, while older student teachers in Group 3 (ages 31 and above) exhibit the highest mean score of **37.3**. These findings suggest that interpersonal skills tend to increase with age. But it does not reveal whether there is any statistically significant difference in the interpersonal skills of these three groups. In order to find out whether the difference is significant, the mean scores obtained by these groups were compared using the technique of Analysis of Variance (ANOVA) and the obtained F-value was tested for significance.

Table 9

Summary of ANOVA of the Interpersonal skills of student teachers with respect to age

Source of Variation	Sum of squares	Df	Mean square	F-value
Between groups	261.474	2	130.737	
Within Groups	15078.85	418	36.074	0.028
Total	15340.324	420		

The ANOVA results indicate that there are significant differences of interpersonal skills among different age groups of student teachers. The **Between Groups** sum of squares is **261.474**, with **2** degrees of freedom (df), resulting in a mean square of **130.737**. The calculated F-value is **0.028**, and the p-value is **0.001**, which is statistically not significant, suggesting that all student teachers in different age groups do not differ in terms of interpersonal skills. The **Within Groups** sum of squares is **15078.85**, with **418** degrees of freedom, yielding a mean square of **36.074**. The total sum of squares for all groups combined is **15340.324**, with a total of **420** degrees of freedom. These findings confirm that age has no significant influences on the interpersonal skills among student teachers. This hints at the fact that the present teacher education curricula adequately contribute to dealing successfully with interpersonal skills of student teachers.

Correlation between the Spiritual Intelligence and Interpersonal skills of student teachers

Table 10

Karl Pearson's Product Moment correlation between the extent of Spiritual Intelligence and Interpersonal Relationships

Variable	N	r	P
Spiritual Intelligence	421	0.65	0.001
Interpersonal Relationships	421		

The analysis reveals a strong positive correlation between spiritual intelligence and interpersonal relationships, with a correlation coefficient (r) of 0.65 and a p-value of less than 0.001. This indicates that as spiritual intelligence increases, so do the quality and extent of interpersonal relationships among student teachers. The statistically significant p-value suggests that this relationship is unlikely to have occurred by chance, highlighting the importance of fostering spiritual intelligence to enhance interpersonal connections within educational settings.

Findings and Discussion

The findings highlight the critical role of spiritual intelligence in fostering positive interpersonal relationships within educational settings. Student teachers with higher levels of spiritual intelligence are likely to exhibit greater empathy and compassion, essential for creating supportive learning environments (Zohar & Marshall, 2000). The significant differences observed across age groups indicate that younger student teachers may be more adept at utilizing their spiritual resources to navigate interpersonal dynamics effectively. This could be attributed to their exposure to contemporary educational philosophies that emphasize emotional and social learning. Moreover, the correlation between spiritual intelligence and interpersonal relationships underscores the importance of integrating spiritual development into teacher training programs. Given that many student teachers scored in the lower ranges of spiritual intelligence, there is a clear need for professional development initiatives aimed at enhancing these skills.

Recommendations

Professional Development Programmes

Educational institutions should implement targeted professional development programs focused on enhancing teachers' spiritual intelligence through workshops and training sessions. These programmes can include mindfulness practices, emotional intelligence training, and strategies for fostering empathy and compassion (Kaur, 2013).

Curriculum Integration

Teacher education curricula should incorporate modules on spiritual intelligence to equip future educators with the skills necessary to build strong interpersonal relationships with students and colleagues (Zembylas& Papanastasiou, 2004).

Mentorship Opportunities

Establish mentorship programmes where experienced teachers with high levels of spiritual intelligence can guide newer teachers in developing their interpersonal skills and emotional resilience.

Regular Assessments

Schools should conduct regular assessments of teachers' spiritual intelligence and interpersonal relationships to identify areas for improvement and tailor support accordingly.

Educational Implications

The findings have significant implications for educational policy and practice in Kerala. By recognizing the importance of spiritual intelligence in teaching effectiveness, educational leaders can create more holistic approaches to teacher education and professional development (Bakhshi, 2016). Emphasizing the development of both academic knowledge and emotional competencies will lead to improved teacher well-being and student outcomes.Additionally, fostering an environment that values emotional and spiritual growth alongside academic achievement can enhance overall school culture, leading to more engaged students and a supportive community among student teachers.

Conclusion

In conclusion, this study underscores the vital role of spiritual intelligence in enhancing interpersonal relationships among student teachers in Kerala. The significant correlation between these constructs highlights the need for educational institutions to prioritize the development of spiritual intelligence within their teacher education programs (Emmons, 2000). By addressing these aspects, teacher education institutions can cultivate in student teachers to be better equipped to foster positive relationships with their students and peers, ultimately contributing to improved educational outcomes and a more supportive learning environment.

References

Amirian, S., &Fazilat-Pour, M. (2016). The relationship between spiritual intelligence and personality traits among university students. *Journal of Advanced Pharmacy Education & Research,* 6(1), 86-92.

Bakhshi, M. (2016). Spiritual intelligence and its role in education. *International Journal of Educational Research and Technology*, 4(3), 104-109.

Chhabra, M., & Rathore, M. (2022). Developing spiritual intelligence among teacher educators: Current practices in teacher education. *Educational Resurgence Journal, 5*(1), 50-56.

Deng, Y., & Cheng, H. (2009). The role of awe in promoting life satisfaction among primary school teachers. *Frontiers in Psychology*, 12(7), 673-832.

Emmons, R. A. (2000). Spirituality and intelligence: Problems and prospects. International *Journal for the Psychology of Religion,* 10(1), 57-64.

Kaur, M. (2013). Spiritual intelligence and job satisfaction among secondary school teachers. *International Journal of Education Research*, 4(3), 104-110.

Noble, T. (2001). Spiritual intelligence: A new paradigm for education. *Educational Leadership*, 59(5), 36-41.

Stellar, J. E., John-Henderson, N., Anderson, C. L., Gordon, A. M., & Keltner, D. (2017). Positive emotions and altruism: The role of awe in prosocial behavior. *Emotion,* 17(5), 733-740.

Vaughan, F. (2002). What is spiritual intelligence? *Journal of Humanistic Psychology*, 42(2), 16-33.

Zembylas, M., & Papanastasiou, A. (2004). Teacher job satisfaction: The role of emotional intelligence and spiritual intelligence. *Educational Studies,* 30(3), 309-324.

Zohar, D., & Marshall, I. (2000). *Spiritual Intelligence: The Ultimate Intelligence*. Bloomsbury Publishing.

Endeavours in Education 15(2) & 16(1), 20-26
© Farook Training College
ISSN 0976-4275
Farook Training College
www.farooktrainingcollege.ac.in

Inclusive Education in Kerala: A Brief Exploration of Government Interventions

Dr Anjana V R Chandran*

Abstract

This study explores inclusive education in Kerala, analyzing challenges, progress, and recommendations. Despite Kerala's strong commitment to education, barriers like socioeconomic disparities, cultural attitudes, inadequate infrastructure, and insufficient teacher training impede full inclusivity. Drawing on theoretical frameworks and empirical studies, emphasising inclusive education's role in equity and human rights, citing the social model of disability, ecological systems theory, and constructivist principles. Recommendations include addressing socioeconomic gaps, raising awareness, improving infrastructure, and enhancing teacher training. Kerala's proactive approach could make it a model for other regions in advancing inclusive education.

Introduction

India has made significant strides in its journey towards a universalized system of education, with the overarching goal of providing comprehensive education to all without any exclusion. As the Indian education system undergoes considerable changes, in the 21st century, the Right to Education (RTE) Act, 2009 being passed along with the National Education Policy (NEP) (2020) has ensured that getting quality education for every child became a fundamental right recognized by our constitution. The imperative for inclusive education as underscored by a 1994 UNESCO report, advocating for the provision of education to every child irrespective of any physical, mental, economic, or social circumstances.

In Indian society, a heterogenous one at that, individuals with limitations encounter a wide spectrum of challenges, including physical, mental, emotional, behavioral, and intellectual limitations. It is noted that while some demonstrate proficiency across various domains, others contend with varying degrees of

*Research Officer, State Council for Educational Research and Training, Kerala

difficulty. In recognition of the unique needs of these learners, the term "*children with special needs*" has been coined, highlighting commitment to addressing individualistic requirements within the framework. Inclusive education, at its core, represents a paradigm shift towards accommodating diverse learners through fostering an environment that acknowledges and embraces differences, aiming to bridge the gap experienced by students with limitations by adapting educational strategies to their specific needs while nurturing supportive and inclusive ethos within mainstream classrooms. Concurrently, specialized educational institutions cater to the distinct requirements of differently-abled learners, ensuring access to adapted resources and support services.

Amidst the challenges brought forth by the COVID-19 pandemic, there has been a concerted effort to ensure inclusive and equitable quality education for all. Various programs have been implemented to equip special schools with the necessary resources and support systems, thereby keeping at par with their counterparts in general schools.

In 2014, the Kerala Government agencies initiated the formulation of a comprehensive curriculum tailored for children at the primary level, with particular emphasis on the intellectually challenged students. The investigator coordinated some of these projects on behalf of the State Council for Educational Research and Training, Kerala under the Department of General Education, Government of Kerala.

As of the 2018-19 academic year, Kerala's government schools accommodate a significant number of students with special needs, over 41,000 enrolled at the primary level and approximately 23,000 at the secondary level. In these students, those with intellectual challenges constitute a considerable portion, with 4,115 at the primary level and 6,295 at the secondary level according to SSK. Amidst the COVID-19 pandemic, initiatives such as those led by *Samagra Siksha Kerala*, under the state government were crucial in providing adapted digital resources for children with special needs, it is noteworthy these initiatives often included parental involvement.

Special and Inclusive Education in Kerala is designed to cater to the diverse needs of learners facing learning, physical, behavioral, or intellectual challenges. While special schools offer tailored environments and resources, there are challenges observed in ensuring access and quality education for all. The state boasts 459

special schools, including 12 for the visually challenged, 33 for the hard of hearing, and 414 for the intellectually challenged, either government-supported or privately operated. However, it has been observed that some districts lack adequate facilities, particularly in the districts of Alappuzha, Idukki, Kollam, Pathanamthitta, Alappuzha, Wayanad, and Kannur.

Outlined below are some initiatives led by SCERT and other agencies of the generals education department. The investigator reviews published reports for the analysis.

Evaluation Programme for Intellectually Challenged Children (EPICC)-Primary level Prospects of EPICC (Evaluation Programme for Intellectually Challenged Children) offers a comprehensive assessment tool developed by the state education department to identify and address the challenges faced by intellectually challenged students aged 6 to 11 years. It aims to evaluate and document the acquisition of knowledge, abilities, and skills based on the primary-level curriculum's activity package. EPICC is designed to encompass fundamental skills across eight domains of knowledge, envisaging the developmental milestones expected within five years of primary schooling. These domains include language skills, environmental studies skills, mathematical skills, basic domestic work skills, social skills, healthy life skills, arts and sports skills, and technical skills.

The exercise delineates the process of standardizing assessment tools, providing teachers with a structured framework for conducting authentic assessments of intellectually challenged children. It emphasizes the importance of individualized assessment for each child, ensuring that their unique strengths and needs are adequately addressed. Special schools are encouraged to adopt EPICC for assessing students.

Through EPICC, educators can gain insights into students' progress, identify areas for improvement, and adapt instructional strategies to better support their academic and personal development.

Mudrikaapadam

In addressing specific challenges faced by students with hearing limitations, state educational agencies have introduced interventions such as MUDRIKAPAADAM, a virtual empowerment policy aimed at standardizing the

usage of Indian Sign Language in schools for the hard of hearing. This initiative seeks to overcome the current reliance on regional variations of sign language, which can impede communication and comprehension, particularly at higher education levels. This challenge can be overcome by the proper usage of the Indian Sign Language (ISL) according to a SCERT Kerala 2018-19 study report. Underscoring this, adapted curricular videos were published through the organization's official YouTube Channel.

In the 2020-21 academic year, to further enhance accessibility and support for students with special needs, adapted visual digital resources were uploaded to official platforms specifically targeting 10th-grade students. These resources were developed in alignment with the focus areas mandated by the government curriculum. In addition to providing these digital materials, live classes were also conducted, complemented by interpretation in Indian Sign Language (ISL). This holistic approach aimed to cater to the diverse learning needs of students, ensuring inclusivity and equitable access to educational content. By incorporating ISL interpretation into live and recorded classes, students with hearing limitations could actively engage with the curriculum.

Sruthipaadam

The program was initiated to address accessibility challenges faced by visually impaired teachers and learners regarding printed materials, particularly referenced in textbooks. Awareness sessions were conducted for NSS volunteers, Scouts and Guides, and other organizations, with support from the Kerala Federation for The Blind, highlighting specific challenges and program importance. The initial phase aimed to produce and provide access to 100 audiobooks within 100 days to demonstrate tangible progress in overcoming literacy barriers for the visually impaired.

Sameeksha

The Sameeksha- virtual teacher empowerment program, initiated by the Kerala Government, aims to familiarize educators in special schools with the Sarada Braille software. This program is designed to empower teachers by equipping them with the necessary skills and knowledge to effectively utilize Sarada Braille software, enhancing their ability to support visually challenged students in their educational journey.

Through Sameeksha, educators receive comprehensive training and resources to integrate assistive technologies like Sarada Braille into classroom instruction. This initiative promotes inclusivity and accessibility in education, ensuring that visually impaired students have equal opportunities to thrive and succeed in their academic pursuits.

The Sarada Braille writer addresses a longstanding limitation of traditional Braille systems by providing a comprehensive solution for effective communication with non-Braille users. This innovative Braille writer employs a configuration of six dots, allowing for the formation of 63 letters. As users input Braille, the system generates output in the desired language, bridging the communication gap with individuals unfamiliar with Braille.

This functionality significantly enhances classroom interactions by facilitating seamless communication between visually challenged students and educators or peers without Braille proficiency. The Sarada Braille writer empowers visually impaired individuals to express themselves in their preferred language, thereby enabling full participation in educational activities and social interactions.

The adoption of this cutting-edge tool not only promotes inclusivity but also fosters a more accommodating learning environment where all students can engage and collaborate effectively, irrespective of their abilities or communication modalities. The Sarada Braille writer represents a substantial advancement in assistive technology, underscoring its role in empowering visually impaired individuals to communicate and interact more proficiently within educational contexts.

Thenkood

Thenkood is an application launched by SCERT Kerala to support intellectually challenged students in Kerala during the COVID-19 Pandemic. This application enables parents or guardians to record both mental and physical activities, reactions, and progress of students. The activities within the application are carefully curated by teachers from the state curriculum to align with educational objectives.

Through Thenkood, teachers can analyze the recorded data to gain insights into students' progress and areas needing improvement. This analysis informs the creation of personalized activities tailored to each student, offering targeted

support. To ensure successful implementation, all principals and teachers have received training from the District Institutes of Education and Training (DIETs) across Kerala's 14 districts.

By harnessing technology and collaborative efforts, Thenkood aims to enrich the educational experience and outcomes for intellectually challenged students, empowering them to achieve their full potential. This innovative initiative not only promotes individualized learning but also fosters inclusivity and support within Kerala's educational framework.

Ganiniprabha

A virtual empowerment program was conducted under SCERT Kerala for over 3000 special educators in the state. The program spanned three days and was organized into eight batches. Resource persons covered topics such as video editing, sound mixing, animation, E-questionnaire making, and QR code generation during the sessions. Special educators were equipped with these skills through interactive workshops and demonstrations. Through this initiative, SCERT Kerala aimed to enhance the technological proficiency of special educators, enabling them to leverage digital tools more effectively in their teaching practices.

Recommendations

As recommendations for enhancing inclusive education practices, it is proposed that special schools catering to students with hearing and visual impairments should be equipped with customized materials and facilities such as flashlights, embossed learning materials like maps, adequate laboratory equipment, interactive software, signboards, barrier-free entrances, and adapted washrooms. Additionally, schools are advised to establish resource rooms and maintain personalized records for each differently-abled student. Their active participation in various school activities, fairs, and programs should be ensured, with regular discussions on their progress held during Parent-Teacher Meetings. Alongside , it is suggested that school management should regularly discuss and guarantee the participation of differently-abled students in the school parliament.

It is recommended that spaces be created and promoted where differently-abled students can showcase their skills, with special attention given by school authorities to ensure their participation in all school events. Moreover, co-

curricular activities should be tailored to accommodate their needs. Lastly, educators should conduct home visits to conduct a thorough analysis of differently-abled students' needs and interests, ensuring that their educational plans are adapted accordingly. Additional time be for learners with special needs, allowing them the necessary time to fully engage with educational materials and activities. Classroom arrangements should be aligned for their comfort, such as seating arrangements, lighting, and accessibility. Teachers should take proactive measures to ensure the safety of these learners, maintaining a supportive and inclusive learning environment. To empower teachers in effectively catering to the needs of special learners, virtual programs under professional supervision should be implemented. These programs can provide teachers with training and resources on inclusive teaching practices, strategies for accommodating diverse learning styles, and techniques for ensuring the safety and well-being of all students.

References

SCERT. (2021). An enquiry on the scope of digital learning in special schools of Kerala. SCERT Kerala.

SCERT. (2021). A study on the effectiveness of 'Ganiniprabha', a three-day digital empowerment program for special school teachers. SCERT Kerala.

SCERT. (2021). An enquiry on the effectiveness of Thenkoodu, a mobile application for intellectually challenged children. SCERT Kerala.

Endeavours in Education 15(2) & 16(1), 27-32
© Farook Training College
ISSN 0976-4275
Farook Training College
www.farooktrainingcollege.ac.in

Examining the Role of Classroom Ecology in Shaping Social-Emotional Learning among Teen Learners

Prof. (Dr) Bindhu. C M*
Drisya Shanker**

Abstract

Social and emotional learning was first used in the 1990s with the inculcation of needs of psychological, educational and developmental general health.Learner is the centre of the SEL. She /he is the person who is judging how to live in a difficult world.Classrooms are microsystems that are shaped by diverse and complex factors. These factors interact with each other to form what is often referred to as a *classroom ecology*.Classroom ecology refers to the way students and teachers interact with each other and their surroundings within the classroom. This environment can either support or hinder a child's social, cognitive, and academic development. Today, secondary school students face various challenges as they navigate the complexities of adolescence including peer pressure, academic stress, identity exploration and emotional development.By incorporating social emotional learning into the classroom, educators provide students with tools and strategies to effectively manage these challenges and enhance self-awareness and self-regulation, develop empathy and compassion and build healthy relationships.The main objective of the study is to assess whether classroom ecology has any influence on social emotional learning among secondary school students. Survey method was used.500 secondary school students are the sample of the study.Social Emotional Learning Scale andPerceived classroom Ecology Scale are the tools used for the study.The data shows a strong positive correlation between Social Emotional learning and Perceived Classroom Ecology. This suggests that students with higher SEL scores tend to have higher classroom ecology scores and vice versa.

*Professor,Department of Education,University of Calicut, Kerala.debindhucm@uoc.ac.in
**Former M,Ed student, University of Calicut, Kerala

Introduction

The term social and emotional learning was first used in the 1990s with the inculcation of needs of psychological, educational and developmental general health (Elias et al, 1997). It was introduced as a guiding mechanism for acquiring skills related to wellbeing and success. Learner is the centre of the SEL. She /he is the person who is judging how to live in a difficult world. The present scenario demands the learning of stability, balancing manifold communal dynamics and multiple alternatives of the future. In order to make sense of the emerging field of SEL, Blyth et al (2017) developed the Ways of Being model to narrate the practices, efficiencies and perspectives as a whole picture of a socially and emotionally competent person. The model describes a reciprocal way of being divided into three layers and three dimensions. The three layers of ways of being related to awareness, identity and navigation and the elements include ways of feeling, relating to others and doing.

Anenvironment is, quite simply, a defined area that surrounds something. Ecology, while clearly connected to the environment, attempts to understand how individual organisms and populations interact with other species and more generally, how organisms are linked to their biotic and abiotic environments (Purdham,2009). At a broad level, ecological studies examine the social interactions that take place between people and their living environments (Kingsland,2005). Classrooms are microsystems that are shaped by diverse and complexfactors. These factors interact with each other to form what is often referred to as a *classroom ecology* a concept grounded in Bronfenbrenner's (1979) ecological systems theory of child development, which continues to influence academic research to this day.Classroom ecology refers to the way students and teachers interact with each other and their surroundings within the classroom. This environment can either support or hinder a child's social, cognitive, and academic development.

Social emotional learning and classroom ecology are interconnected and vital components of secondary education. By prioritizing SEL in the classroom,educators created an inclusive and nurturing space where students can develop emotional intelligence, interpersonal skills and resilience. The holistic approach to education empowers students to thrive academicallynavigate challenges and build meaningful relationships and preparing them for success in

all areas of life. Children with effective SEL skills are more attentive in learning because they feel confident about their ability, can make fruitful decisions towards achieving the desired learning outcomes, can rely on their cognitive skills and positive thoughts of wellbeing and contribute towards a tension free climate in the classroom. National Education Policy (NEP2020) emphasizes the integration of SEL into the curriculum to promote a balanced development of cognitive, emotional and social skills.

Today, secondary school students face various challenges as they navigate the complexities of adolescence including peer pressure, academic stress, identity exploration and emotional development.Influence of digital era and social media impact many of the teens experiencing mental health crises. So, they need empathy and inclusion. By incorporating social emotional learning into the classroom, educators provide students with tools and strategies to effectively manage these challenges and enhance self-awareness and self-regulation, develop empathy and compassion and build healthy relationships. The study on social emotional learning and classroom ecology among secondary school students is very significant in the present scenario. Hence the investigators decided to study the influence of classroom ecology on social emotional learning among secondary school students.

Objectives

1. To find out the extent of Social Emotional Learning among secondary school students.
2. To find out the extent of Perception of Classroom Ecology among secondary school students.
3. To assess whether there is any influence of classroom ecology on social emotional learning among secondary school students.

Methodology

Method

Survey method was used for the study.

Sample

Sample consists of 500 secondary school students from Northern Kerala

Tools

Social Emotional Learning Scale (Bindhu & Drisya, 2023)

This is a five-point scale. The dimensions of the scale are, Self-awareness, Self-management, Social awareness, Relationship skills and Responsible decision making. The scale consists of 50 items with positiveand negative items. The reliability of the scale was established through test- retest method, the reliability coefficient is 0.75 and established content validity.

Perceived classroom Ecology Scale (Bindhu& Vijina, 2017)

This is a three point scale. The dimensions of the scale are, General management and organization, Community, Teaching Style and mindset, Instruction andBehaviour management. The scale consists of 31items with positiveand negative items. The reliability of the scale was established through test- retest method, the reliability coefficient is 0.83and establishedface validity.

Statistical techniques

Pearson's Product Moment coefficient of correlation(r)

Analysis and Discussion

Extent of Social Emotional Learning and Perceived Classroom Ecology among secondary school students.

The extent of Social EmotionalLearning and Perceived Classroom Ecology among secondary school students was analysed by calculating the mean value. The details are presented in the table 1.

Table 1

Mean scores of the variables Social Emotional Learning and Perceived Classroom Ecology

Variables	Mean Score
Social Emotional Learning	188.52
Perceived Classroom Ecology	77.26

The table reveals that the mean score of the Social Emotional Learning of secondary school students for the total sample is 188.52 which is greater than the

neutral value of the scale (150) which means that majority of the students have a good Social Emotional Learning status.

The table reveals that the mean score of the Perceived Classroom Ecology of secondary school students for the total sample is 77.26 which is greater than the neutral value of the scale (62) which means that majority of the students have a good perception about their classroom ecology.

To assess whether there is any significant influenceof classroom ecology on socialemotional learning amongsecondary school students.

Pearson's product moment correlation was used to determine the relation between Social Emotional Learning and Perceived Classroom Ecology Among Secondary School Students. Details are given in Table 2.

Table 2

Assessment of influence of Classroom Ecology on Social Emotional Learning amongsecondary school students

Variables	N	r	Level of significance	p-value
Social Emotional Learning & Perceived Classroom Ecology	500	0.602*	0.01	0.000

*p < 0.01

The data shows a strong positive correlation of 0.602 between Social Emotional learning and Perceived Classroom Ecology. This suggests that students with higher SEL scores tend to have higher classroom ecology scores and Vice versa. This finding is consistent with Gracia (2023), who also found that supportive classroom environment fosters optimal social emotional learning in students.

Conclusion

The study highlights the pivotal role of Classroom ecology in shaping student's social emotional learning. A positive classroom environment characterized by supportive teacher- student relationships, a sense of community and an inclusive atmosphere facilitates to develops SEL competencies that foster a holistic

approach of education. A positive classroom ecology can enhance student engagement, reduce disruptive behaviour and boost academic performance. By incorporating SEL, students can better to understand and manage their emotions, which in turn helps them to build positive relationships and make responsible decisions.SEL helps individuals become more **emotionally intelligent, sociallyresponsible,and mentally strong**- skills that are essential in navigating today's complex world. For the effective implementation of the SEL, teachers need continuous professional development opportunities to develop practical instructional strategies tailored to their classroom.

References

Blyth,D., Olson,B., & Walker,K (2017). *Ways of being: A model for social and Emotional learning*.Published by University of Minnosota Digital Conservancy

Bronfernbrenner,U.(1997). *The Ecology of Human Development*. Harwqard University Press

Elias, M.,Kinsmen., & Weissberg, R P. (1997*). Promoting Social and Emotional Learning: Guidelines for educators.* Published by Association for Supervision and Curriculum Development (ASCD), Alexandria.

Garcia-Peinnado, R. (2023). The impact of classroom climate on emotional development in Childhood. *Journal of Environment and Social Psychology*, 9 (1).

Kingsland, S.E. (2005). The evolution of American ecology, 1890-2000. Johns Hopikins University Press.

Prudham, W.S. (2009). Ecology. I.R.Kitchin & N.Thrift (Eds). International Encyclopedia of Human Geography. (pp.23-27), Elsevier.

Vijina, K (2017) Perceived Classroom Ecology and Academic Achievement among Secondary School Students. Unpublished M Ed Dissertation, Kannur University.

Endeavours in Education 15(2) & 16(1), 33-42
© Farook Training College
ISSN 0976-4275
Farook Training College
www.farooktrainingcollege.ac.in

Advancements in AI: Are They Leading Us to Proof of Simulation Theory?

Desmin Davis*
Dr Manoj Praveen G**

Abstract

This paper examines whether the advancement of artificial intelligence will lead us to the concept underlying simulation theory. This study follows a comparative analysis that compares different viewpoints on AI's role in simulation theory and examines how these perspectives may evolve with new developments in AI technology. This paper explores the potential connection between the advancement of artificial intelligence (AI) and the concept of Simulation Theory. The present study examines whether AI could eventually enable the creation of simulations that are indistinguishable from actual reality. By understanding AI's trajectory, from early computer systems to modern deep learning algorithms, this paper assesses the process of achieving technological sophistication where simulations can be created to exceed the complexity of our physical reality. The findings contribute to the ongoing discourse surrounding AI's potential to reshape our understanding of reality, consciousness, and the boundaries between the virtual and the real. This study tries to answer the question "Will the development of AI bring us closer to the idea that we might be living in a simulated reality?"

Keywords: Simulation Theory, Artificial intelligence, Plato's Allegory, Virtual Universe

Advancements in AI: Are They Leading Us to Proof of Simulation Theory?

Introduction

Philosopher Nick Bostrom was the first to propose simulation theory in his 2003 paper "Are You Living in a Computer Simulation?" (Thomas, 2024). Simulation theory is a theoretical hypothesis that says what people perceive as reality is an advanced, hyper-realistic computer simulation, possibly overseen by a higher being (Thomas, 2024b). In his book titled "Are You Living in a Computer Simulation?" Nick Bostrom explains that future generations might have mega-computers that can run numerous and detailed simulations of their forebears, in which simulated beings are imbued with a sort of artificial consciousness (Bostrom, 2003). A philosophical explanation can be seen in Plato's allegory of

*Research scholar, Department of Education, University of Calicut, Kerala
**Associate Professor, Department of Education, University of Calicut, Kerala

the cave. It describes the situation where a group of people are imprisoned and chained in a cave. They can see only the shadows of objects cast by the objects behind them. They think those shadows are real because they have never seen the real world outside the cave. One day one of them escaped from the cave and he saw the real world outside the cave for the first time. It was difficult for him to accept the real world. But he knew the reality and enjoyed the beauty outside the cave. When he returned to the cave and explained the beauty of things he observed, others rejected him (Plato, c. 380 BCE/2004). Just like this, it is indigestible to realize the truth we are living in a simulated world. In the above allegory, artificial intelligence plays the role of objects that cast shadows on real objects. AI frameworks like neural operators can improve or replace traditional simulators. They work 4-5 times faster than current methods. Neural Operators can also be combined with physics-based rules to create high-quality and accurate solutions. They help to optimize designs and solve complex problems. This AI approach could revolutionize simulation and research, making advancements much faster and more efficient (Azizzadenesheli et al., 2024). AI algorithms can enhance the realism and delicacy of visual effects (Liu, 2024). As per Nick's viewpoint, if consciousness can be simulated and AI can think like humans, we might create a world that feels 100% real. Then we can say that we are living in a world of simulations. This paper examines whether the advancement of artificial intelligence will lead us to the concept underlying simulation theory.

Research question

Will the development of AI bring us closer to the idea that we might be living in a simulated reality?

This paper investigates the relationship between AI advancements and the credibility of simulation theory, by assessing the evidence from technological and philosophical perspectives.

Literature Review

A virtual universe is a software environment created using a computer system and life can be simulated here. An improved virtual world is a fit environment for all forms of improved synthetic life (Beltramini, 2018). This works for simulation. Torres (2023), in her book "A History of the Science and Ethics of Annihilation," discusses how human choices and attitudes about extinction have evolved in

Western history. Eric Steinhart, a philosopher explores human evolution, where humans are replaced by superhuman beings and human intelligence by superintelligence. Davis and Marcus (2015) suggest that simulation is powerful and intuitively appealing. AI-enhanced simulations offer new possibilities and solutions in various fields (Zhang et al., 2023). Artificial intelligence has evolved significantly over the decades. Alan Turing, one of the most pivotal figures in the development of AI, proposed that the "Turing Test" in 1950, defined whether a machine could simulate human-like intelligence (Turing, 2004). Turing test became the foundation for the development of AI. In the 1980s and 1990s, AI shifted from symbolic methods to data-driven approaches. Machine learning, a subset of AI, focuses on systems that can learn from data rather than relying only on pre-programmed rules (Rumelhart et al., 1986). Reinforcement learning used in AlphaGo and AlphaZero, has enabled AI to achieve human-level performance in games and real-world applications, including robotics and autonomous vehicles (Silver et al., 2016). Deep DIMLP (Discretized Interpretable Multilayer Perceptron) networks trained by deep learning can extract symbolic rules with high predictive accuracy and balanced complexity between accuracy and interpretability (Bologna & Hayashi, 2017). The convergence of AI, VR, AR, blockchain, and 5G networks creates complex virtual worlds that enhance user interactions in the Metaverse and offer new opportunities for exploration and user engagement in various activities (Marinescu & Iordache, 2023, p. 45).

Theoretical Framework

Theoretical Framework of Simulation Theory: Technology Perspective

Technological components of simulation theory:

Advancements in Computational Power (Moore's Law-computational progress will become significantly faster and more efficient over time (Schaller, 1997), Quantum Computing-quantum computing could exponentially enhance processing power, enabling the simulation of vast and intricate systems that classical computers cannot handle (Aaronson, 2013))

Artificial Intelligence and Machine Learning (Machine Learning and Deep Learning: systems capable of learning from vast amounts of data and adapting over time (such as deep neural networks) could be employed to create self-evolving, responsive environments that simulate complex human-like

interactions., Artificial Consciousness: Kurzweil predicts that a core feature of the singularity will be the merging of biological and machine intelligence, such that the majority of "human" intelligence will become non-biological, and the merging of virtual and physical reality. Kurzweil considers this the next step in human-machine co-evolution (Kurzweil, 2005).)

Virtual Reality (VR) and Augmented Reality (AR) (Neural Interfaces: The development of neural interfaces that connect directly to the brain could enable users to experience simulated worlds without any physical hardware such as headsets (Nicolelis, 2011), Full immersion: the future of VR technologies and their potential to create multisensory experiences, including not just vision and sound but also touch, which is a critical component of full immersion (Riva, Wiederhold, & Mantovani, 2019).)

Simulating the Laws of Physics (Simulating Quantum Mechanics: Advancements in quantum computing are necessary for quantum-level phenomena, which are fundamental to the nature of reality as we experience it (Aaronson, 2013).

Theoretical Framework of Simulation Theory: Philosophical Perspective

Plato's Allegory of the Cave: In this allegory, Plato describes the prisoners who are chained inside a cave and can see only the shadows on the wall. They mistake these shadows for reality because they have never seen the outside world. This is often cited as an analogy for humans living in a simulated reality, unaware of fundamental reality (Plato, c. 380 BCE/2004).

Descartes' "Evil Demon" Hypothesis: Descartes entertained the idea that an "evil demon" could deceive him into believing in a false reality. This is similar to a simulation deceiving its inhabitants into believing in the simulated reality they experience (Descartes, 2008).

Methodology

This study follows a comparative analysis of different viewpoints on AI's role in simulation theory and examines how these perspectives may evolve with new developments in AI technology.

Comparative Analysis of AI's Role in Simulation Theory

Simulation theory suggests that the reality we perceive could be a simulation created by advanced intelligence or artificial systems. We have to explore different perspectives, such as 'AI as a tool for exploring the hypothesis', 'AI as a creator of simulations', and 'the ethical implications of these scenarios. ' Here, we compare multiple viewpoints on AI's involvement with simulation theory and reflect on how they may develop with new advancements in AI.

AI as a Tool for Testing Simulation Theory

AI-based systems can detect anomalies or imperfections in the real world. Gummadi et al. (2025) propose a framework for evaluating explainable AI methods for anomaly detection in IoT systems. A physics-based simulation model can improve the classification accuracy of identified anomalous states in deep learning models. It can recognize deviating behavior in industrial processes. (Mäkiaho et al., 2024). Jiang et al. (2022) suggest that the masked Swin Transformer Unet (MSTUnet) detects and localizes industrial anomalies, using global learning abilities and simulated anomalies. Wang et al. (2020) proposed a recurrent neural networks-based method that can effectively detect anomalies in time series data from manufacturing systems, and provide insights into the timestep at which the anomaly occurred. Thus, there are a lot of situations in which AI-based systems can be used to detect anomalies. The laws of physics are incredibly consistent in our universe (Uzan, 2011). AI, particularly machine learning (ML) algorithms, could be trained on vast amounts of data from physical experiments to understand how these constants behave in real-world scenarios. The AI would look for deviations from expected values in physical experiments. This indicates simulation controls the reality. When AI improves enough to mimic the real world through simulation, all will be controlled by AI. Then we will reach the concept underlined by simulation theory.

AI as a Creator of Simulations

AI tools can accelerate augmentative and alternative communication (AAC) by imitating human intelligence and adapting to changing environments (Sennott et al., 2019). AI-generated media can enable users to explore and engage with alternate realities (Dunnell et al., 2024). AI-based intelligent engines can efficiently reduce human intervention and cognitive thinking. (Mandala &

Surabhi, 2024). AI helps in scenario creation in simulation (Tyagi & Sengupta, 2020). BrainCog is a platform for creating brain-inspired AI and brain simulation models. It supports various cognitive functions and enables brain-inspired AI models to simulate cognitive brains. (Zeng et al., 2023). The rapid advancements in AI, particularly in the fields of artificial general intelligence (AGI) and virtual reality (VR), raise questions about the capability of AI to create simulations so complex that they are indistinguishable from reality. Leading thinkers like David Chalmers (2010) speculate that in future AI could simulate consciousness and entire societies within virtual worlds.

Ethical Implications of AI in Simulation Theory

AI simulations can aid in ethical reflection and design in healthcare by analyzing complex scenarios and values (Schicktanz et al., 2023). AI ethics is a field that addresses concerns about AI's impact and its implications, with three main approaches: principles, processes, and ethical consciousness (Kazim & Koshiyama, 2020). Al-kfairy et al. (2024) explore the ethical challenges and solutions related to generative AI. They suggest that generative AI faces ethical challenges and it requires policies, guidelines, and frameworks to prioritize human rights, fairness, and transparency for responsible development. As AI continues to evolve, in future there will be an environment which is fully controlled by AI. Then it will be difficult to distinguish between real and simulated world. Then there is an intense need to develop ethical policies to prioritize human rights.

Conclusion

The role of artificial intelligence (AI) in simulation theory is complex and involves different ideas. Some researchers use AI to test the idea that our reality might be a simulation. AI can help identify patterns or unusual behavior in things like physics or the way particles behave. If AI finds anything strange, it might point to the possibility that we are living in a world of simulation. As AI technology improves, it is getting better at making realistic simulations of our world or even entire universes. This could be used for things like creating virtual worlds in games or developing simulations for research. If AI can simulate human consciousness, then it will be a challenge for human existence. In summary, AI is not only a tool for testing whether we live in a simulation, but it also has the potential to create new simulated realities. This will raise many

questions regarding reality. The future of AI could change our understanding of reality in ways we can't fully imagine yet. Then there is an intense need to develop ethical policies to prioritize human rights.

Reference

Thomas, M. (2024, August 2). *What is simulation theory? Are we living in a computer simulation?* Built In. https://builtin.com/hardware/simulation-theory

Thomas, M. (2024b, August 2). *What is simulation theory? Are we living in a computer simulation?* Built In. https://builtin.com/hardware/simulation-theory

Bostrom, N. (2003). *Are you living in a computer simulation?* Philosophical Quarterly, 53(211), 243–255. https://doi.org/10.1111/1467-9213.00309

Plato. (2004). *The Republic* (C. D. C. Reeve, Trans.). Hackett Publishing. (Original work published c. 380 BCE)

Azizzadenesheli, K., Kovachki, N., Li, Z., Liu-Schiaffini, M., Kossaifi, J., & Anandkumar, A. (2024). Neural operators for accelerating scientific simulations and design. *Nature Reviews Physics*, 6(5), 320-328.

Liu, H. (2024, February). Research on AI Algorithm to Improve Visual Communication Fidelity in the Meta-universe. *In 2024 4th Asia-Pacific Conference on Communications Technology and Computer Science* (ACCTCS) (pp. 602-608). IEEE.

Beltramini, E. (2018). Simulation Theory: A Preliminary Review. *European Journal of Science and Theology*, 14(4), 35-48.

Davis, E., & Marcus, G. (2015). The scope and limits of simulation in automated reasoning. *Artificial Intelligence*, 233, 60–72. https://doi.org/10.1016/j.artint.2015.12.003

Zhang, J., Chen, D., Xia, Y., Huang, Y., Lin, X., Han, X., Ni, N., Wang, Z., Yu, F., Yang, L., Yang, Y., & Gao, Y. (2023). Artificial Intelligence Enhanced Molecular Simulations. *Journal of chemical theory and computation*. https://doi.org/10.1021/acs.jctc.3c00214.

Turing, A. (2004). Computing Machinery and Intelligence (1950). *In Oxford University Press eBooks* (pp. 433–464). https://doi.org/10.1093/oso/9780198250791.003.0017

Rumelhart, D. E., Hinton, G. E., & Williams, R. J. (1986). Learning representations by back-propagating errors. *nature*, 323(6088), 533-536.

Silver, D., Huang, A., Maddison, C. J., Guez, A., Sifre, L., Van Den Driessche, G., ... & Hassabis, D. (2016). Mastering the game of Go with deep neural networks and tree search. *nature*, 529(7587), 484-489.

Bologna, G., & Hayashi, Y. (2017). Characterization of Symbolic Rules Embedded in Deep DIMLP Networks: A Challenge to Transparency of Deep Learning. *Journal of Artificial Intelligence and Soft Computing Research*, *7*, 265 - 286. https://doi.org/10.1515/jaiscr-2017-0019.

MARINESCU, I. A., & IORDACHE, D. D. (2023). Exploring relevant technologies for simulating user interaction in Metaverse virtual spaces. *Romanian Journal of Information Technology & Automatic Control/Revista Română de Informatică şi Automatică*, 33(3).

Schaller, R. R. (1997). Moore's law: past, present, and future. *IEEE Spectrum*, 34(6), 52-59.

Aaronson, S. (2013). *Quantum computing since Democritus*. Cambridge University Press.

Kurzweil, R. (2005). The singularity is near: *When humans transcend biology*. Viking.

Nicolelis, M. (2011). *Beyond boundaries: The new neuroscience of connecting brains with machines and how it will change our lives*. Macmillan.

Riva, G., Wiederhold, B. K., & Mantovani, F. (2019). Neuroscience of virtual reality: from virtual exposure to embodied medicine. *Cyberpsychology, behaviour, and social networking,* 22(1), 82-96.

Descartes, R. (2008*). Meditations on first philosophy: With selections from the objections and replies.* Oxford University Press.

Gummadi, A., Arreche, O., & Abdallah, M. (2025). A systematic evaluation of white-box explainable AI methods for anomaly detection in IoT systems. *Internet Things*, 30, 101505. https://doi.org/10.1016/j.iot.2025.101505.

Mäkiaho, T., Koskinen, K. T., & Laitinen, J. (2024). Improving Deep Learning Anomaly Diagnostics with a Physics-Based Simulation Model. *Applied Sciences*, 14(2), 800.

Jiang, J., Zhu, J., Bilal, M., Cui, Y., Kumar, N., Dou, R., ... & Xu, X. (2022). Masked swin transformer unet for industrial anomaly detection. *IEEE Transactions on Industrial Informatics*, 19(2), 2200-2209.

Wang, Y., Perry, M., Whitlock, D., & Sutherland, J. W. (2022). Detecting anomalies in time series data from a manufacturing system using recurrent neural networks. *Journal of Manufacturing Systems*, 62, 823-834.

Sennott, S. C., Akagi, L., Lee, M., & Rhodes, A. (2019). AAC and artificial intelligence (AI). *Topics in language disorders*, 39(4), 389-403.

Dunnell, K., Agarwal, G., Pataranutaporn, P., Lippman, A., & Maes, P. (2024, May). AI-generated media for exploring alternate realities. *In Extended Abstracts of the CHI Conference on Human Factors in Computing Systems* (pp. 1-8).

Mandala, V., & Surabhi, M. D. Intelligent Engines: Revolutionizing Manufacturing and Supply Chains with AI.

Tyagi, S., & Sengupta, S. (2020). Role of AI in Gaming and Simulation. *In Proceedings of the International Conference on Computer Networks, Big Data and IoT (ICCBI-2019)* (pp. 259-266). Springer International Publishing.

Zeng, Y., Zhao, D., Zhao, F., Shen, G., Dong, Y., Lu, E., ... & Bi, W. (2023). BrainCog: A spiking neural network-based, brain-inspired cognitive intelligence engine for brain-inspired AI and brain simulation. *Patterns*, 4(8).

Chalmers, D. (2010). *The Conscious Mind: In Search of a Fundamental Theory*. Oxford University Press.

Schicktanz, S., Welsch, J., Schweda, M., Hein, A., Rieger, J. W., & Kirste, T. (2023). AI-assisted ethics? Considerations of AI simulation for the ethical assessment and design of assistive technologies. *Frontiers in Genetics*, 14, 1039839.

Kazim, E., & Koshiyama, A. S. (2021). A high-level overview of AI ethics. *Patterns*, 2(9).

Al-kfairy, M., Mustafa, D., Kshetri, N., Insiew, M., & Alfandi, O. (2024, September). Ethical challenges and solutions of generative AI: An interdisciplinary perspective. *In Informatics* (Vol. 11, No. 3, p. 58). Multidisciplinary Digital Publishing Institute.

Endeavours in Education 15(2) & 16(1), 43-49
© Farook Training College
ISSN 0976-4275
Farook Training College
www.farooktrainingcollege.ac.in

Revitalizing Educational Assessment in India: Bridging Tradition and Modernity

Prof. (Dr) Devanandan K. V.*

Abstract

This paper critically examines the evolution of educational evaluation in India, contrasting the exam-driven, memory-focused methods of the contemporary system with the holistic, learner-centric practices of ancient traditions like the Gurukula. The ancient system emphasized individualized mentoring, qualitative feedback, and multidimensional growth based on the Panchamaya Kosa paradigm, addressing physical, emotional, intellectual, and spiritual development. Modern systems, however, prioritize rote learning over critical thinking and creativity.

The paper advocates for a transformative shift in evaluation culture, aligning with the National Education Policy (NEP) 2020, which proposes competency-based formative assessments rooted in Bloom's Taxonomy and enriched with AI-driven personalization. Drawing inspiration from ancient holistic practices and leveraging modern technological advancements, the paper outlines an inclusive, human-centered, and multidimensional evaluation system. It concludes with actionable recommendations to merge the wisdom of traditional Indian education with innovative approaches, fostering well-rounded learners and lifelong education.

Key Terms: *Holistic Education, Gurukula education system, Panchamaya Kosa, Competency-Based Assessment, AI-Driven Personalization, Higher-Order Thinking Skills, Holistic Progress Card*

Education transforms societies, and at its core lies evaluation, which shapes the way students learn, grow, and succeed (UNESCO,2015). However, the methods used to evaluate students deeply influence educational outcomes. Across time and geography, evaluation systems have evolved, reflecting cultural values and societal priorities Black & Wiliam, (1998).

In ancient India, systems like the Gurukula prioritized holistic, personalized, and multidimensional education. In contrast, modern education often emphasizes

*Principal, KPPM College of Teacher Education, Anakkayam, Kerala

standardized, exam-based evaluations, which prioritize cognitive memorization over critical thinking, creativity, and emotional development. This article explores these paradigms, critiques the limitations of current systems, and establishes a vision for transforming assessment in line with the National Education Policy (NEP) 2020.

The Shift from Holistic to Exam-Based Evaluations

Ancient Indian Approach: Gurukula Tradition and Beyond

Ancient Indian education systems embodied a learner-centric, formative approach where evaluation was continuous, qualitative, and multidimensional. Systems like the Gurukula focused on mentoring, deep observation, and tailored guidance Altekar A.S, (2009). Teachers (acharyas) assessed students not through standardized tests but by analyzing their real-world application of knowledge, character development, and alignment with cultural and spiritual values Dr. S.B. Mukherjee, (2002).

Key features of ancient systems included:

- Individualized Mentorship: Teachers guided students based on their unique capabilities, addressing both strengths and areas for growth.
- Panchamaya Kosa Model: This framework from the Taittiriya Upanishad focused on five dimensions of human development Swami Gambhirananda, (2010):
  - ✓ Annamaya Kosa (Physical Growth)
  - ✓ Pranamaya Kosa (Energy and Vitality)
  - ✓ Manomaya Kosa (Emotional and Mental Well-being)
  - ✓ Vijnanamaya Kosa (Intellectual and Discriminative Abilities)
  - ✓ Anandamaya Kosa (Bliss and Spiritual Fulfillment)
- Qualitative Observation: Formative feedback was narrative and personalized, encouraging lifelong learning rather than competition.

This approach cultivated fully-rounded individuals, ensuring balanced physical, intellectual, emotional, and spiritual development.

Bloom's Taxonomy and Modern Evaluation Practices

The three basic brain processes—knowing, feeling, and willing—which correspond to the cognitive, affective, and psychomotor domains, respectively, are used by Bloom's Taxonomy to categorise educational goals. Knowledge acquisition and intellectual abilities including recall, comprehension, application, analysis, evaluation, and creation are related to the cognitive domain. In conventional educational systems, this is the area that is most frequently addressed. From receiving and reacting to valuing, organising, and internalising values, the affective domain encompasses emotions, attitudes, values, and feelings. It shows how students react emotionally to both the material and other people. Physical movement, coordination, and the application of motor abilities are all included in the psychomotor domain, which is frequently disregarded in formal education. Writing, painting, conducting experiments, and playing musical instruments are examples of such activities. When combined, these areas promote holistic learning, guaranteeing that education not only fosters cerebral prowess but also moulds character, emotional intelligence, and practical skills necessary for success in the real world and personal development.

Cognitive skills were categorised into five levels by Bloom's Taxonomy (1956): remembering, understanding, applying, analysing, evaluating, and creating. Lower-order thinking skills (LOTS), such recall and comprehension, are the main focus of contemporary assessment systems, especially in India.

Alignment with Bloom's Taxonomy in current curriculum is weak due to:

- Over-reliance on objective tests
- Infrequent use of performance-based tasks
- Lack of training for teachers in designing HOTS-based (Higher-Order Thinking Skills) assessments

Modern Systems: Rote Memorization and Standardization

With shifts driven by colonial and industrial priorities, modern education systems leaned heavily into standardization Dr. R.P. Mishra, (2017). In India, this has resulted in evaluation systems focused disproportionately on cognitive recall, where success is often confined to:

- Rote memorization and replication of textbook content.

- High-stakes exams that test for lower-order thinking skills (LOTS) like recall and comprehension rather than critical analysis or creativity.
- Neglect of affective and psychomotor domains, which cover emotional intelligence, artistic abilities, and practical skills.

This method sacrifices student individuality and broader development, prioritizing grades over holistic growth. Standardized systems also exacerbate stress, undermining what education should ideally achieve — nurturing thoughtful, innovative, and well-rounded individuals.

The Path Forward: Bridging Tradition with NEP 2020

The National Education Policy (NEP) 2020 represents a transformative vision, aiming to shift Indian education away from rigid, exam-driven systems toward human-centric, competency-based learning and assessment. The NEP advocates for restructuring evaluations as tools that highlight understanding, creativity, problem-solving, and collaboration.

Key Highlights of NEP 2020 for Assessment

1. Holistic Progress Cards:

✓ Evaluate students across cognitive, emotional, and psychomotor domains.

✓ Move beyond academic scores to emphasize co-curricular and social development.

2. Competency-Based Assessments:

✓ Focus on applying skills to real-world scenarios, reducing emphasis on rote memorization.

✓ Emphasize creative and critical thinking as core competencies.

3. Technology Integration via AI:

✓ AI-driven adaptive assessments can personalize learning by identifying individual strengths, weaknesses, and pace of growth.

4. Redesigned Board Examinations:

✓ Transition from a one-size-fits-all model to flexible, modular formats.

- ✓ Highlight deeper understanding and conceptual grasp rather than superficial recall.

By integrating ancient wisdom with modern insights, a transformative, stress-free, and empowering system of evaluation can emerge.

Actionable Strategies for the Future

To implement the vision of NEP 2020 effectively, India must address key areas and challenges in educational evaluation. Below are recommended strategies based on ancient traditions, contemporary practices, and emerging technologies.

1. Revive and Adapt Holistic Frameworks

Revise evaluation models to integrate the Panchamaya Kosa framework, acknowledging the interconnected growth of students across physical, emotional, intellectual, and spiritual dimensions. Mechanisms to operationalize this include:

- ✓ Incorporating mindfulness training into curricula for emotional resilience (Manomaya).
- ✓ Promoting creative pursuits like art or athletics for physical and emotional growth (Annamaya and Pranamaya).
- ✓ Encouraging reflective practices like journaling, which foster intellectual and spiritual insight (Vijnanamaya and Anandamaya).

2. Strengthen Teacher Training in Assessment Design

Teachers play a pivotal role in ensuring assessments are effective, inclusive, and insightful. To achieve this:

- ✓ Train educators in Bloom's Taxonomy, emphasizing Higher-Order Thinking Skills (HOTS) like analysis, evaluation, and creation.
- ✓ Equip them to design rubrics and develop portfolio-based evaluations that prioritize process over product.
- ✓ Use exemplar-based workshops to create performance tasks that assess real-world applications rather than rote knowledge.

3. Restructure Board Examinations

The board exams, viewed as the ultimate barometer of student performance, must

evolve. Proposed reforms include:

- ✓ Modular structures with flexible testing opportunities throughout the year.
- ✓ Open-book or project-based exams to test critical thinking and innovation.
- ✓ Multiple formats (digital, oral, written) to accommodate diverse learning styles and reduce performance anxiety.

4. Expand Continuous and Comprehensive Evaluation (CCE)

Although CCE, introduced in 2005, had theoretical merits, its implementation suffered due to technical challenges. To strengthen CCE:

- ✓ Streamline processes using digital tools for documentation and feedback.
- ✓ Align assessments with both scholastic and co-scholastic goals using qualitative indicators.
- ✓ Replace checkbox compliance with reflective practices that uncover deeper insights about learners' progress.

5. Leverage AI for Personalized Adaptive Assessments

Artificial Intelligence holds the potential to revolutionize assessment processes:

- ✓ Use adaptive algorithms to diagnose learners' needs and curate personalized learning trajectories.
- ✓ Automate formative feedback to reduce teacher workload while ensuring every learner gets individual guidance.
- ✓ Track emotional, social, and academic trends for well-rounded progress assessments.

Conclusion: Fostering Inclusive, Human-Centric Evaluation

The juxtaposition of ancient and modern education systems reveals stark contrasts but also immense opportunities for integration. While ancient systems emphasized mentorship, holistic growth, and alignment with spiritual values, modern systems bring tools for scalability and precision. The NEP 2020 offers a

roadmap for blending these principles — fostering inclusive, transformative, and human-centered assessment practices.

By embracing holistic frameworks like Panchamaya Kosa, aligning assessments with Bloom's Taxonomy for higher-order skills, and leveraging technological innovations like AI, India can reimagine education to build not just knowledgeable learners but compassionate, resilient, and empowered individuals. In doing so, the nation honors its rich educational heritage while preparing for a future defined by creativity, adaptability, and shared human values.

References

Altekar, A. S. (2009). Education in ancient India. Nand Kishore & Sons. ISBN 9788120804955.

Black, P., & Wiliam, D. (1998). Evaluation in education: The role of assessment in shaping learning processes. International Journal of Educational Assessment, 24(5).

Chakravarti, U. (1993). Holistic education and worldview in ancient India. Journal of Indian Cultural Studies, 15.

Mishra, R. P. (2017). Assessment trends in Indian education. International Journal of Education Reform, 29(3).

Mukherjee, S. B. (2002). The Indian tradition of education. Arya Book Depot. ISBN 9788180140416.

NCERT. (n.d.). Continuous and comprehensive evaluation (CCE): Theory and practice. NCERT Publication. Retrieved from https://ncert.nic.in

Swami Gambhirananda. (2010). Taittiriya. Advaita Ashrama. ISBN 9788175050976.

UNESCO. (2015). Education as a driver for development. UNESCO.

Endeavours in Education 15(2) & 16(1), 50-63

Farook Training College
ISSN 0976-4275 | www.farooktrainingcollege.ac.in

Identifying Stressful Academic Pressures among Senior Secondary Students in Kerala

Prof. (Dr) Abdul Gafoor K*
Muhammed Muqthar. T*

Abstract

This study examines the link between academic pressure and stress among senior secondary science students in Malappuram and Kozhikode districts of Kerala. Its primary goal is to differentiate academic pressure from stress and identify which pressure types—categorised as positive or negative and internal or external, most significantly influence stress levels. Employing a comparative descriptive research design, the study gathered data from 540 students using two tools: the Academic Pressure Scale, developed and validated by the researcher, and the Educational Stress Scale for Adolescents (ESSA). Negative pressures, such as internal factors like self-imposed fear of failure or external factors like punitive discipline and peer comparisons, were found to substantially increase stress levels. In contrast, positive pressures, particularly external ones such as encouragement from parents and teachers, either reduced stress or had no notable impact. These findings underscore the importance of distinguishing between types of pressure to create effective interventions. By addressing harmful stressors and promoting supportive academic environments, schools can better support student well-being. The study advocates for tailored strategies to mitigate negative pressures while leveraging positive ones to foster healthier learning experiences.

Key words: Academic stress, academic pressure, positive pressure, negative pressure, internal pressure, external pressure

Adolescence marks a developmental phase characterised by significant physical, cognitive and socio-emotional transitions. The transition into senior secondary education is marked by high academic demands, parental expectations, competitive environments and internal aspirations, contributing to rising levels of academic stress among students. At this critical stage, senior secondary students

*Professor, Department of Education, University of Calicut
**Assistant Professor, Majma's Training College, Kavanur

in Kerala — a society that places a high emphasis on education and economic independence — face increasing academic demands, including high-stakes examinations, competitive admissions, and societal expectations for scholastic excellence. These pressures place students at heightened risk of academic stress—a psychological and physiological response to academic demands—which can manifest in anxiety, disengagement, burnout, and impaired academic functioning (Lee et al., 2013; Greenberger & Chen, 1996; Levecque et al., 2017).

While academic stress is widely recognised in research, it is often conflated with academic pressure, which more accurately refers to the internal and external expectations that shape students' academic behaviours. Internal pressures stem from personal aspirations, perfectionism, and self-set goals, whereas external pressures arise from parents, teachers, peers, and broader cultural norms (Wang et al., 2015; Luthar & Kumar, 2018). Crucially, not all forms of academic pressure are harmful. Positive academic pressures can serve as motivational forces, pushing students toward excellence and personal growth (Weisinger & Fry, 2015). However, when excessive or perceived as punitive, especially in competitive environments like higher secondary science streams, such pressure may become maladaptive and contribute to chronic academic stress. This study explores the nuanced relationship between academic stress and academic pressure, aiming to empirically distinguish the two and identify which forms of academic pressure function as stressors.

Need and Significance of this study

The need and significance of this study lie in addressing the nuanced yet underexplored relationship between pressure and stress. Although many studies have examined academic stress (Bhui et al., 2016; Levecque et al., 2017), few have systematically differentiated between the sources and types of academic pressure and their role as stressors. This research attempts to fill that gap by empirically distinguishing positive vs. negative and internal vs. external academic pressures and analysing their differential impact on stress. By focusing on senior secondary science stream students in Malappuram and Kozhikode districts—areas known for intense academic competition—the study responds to the contextual realities of Kerala's educational climate.

Conceptual Overview: Academic Stress and Academic Pressure

Conceptually, academic stress is defined as the reaction to academic demands such as assignments, tests, and high achievement expectations. Academic stress is generally defined as the mental distress associated with anticipated academic challenges or failure (Sinha, Sharma & Nepal, 2001). It includes emotional, cognitive, and physiological responses. Academic pressure, on the other hand, refers to the internal and external expectations placed on students to perform or achieve to meet these expectations, whether self-imposed or externally driven. While stress is a reactive condition, pressure is the proactive force that may or may not lead to stress, depending on its nature and intensity

Internal pressures may involve self-imposed expectations and perfectionism, while external pressures stem from parents, teachers, and peers. The literature distinguishes positive academic pressures, which can motivate and enhance performance, from negative pressures, which can be detrimental to student well-being. This conceptual distinction underpins the current study's hypothesis that not all pressure results in stress, and in some cases, it may serve a protective function.

While academic pressure and academic stress are often used interchangeably, there is a lack of clear empirical distinction between various types of academic pressures (positive/negative, internal/external experiences and behaviours) and the resulting academic stress (the response) in senior secondary students. This ambiguity hinders the identification of specific pressure types that act as significant stressors and the potential protective role of positive pressures, making it difficult to develop targeted interventions for student well-being. Academic pressure is understood as the demand placed on students, while academic stress is not a direct outcome of these demands alone, but rather a response to how those demands are perceived and experienced. This distinction is essential to inform effective interventions. This study aims to empirically distinguish academic pressure from stress and identify which types of pressure are stressors among senior secondary students by comparing academic stress levels between students experiencing high vs. low levels of positive/negative internal/external academic pressures using a comparative descriptive research design.

Objectives

The study was carried out with the following objectives

1. To assess the levels of academic stress and the four types of academic pressure among senior secondary students.
2. To empirically distinguish academic pressure from academic stress.
3. To compare academic stress levels between high and low groups for each of the four types of academic pressure.
4. To identify which types of academic pressure significantly influence academic stress.

Hypotheses

1. Students experiencing high positive internal pressure will have significantly lower levels of academic stress compared to those experiencing low positive internal pressure.
2. Students experiencing high negative internal pressure will have significantly higher levels of academic stress compared to those experiencing low negative internal pressure.
3. Students experiencing high positive external pressure will have significantly lower levels of academic stress compared to those experiencing low positive external pressure.
4. Students experiencing high negative external pressure will have significantly higher levels of academic stress compared to those experiencing low negative external pressure.

Methodology

Design

This study employed a quantitative, comparative, and cross-sectional design to examine the relationship between academic stress and four types of academic pressure (positive/negative, internal/external) among higher secondary students. The study aimed to assess the levels of academic stress and academic pressure, compare stress levels between high and low groups for each pressure type using independent samples t-tests, and identify which types of pressure significantly

influence academic stress. Data were collected at a single point in time from senior secondary students.

Sample

The study followed a survey method and was conducted among higher secondary science students in Kerala. A total of 540 students from the science stream were selected from eight higher secondary schools using a stratified random sampling method. The schools were located in both urban and rural areas of the Malappuram and Kozhikode districts, and the sample included both male and female students. Data collection took place between November and December 2023. Incomplete responses were discarded, ensuring clean data from all 540 students.

Tools

Two tools were used for data collection:

Academic Pressure Scale

Developed and standardised by Gafoor and Muqthar (2024), this scale assesses academic pressure across four dimensions:

- Positive Internal Academic Pressure (12 items)
- Positive External Academic Pressure (14 items)
- Negative Internal Academic Pressure (12 items)
- Negative External Academic Pressure (14 items)

The scale consists of 52 Yes/No items reflecting both the emotional and academic aspects of pressure. Its development involved interviews with 10 students and feedback from 50 students via Google Forms, which helped identify key academic themes such as workload, tight syllabus, exam fear, peer comparison, and unrealistic expectations.A try-out version of the scale was tested on 370 students from the same regions. Item analysis was conducted using Ebel's method, considering difficulty index and discriminating power. Only items meeting appropriate criteria were retained.

The Academic Pressure Scale, developed and standardized by Gafoor and Muqthar (2024), underwent a rigorous process to ensure both validity and reliability. To establish content validity, the authors conducted interviews with

ten students and gathered feedback from fifty students using Google Forms to identify core academic themes such as workload, tight syllabus, exam fear, peer comparison, and unrealistic expectations. Based on these themes, items were constructed to reflect both the positive and negative emotional and academic dimensions of pressure. The validity of the Academic Pressure Scale was established through face and content validation by field experts, and construct validity was ensured by aligning the items with well-defined themes from student feedback. The split-half reliability coefficient of .74 indicates high internal consistency.

The Educational Stress Scale for Adolescents (ESSA)

*The Educational Stress Scale for Adolescents (ESSA)*developed by Sun, Dunne, Hou, and Xu (2011), was used to assess academic stress. This tool consists of 16 items rated on a 5-point Likert scale and has demonstrated strong construct validity as well as test-retest reliability, with an intraclass correlation coefficient (ICC) of 0.78, making it a reliable and well-established instrument for measuring educational stress in adolescent populations.

Data Collection

Data were collected between November and December 2023. Incomplete responses were discarded, ensuring a clean dataset from all 540 students

Findings

Table 1 summarises the mean, median, mode, standard deviation, skewness, and kurtosis for each variable. Following this, Figure 1 illustrates the cumulative percentage distribution of academic stress scores, revealing significant trends regarding the prevalence and intensity of stress experienced by the students.

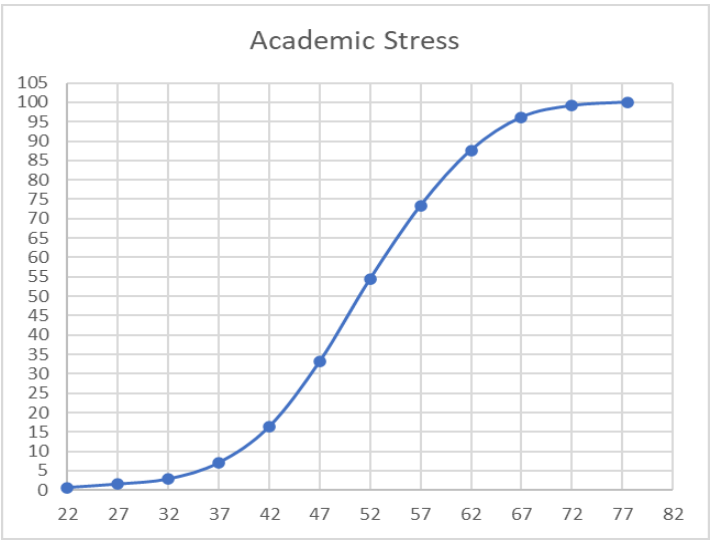
Table 1

Important Statistical Constants for the Scores of Academic Stress for the Total Sample (N=540)

Variable	Mean	Median	Mode	sd	Skewness	Kurtosis
Academic Stress	53.46	54	52	9.56	-0.26	0.4
Positive Internal Academic Pressure	9.56	10	10	1.56	-2.098	5.93
Positive External Academic Pressure	8.23	9	11	2.52	-0.52	-0.51
Negative Internal Academic Pressure	7.03	7	7	2.73	-0.29	-0.61
Negative External Academic Pressure	5.75	6	7	2.81	0.057	–.71

The cumulative percentage distribution of academic stress scores among senior secondary students revealed significant trends pointing to widespread stress experiences.

Figure 1. *The Cumulative Percentage Distribution of Academic Stress Scores*



As illustrated by the ogive, only a small proportion of students (2.8%) reported low stress levels, with scores ranging between 20 and 34. The majority of students

(54.4%) fell below a score of 54, indicating moderate levels of academic stress. Notably, the cumulative percentage increased sharply between the score intervals of 45–64, suggesting that a large segment of students (approximately 54.5%) were experiencing moderate to high stress. Furthermore, 87.6% of the students scored below 64, highlighting a clear concentration of academic stress in the upper-mid range of the distribution. These findings suggest that academic demands, such as examination pressure, curriculum overload, and performance expectations, may be major contributors to stress among students in the region. The distribution pattern supports prior research indicating that academic stress intensifies during the senior secondary stage, a period marked by crucial career decisions and heightened academic competition (Kumar &Bhukar, 2013).

Table 2

Comparison of Academic Stress Levels Between Individuals with Low and High levels of four types of Academic Pressures by their Sources (Internal vs. External) and Direction (Negative vs. Positive)

Academic Stress	Low			High			*t-value*
	N	Mean	SD	*N*	Mean	SD	
Positive internal academic pressure	401	53.7	9.86	139	52.78	8.67	0.98
Positive external academic pressure	338	54.54	9.58	202	51.66	0.28	3.42*
Negative internal academic pressure	295	50.07	8.77	245	57.55	8.86	9.83*
Negative external academic pressure	319	50.45	8.69	221	57.82	9.08	9.52*

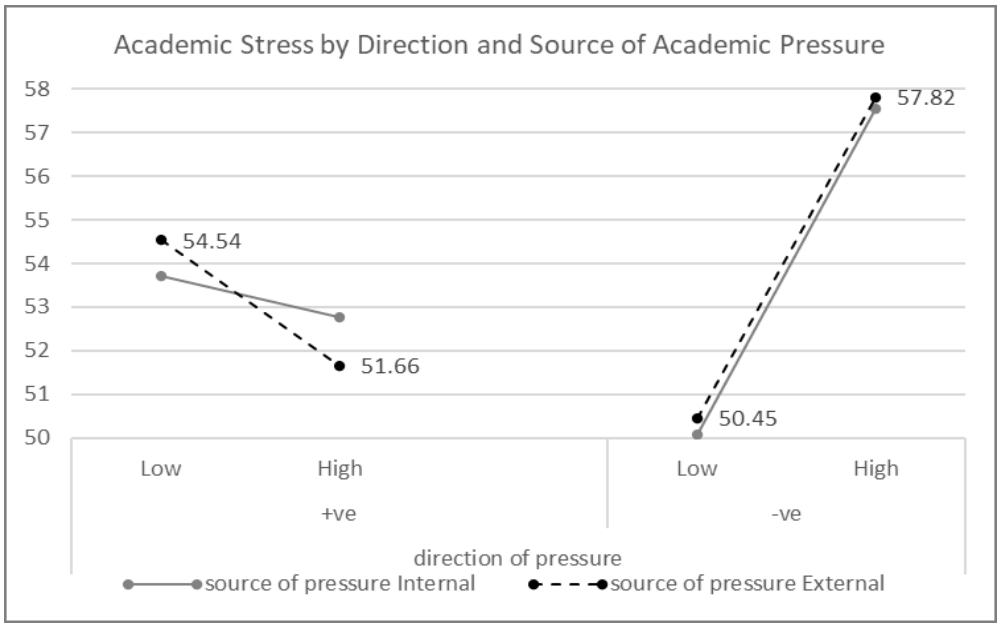
*$p < .01$

An independent samples t-test was conducted to compare the mean scores of various academic pressures between students with low and high levels of academic stress. The results revealed no statistically significant difference in positive internal academic pressure between students with low (M = 53.7, SD = 9.86) and high academic stress (M = 52.78, SD = 8.67); t(538) = 0.98, p = .33. However, a statistically significant difference was observed in positive external academic pressure, with students experiencing low stress reporting higher mean scores (M = 54.54, SD = 9.58) compared to those with high stress (M = 51.66, SD = 0.28); t(538) = 3.42, p = .001. This suggests that supportive external factors such as

encouragement from teachers and family, may buffer against academic stress. More notably, significant differences were found in negative internal and negative external academic pressures. Students with high academic stress reported significantly higher scores in negative internal pressure ($M = 57.55$, $SD = 8.86$) than those with low stress ($M = 50.07$, $SD = 8.77$); $t(538) = 9.83$, $p < .001$. A similar trend was found for negative external pressure, where students with high stress reported a higher mean ($M = 57.82$, $SD = 9.08$) compared to their low-stress counterparts ($M = 50.45$, $SD = 8.69$); $t(538) = 9.52$, $p < .001$. The findings on the influence of Direction and Source of Academic Pressure on the academic stress of science stream higher secondary students in Kerala is summarised in Figure 2.

Figure 2.

Mean Plots of Academic Stress by Direction and Source of Academic Pressure



The findings summarised in Figure 2 underscore the significant impact of negative academic pressures, such as fear of failure, punitive discipline, and peer comparison—in elevating stress levels among senior secondary students in Kerala. The data emphasize the need for schools to reduce harmful academic practices and foster a more supportive and emotionally safe learning environment.

Discussion

The study found that negative internal and external pressures significantly increase academic stress, while positive pressures, particularly external ones, may buffer or have a neutral impact. These findings are consistent with the work of Kumar and Bhukar (2013), who emphasised the stress-inducing nature of fear of failure and peer comparison.

The absence of significant differences in stress levels for positive internal pressure mirrors findings from Subramanian (2016), who observed that internal motivation often correlates with academic engagement but not necessarily with distress. Furthermore, the buffering role of positive external pressures identified by this study such as self-driven behaviors and intrinsic motivations, stemming from personal aspirations, pride in their learning and achievements, self-discipline in completing tasks, a consistent work ethic, and proactive engagement in learning activities, personal desire for excellence, future orientation, and enjoyment derived from academic pursuits or sharing knowledge, supports the conclusions of Reddy et al. (2018), who found that teacher and parental support reduce stress perception.

This study contributes to existing literature by empirically validating the theoretical distinction between academic pressure and stress and providing a nuanced understanding of how different types of pressures influence student mental health.

Implications for Educational Theory and Practice

The findings have several implications.

Theoretically, the results support a differentiated model of academic stress that incorporates pressure type and source as critical variables, moving beyond generalised stress models.

Practically, interventions should aim to reduce negative academic pressures, especially punitive and fear-based systems, and enhance positive support systems, including parent-teacher collaboration and student counselling services. Therefore, targeted interventions, such as school-based counselling services, stress management programmes, and curriculum restructuring, are imperative to mitigate stress and support students' mental well-being during this critical phase of education.

To effectively reduce negative academic pressure among higher secondary students, several behaviours identified through the Academic Pressure Scale should be consciously avoided. These include excessive comparison with peers, both self-imposed and by parents or teachers, as this undermines self-confidence and increases anxiety. Over-monitoring by parents and teachers, and frequent reminders about academic tasks, can create a sense of surveillance and pressure, leading to reduced motivation. Sacrificing recreational activities and social interactions solely for academic pursuits results in emotional exhaustion and isolation. Students feeling burdened by constant examinations, tight deadlines, and a lack of autonomy in academic decisions also experience heightened stress. Other harmful behaviours include internalising failure, reacting with frustration when unable to perform well, and feeling embarrassed about academic setbacks. Avoiding these practices and promoting a balanced, supportive approach can help maintain student well-being and reduce harmful academic stress.

Whereas External Regulation characterised in the above set of behaviours are stress generating internal regulation behaviours, characterised by personal desire for excellence, future orientation, and enjoyment derived from academic pursuits or sharing knowledge, personal aspirations, pride in own learning and achievements, self-discipline in completing tasks, a consistent work ethic, and proactive engagement in learning activities, act as a buffer to academic stress.

Adolescents, counsellors and other care-takers have to recognise that internal emotional responses to academic demands, including behaviours and feelings such as self-comparison leading to a loss of confidence, discomfort or boredom with challenging subjects, worrying about deadlines, self-frustration over perceived academic shortcomings, and emotional pain from sacrificing leisure for studies, are as stress-inducing as the stressful behaviors and environmental factors imposed from outside the student.

Providing supportive and stimulating external factors that encourage academic growth (positive expectancies) helps fight stress in adolescents. Behaviours and environmental influences that help fight stress include positive peer examples, motivating structures like exams and seminars offering opportunities for achievement, constructive feedback and suggestions from teachers, and supportive family involvement (e.g., discussions about the future, reminders, help with

focus). Positive social comparisons and the hope or confidence others place in the student also help reduce stress.

Policy-level reforms may include redesigning curriculum load, diversifying assessment systems, and integrating life skills and emotional intelligence training to build resilience.

Teacher education programmes should incorporate modules on emotional support and non-coercive pedagogies.

Conclusion

This research empirically distinguishes between academic pressure and academic stress among senior secondary students and identifies which specific types of pressure contribute most to elevated stress. The findings establish that negative internal and external pressures are significant predictors of higher academic stress, while positive external pressures may be associated with lower stress levels. These insights support the need to conceptualize academic stress not as a direct outcome of academic demands alone, but as a response to how those demands are perceived and experienced. whereas stress requires management, pressure requires transformation or balance. Findings consistently indicate that negative internal and external pressures significantly increase academic stress, aligning with existing literature emphasising the detrimental impact of fear of failure and unhelpful peer comparison. Conversely, positive pressures, particularly those stemming from supportive external environments (e.g., constructive feedback, family involvement, peer motivation) and robust internal self-regulatory behaviours (e.g., personal aspirations, self-discipline, enjoyment in learning), serve as crucial buffers against stress or have a neutral impact, promoting engagement without distress.

Academic stress among senior secondary students is not a monolithic construct, but is profoundly influenced by the type and source of academic pressure. The results empirically validate a differentiated model of academic stress, moving beyond generalised frameworks. Practically, the implications are substantial, necessitating a multi-faceted approach to student well-being. Interventions should prioritise the reduction of stress-inducing external factors like punitive systems, excessive comparison, and over-monitoring, while actively cultivating positive external support and strengthening students' internal coping mechanisms. This

calls for systemic educational reforms, including curriculum restructuring, diversified assessment strategies, comprehensive counselling services, integration of life skills training, and teacher education programs focused on emotional support and non-coercive pedagogies, ultimately aiming to foster resilience and a healthier academic environment.

References

Bhui, K., Dinos, S., Galant-Miecznikowska, M., de Jongh, B., & Stansfeld, S. (2016). Perceptions of work stress causes and effective interventions in employees working in public, private and non-governmental organisations: A qualitative study. *BJPsych Bulletin, 40*(6), 318–325.https://doi.org/10.1192/pb.bp.115.050823

Greenberger, E., & Chen, C. (1996). Perceived family relationships and depressed mood in early and late adolescence: A comparison of European and Asian Americans. *Developmental Psychology, 32*(4), 707–716.https://doi.org/10.1037/0012-1649.32.4.707

Hendrie Weisinger, &Pawliw-Fry, J. P. (2015). *Performing under pressure: The science of doing your best when it matters most*. Crown Business.

Kumar, S., &Bhukar, J. (2013). Stress level and coping strategies of college students. *Journal of Physical Education and Sport Management, 4*(1), 5–11.https://doi.org/10.5897/JPESM12.001

Lee, S., Puig, A., Kim, Y. B., Shin, H. Y., & Lee, S. M. (2013). Academic burnout profiles in Korean adolescents. *Stress and Health, 29*(4), 344–351.https://doi.org/10.1002/smi.2477

Levecque, K., Anseel, F., De Beuckelaer, A., Van der Heyden, J., & Gisle, L. (2017). Work organization and mental health problems in PhD students. *Research Policy, 46*(4), 868–879.https://doi.org/10.1016/j.respol.2017.02.008

Luthar, S. S., & Kumar, N. L. (2018). Youth at high risk for academic failure: The role of achievement values and behavioral disengagement. *Journal of Youth and Adolescence, 47*(5), 1056–1070.https://doi.org/10.1007/s10964-017-0672-8

Reddy, K. J., Menon, K. R., &Thattil, A. (2018, March 25). Academic stress and its sources among university students. *Biomedical and Pharmacology Journal, 11*(1).https://biomedpharmajournal.org/vol11no1/academic-stress-and-its-sources-among-university-students/

Sinha, U. K., Sharma, V., & Nepal, M. K. (2001). Development of the Scale for Assessing Academic Stress: A preliminary report. *Journal of Institute of Medicine, 23*, 96–102.

Subramanian, A. (2016). Time management and academic achievement of higher secondary school students. *Zenodo*.https://doi.org/10.5281/zenodo.230852

Wang, Z., Liu, Q., & Zhao, F. (2015). Stress, burnout, and job satisfaction: Case of police force in China. *Journal of Social Service Research, 41*(4), 398–410.https://doi.org/10.1080/01488376.2015.1057443

Weisinger, H., &Pawliw-Fry, J. P. (2015). *Performing under pressure: The science of doing your best when it matters most*. Random House.

Endeavours in Education 15(2) & 16(1), 64-79

Farook Training College
ISSN 0976-4275 www.farooktrainingcollege.ac.in

An Exploration into Psychosocial Maturity and Conflict Resolution Management among Adolescents

Dr Fathima Jaseena MPM*

Abstract

The aim of the study is to find out the level of psychosocial maturity and conflict resolution management of adolescent students. The other Aim of the study is to identify the difference in the level of psychosocial maturity of various sub-groups. A survey was used to conduct the study. The sample consists of 685 students from Kerala. The tool used was Psychosocial maturity scale &Conflict resolution management scale. The findings revealed that the level of psychological maturity and conflict resolution Competency of adolescents is average. A significant difference was also found in the scores of psychosocia maturity among different sub-groups.The conclusion highlight the importance of psychosocial environments that provide a supportive and stress-free milieu for adolescents to foster better life.

Keywords Psychological Maturity, Conflict Resolution Management, Adolescent Students, Emotional wellbeing.

Introduction

Knowledge is the driving force in the rapidly changing globalised economy and society. The most valuable skill we can afford is knowledge. A good education is no longer just a pathway to opportunity but it became a necessity. Governments all over the world insist on value based, skill driven economy recognizing that the first step is the development of a well-educated and skilled workforce. The quantity and quality of highly specialized human capital determine human competence in the global market. The human competence is primarily shaped through education.

The disappearance of the family as a unit of production, the relocation of work away from the home, and changes in family dynamics have weakened the extended family network as the primary agent of a child's socialization. This

[7] *Assistant Professor ,Department of Education, Farook Training College, University of Calicut, Kerala*

highlights the growing importance of schools. The emergence of schools that draw students from widely dispersed communities, in contrast to neighbourhood-based schools, reinforces the impact of this declining extended family structure. Schools play a vital role in the social development of children. They are spaces where young people learn to interact, communicate, and collaborate with others. Through group activities, sports, and classroom discussions, students build friendships and learn important values like teamwork, empathy, and respect for others. These social skills are just as important as academic knowledge in shaping responsible and caring individuals.

At an individual level, the physiological and psychological changes during adolescence often place young people in a state of confusion and emotional turmoil. In Kerala, there is an increase in cases reported to psychiatrists related to premarital sexual activity among teenagers, leaving parents feeling helpless and guilty. These factors will affect the psychosocial development of children. Hence, there is an urgent need for schools to focus not only on academic achievement but also on personality development and emotional well-being.

Technology is changing rapidly and continuously and learning and keeping pace with these changes requires not just one competence but a set of competencies. Challenges exist not only at the individual level but also at the societal level. A mature individual is thought to be an asset to the society. So adolescents must realize their own potentials, skills and create a better interpersonal relationship with peers, family members and others. They must also be able to contribute to social welfare of our country because they are our future generation.

In addition, adolescents in our society have to face many conflicts day by day. These conflicts may escalate and lead to unproductive outcomes. However, if managed constructively, conflict can yield positive outcomes and lasting solutions. So there is a need to resolve these conflicts effectively in a fruitful way. But in another sense, these conflicts may sometimes lead to better results and a final solution to problem. Conflict triggers strong emotions and lead to hurt feelings, disappointment and discomfort. When it is handled in a healthy manner it increases our understanding of one another, builds trust and strengthens our relationship bonds. Adolescents are increasingly exposed to issues such as peer pressure, substance abuse, and sexual harassment as reported in the media. These challenges can be mitigated through the development of psychosocial maturity

and training in conflict resolution. An individual equipped with conflict resolution skills can lead a good life. According to Johnson and Johnson (1995)conflict can increase achievement, motivation to learn, higher-level reasoning, long term retention, healthy social and cognitive development, and the fun students have in school. Conflict can also enrich relationships, clarify personal identity, increase ego strength, promote resilience in the face of adversity, and clarify how one needs to change.

Conflict resolution management are personal resources that develop over time. The skills cannot be imparted by others but parents, educators and caregivers can support development by modeling the skills and being mindful of the developmental process characteristic to conflict resolution. An educator can provide some contributions for the healthy development of adolescents. A review of related literature reveals a scarcity of research in this specific area. Hence the investigator realized the importance and need for undertaking this study. The findings of this study will be helpful to teachers and students to set their educational skill and to cultivate a generation of skilled individuals capable of transforming our country into a global power.

Theoretical framework

Psychosocial maturity includes two main components of development; autonomy and social responsibility. Both aspects should be encouraged during youth in order to become an adult with the ability to achieve personal objectives and the goals of society.

Psychosocial maturity includes acquisitions in several areas of development that are consistent with the three dimensions of maturity. These acquisitions include

(a) The ability to function independently (individual adequacy).

(b) The ability to communicate and interact with others (interpersonal adequacy)

(c) The ability to act with social responsibility and the formation and maintenance of effective social relationships. (social adequacy).

Thus, psychosocial maturity includes individual adequacy, interpersonal adequacy and social adequacy.

Individual adequacy

Individual adequacy means the capacity of an individual to function adequately on one's own. Individual adequacy consists of three components. They are self reliance, work orientation and identity.

Self reliance

Self reliance is defined as a person's willingness to take the initiative without allowing others to exercise excessive control. The excessive need for social validation is absent.

Identity

Identity is defined as the adolescent's knowledge of himself or herself. Individuals who know who they are, what they believe, what they want and who have a sense of their worth as person then that person have a stable identity .

Work orientation

The individual's willingness to fulfill his or her own obligations is known as work orientation. Work orientation can be used to describe the following traits of an individual. They are general tasks or work skills, standards of competent task performance and the capacity to experience pleasure in work. Work orientation plays a role in some aspects of adequate individual functioning.

Interpersonal adequacy

Interpersonal adequacy means the capacity of an individual to interact adequately with others. Indicators of this capacity are attributes that contribute to an individual's stability, predictability, and trust in others.

Communication skills

It is an ability to express ourselves both verbally and non verbally in ways that are appropriate to our cultures and situations. It enables us to express opinions desires, needs and fears appropriately.

Enlightened trust

The capacity to rely on others when necessary is perhaps the most fundamental aspect of trust. An intellectual or factual or well informed reliance on another person or entity is known as enlightened trust.

Knowledge of major roles

Knowledge of social norms concerning role performance is likely to stabilize social relationships and to render them more predictable than they otherwise would be .Knowledge of roles involves awareness of obligations inherent in current definitions of major roles and the awareness of priorities that govern the management of role conflicts.

Social Adequacy

Social adequacy is the capacity to contribute to social cohesion. Social cohesion is defined as the capacity of citizens living under different social and economic circumstances to live together in harmony with a sense of mutual commitment (Canadian senate). It is an indicator of a developed and interactive society and is perceived as a helping agent in the achievement of economic growth, good governance, health and social security.

Social commitment

It is the capacity of individuals to work for objectives that may not bring substantial social or personal benefits for a long period of time. These long term investments of effort are investments in the survival of the society.

Openness to sociopolitical change

Mature individuals will have openness to social and political change consisting of general openness to change, recognition of the costs of the status quo and recognitions of the costs of change .Social and political change are often sparked by the disaffection of large groups within the society.

Tolerance of individual and cultural differences

In a society composed of individuals of heterogenous national origins and varied customs and beliefs, tolerance of individual and cultural differences contributes to social cohesion. Tolerance involves willingness to interact with individuals and groups who differ from the norm, sensitivity to the rights of individuals and groups who differ from the norm and awareness of the costs and benefits of tolerance.

Conflict Resolution Management .

Conflict may be defined as a struggle or contest between people with opposing needs, ideas, beliefs, values, or goals .Conflict is more than just a disagreement. Or it is a situation in which one or both parties perceive a threat. Conflict arises from differences. It occurs whenever people disagree over their values, motivations, perceptions, ideas, or desires. Sometimes these differences look trivial, but when a conflict triggers strong feelings, a deep personal and relational need is at the core of the problem—a need to feel safe and secure, a need to feel respected and valued, or a need for greater closeness and intimacy. There are several causes of conflict. Conflicts usually occurs two or more groups in opposing views. It also related to mediatory interference.

Conflict Resolution Management refers to the process of identifying, addressing, and resolving disagreements or disputes in a constructive and effective manner. It involves various strategies and techniques to manage conflict between individuals or groups, aiming to reach a peaceful solution that satisfies all parties involved.

Conflict may occur when

1. A party is required to engage in an activity that is in congruent with his or her needs or interests.
2. A party holds behavioral preferences, the satisfaction of which is incompatible with another person's implementation of his or her preferences.

Conflicts can be completely eliminated through the following three steps. (Holmes, 1997)

1. Understand the cause of the conflict.

   Most important process is to clearly understand the specific cause of the conflict.

2. Understand the intensity of conflict. After getting idea of the conflict, we need to understand its level of intensity.
3. Selection of strategy for resolving the conflict.

The best way of managing the conflict is to select the strategies according to the situation.

An awareness of the nature of the conflict helps a person appreciate the variety of ways that people can manage or respond to conflict. By learning a range of conflict styles (such as competing, collaborating, accommodating, avoiding and compromising). Effective conflict managers understand that no single approach works universally. The key is to apply the most appropriate strategy for the specific context.

Objectives

The major objectives of the study are:

- To study the level of psychosocial maturity ,and conflict resolution management of higher secondary school students.
- To find out if there exists any significant difference in the scores of psychosocial maturity and conflict resolution management of higher secondary school students for the total sample and the relevant sub groups ,based on religion, type of management of institution, and subject of specialization.

Methodology

Survey method was employed to conduct this study.

Participants

The population of the study comprised higher secondary school students from selected districts in Kerala. A sample of 685 students was drawn from 12 higher secondary schools located in the districts of Malappuram, Kozhikode, and Thrissur. The stratified sampling technique was used to ensure proportional representation across key demographic and institutional variables such as gender, locale of the school (rural/urban), religion, type of school management (government, aided, or unaided), and subject specialization (e.g., science, humanities, commerce).

Instruments

For the purpose of collection of data related to the present study, the following tools were employed.

1. Psychosocial maturity scale (Jaseena & Divya, 2014)
2. Conflict resolution management scale (Bindu & Divya, 2011)

Psychosocial maturity scale

The Psychosocial Maturity Scale was developed based on nine core components considered essential to the construct of psychosocial maturity. These components include self-reliance, identity, work orientation, communication skills, enlightened trust, knowledge of major roles, social commitment, openness to sociopolitical change, and tolerance of individual and cultural differences. It is a five point scale which includes 67 questions out of 40 items were positive and 27 items were negative. The reliability of the scale was established through cronbachs alpha and it was found 0.903 and it suggest the scale was highly reliable.

Conflict resolution management scale

The **Conflict Resolution Management Scale** employed in the present study was adopted from **Bindu and Divya (2011)**. This scale was developed to measure individuals' ability to manage interpersonal conflicts effectively and is structured around five key dimensions: communication, problem solving, empathy, emotional management, and effective decision-making. It consists of 60 questions out of 35 were positive and the rest are negative.

Result and Discussion

Data analysis refers to the systematic examination of organized information with the objective of uncovering underlying patterns, relationships, or facts. It involves a series of closely related procedures aimed at answering the research objectives. Interpretation, on the other hand, is the process of drawing meaningful inferences from the analyzed data. The true value of the data lies in its accurate interpretation, which transforms raw information into useful insights.

Level of Psychosocial Maturity

The maximum possible score on the Psychosocial Maturity Scale is 345, while the minimum is 69. In the present study, the observed maximum score was 338 and the minimum score was 175. The mean score obtained was 271.15, which is higher than the midpoint value of 207 on the scale. This indicates that the level of psychosocial maturity among higher secondary school students is moderate

Table 1

Percentile Norm of Psychosocial Maturity for the Total Sample

Percentile	Value
P_{10}	233
P_{20}	247.2
P_{30}	257.2
P_{40}	265
P_{50}	272
P_{60}	281
P_{70}	288
P_{80}	296
P_{90}	306

Table 1 reveals that the 10th percentile of the psychosocial maturity scores for the total sample is 233, indicating that 10% of the students scored below this value. The 50th percentile (P50) is 272, meaning that an equal number of students scored below and above this score. Similarly, the remaining percentiles can be interpreted as indicating the distribution of psychosocial maturity scores across the student sample.

Level of Conflict resolution Management

The maximum obtainable score on the Conflict Resolution Management Scale is 250, and the minimum is 50. In the present study, the observed maximum score was 246, and the minimum was 129. The mean score obtained was 196.7, which is significantly above the mid-point value of 150 on the scale. This indicates that the level of conflict resolution management among higher secondary school students is above average.

Table 2

Percentile Norm of Conflict Resolution Management for Total Sample

Percentile	Value
P_{10}	162.1
P_{20}	176.2
P_{30}	185.3
P_{40}	194
P_{50}	200
P_{60}	206
P_{70}	212
P_{80}	217
P_{90}	225

Table 2 shows that the 10th percentile of the conflict resolution management scores for the total sample is 162.1, indicating that 10 percent of students scored below this value. The 50th percentile (P50) is 200, meaning that an equal number of students scored below and above this score. Similarly, the interpretation of other percentiles follows the same principle.

Major Analysis

In this section, the mean scores of the variables *psychosocial maturity* and *conflict resolution management* among higher secondary school students were analyzed for comparison. A two-tailed test of significance was used to examine differences in these variables based on gender and locale. The mean and standard deviation of the scores were subjected to an independent samples *t*-test, and the results were interpreted accordingly. Furthermore, one-way ANOVA was employed to determine whether significant differences existed in psychosocial maturity among subgroups based on subject of study, type of school management, and religion. The results of these analyses are presented in the following tables.

Table 3

Results Of Anova of Psychosocial Maturity for Science, Commerce and Humanities

Variable	Source of variable	Sum of square	df	Mean Square	F	Level of significance
Psychosocial maturity	Between group	1507.825	2	753.913	0.955	0.01
	Within group	471408.135	597	789.628		
	Total	472915.958	599			

From the table, it can be observed that the obtained F-value is 0.955, which is less than the critical F-value required for significance at the 0.01 level ($F_{(}2,597_{)}$ = 4.61). This indicates that the psychosocial maturity of students does not differ significantly based on their subject of study—namely, science, commerce, or humanities. Therefore, students across these three streams do not show significant differences in their levels of psychosocial maturity.

Table4

One-Way ANOVA Summary for Psychosocial Maturity Scores Based on Type of School Management (Government, Aided, and Unaided)

Variable	Source of variable	Sum of square	df	Mean Square	F	Level of significance
Psychosocial maturity	Between group	2272.755	2	1136.378	1.441	0.01
	Within group	470643.203	597	788.347		
	Total	472915.958	599			

From the table, it can be seen that the f value obtained is 1.441 which is less than the F value required for significance at 0.01 level with (2,597) degrees of freedom 94.61). It means that psychosocial maturity of students does not differ significantly with respect to government aided and unaided schools.

Table5

One-Way ANOVA Summary for Psychosocial Maturity Scores Based on Religion (Hindu, Muslim, and Christian)

Variable	Source of variable	Sum of square	Df	Mean Square	F	Level of significance
Psychosocial maturity	Between group	532.094	2	2663.047	3.4	0.01
	Within group	467700.24	597	783.233		
	Total	467589.867	599			
		472915.958				

The F value obtained is 3.4 which is less than the F value (4.71) required for significance at 0.01 level with (2,597) degrees of freedom. It means that psychosocial maturity of students does not differ significantly with respect to religious viz., Hindu, Muslim and Christian.

Table-6

One-Way ANOVA Summary for Conflict Resolution Management Scores Based on Subject Specialization (Science, Commerce, and Humanities)

Variable	Source of variable	Sum of square	Df	Mean Square	F	Level of significance
Psychosocial maturity	Between group	11430.885	2	5715.443	11.035*	0.01
	Within group	309209.740	597	517.939		
	Total	320640.625	599			

From the table, it can be observed that the obtained F value is 11.035, which is greater than the critical F value (4.61) required for significance at the 0.01 level with (2,597) degrees of freedom. This indicates that conflict resolution management scores of higher secondary school students differ significantly across the three subjects of specialization: science, commerce, and humanities. To further specify which subjects show significant differences, post hoc tests are conducted. Scheffé's test is employed for this purpose. The following tables present the results of the post hoc tests

Table 7

Results of the post hoc tests for Conflict Resolution Management of Higher Secondary School Students For Science ,Commerce ,Humanities.

dependent Variable	I	J	Mean difference
Conflict resolution management	Science	Commerce	5.4213
		Humanities	10.5085*
	Commerce	science	-5.4213
		Humanities	5.0872
	Humanities	Science	-10.5085*
		Commerce	-5.0872

Scheffe's post hoc analysis reveals that the students studying in science and humanities classes differ significantly in their conflict resolution management because their mean difference is 10.5085 which is significant at 0.01 level. (10.5085 > 4.61)

Table-8

Results of ANOVA for Conflict Resolution Management of Higher Secondary School Students Belonging to Government, Aided, and Unaided Schools

Variable	Source of variable	Sum of square	Df	Mean Square	F
Conflict resolution management	Between group	4643.26	2	2321.63	4.386
	Within group	315997.36	597	529.3	
	Total	320640.6	599		

The F value obtained is 4.386 which is less than the F value (4.61) required for significance at 0.01 level with degrees of freedom (2,597). It means that the higher secondary school students studying in government, aided and unaided schools do not differ significantly in their conflict resolution management.

Table 9

ANOVA Results for Conflict Resolution Management of Higher Secondary School Students by Religion (Hindu, Muslim, Christian)

Variable	Source of variable	Sum of square	df	Mean Square	F	Level of significance
Conflict resolution management	Between group	3026.153	2	1513.077	2.844	0.01
	Within group	317614.472	597	532.018		
	Total	320640.625	599			

From the table , it is clear that the F value obtained 2.896 which is less than F value required for significance at 0.01 level with (2,597) degrees of freedom (4.61). It means that the higher secondary school students belonging to the religion Hindu, Muslim and Christian do not differ significantly in conflict resolution management.

Conclusion

In the preliminary analysis, the level of psychosocial maturity and conflict resolution skills among higher secondary school students was examined. The results indicate that the students exhibit above-average levels in both psychosocial maturity and conflict resolution management.

The major analysis focused on comparing the mean scores of psychosocial maturity and conflict resolution skills across the total sample and relevant subgroups. It was found that psychosocial maturity and conflict resolution skills differ significantly between male and female students. However, locale does not appear to influence psychosocial maturity or conflict resolution management in higher secondary school students.

Additionally, no significant differences were observed in the psychosocial maturity of students based on religion, subject of study and type of school management. However, a significant difference was noted in conflict resolution skills among students from government, aided, and unaided schools.

Since adolescents spend a significant amount of time in schools, often with their peer groups, the school environment plays a crucial role. Therefore, it is important for schools to consider the co-scholastic aspects of education in fostering the complete development of the future generation.

Implications

- It is important for students to gain a clear understanding of the nature of peer interactions both within their groups and in society at large. Only then can they adjust to society and address the current issues faced by adolescents.
- Learning experiences should be tailored to the needs of the students, providing them with opportunities to showcase their talents and emotions. This will help develop their confidence and mental maturity.
- Students should be trained to set goals based on their desires and passions, which will boost their self-confidence to work toward these goals and create a life-oriented generation.
- Personality development classes should be conducted for the overall development of students. These classes will assist students in controlling immature emotions and making better decisions without risk.
- Guidance and counseling centers in every school should be strengthened to enhance students' maturity levels and eliminate the negative outlook prevalent in children's minds.
- The proper involvement of parents in adolescent development will support the achievement of a mature personality. Workshops should be organized for teachers to understand various conflict resolution strategies.
- Practicing yoga will help instill a positive approach to life, and it should be included in co-curricular activities.

References

Aureli, F., & de Waal, F. B. M. (2000). *Natural conflict resolution*. University of California Press.

Best, J. W., & Kahn, J. V. (2012). *Research in education* (10th ed.). Prentice Hall of India.

Divya. (2011). *Home environment and conflict resolution management of higher secondary school students* (Unpublished M.Ed. dissertation). University of Calicut, Calicut.

Frohlick, N., Kaufman, E., Oppenheimer, J. A., & Assal, V. (2001). Understanding, modeling, and evaluating conflict resolution techniques.

Garrett, H. E. (2012). *Statistics in psychology and education* (2nd ed.). Surjeet Publications.

Hall, C. S., Lindzey, G., & Campbell, J. B. (2009). *Theories of personality* (4th ed.). John Wiley & Sons.

Jackson, M., & Athaki, M. (2010). *Psychological maturity and attribution: Detained girls' perceptions of their delinquent behaviors* [Doctoral dissertation, ProQuest Dissertations]. Retrieved from http://search.proquest.com/docview/305194362

McElhaney, K. B., Allen, J. P., Stephenson, J. C., & Hare, A. L. (2009). Attachment and autonomy during adolescence. In R. M. Lerner & L. Steinberg (Eds.), *Handbook of adolescent psychology* (3rd ed., pp. 358–403). John Wiley & Sons, Inc.

Nizhakahn. (2009). *Perceived comfort of home environment and conflict management competency of student teachers in teacher training institute of Kerala* (Unpublished M.Ed. dissertation). University of Calicut, Calicut.

Oboegbulem, A., & Alphonsu, A. I. (2013). Conflict resolution strategies in non-government secondary schools in Benue State, Nigeria. *China Education Review, 3*(2), 91–102. Retrieved from http://www.tandf.co.uk/journal

Papazova, E. (2013). Psychological maturity statuses and social environment in adolescence. *Cognition, Brain, Behavior: An Interdisciplinary Journal, 17*(3), 201–214.

Endeavours in Education 15(2) & 16(1), 80-90
© Farook Training College
ISSN 0976-4275
Farook Training College
www.farooktrainingcollege.ac.in

Accelerating Through Dynamism: Facilitating Engagement and Motivation of Students Through Performing Arts Integration in Teaching English

Lulu S Kappil*
Prof. (Dr) Mumthas N S**

Abstract: Learning English demands communicative competence. The significance of motivation in acquiring a second language is very much approved by the academic community throughout the world. One of the major reasons for lack of motivation is the mismatch between one's aptitude and the subject of one's study. Dislike of English, mundane teaching methods, differences in learning styles, inappropriate text books, lack of challenging tasks, lack of interest, diffidence in expressing oneself, etc. are the other causes. Catering to individual differences by identifying learners' needs and interests, overcrowded classrooms, lack of students' motivation, inadequate parental support of students, etc. become hazards to teachers. The teachers of English need to consider synergising their method of teaching with a multidimensional and flexible approach. The dynamic, non-linear and interconnected disposition of language learning, as identified by the Complex Dynamic Systems Theory in the context of second language acquisition, can be applied to teaching English by integrating performing arts, resulting in engagement and motivation of students. The multifaceted and dynamic teaching method not only creates a love for language and literature in the students but also enhances a positive teacher-student relationship.

Key words: language learning, engagement and motivation, performing arts integration

* *Research Scholar, Department of Education, Farook Training College, University of Calicut,Kerala luluskappil1967@gmail.com*
** *Professor, Farook Training College, University of Calicut, Kerala*

Introduction

Learning a language is natural when the students acquire it through interaction.Learning a second or foreign language demands communicative competence, especially in an era of technological advancement. A reflection on the national and international affairs accentuates the prominence of English because of the role of English in facilitating communication between various countries and in offering a world of opportunities to the individuals. Though there is little doubt on the relevance of learning English, the standard of English is a matter of concern in our educational institutions.Sreekanth (2023) reports thatwhile most of the boards record very high pass percentages in the annual/public examinations conducted every year, in the common competency-based testing based on the curriculum taught at Grade 10 level, students of other boards performed far below the level of Council for Indian School Certificate Examinations (CISCE).

According to Nair (2004) there is a consistent diminishment in the number of Keralites who are selected in the national-level examinations over the years. Even if they pass the written examinations, they fail generally in the interview. A major impediment identified is the lack of proficiency in the usage of English. Improving the general standard of English thus became a priority area in the field of education in Kerala. Ahmed (2014) opines that one of the pertinent problems in terms of English acquisition in school is lack of creation of English atmosphere.

Rationale and Justification

According to Duckworth, et al., (2012), a person's intelligence clearly makes a difference in school but engagement turns up as even more essential, at least for some achievement outcomes (as cited in Guthrie & Wigfield, 2017). It has been reported by the 2016 international literacy assessment of fourth graders that for many students, diverse reading motivations and engagement in reading lessons were too low (PIRLS, 2016 as cited in Guthrie & Wigfield, 2017). Martin and Dowson (2009) states that in a number of published peer reviewed articles, handbooks of research and meta-analyses of last two decades, motivation and engagement relevant to literacy has expanded. Another noteworthy observation is that engagement and motivation exist in spiral; when one rises the other goes up. Likewise, when one declines the other drops. The cognitive module and a

merger of the motivational-engagement modules increased literacy achievement about equally across cultures (OECD, 2010 as cited in Guthrie & Wigfield, 2017).

It has been proved by Moorefield-Lang (2008) that in rural middle schools, students' arts courses had a relationship to their motivation, self -efficacy, and creativity. The integration of performing art makes learning more enjoyable and meaningful (Agarwal & Verma, 2023). In a Canadian university, it has been revealed that "English Through the Arts", the programme serves as a stimulus, refresher, guider and facilitator in English language learning. High involvement and engagement were displayed by participants in art integrated learning of English (Chi, 2017). It has been found that "even among those students with obvious difficulty with the written word, drama can feature a context in a way that encourages them to connect with their own internal motivation to write" (Gallagher, 2001).

Mentang, et.al., (2022) found that the type of students' motivation in English Online Learning was integrative motivation.A report from Oxford University Press stated that in the case of young language learners across 30 studies, outside-of-class reading was linked to positive motivation (3 Strategies for motivating ESL students: Lesley university, n. d). A student's intrinsic motivation raises just a bit with an autonomy support in a class, but it drops when he has no choice (Assor et al., 2005).

An instructionally engaged learner is listening intently, wondering creatively, connecting new to old, and enthused (PIRLS, 2016 as cited in Guthrie, 2017). In the view of Pianta, et.al., (2012), there are both active and passive engagement; while reading aloud, writing, singing and answering a question are active engagement, passive engagement includes listening or watching attentively. Moreover, at-risk primary students appear to improve the most in engagement and achievement from heightened qualities of teacher-student relationships in the classroom (Pianta, et.al., 2012 as cited in Guthrie,2017).

Engagement and Motivation of Students: Essential Factors

Motivation and engagement are very much essential for development of personality. Student engagement is "the amount of physical and psychological energy that the student devotes to the academic experience" (Astin, 1984). Motivation is the process that initiates, guides, and maintains goal-oriented

behaviours (Cherry,2023). Motivation which arises from outside of the individual is extrinsic while that which arises from within the individual is intrinsic. (Tranquillo & Stecker, 2016 as cited in Cherry, 2023). The instinct theory of motivation suggests that fixed and inborn patterns of behaviour are motivated by instincts (Myers& Twenge, 2021). As far as the drive reduction theory of motivation is concerned, people have these basic biological drives, and our behaviours are motivated by the need to fulfil these drives (Siegling & Petrides, 2016). Gardner's socio-educational Model (1979) proposes ability and motivation in acquisition of language. Better performance is shown by students with higher levels of motivation than the students with lower levels (as cited in Lovato, 2011).

The Self-Determination Theory (Deci & Ryan, 1985) asserts that the three innate psychological needs, namely competence, autonomy, and relatedness, when satisfied yield amplified self-motivation and mental health whereas when thwarted, lead to diminishment in motivation and well-being. Cognitive evaluation theory was formulated (1985) in terms of social and environmental factors that facilitate intrinsic motivation (as cited in Ryan& Deci, 2000). Krashen (1982), in his affective filter hypothesis, remarks that student's emotional condition is a key factor in learning a second language. Achievement goal theory is an effective framework to account for motivation associated with social achievement and learning environments (Cheng, 2023).

Language is a Complex Dynamic System. Language development is a nonlinear, chaotic, and highly individual process. The resources of second language learning are the learner's internal capabilities, such as aptitude and working memory, as well as pre-existing capabilities and motivations (De Bot et al., 2007). Language pedagogy will also have to be considered that learning entails changes in a self-organizing system. The implication is that language teaching aims at creating optimal conditions and perturbations that invoke the desired phase changes in the multidimensional state space of what we simply call "language" (Lowie, 2013).

Teachers' Challenges in Sustaining Engagement and Motivation

One of the major reasons for lack of motivation is the mismatch between one's aptitude and the subject of one's study. When a child doesn't like English, the teacher may struggle to convince the child about the relevance of learning English but fails. The mundane teaching methods adopted in the classroom where the learning styles of students differ, compulsion to learn textbooks not suited to

their interests and requirements, failure to cater to individual differences, etc. demotivate the students. Lack of challenging or innovative tasks, diffidence in expressing verbally, inhibition to read and speak English, too much self-consciousness about other students' negative comments, personal or family problems, etc. can be other factors. A student who is motivated for the sake of getting rewards may cease to get motivated when the reward is withdrawn.

The most challenging task of the teacher is to cater to individual differences and requirements.Savita (2021) presents the argument to have more flexible and dynamic understanding of individual differences with respect to students and teachers. Identifying the requirements of each and every learner demands much skill and efficiency of the teacher. When the students are not intrinsically motivated, a teacher may struggle with the choice of the most appropriate teaching method by considering students' activities which ensure the fulfilment of goals. If the content of the learning material doesn't guarantee students' sustained engagement, the teacher has to plan activities to substitute the same. This needs a lot of imagination, and competency by the teacher. There are occasions where students need to be convinced of the relevance of learning English with particular reference to the life situations. When a child feels that he doesn't have freedom to express his talents or creativity, he may withdraw from activities. Finding out strategies for building up students' confidence is challenging. Recognising the challenges faced by children can cause trouble to teachers.

Another major challenge is to understand the learning styles of the students like auditory, visual and kinesthetics modes. Maintaining a joyful learning environment and balancing it with the requirements of the curriculum may pose threat to many. Insufficient resources to use the teachers' innovative methods of teaching, overcrowded classrooms, lack of motivation and inadequate parental support become hazards in the course of teaching. Students of the new age are distracted with digital gadgets. Thapa, et al., (2025) found that 51.2% of students reported using digital devices 1 to 3 times per class, primarily for non-academic activities such as texting (21.9%), social networking (14.1%), and checking the time (41.2%).This may create problems related to lack of attention, interest and curiosity tackling of which require a dynamic pedagogy.

Accelerating through Dynamism: performing arts integration

The teachers of English can synergise their method of teaching with a multidimensional and flexible approach. The dynamic, non-linear and interconnected nature of language learning, as identified by the Complex Dynamic Systems Theory (Larsen-Freeman & Cameron, 2008), can be applied to teaching English by recognising the multifaceted talents of the students and through employing performing arts integration. A motivated teacher inspires children by giving support and encouragement, by relating the content and projects to everyday life and experiences and by giving chances for movements and physical activities. The relevance of learning English must be demonstrated through innovative ventures rather than theorising on it. The meaningful co-creation of learning experiences through performing arts, which enhance children's creativity and critical thinking, contributes to the productive endeavours of learning English. Freedom of choice related to integrating innovative ideas in classroom process keeps children engaged. While planning and implementing activities, the teacher needs to consider current trends and children's background and incorporate culturally relevant content. A collaborative learning scenario, with supportive and constructive feedback and appropriate encouragement extended by the teacher, guidance from experts and support and mutual collaboration with parents, can do wonders. Utilising reflective assessment like informing the students about their progress, accepting feedback from children and modifying accordingly, contribute to this dynamic pedagogy. As Dewey (2016) says "Education is not preparation forlife; education is life itself" (as cited in Talebi, 2015).

As motivation is dynamic, the teacher gets a chance to interconnect learning experiences with all the components of language through performing arts integration by adapting a flexible lesson plan. The holistic teaching method of integration gives the students plenty of opportunities to develop their language skills, ability of self- expression and creativity. As the team work and projects are designed to keep the students occupied positively, the classroom transforms into an ideal place for student empowerment. The advantages of group activities are reflected upon students' sense of belongingness. Christison (2013)states that participating in extracurricular activities has positive effects on students' success. When there are chances to link language with culture, students explore the

relevance of learning English in a natural way by fixing learning objectives. The teaching learning process becomes joyful, meaningful and memorable by connecting the daily life experiences through performing arts. Chances for emotional expressions through interactions enhance communicative competence, emphasising the significance of this dynamic pedagogy.

The students are provided different learning styles satisfying their auditory, visual and kinaesthetic learning modes as the teacher caters to individual differences, ensuring inclusive education (Gilakjani,2012). Acquisition of additional skills like cooperation and adaptability through team work and a deeper understanding of the content are made possible through enacting the roles of different characters in the stories, poems and dramas. Through participating in a variety of discourses like debates, announcements, script writing, choreography, role play, etc. the students keep themselves engaged.

Conclusion

Motivation plays a significant role since it positively influences the individuals and determines the success in learning. A motivated learner acquires knowledge and skills even in the middle of challenges by fixing the goals, staying focused and applying the knowledge to resolve problems in daily life. The energy, curiosity and enthusiasm of a motivated learner create interest in co-learners as well. An enjoyable learning accelerates better performance and achievement through an increase in self-confidence and self- concept.

Teachers often design motivational activities with an aim of evoking interest and to capture the attention of students. A thorough understanding of the theories of motivation leads a teacher to create supportive learning environment which suits all learners in a classroom. Motivated student keeps oneself engaged. In other words, engagement connects motivation and achievement. Achievement improves when motivation leads to engagement. Therefore, a teacher targets at engagement. Student engagement happens through awakening of interest. Innovative strategies like performing arts integration in teaching of English will not only motivate the students but also help them recognise the relevance of learning English. Along with entertainment, it contributes to a more dynamic and creative learning environment. The multifaceted and dynamic teaching method not only creates a love for language and literature in the students but also enhances a positive teacher-student relationship.

References

Ahmed, R. S. (2014). An exploratory case study in Kerala primary schools: English acquisition in Kerala primary classes; Present scenario and challenges – In Teachers' perspective [Report number: 123]. Azim Premji University.

Agarwal, M., & Verma, A. (2023). Integration of Performing Arts in Education: A Joyful, Retentive and Transformative Learning. *Research Journal of Humanities and Social Sciences*, 14(2), 61-68.

Assor, A., Kaplan, H., Kanat-Maymon, Y., & Roth, G. (2005). Directly controlling teacher behaviours as predictors of poor motivation in girls and boys: The roles of anger and anxiety. *Learning and Instruction*, 15, 297–314.

Astin, A. (1984). Student involvement: A development theory for higher education. *Journal of College Student Development*, 40, 518–529.

Cheng, X. (2023). Looking through goal theories in language learning: A review on goal setting and achievement goal theory. *Frontiers in Psychology*, 13, 1035223.

Cherry, K. (2023). Motivation: The driving force behind our actions.

Chi, C. (2017). Integrating the arts into English learning: A case study of EFL learners in a Canadian university [Master's thesis, University of Windsor].

Christison, C. (2013). The benefits of participating in extracurricular activities. United States Department of Education.*BU Journal of Graduate Studies in Education*, v5 n2 p17-20 2013

De Bot, K., Lowie, W. M., &Verspoor, M. H. (2007). A dynamic systems theory approach to second language acquisition. Bilingualism: Language and Cognition, 10(1), 7–21.

Deci, E. L., & Ryan, R. M. (1985). Intrinsic motivation and self-determination in human behavior. Plenum.

Dewey, J. (1938). Experience and Education.New York: Macmillan Company.

Duckworth, A., Quinn, P., & Tsukayama, E. (2012). What No Child Left Behind leaves behind: The roles of IQ and self-control in predicting standardized achievement test scores and report card grades. *Journal of Educational Psychology*, 104, 439–451.

Gallagher, K. (2001). Drama education in the lives of girls. University of Toronto Press.

Gardner, R. C. (1979). Social psychological aspects of second language acquisition. In H.

Giles & R. St. Clair (Eds.), Language and social psychology (pp. 193-220). Blackwell.

Gilakjani, A.P.(2012).Visual, Auditory, Kinaesthetic Learning Styles andTheir Impacts on

English Language Teaching *Journal of Studies in Education*. Vol. 2, No. 1 p.1.
Guthrie, J. T., & Wigfield, A. (2017). Literacy engagement and motivation: Rationale, research, teaching, and assessment. In Handbook of research on teaching the English language arts.

Krashen, S. D. (1982). Principles and practice in second language acquisition. Pergamon Press.

Larsen-Freeman, D., & Cameron, L. (2008). Complex systems and applied linguistics. Oxford University Press.

Lovato, C. (2011). Motivation in second language acquisition - Gardner's socio-educational model.

Lowie, W. (2013). Dynamic systems theory approaches to second language acquisition.

Martin, A. J., & Dowson, M. (2009). Interpersonal relationships, motivation, engagement, and achievement: Yields for theory, current issues, and educational practice. *Review of Educational Research*, 79, 327–365.

Mentang, D. I. K., Tuna, J. R., &Liando, N. V. F. (2022). The analysis of students' motivation in English online learning. *Journal of Teaching English, Linguistics, and Literature*, 1(4), 550-564.

Moorefield Lang, H. (2008). The relationship of arts education to student motivation, self-efficacy, and creativity in rural middle schools.https://doi.org/10.17615/qqjf-t427

Myers, D., & Twenge, J. (2021). Exploring social psychology. McGraw Hill Education.

Nair, S. K. (2004). The teaching of English in the Government/Aided primary schools in Kerala under DPEP (Discussion Paper No. 58). Centre for Development Studies.

OECD. (2010). PISA 2009 results: Learning to learn – student engagement, strategies, and practices (Vol. III).

Pianta, R., Hamre, B., & Allen, J. (2012). Teacher-students' relationships and engagement: Conceptualizing, measuring and improving the capacity of classroom interactions.

In S. Christensen, A. Reschly, & C. Wylie (Eds.), Handbook of research on student engagement (pp. 365–386). Springer Science.PIRLS. (2016). PIRLS 2016 framework.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist Association*, 55(1), 68-78.

Savita, K. M. (2021). Individual Differences in Classroom: Importance and Utilization *International Journal of Educational and Psychological Research,*10(3), 7-16.

Siegling, A. B., & Petrides, K. V. (2016). Drive: Theory and construct validation. PLOS ONE, 11(7), e0157295.

Sreekanth, Y. (2023). English as medium of instruction at school level in India: Opportunities and dilemmas. In Proceedings of the 8th Annual International Conference on

Humanities & Arts in a Global World. Athens Institute for Education and Research. strategies for motivating ESL students. (n.d).Lesley University

Thapa, P., Sharma, P., Goundar, S., Tsirkas, P., Valamontes, A., & Adamopoulos, I. (2025). Digital Distractions in the Classroom Among Students: A Cross-Sectional Study Research Gate.

Talebi, (2015).John Dewey-Philosopher and Educational Reformer IJORER *International Journal of Recent Educational Research* 3(3):269-287IJORER

Tranquillo, J., & Stecker, M. (2016). Using intrinsic and extrinsic motivation in continuing professional education. *Surgical Neurology International*, *7*(Suppl 7), S197-S199.

Endeavours in Education 15(2) & 16(1), 91-105

Farook Training College
ISSN 0976-4275 www.farooktrainingcollege.ac.in

Enhancing Outcome-Based Education: Strategies for Curriculum Alignment and Effective Assessment

Dr Manoj Praveen G*
Dr Ali Noufal K**

Abstract

This article discusses the implementation of Outcome-Based Education (OBE) within existing university curricula. It advocates for a shift from traditional teaching methods to a more student-centered approach that aligns course content with measurable learning outcomes. OBE encourages active learning, real-world application, and continuous assessment to ensure students not only acquire theoretical knowledge but also develop practical skills. The process involves identifying clear course outcomes, aligning teaching methods, and developing assessments that evaluate student progress against these outcomes. The authors emphasize that the transition to OBE does not require a complete overhaul of existing curricula but rather repackaging it to fit an outcomes-based model. They also introduce practical tools like Bloom's Taxonomy and the ADDIE model to guide educators through the curriculum redesign. Additionally, the paper explores the integration of question banks to standardize assessment and address challenges in evaluating higher-order thinking skills. Overall, the article provides a step-by-step guide for educators on how to effectively implement OBE and enhance the quality of education across various disciplines.

Keywords: Outcome-Based Education, Question Bank, Bloom's Taxonomy, ADDIE Model, Curriculum

Introduction

Outcome-Based Education (OBE) focuses on aligning the entire educational process around specific, measurable learning outcomes. Teachers must clearly define these goals to ensure that students achieve not only theoretical knowledge

* *Associate Professor, Department of Education, University of Calicut, Kerala manojpraveeng@gmail.com ORCID ID:0000-0002-1650-5121*
** *Associate Professor, Department of Arabic,University of Calicut, Kerala alinoufaljnu@gmail.com ORCID ID : 0009-0008-6340-1254*

but also practical skills applicable in real-world scenarios (Syeed et. al., 2022). The concept of Outcome-Based Education (OBE) was pioneered by William G. Spady, who introduced the framework in the 1980s as a means to shift educational focus from content delivery to achieving specific, measurable student outcomes (Spady, 1994). Spady emphasized that education should be driven by clearly defined 'exit outcomes' that prepare students for real-world success, ensuring accountability and alignment across all educational processes. His work laid the foundation for OBE's student-centered approach, which prioritizes active learning and the development of practical skills, as adopted in modern curricula worldwide. Teachers establish a systematic, data-driven environment for continuous growth that is advantageous to both students and educators by routinely evaluating pupils against these outcomes. The student-centered approach, which promotes participation and active learning, is a crucial component of OBE. Teachers want their students to actively apply their knowledge in real-world situations by using techniques like project-based work and collaborative learning, as opposed to just lecturing. Student motivation and retention improve as a result of this involvement.

Rao (2020) asserts that OBE prioritizes the end results of education, focusing on what students can do after completing a course or program. OBE also improves transparency and accountability in the classroom. Both teachers and students are held accountable for the results when clear expectations are established and learning objectives are linked to quantifiable criteria. This aids in preparing students for the workforce by emphasizing employability skills including critical thinking, problem-solving, and adaptability. Table 1. below lists the attributes of existingcurriculum and OBE based curriculum.

Table 1

Differences between traditional and OBE format of curricula

Existing format of curriculum	**OBE format of curriculum**
Focus on teaching	Focus on evaluating.
Outcomes are not predicted	Outcomes are predicted
Comparison of Aspiration vs Achievement is not possible	Comparison of Aspiration vs Achievement is possible
Very few teaching strategies are required.	Variety of teaching strategies are required.

Repacking the existing curriculum

University teachers need not reject the present curriculum when transitioning to Outcome-Based Education (OBE). Rather than replacing the existing curriculum framework, OBE builds on it by aligning existing content with clear learning outcomes. This approach allows teachers to retain familiar materials while focusing on measurable student competencies. The shift to OBE enhances the relevance of the curriculum without discarding its value, improving student engagement and real-world application.

To transition the existing syllabus to an Outcome-Based Education (OBE) format, a bottom-up approach is ideal, ensuring alignment with graduate attributes and program outcomes. Graduate attributes, which include essential skills, attitudes, and values, must be integrated into every course, shaping the curriculum to foster well-rounded individuals prepared for further study, employment, and responsible citizenship. Each course should clearly define course learning outcomes that map directly to the overarching program-level outcomes, ensuring a seamless connection between subject-specific knowledge and transferable global skills. The syllabus must be modular, with each module explicitly stating not only content and learning activities but also formative and summative assessment strategies to track progress.

The realization of courseobjectives within a specific course in the classroom, though subject specific and precise is aligned to the generic graduate attributes envisioned by the University. In the classroom, specific learning outcomes are designed to cultivate targeted competencies that align with broader programme objectives. For instance, an engineering course may emphasize design of complex structures in a structural engineering course, which cumulatively enhance students' critical thinking—an essential graduate attribute. Similarly, a humanities course focused on written communication or precise writing hones students' argumentation and analysis skills, contributing to effective communication. Thus, specific classroom outcomes serve as foundational elements for achieving the university's graduate attributes, ensuring that students not only gain subject-specific expertise but also develop broader competencies relevant to real-world scenarios. This interconnected approach creates a seamless educational experience from enrolment to graduation, equipping students with a well-rounded skill set.

Repacking the curriculum in to OBE format helps standardization of educational and evaluation experiences across colleges affiliating to a university, ensuring that all students, regardless of institution, receive comparable, high-quality education (Piyasena et. al., 2023).

While doing the repacking exercise the experienced teacher should keep in mind the definitions of the following key terms in OBE.

- The Course outcomes – the specific competencies and inclinations that needs to be acquired after completing all the modules that is organized in the specific course.
- The Programme Outcomes -the knowledge skills and attributes that the Programme (for example – M Ed.) proposes.
- The Graduate Attributes - the wholistic notion of the University about the desired qualities and competencies envisioned about a University Graduate who passes out from the university.

What should the teacher do to enhance the present curriculum to ensure proper alignment with objectives and evaluation procedures?

Redrafting the present curriculum into OBE format involves aligning course objectives, teaching methods, and assessment strategies to ensure that students achieve the desired outcomes (Buddy et. al., 2020).

1. Identify 5 to 6 Course Outcomes:

Begin the course design process by identifying 5-6 measurable learning outcomes. These outcomes must be specific, measurable, achievable, reliable, and timely (SMART) with verbs indicating the level of understanding or skill students should demonstrate. Articulate objectives that align with the revised Bloom's Taxonomy, reflecting the cognitive load of the content and explicitly denoting the knowledge dimension, including facts, concepts, procedures, and metacognition.

2. Align Teaching Methods to Outcomes:

Determine the teaching methods for each learning outcome, considering a variety of approaches such as lectures, discussions, group projects, case studies, simulations, and problem-solving exercises. This might be influenced by institutional philosophy, industry demands, curriculum benchmarks and unique

contexts (Cahapay, 2021). Prioritize a balanced mix of teacher-initiated and student-initiated methods that foster autonomy and ensure deep cognitive involvement. Emphasize activities promoting analysis and evaluation. This new thought may warrant a slight modification of the existing curriculum in a way that would suit the newly designed teaching methods.

3. Align Assessment Strategies to Outcomes:

Develop assessment strategies that directly measure the achievement of each learning outcome. Utilize a variety of methods such as exams, quizzes, presentations, portfolios, and practical projects. Ensure that assessment criteria align clearly with learning outcomes. Comprehensive alignment of course outcomes with assessment strategies is vital, addressing formative, summative, and self-directed learning aspects. Introduce innovative approaches like rubrics, and offer a variety of tools to students enabling them multiple avenues to express their learning outcomes.

4. Reorganize into an OBE-Format Syllabus: Reorganize the syllabus to reflect the OBE approach by aligning course content, teaching methods, and assessment strategies according to the learning outcomes.

5. Share and Collaborate: Share the OBE-formatted syllabus with colleagues and seek feedback. Engage in discussions to refine the learning outcomes, teaching methods, and assessment strategies.

Figure1. will clearly give the steps that would handhold a novice teacher to design and practice outcome-based education in the higher education context. It gives the progressive sequence of steps to be followed by the teacher who attempts to repack the existing curriculum into an OBE format.

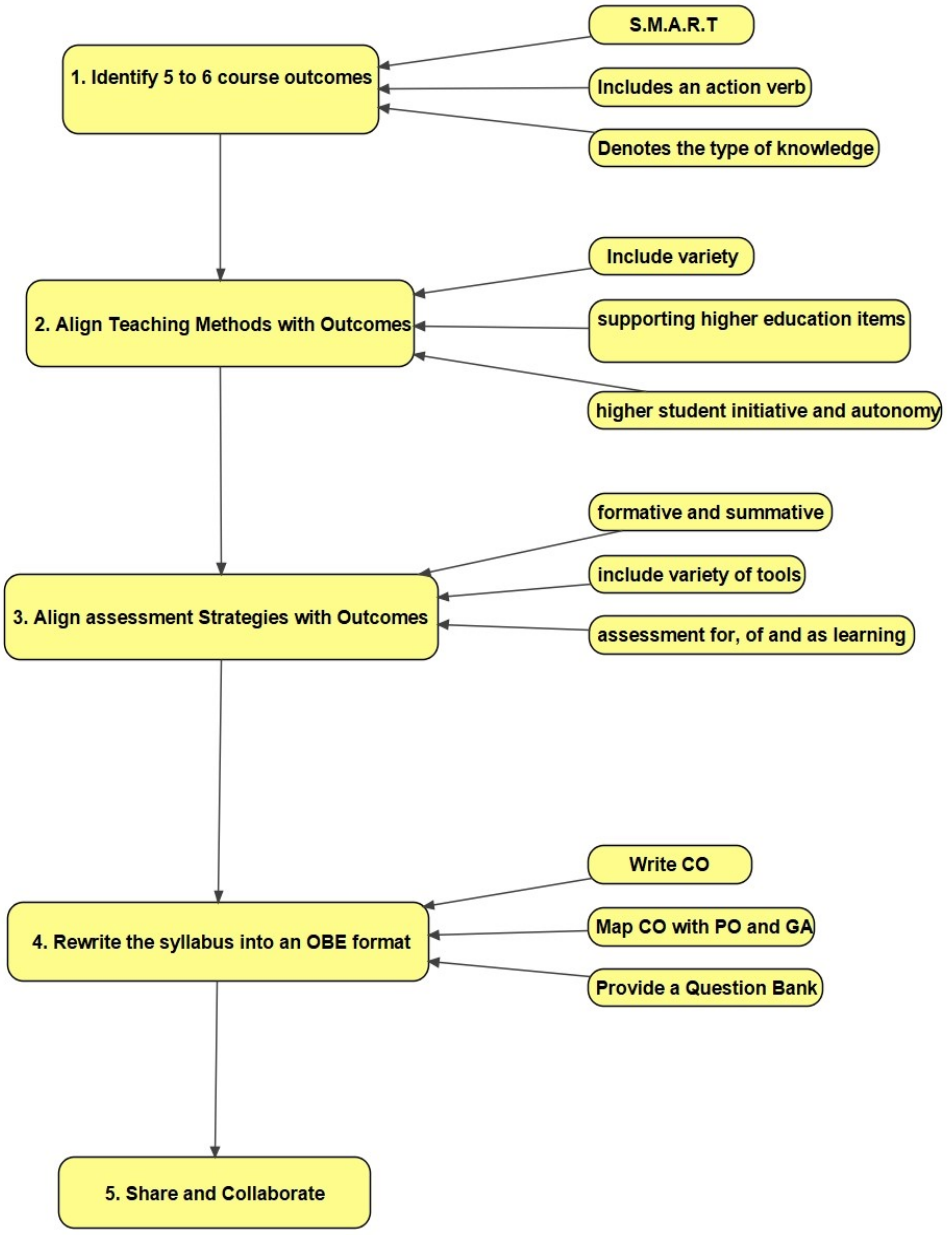


Figure 1. A step-by-step guide for teachers to convert their existing syllabus content into OBE format.

A practical Example

We take an example of a course on Educational Management from a master's course in Education (M Ed.). The course has 5 modules, viz; MODULE 1- Educational Management and Administration MODULE 2 - Leadership in Education Module 3: Educational Planning MODULE 4 - Educational Financing MODULE 5 - Recent Trends and Issues in Educational Management in India.

The existing syllabus has a quiet good amount of content allocated under each module. But as an experienced teacher who has been doing the course, one can take the privilege of having a fresh look at the existing content so as to align it with student learning experiences that would result in learning certain concepts, abilities, skills and acquiring certain attitude and inclinations as course outcomes. Thus, the teacher would proceed to identify 5 to 6 course outcomes that would reflect the knowledge dimensions the student has to involve and cognitive processes the student has to engage. Given below is a set of course outcomes the teacher might want to deploy in this course!

Course Outcomes

1. The learner will be able to **describe** the basic concepts and principles of educational management and administration. (UNDERSTAND).
2. The learner will be able to **classify** the characteristics of various leadership styles into various leadership theories. (APPLY)
3. The learner will be able to **differentiate** between various approaches of Educational Planning. (ANALYZE)
4. The learner will be able to **interpret** various concepts related to Educational Financing like Planning, Budgeting and mobilization of resources. (EVALUATE)
5. The learner will be able to **use** the principles of Total Quality Management in specific case-based scenarios of improving educational institutions. (APPLY)
6. The learner will be able to **illustrate** the use of ICT and integrated information management system to solve issues in administration in educational institutions. (ANALYZE)

Note:

i. The action verbs are put in bold in each statement.

ii. The noun part is the content of the discipline mentioned in the statement.

iii. The cognitive process required for the learner to undergo is mentioned in brackets at the end of the statement.

iv. The higher level of cognitive process included in the statement invariably implies lower cognitive processes like remembering, understanding etc. (For example, in the fourth CO, which is at the level ***evaluate****, implies remembering, understanding, applying and analysing the content portions of Planning, Budgeting and mobilization of resources.*

v. Please note that the course outcome is written as a statement which contains a verb and a noun. The verb generally describes the intended cognitive process. The noun generally describes the knowledge students are expected to acquire or construct.

Stating the Teaching Methods

As an example, a list of possible teaching methods/activities /learning experiences for realizing CO 1. –"The learner will be able to describe the basic concepts and principles of educational management and administration. (UNDERSTAND)"could be:

i. Advance Organiser Model to introduce basic concepts.

ii. Video based teaching to make students conceptually think of Principles of Management.

iii. Think/ Pair / Share Method to classify and describe the differences in approaches to Educational Management.

Stating the Assessment Strategies

As an example, a list of assessment strategies for formative assessment and summative assessment that would be useful to test the learning outcomes of CO 1. is given:

Formative Assessment tools

1. Rubrics: (Students are required to prepare an organogram of the university administrative structure with top level, middle level and bottom level positions as a hierarchy)
2. Pictorial Device: Describe any three of the Fayol's Principles using picture/diagram/ cartoon or drawing.
3. Chart: Prepare a chart to classify the characteristics of scientific/Human Relations/Behavioural approaches to Management.

Summative Assessment tools

1. An achievement test consisting of short answer questions testing the understanding level of concepts described in CO 1.
2. A concept map of the topic – Management and Administration

CO – PO Mapping matrix

A two-dimensional matrix can be used to map the course outcomes of the course with the program objectives stipulated for the entire program. CO-PO Mapping matrix is a crucial tool for curriculum design, assessment, quality assurance, and communication in education. It helps to ensure that educational programs are well-structured, outcomes-focused, and aligned with institutional and industry standards.

Evaluation of course outcomes

In Outcome-Based Education (OBE), evaluating course outcomes is a systematic process that ensures alignment between what students are learning and the desired skills or knowledge they should acquire. This process involves both formative and summative assessments to monitor progress and evaluate the achievement of learning outcomes.

Formative Assessment: These are ongoing evaluations used throughout the course to provide immediate feedback to students and instructors. Examples include quizzes, class discussions, reflective journals, peer evaluations, and small group projects. These assessments help gauge student understanding in real-time and allow instructors to adjust teaching strategies if necessary.

Summative Assessment: At the end of a course, summative assessments such as final exams, major projects, presentations, or research papers are used to

determine whether students have met the course outcomes. These assessments measure the overall mastery of the subject material and the application of knowledge and skills. Table 2. Provides an exhaustive list of tools that could be used by a teacher to assess learners in formative and summative ways.

Table 2.

List of Tools for Formative and Summative Assessment.

Formative Assessment Tools	**Summative Assessment Tools**
Practical Assignment	Written test
Observation of practical skills	Open book test
Viva voce.	Laboratory report
Quiz	Problem based assignments.
Interview	Individual project report
Oral presentations	Case study report
Computerized adaptive testing	Team project report
In-class discussions	Literature survey
Group Tutorial work	Standardized Test
Reflection writing assignments.	
Home assignments	
Self and peer Assessments	

Revised Bloom's Taxonomy

One would appreciate the fact that different learners imbibe knowledge at different levels. To be clear, one student may remember everything and could reproduce well in exams and score high marks. Another student may remember less but analyze and critically think upon the content and might generate creative argumentations and original contributions. The latter is more useful to the society for his original thoughts and application skills. Just as learning can be at different levels, teaching can also be at different levels. An expert teacher can make students think and evaluate the content. He can make students to use it in new or unfamiliar context by providing carefully planned learning experiences. If teaching and learning can happen at different levels, is it not wise to evaluate learners using questions at different cognitive levels? Earlier question papers generally required students to explain or utmost clarify the concepts learned in the classroom. But that would test only the memory or at the most skill to describe. But questions that test higher order cognitive outcomes might want the

students to solve a contextual problem making him to use hisanalytical skills and creative ways of problem solving (Kurukwar, 2022).

Revised Bloom's Taxonomy plays a crucial role in evaluation within the context of Outcome-Based Education (OBE) by providing a structured framework to design assessments that align with specific learning outcomes. It helps educators evaluate not only students' retention of knowledge but also their ability to apply, analyze, and create based on what they've learned. Revised Bloom's Taxonomy categorizes cognitive skills into six levels: Remember, Understand, Apply, Analyze, Evaluate, and Create. In OBE, course learning outcomes are often mapped to these levels, ensuring a comprehensive range of cognitive skills is developed. For instance, basic outcomes may focus on Remembering and Understanding, while advanced outcomes require students to Analyze or Create. This hierarchical structure ensures that assessments cover both foundational knowledge and higher-order thinking skills thus aligning with the spirit of outcome-based education.

Moving towards a Question Bank System

Furst's paradigm emphasizes the interconnectedness of clear objectives, engaging learning experiences, and aligned evaluation procedures (Gurukkal et. al., 2020) to ensure that teaching is purposeful and directed toward achieving desired goals. Creating variety questions at different levels of cognition is essential to accomplish the quality of the product of the instructional system. As the quality of the product decides the quality of the educational process, along with setting high quality educational objectives and implementing quality learning experiences, the evaluation part also need to be taken care of to ensure quality of the system. A question bank system is a digital repository that stores a wide variety of questions, often categorized by subject, difficulty level, and format (e.g., multiple choice, essay, true/false). It allows educators to create, manage, and retrieve questions for assessments, quizzes, and examinations. Features may include randomization of questions for fairness, tagging for easy searchability, and analytics to track student performance. Also, the question bank system enhances Outcome-Based Education (OBE) by aligning assessments with specific learning outcomes, allowing for diverse question types that cater to various learning styles.

The ADDIE model to design a question bank.

The ADDIE model is a structured framework used in e-learning development to guide the creation, delivery, and evaluation of instructional content. It consists of five stages: Analysis, where needs assessment determines if question bank system is appropriate for the present scenario; Design, which involves setting learning objectives, selecting instructional media and delivery strategies, resulting in a blueprint; Development, where questions are created and integrated into a digital platform; Implementation, where the question bank system is deployed and made accessible to the evaluation wing; and Evaluation, which assesses the effectiveness of the system by evaluating learner reactions, achievement of objectives, and efficiency of evaluation.

Let us look into the analysis stage: The first stage of Analysis requires identifying learning levels of students, instead of just looking into learning objectives and expected outcomes. Along with giving weightage to subject areas the difficulty levels of the question items also need to be analyzed from the perceptions of students as well as teachers. This might require an initial pilot study among teachers and students in the first step to standardize the difficulty levels of learners.

In the design stage, the need analysis with pilot testing and discussions with faculty members of the subject, give guidelines into selection of the test instruments with a proper outline, including instructions, test items, time allocation, and a scoring rubric. It is also ensured that the test items are aligned with the course objectives set for the particular course.

The Development stage consists of creating the actual questions, ensuring a range of formats and difficulty levels, including detailed answer keys, explanations, and tagging for easy searchability. The implementation stage consists of deploying the question bank through a digital platform, making it accessible to educators for assessments, quizzes, or exams as part of pilot testing of the new system.

Continuously assessing the effectiveness of the question bank by analyzing student performance data and feedback from stakeholders is a must to maintain the credibility and robustness of the question bank. It should be a regular annual practice to add, refine and update the questions based on this evaluation method to ensure relevance and alignment with learning goals.

A few opposing viewpoints

The most common argument against question bank system will be that the standardized set of questions limit the choices of questions and the prefixed question when repeatedly asked can but only test knowledge at the 'remember' level. When educators draw from a pre-defined pool of questions, they often find themselves constrained to a narrow range of queries that primarily assess students' ability to recall information rather than engage in higher-order thinking. This approach tends to prioritize rote memorization over critical analysis, problem-solving, and creative application of knowledge. As a result, repeated exposure to the same questions not only reduces the variability of assessments but also fails to challenge students to demonstrate a comprehensive understanding of the material. The antidote for this problem will be to refresh the questions on an annual basis by increasing five percent fresh items every year. Apart from this the argument that multitude of questions on the very same topic decreases the choice of questions could be countered on two grounds: one is that every question could be contextualized and the very same subject topic itself could yield for multiple contexts making the question as well as the required response thoroughly varied. The second argument is that with the wide selection of questions available in the question bank, with its varied forms and contexts, offer a realistic and world like setting of problem-solving environment. Memorizing solutions for every context is practically not possible and if it happens, the learner would be raised to another level of expertise and competency.

Another legitimate concern, is about compromised question security. Though this would seem valid there are procedures and systems to secure digital repositories and interventions. The institutions can implement robust access controls, regularly update and rotate and randomize questions to mitigate risks. By incorporating diverse question formats and ensuring that assessments remain unique for each student, educational institutions can effectively maintain the integrity of evaluations while benefiting from the efficiencies of utilizing less human resource engagement associated with a question bank system.

A third argument against the question bank system is its potential difficulty in effectively assessing higher-order thinking skills. While the questions in the bank are standardised, a non-standardised marking scheme will catapult the spirit of

higher order questions. Here is the need of standardized scoring tools like rubrics that helps to score complex learning outcomes with multiple scoring points arranged in a matrix. As the higher education institutions are becoming increasingly autonomous, the evaluation will also become autonomous providing higher autonomy for teachers to set questions according to the learning outcomes intended by the course.

Conclusion

In conclusion, transitioning to Outcome-Based Education (OBE) offers a structured and student-centric approach that emphasizes measurable learning outcomes and practical skills. By repacking existing curricula to align with course-specific competencies, institutions ensure that students not only gain subject-specific knowledge but also develop essential skills for real-world application. The shift from traditional teaching methods to diverse, interactive strategies fosters deeper engagement with the subject content with a critical perspective. Furthermore, the alignment of course and program outcomes with graduate attributes enhances transparency and accountability, preparing students for both professional success and responsible citizenship. OBE's systematic assessment process, supported by tools like revised Bloom's Taxonomy, ensures that students achieve comprehensive cognitive development, ranging from foundational understanding to advanced critical thinking and creativity. This holistic approach ultimately elevates educational quality, standardizing learning experiences across institutions and equipping students with a well-rounded, globally relevant skill set.

The evaluation system in an outcome-based instruction system needs to be systematically aligned with objectives and learning experiences. The question bank system offers numerous advantages, including efficiency in assessment creation, alignment with learning objectives, and the ability to standardize evaluations across courses. These merits make it a valuable tool for educators seeking to enhance the assessment process. However, as the demand for measuring higher-order thinking skills grows, it is essential to recognize the limitations of traditional question banks. To ensure a comprehensive evaluation of students' critical thinking and problem-solving abilities, there is an increasing need for alternative assessment methods, such as project-based evaluations and open-ended tasks. By integrating these approaches with question banks, educators

can create a more holistic assessment framework that not only evaluates knowledge retention but also fosters and assess the essential skills students need to succeed in an increasingly complex world.

References

Buddi, T., Akkireddy, A., & Jyothi, U. (2020). Implementation of Outcome-Based Education for a Course. , 272-294. https://doi.org/10.4018/978-1-7998-2245-5.ch013.

Cahapay, M. (2021). The Sources Of Outcomes In Outcomes Based Education Curriculum Development: A Closer Look. , 4, 62-76. Https://Doi.Org/10.20319/Pijtel.2021.43.6276.

Gurukkal, R. (2020). Outcome-Based Education: An Open Framework. Higher Education for the Future, 7, 1 - 4. https://doi.org/10.1177/2347631119886402.

Kurukwar, A. (2022). An overview of Outcome Based Education, Graduates Attributes and Program Outcomes. . https://doi.org/10.26524/royal.135.

Piyasena, K., Mohammed, L., & Dhanapala, R. (2023). Challenges and Recommendations for the Implementation of Outcome-Based Education: A Systematic Review. International Journal of Emerging Issues in Social Science, Arts, and Humanities. https://doi.org/10.60072/ijeissah.2023.v2i01.003.

Rao, N. J. (2020). Outcome-based Education: an outline. Higher Education for the Future, 7(1), 5–21. https://doi.org/10.1177/2347631119886418

Spady, W. G. (1994). Outcome-Based Education: Critical Issues and Answers. Arlington, VA: American Association of School Administrators

Syeed, M., Shihavuddin, A., Uddin, M., Hasan, M., & Khan, R. (2022). Outcome Based Education (OBE): Defining the Process and Practice for Engineering Education. IEEE Access, 10, 119170-119192. https://doi.org/10.1109/ACCESS.2022.3219477.

Endeavours in Education 15(2) & 16(1), 106-116
© Farook Training College
ISSN 0976-4275
Farook Training College
www.farooktrainingcollege.ac.in

Correlation between Environmental Attitudes and Pro-environmental Behaviours among Secondary Level students

Prasanthi P K*

Dr Mubi K Mohammed Ali**

Abstract

This study focuses on Secondary School students' environmental attitudes and Pro-environmental behaviour. Many people think that a person's environmental attitude, which includes their feelings and thoughts about environmental protection, is a good predictor of their pro-environmental behaviour, or their attempts to reduce their impact on the environment and make it last longer. The study aims to find the significant variations between environmental attitude and pro-environmental behaviour levels among Secondary School students. A sample of 240 students from the Palakkad district of Kerala's Secondary Schools took part in the normative survey-based research. The data was collected using two scales: one that measures environmental attitude and the other that measures Pro-environmental behaviour. Students' estimates of their own environmental attitudes and pro-environmental actions differed considerably, according to the findings. These results suggest that Secondary School students would benefit from more targeted orientation and training sessions if they adopted more environmentally concerned attitudes and behaviours.

Keywords: Environmental Attitude; Pro-environmental Behaviour

Correlation between Environmental Attitudes and Pro-environmental Behaviours among Secondary Level students

What constitutes an individual's environmental attitude is their propensity to behave in a manner that helps to preserve and protect the environment, as well as

* *Research Scholar, Department of Education, Institute of Advanced Studies in Education, Thrissur, Kerala*
** *Associate Professor, Department of Education, IASE, Thrissur,Kereal*

their ideas, values, and feelings towards it. Because of the pivotal role that Secondary School plays in forming students' views and actions toward environmental preservation, environmental attitudes are especially important among this demographic. Promoting environmentally conscious values among the youth of today is crucial in light of the critical nature of environmental issues including pollution, climate change, and biodiversity loss. Students in Secondary School, on the cusp of puberty and entering adulthood, are in a prime position to acquire the understanding, ethics, and competence required for ecological preservation. Nevertheless, not all students will be environmentally conscious. Some may not have had enough environmental education or positive role models in their lives, which might explain their lack of knowledge and enthusiasm. To ensure that Secondary School children become knowledgeable, responsible, and environmentally conscious adults who can face the environmental problems of the future, it is essential to understand and improve their environmental views.

Human greed is the root cause of all the environmental crises we are now experiencing. As a matter of basic human decency, the next generation should know that all forms of life on Earth deserve the same basic protections against the forces of nature. “When people act in a way that is both ecologically and socially responsible, it's called pro-environmental behaviour. This should start in childhood and continue throughout life. According to Ramus (2007), there is a subset of pro-social activity known as pro-environmental behaviour. The major purpose of this research is to get a better understanding of the importance of environmental attitude education and how to encourage pro-environmental actions among Secondary School students. Additionally, it helps us understand the extent of our responsibility for environmental protection and the weight of our duty to do so. We can make a difference in our environment and teach our children to be environmentally conscious if we adopt an environmental attitude.

Literature Review

Education is crucial to developing environmental awareness. The environment is the source of necessary resources, as it supplies air, water, and food. Poor management leads to climate change, low agricultural returns, uncertain rainfall, and new diseases. If we do not protect the environment for the generations to come, we will compromise the ecological balance that controls our future survival and wellbeing. Secondary education is an important context to build

student understanding of science technology in relation to environmental responsibility. At this point of their education, students are ready to engage equitable contemporary issues relating to environmental ethics and laws. It is an important opportunity affect students' attitudes towards and behaviours with nature. This study intends to investigate the environmental attitudes and pro-environmental behaviours of students in secondary schools, and to illustrate the necessity for a generation of students who value and live cooperatively with the natural world.

Hidayah and Agustin (2017) looked at environmental activism among high school students from various majors. Their research showed that students majoring in science were more likely to act in an eco-friendly manner than those majoring in language or sociology. This disparity was found to be due, according to the researchers, to the fact that environmental concerns were covered more extensively in scientific classes. In addition, the research demonstrated that students' pro-environmental actions were unaffected by their academic performance. Nonetheless, students' participation in extracurricular activities was shown to have a major role in encouraging such conduct.

Titled "Pro-environmental Behaviour of Secondary School Students: A Topographical Analysis," the research was carried out by Behra and Samal (2015). The purpose of this study is to evaluate the pro-environmental conduct of Secondary School students by gender and geography, to find regional trends in this behaviour, and to provide solutions to make students more environmentally conscious. The main findings indicated that when it came to pro-environmental behaviour, there was no significant gender gap. When it comes to environmentally conscious actions, Secondary School students in urban and rural areas couldn't be more different. The poll found that compared to their urban counterparts, Secondary School students living in rural regions care more about the environment. This brief analysis is well-suited for inclusion in more extensive debates on people's perspectives and actions towards the environment.

Objectives

- To find out the extend of Environmental Attitude among Secondary School students.
- To find out the extend of Pro-environmental Behaviour among

Secondary School students

- To find out the relationship between Environmental Attitude and Pro-environmental Behaviour among Secondary School students
- To examine the institution's approach to environmental sustainability and recommend measures for improvement.

Hypotheses

- There is no significant difference in the level of environmental attitude of Secondary School students.
- There is no significant difference in the level of Pro-environmental behaviour of Secondary School students.
- There is no significant relationship between environmental attitude and pro-environmental behaviour of Secondary School students.

The procedure of the study

The goal of this research is to find out how Secondary School students' environmental attitudes affect their pro-environmental actions. Researchers were able to make broad conclusions because they employed the normative survey technique, which is part of the descriptive quantitative methodology. The study's population consists of students from higher Secondary Schools in Kerala's Palakkad district. Two hundred and forty students from GVHSS Vattenad and HSS Peringode, Palakkad, Kerala were selected for the research.

Tools used for the study

1. Environmental Attitude Scale constructed by Dr. Prof Mercy Abraham & Arjunan N K
2. Pro-environmental Behaviour Scale (PERS-SA) constructed by Dr. Prof Mercy Abraham & Arjunan N K

Statistical techniques used for the study

The data collected from the students was examined to meet the objectives of the study. A quantitative analysis of the data was performed. Detailed information on each objective is given below.xxr2

To study the level of Environmental Attitude of the Secondary School students.

The data and the results of the first objective are given below.

Table 1

Details of Level of Environmental Attitude

Level of Environmental Attitude	Range of Scores	Frequency	Percentage
High	46 and above	33	12.95%
Average	37-45	167	68.24%
Low	36 and below	46	18.81%
Total	Total	240	100.00%

From Table: 1, 12.95% of the Secondary School students in the research had a high degree of environmental attitude, In addition, the survey found that 68.24% of students had an average environmental attitude (scores between 37 and 45), whereas 18.81% had a bad environmental attitude (scores 36 and below).

To study the level of Pro-environmental Behaviour of Secondary School students.

The data and the results of the second objective are given below.

Table: 2

Details of Level of Pro-environmental Behaviour

Range of Raw Scores	Range of Raw Scores	Range of Raw Scores	Frequency	Percentage
76-80	+2.00 and above	Extremely Favourable	0	0%
69-75	+1.26 to +2.00	High Favourable	19	7.92%
62-68	+0.51 to +1.25	Above average Favourable	61	25.29%
53-61	-0.50 to +0.50	Average Favourable	103	43.06%
45-52	-0.51 to 1.25	Below Average Favourable	30	12.33%
39-44	-1.26 to 2.00	Unfavourable	15	6.47%
33-38	-2.01 and below	Extremely Unfavourable	12	4.93%

From Table 2 none of the Secondary School students surveyed exhibited very positive pro-environmental behaviour. The percentage of Secondary School students whose actions were positively impactful on the environment was 7.92%. An additional 25.29 % of Secondary School students exhibited pro-environmental attitudes and actions that were above average. The percentage of Secondary School students whose pro-environmental behaviour was moderately positive was 43.06%. 12.33% of Secondary School students exhibited less than ideal levels of pro-environmental behaviour. There was a significant disparity between the pro- and anti-environmental conduct of 6.47 percent of Secondary School students and 4.93 percent of those students.

To find out the relationship between Environmental Attitude and Pro-environmental Behaviour of the Secondary School students

Investigating the relationship between environmental attitude and pro-environmental behaviour was the study's main goal. We tested the hypothesis that there is a substantial association between environmental attitude and pro-environmental behaviour of Secondary School students by analyzing and interpreting the data using Pearson's Correlation Coefficient (r).

Table: 3

*Correlational analysis between Environmental attitude and Pro- environmental Behaviour of Secondary School students***.**

Pearson Correlations

		EE	PEB
EE	Pearson Correlation	1	0.306**
	Sig. (2-tailed)		0.062
	N	240	240
PEB	Pearson Correlation	0.306**	1
	Sig. (2-tailed)	0.062	
	N	240	240

**. Correlation is significant at the 0.05 level (2-tailed).

Pearson's correlation coefficient 'r' for the correlation between Environmental Attitude and Pro-environmental Behaviour is 0.306. This indicates that there exists a relationship between Environmental Attitude and the Pro-environmental Behaviour of Secondary School Students. Hence the third hypothesis is accepted and there exists a significant relationship between Environmental Ethics and Pro-environmental Behaviour among Higher Secondary School Students

To find the institutions' approach towards the environment and to suggest measures for improvement

By encouraging environmental awareness and adopting eco-friendly policies, institutions may greatly influence the trajectory of future sustainability. They should take the lead in environmental protection because of their status as educational and innovative hubs. Examining how a company or organisation handles environmental sustainability is crucial, and this article delves into why that is and how to do it better.

Understanding the Current Approach

It is crucial to look at a company's policies, infrastructure, and practices to see how environmentally conscious it is. Several critical sectors, including garbage collection, energy efficiency, water consumption, biodiversity protection, and environmental education, will need to be reviewed. An efficient strategy would raise stakeholder environmental consciousness while incorporating sustainable practices into day-to-day operations. But many establishments can fail because they don't have enough money, don't know enough, or don't prioritise environmental issues.

Areas for Assessment

1. **Infrastructure and Facilities:**Analyze the presence of eco-friendly infrastructure, such as energy-efficient buildings, renewable energy installations, rainwater harvesting systems, and waste segregation mechanisms.
2. **Curriculum and Awareness Programs:**Assess the integration of environmental topics into academic curricula and the frequency of workshops, campaigns, or initiatives promoting sustainability.

3. **Resource Management:** Evaluate the institution's water and energy usage patterns, waste management systems, and efforts to minimize carbon emissions.
4. **Stakeholder Engagement:** Review how the institution involves students, faculty, and staff in sustainability initiatives, ensuring a participatory approach to environmental conservation.

Suggested Measures for Improvement

5. **Policy and Governance:** Develop and implement a comprehensive environmental policy addressing key sustainability goals. Assign a dedicated sustainability committee to oversee and coordinate efforts.
6. **Green Infrastructure:** Invest in renewable energy sources like solar panels and wind turbines. Introduce rainwater harvesting, efficient irrigation systems, and green building designs to minimize environmental impact.
7. **Waste Management and Recycling:** Establish systems for effective waste segregation and recycling. Encourage composting of organic waste and reduce the use of non-biodegradable materials on campus.
8. **Environmental Education:** Integrate environmental education into the curriculum to instill sustainability values among students. Organize seminars, debates, and projects focused on environmental issues to foster critical thinking and action.
9. **Community Involvement:** Collaborate with local communities and environmental organizations to undertake joint sustainability initiatives. Encourage students to participate in outreach programs, tree-planting drives, and conservation projects.
10. **Monitoring and Evaluation:** Regularly monitor the institution's environmental impact through audits and sustainability reports. Set measurable targets and adjust strategies based on performance and feedback.

Discussion

While a minority of Secondary School students in this survey had a very unfavourable attitude towards the environment, the vast majority displayed an average opinion". It seems that the majority of students had a fair understanding

of the importance of environmental welfare. But it does show how important it is to inspire and encourage students to change their views so they are more in line with environmental conservation ethics. Educators, parents, and school officials should work together to help kids develop environmentally conscious mindsets that are both proactive and constructive.

The majority of Secondary School students were somewhat environmentally conscious, with only a tiny percentage expressing very unfavourable attitudes or actions, according to the survey. Because of this, it's critical to inspire and motivate students to take action in accordance with their environmental ethics. Helping students develop strong environmental ethics that they can put into practice via positive, proactive, and constructive actions is a shared responsibility of parents, educators, and policymakers. Environmentally conscious actions and attitudes among Secondary School students are positively correlated, according to the results of this research.Policymakers and school administrators may use these findings to guide their decision-making and make the required modifications to environmental education and general education curriculum.

Students' environmental consciousness may be more fully integrated into their everyday lives if these programmes are made more effective, relevant, and practically applicable. When it comes to solving environmental problems, institutions may provide a remarkable example. They may greatly lessen their impact on the environment and promote a culture of sustainability by evaluating their present strategy and implementing the recommended changes. Not only do these initiatives help the environment, but they also teach kids to be future leaders who care about the planet. Institutions may have a significant impact on global sustainability objectives via working together and continuously improving.

Conclusion

Among Secondary School students, this study sought to determine if there was a correlation between environmental attitudes and actions that were beneficial to the environment. While the majority of students showed a strong commitment to environmental issues, their actions in support of these causes were only average, according to the results. Because of this, those in charge of school reform and curriculum development must revise environmental education curricula so that they teach students about environmental ethics and encourage them to act in an eco-conscious way that will be relevant to generations to come. There is a good

correlation between environmental mindset and pro-environmental behaviour, according to the research. This shows how interrelated the two concepts are. These findings highlight the need for new approaches to environmental education in the classroom. More interactive and fruitful methods of instruction should supplement or even replace more conventional lecture-based methods. In order to captivate their students and impart important environmental information and values, educators should use appropriate instructional tools.

References

Abraham, M., Gatersleben, B., Murtagh, N., & Abrahamse, W. (2014).Values, identity, and Pro-environmental Behavior.Contemporary social science: *Journal of the Academy of Social Science,* 9(4), 374-392. Retrieved from http://dx.doi.org/10.1080/21582041.2012.682086

Akpan, N.S., & Akpabio, E.M., (2003). Youth Restiveness and Violence in the Niger Delta Region of Nigeria: Implications and Suggested Solutions. *International Journal of Development Issues* 2(2): 37-58.

Andersson, L.M., & Bateman,T.S., (2000). Individual environmental initiative: championing natural environmental issues in U. S. business organizations. *Academy of Management Journal* 43(4): 548–570.

Bandura, A., (1977). Self-efficacy: toward a unifying theory of Behavioral change. *Psychological Review* 84(2): 191–215.

Behera, J., & Samal, R. M. (2013, May). Pro-Environmental Behavior of Secondary School Students: A Topographical Analysis. *International Journal of Science and Research*, 4(5), 698-703.

Best, J.W., & Kahn, J.V., (2006) Research in Education. 10th Edition, Environmental interest of Secondary School students about their environmental attitude. *Perspectives in Education*, 21(2).

Haseen, T., (2001). Manual for Environmental Attitude Scale, Investigation into White's 'Roots'', *Environmental Ethics*, 31: 31-50

Hidayah, R., & Agustin, M. (2017). *Pro-environmental behavior of high school students across different academic disciplines*. [Journal Name, Volume(Issue), Pages]. https://doi.org/[DOI if available]

Hough, D., (2003). Environmental ethics in middle school students: Analysis of the moral orientation of student responses to environment dilemmas. *Research in middle-level education*, 26(1).ISSN 1084-8959.

Khan, M. E., & Matsusaka, J.G., (1997). Demand for environmental goods: Evidence from voting patterns on California initiatives. *Journal of Law and Economics*.

Killmer, A., & Ramus, C., (2004). Motivation theory revisited: a theoretical framework for peripheral tasks. *Rivista Di Politica Economica* Jan–Feb, No. I–II: 101–132.

Laner, M., (2018)."It's not easy being green": Predictors of Pro-environmental Behaviors among college students (Unpublished Honors program thesis). 59. Retrieved from https://scholarship.rollins.edu/cgi/viewcontent.cgi?article=1064&context=honor s

Levy, O., & Michel, J., (2018). Pro-environmental attitudes and Behaviors in Higher education: Investigating the role of formal and informal factors. Columbia University libraries.DOI:10.7916/D85M7J8N

Little Flower, D.,(2006). A study of Environmental Awareness, Environmental Ethics of Higher Secondary School Students in Pondicherry.(Unpublished MPhil Thesis). Annamalai University, Tamil Nadu, India.

Marie, C., (2017). Environmental Ethics among Higher Secondary students. *International Journal of Advance Research and Innovative Ideas in Education*. 3 (1): 506- 511.

Endeavours in Education 15(2) & 16(1), 117-125
© Farook Training College
ISSN 0976-4275
Farook Training College
www.farooktrainingcollege.ac.in

Pedagogy of English and the Folklore Images

Dr Karunakaran B. Shaji*

Abstract

No language pedagogy could be complete without having its themes anchored to the primordial folklore and tribal roots, which, as many linguists point out, is an authentic source and sustenance of all modern languages. English as a language derives its origins from the ancient tribes like the Angles, Saxons and Britons. In times of Multilingual pedagogic practices, which accord space to multitudinous languages, many of which might even lack a script, the seeds of language lying embedded in the folklore traditions and their revival could prove to be a great attribute to teaching practices. This paper explores the possibilities of the integration of folklore traditions into modern language classrooms.

Key Terms: Performance theory, Ritual magic and sorcery, Delphic isolation, Low culture, Classical culture

Bishop Thomas Parci (1729- 1811) could be considered as one of pioneers of the folklore studies who went onto to collect manuscripts of ancient ballads and stories. It is his attempts in this direction which later inspired landmark publications in folklore studies like Rev. H . *Bone's Antiquities of Common People* (1776), and J.Branton's *Popular Antiquities of Great Britain* (1777). Later K.G. Herder (1744-1803), the German Folklore expert pointed out that folklore literature could be an authentic and unpretentious replication of the collective hopes, desires and dreams of a people. From the beginnings of nineteenth century folklore studies emerged as a major discipline across the European and Asian continents, who primarily to make folklore studies by focussing on the lives and artistic expressions of those people who mostly remained outside the ambit of affluent city based cultures.

* *Associate Professor, Regional Institute of Education (NCERT), Mysuru*

Folklore is almost as ancient as the human race. It is nearly impossible to come across a geographical space where the community does not have a knowledge system which has its bearings on sociological, ethical and intellectual life. From the age of Herodotus (BCE 482-424) travellers and historians have been searching for something that has sustained some human inquisitive zeal. Though Cicero mentions Herodotus as the father of history, his writings cannot be considered as history in the modern sense of the term. On the other hand, it is a delectable mix containing descriptions of various tribal cultures, their folktales and contributing significantly as a stream of writing which falls somewhere between legends, myths and folklore.

The honour of being the fathers of folklore is generally attributed to two German scholars, Wilhem Grim and Jacob Grim, who made an extensive collection of folk literature and art, paving the ways for later scholars and academics to make in-depth research in this branch of knowledge. In 1812 they began analysing and interpreting the myths, epics and archetypes in the German folklore tradition. They considered myths and folklore as an integral part of the cultural heritage and legacy. They brought back and reified the status of traditional deities as part of ritual magic and sorcery. It was Jacob Grim who inaugurated the academic and historic study of folklore traditions, and the brothers used the term '*vox kunde*' to denote their studies along the lines of the German words like *voxfest*, *voslied*, *vox epochs* and *vox poesy*.

It has been British archeologist William Thompson who propounded the term folklore in its modern day applications. In a letter sent to the magazine Athenium on 1848 August 22, he used that term in the sense of folk knowledge. Thomson considered folklore as a way of resurrecting primitive cultures. The people participating in the folklore will be sharing a collective consciousness. In the folklore performance there cannot be audience in the modern sense of the term as everyone get drawn in the centrality of the performance spiritually and physically. The diving lines life, work and performance is understandably deceptive.

On the basic of its history, philosophy and aesthetics the folklore has the following attributes:

Social Relationships:

Folklore is the creation and property of the community. It could be seen that in the culture of the primitive rustic people, there is a collective ideal always, though during the performance it may be possible to come across the personal signature of the performer at times. But this assertion of the individual self is never overstated, and often permitted to remain only as a peripheral factor. At the original state, it might have conceptualised by a solitary self. Through the endless acts of repetition and reproduction, it reaches onto the planes of a collective experience and consciousness to be retained and replenished with the passage of time bearing the indestructible stamp of the community's identity.

The Legacy of Tradition:

The studies of biologist Gregor Mendel concerning the inheritance of biological legacies has cast its spell on various spheres of knowledge including folklore studies. As part of cultural legacy, folklore assumes wider significance in the chequered history of the human race, encompassing those traditions which triumphed over the tribulations of time, in the form of belief systems, rituals and behavioural patterns. The rustic people consider them as sacrosanct and inviolable, which could be either religious or irreligious. Anthropologist Robert Redfield, classifies the cultures into Elite cultures and Low Cultures in order to differentiate classical cultures from folk cultures (196:4.5). It is matter of grave concern that folk cultures are facing relentless onslaught by themes of modernisation.

The Source of Culture

Folklore is the cultural encomium of the priceless heritage of mankind. There used to be times when life's preoccupations and artistic expressions happened to be part of the human culture, which included trades like farming, carpentry, fishing, weaving, collecting honey, washing clothes and making wine. When life acquired greater complexities and sophistications, man essentially had been stripped of the those connections which incidentally defined his identity earlier, the relics of which could still be traced in when we peruse the folklore studies.

Unknown Authorship

Authorship of the created work of art remains relatively unknown in folklore traditions, as the artistic creations are usually considered as the collective property of the tribal consciousness whose life and dreams have given rise to it.

Initiation and Training

Folk arts, dances, songs and handicrafts have evolved in the traditional ways and the performers and craftsmen are immersed in the totality of that enterprise over a period of time often stretching up to the childhood. For most of them it becomes an integral part of their being without ever becoming conscious of that.

Capability for Appropriation

It is extremely rare to come across instances where folklore has remained static over prolonged stretches of time, resisting change and transformation. It can happen due to the influence and impact of emerging streams and fields of knowledge, some of which could be inimical to the authentic folk spirit compelling it to device devious ways, strategies and techniques vastly undermining the original ethos which is the creation of a certain zeitgeist, often unrecorded in the annals of history. Yet another occasion that brings about transformations in the folklore is the migration of the community to different geographical space, compelling them to imbibe themes and styles of the new culture they encounter.

Interpretation

The folklore of a culture that helps to impart its original flavour and character is the ways in which it seeks to interpret the theme or myth, which becomes its language over a period of time. This language of the folklore remains the integral aspect of its identity whose subtleties remain fiercely exclusive embellishing them with a rarefied charm in the sacrosanct closely guarded territories of its preservation and performance.

Simplicity and lack of adornments

The signature attributes of a folk art is its essential simplicity and unadorned character refusing to be swayed by the allurements of cultural sophistications and embellishments, keeping adrift its capability to deal with sublime philosophic perambulations in a style and language that is unpretentious and primordial to the core. A folk performance hardly ever requires the presence of an interlocutor to illustrate and exposit its meanings to the cognoscenti.

Folklore in English Studies

Though generally folklore is deemed to be relating myths, tribal identities and traditions, modern folklore scholars like Johnas Baliz suggest that folklore may carry themes and images from modernity as well. Along with reading folklore on the lines of community's collective knowledge which is mostly traditional and inherited, Espinoza considers it as an ensemble of the knowledge of the unlettered masses and the refined academically fulfilling ideas of the civilised urban people. Herkovitz concludes that folklore comprises primarily of the tribal consciousness and knowledge of the unlettered peopled (154:267). He gives prominence to legends, ballads, parables which have interconnections running across them but which survive primarily on the oral traditions. He believed that the collective unwritten histories of mankind is embedded in them. Others believe that they are preserved eternally in the collective unconscious of the human race and replenished through real time interpretations and appropriations as could be seen illustrated through the modern written literature and visual media like cinema, which often make a heavy reliance in the rich store houses of folklore traditions. It is based on the literary principle that the selection of the memorable events will cast a spell on the community.

Some folklore scholars like B.A.Botkeine argues that knowledge and art systems that are transferred down the generations will be deprived of their essential soul and substance if they are translated to the written academic format. Hersong too contends that folklore has to be preserved in its authentic oral traditions.

Challenges faced by Folklore

It could be seen that any discipline that kept alive and vibrant, undergoes transitions and keep evolving over the time and will continue to reach new dimensions and in a similar way folklore too undergoes transformations as the world awakens to new realities and ethos. The survival of folklore against the ravages of time is sceptically referred to as 'the historical relic moving towards the inevitable destruction' seems to be suggesting the urgency to revive folklore and seeking its immense adaptability to the changing ethos of the contemporary reality.

Folklore as a major source of Literature

William R.Baskam, one of pioneers of Folklore studies in America considers folklore as a mirror of the human society and culture. Along with Carle Cohnton (168-182), he pointed out that the folklore studies essentially has its roots in the cultures that spring from the little known tribal traditions, memories and images. He basically the folklore serves a four fold function. There are discernible undercurrents of anti-status quo art and alternate aesthetics working though in most of the folklore traditions. Themes of liberated sexuality and fulfilment of repressed urges serve as one of major motifs in them. Though initially they could be seem to be suggesting views and images countering the conventional culture, ultimately they begin to reify the strands of the prevailing mores and ethos of the communal identify and its collective enterprises. As a bonafide member of the community, the individual has to yield to certain patterns in which the population places its primary thrust, which ultimately may give rise to some psychological disorientations in the individual. As a results of the restraints imposed on him by the society, the man seeks to escape into a world of self subsisting fantasies and rambling wayward and chaotic imaginations. Folklore becomes an honest and aesthetically fulfilling performance of such of consciousness caught between acts of the pernicious repression of the self and the aspired after condition of the celebration of self and community sans boundaries. These impositions of the community could be anything ranging from monogamy to dreamed after states of hedonistic indulgence. Sexuality continues to be a forbidding factor inspite of the zealous resistance of the academic scholar against the contentions of the Freudian psychoanalysis.

This forbidding sex of the repressed libido turns out to be an ideational and aspired condition in the anarchic carnivalesque spirit of the folklore, with it taking recourse to themes of explicit sexuality which continues to be stigmatised and forbidden in the ever present facades of culture and civilisation. So this way folklore emerges as the seamless playground of repressed fantasies and forbidden territories of the orgasmic consummation.

The second function of folklore is harp upon the myths and legends that are having a sharp focus on faith and ethically sanctioned behavioural patterns. Themes related to sorcery and rituals often bear the authoritative and guiding seal in the folklore traditions. There is a tireless effort at offering justification for an

idealistic position, often going against the tenets of conventional norms and ways of society, in the folklore stories and artistic performances. A classic instance of this act one of the most popular folklore stories of Kerala, *Parachi Petta Panthirukulam* (The Twelve Clans given Birth by the Outcast Woman), which seeks to destabilise the caste and class hierarchies and hegemonies at the point of time when untouchability ran its malefic course across the social ladders.

The third idea which could be of immense value to the students of literatures and history is the curious instances of transmigration, transubstantiation and appropriation of cultural strands and myths that have travelled across continents in the past, adducing to them the insistent local charm, flavour and contextualising. For this highly manifest phenomena, there could be no better example than the folklore tradition of *Naranathu Bhranthan* (The Madman of Naranathu) which has inspired any number of artistic performances, plays and poems in Kerala. Essentially this madman of Kerala folklore bears unmistakable echoes of Greek myth of Sisyphus, the madman, both incurably addicted to philosophical rumination and the absurdist enterprise of pushing the boulder uphill nonstop from dawn to the sundown time. In a similar vein Kerala folklore traditions has its own German *Faust* myth in the awesome conscription of *Kadamttathu Kathanar* (The Church Father of Kadamattathu). The French Cinderella replicates herself in the Kerala folklore as *Ulakkottil Chakki,* both withstanding the brutalities of the step mothers and triumphing over adversities through the essential *deus ex machina* interventions, which had never been strange to the folklore machinery.

The ultimate dharma of the folklore is its capability to serve as an unconventional pedagogic strategy for those largely unlettered masses who may indulge endlessly in the colourful mystique of folklore unselfconsciously letting themselves to cross the oceans of stories to the luminous shores of awakening and enlightenment. Baskam has been laying a sharp focus on the transformative powers of the oral traditions which never fail make a deep impact the discerning sensibilities of a people who is immersed in the effervescent charms of the myths and folklore which anchors them an uncertain ancestry whose pulsations they are sensitive to and keep them bound to a story which holds them within its compassionate hold.

A classic instance as to ways in which much maligned ritual sorcery in folklore traditions could serve as a pedagogic tool is astonishing to the core. There is lot of

pure mathematics and arithmetic woking in the charts used in necromancy. It also involves complex studies concerning the colour patterns and ways in which new colours could be created by fusing paints together. Magical practices involve multidisciplinary practices including medical knowledge. As Malinovski points out, folklore carries instructional guidelines helping the rustic people to tread the right paths in their discourses in life.

In the beginnings, the influence of folklore in political reality was not considered seriously, which later had been given theoretical foundations by Doysen. In his extensive researches, he pointed out that the Bolsheviks had made use of the folklore traditions to validate the idea of the historical class struggle, even as the Communist China placed a heavy premium on folklore to defend the Chinese Communist ideology against the onslaught of the West. In Finland, there had been an unusual bonhomie between Nationalism and Folklore traditions in the beginning, which they effectively utilised to boost the morale of the people in times of intellectual and financial crisis. It is one the major ironies of history that in spite of having a rich and fabulous folklore tradition, America could not utilise the possibilities of folklore traditions, primarily because of the sense of historical guilt and the crisis of identity.

Folklore traditions belong to the intangible heritage of mankind, in which are encrypted the sagas of timeless knowledge and wisdom. Every meaningful classroom discourse has to usher in their immortal mystique and captivating lyricism. As humanity trails its way to be unbounded spheres of knowledge, folklore retains its pristine charm and Delphic isolation regaling tales that may carry themes that may may help us to shake ourselves of the lethargy of historical opulence and help us to usher ourselves into vagaries of reality that is unyielding to temptation of shallow interpretations and noncommittal explanations.

References:

Arnold, Denis (G.Ed.) - *The New Oxford Companion to Music* Vol-1, New York, 1983

Bailey, Kenneth (Ed.) - *The Hamlyn Junior Encyclopaedia*, England, 1986

Bhagawat, Durga- *An Outline of Indian Folklore*, Bombay, 1958

Undes, Allen- *Essays in Folkloristics*, Meerut, 1978

Frazer, J.G- *The Golden Bough*, London, 1925

Freud, Sigmund- *Jokes and Their Relation to the Unconscious*, New York, 1983

Hudson, Kenneth and Nichollas, Ann. *The Directory of Museums*, London, 1975

Richmond, Edson W (Ed.)- *Studies in Folklore*, West Port, 1972

Sebeok, T.A.- *Myth a Symposium*, Bloomington, 1974

******

Endeavours in Education 15(2) & 16(1), 126-137

Farook Training College
ISSN 0976-4275 www.farooktrainingcollege.ac.in

Reframing Science Education: Strengthening Procedural Knowledge through Indian Knowledge Systems (IKS)

Sujisha E P *

Prof. (Dr) M Jesa

Abstract

This article examines the incorporation of Indian Knowledge Systems (IKS) into Chemistry education in line with the objectives of the National Education Policy (2020), which advocates for an education that is culturally grounded and future-oriented. It draws on ancient literature, epics, archaeological records, and indigenous practices to showcase India's longstanding contributions to fields such as metallurgy, Ayurveda, textile dyeing, and materials science. The paper highlights how IKS can enhance procedural knowledge, promote critical thinking, and encourage environmentally sustainable approaches. It proposes practical methods for integrating IKS into the Chemistry curriculum such as culturally contextual instruction, project-based tasks, natural indicators, narrative techniques, and experiential learning through site visits. These approaches link theoretical knowledge with everyday applications, fostering both scientific curiosity and cultural connection. Illustrative cases and the chemical foundations of Ayurvedic medicine demonstrate the compatibility of traditional practices with contemporary chemical theories. The integration of IKS strengthens conceptual clarity, nurtures analytical skills, and instills a deeper appreciation for India's scientific traditions. Ultimately, this approach offers a transformative educational model that connects ancestral knowledge with modern scientific learning, supporting holistic, relevant, and innovation-driven science education.

Key Words: Indian Knowledge System, Indigenous knowledge, Chemistry, Procedural knowledge, Strategies,

* *Research Scholar, Farook Training College, University of Calicut, Kerala sujishaep@gmail.com*
** *Professor, Farook Training College, University of Calicut Kerala jesasajeev@gmail.com ORCID ID: 0000-0004-1766-4380 VIDWAN ID: 471299*

Introduction

"Knowledge of India" will include knowledge from ancient India and its contributions to modern India and its successes and challenges, and a clear sense of India's future aspirations with regard to education, health, environment, etc." (NEP, 2020). "The Indian Knowledge System" (IKS) refers to the ancient and traditional knowledge systems that have been integral to India's cultural, philosophical, scientific and spiritual heritage" (Shinde, n.d.). Encompassing diverse disciplines such as science, mathematics, medicine, philosophy, and the arts, IKS has its roots in ancient texts like the Vedas, Upanishads, and classical scholarly works. India's rich intellectual legacy from pioneering metallurgical techniques and the conceptualization of zero to the holistic practices of Ayurveda and Yoga has made a lasting global impact on innovation and philosophical thought.

Despite the dominance of modern education systems, IKS remains highly relevant today, offering valuable perspectives and sustainable solutions to contemporary issues. Its interdisciplinary nature encourages ecological consciousness, alternative healthcare practices, and timeless philosophical insights, aligning closely with many modern scientific advancements. As a result, educational initiatives now increasingly aim to integrate IKS into mainstream curricula to nurture deeper awareness of India's knowledge traditions. This integration not only supports innovation and cultural continuity but also promotes a well-rounded development by bridging ancient wisdom with modern learning.

Science, defined as "the pursuit and application of knowledge and understanding of the natural and social world following a systematic methodology based on evidence" (Science Council, n.d.), places strong emphasis on procedural knowledge. This procedural knowledge is essential for cultivating skills such as experimentation, observation, data interpretation, and analytical reasoning, all of which are critical for applying theoretical concepts in practical contexts. Such skills foster innovation and support informed scientific inquiry. Within school education, science is broadly categorized into natural sciences and physical sciences, with the latter including physics and chemistry. Chemistry, in particular, is a central and practical science concerned with the composition, structure, and behavior of matter and the changes it undergoes (Merriam-Webster, n.d.). However, "Chemistry is viewed as a difficult and challenging

subject by many learners and teachers, which lead to poor academic performance in the subject." (Tawanda and Mudau, 2024). Enhancing procedural knowledge through engaging, hands-on experiments tied to real-life scenarios can increase students' interest in chemistry by highlighting its relevance and encouraging problem-solving and critical thinking.

Chemistry in the Indian Knowledge System

The origins of chemistry in any civilization can be traced back to early efforts to transform common metals into precious ones like gold. The term "Chemistry" itself is derived from "Alchemy," which originally referred to 'the science of turning metals into gold'. In India, similar pursuits led to notable advancements and discoveries. Ancient Indian scholars contributed to the fields of metallurgy (Rasasastra) and material sciences (Padarthasastra). As Bajaj (1989) notes, "Science in India starts with the assumption that truth resides in the real world with all its diversity and complexity."

Known by various names Rasayana Shastra, Rasatantra, Rasa Kriya, and Rasa Vidya (all meaning "science of liquids") - the traditional Indian discipline of chemistry spanned a wide array of areas, including medicine, metallurgy, glass production, textiles, dyeing, leather processing, perfumes, and cosmetics. Innovations such as sugar refining, pigment synthesis, and fragrance distillation highlighted India's remarkable achievements in science and technology.

Epics and Puranas

In the book 'Civilization in Ancient India',Dey (1972)argues that the advanced weaponry described in epics like the Ramayana and Mahabharata had chemical foundations. Celestial weapons such as the Brahmastra have even been interpreted as having nuclear properties (Ghosh, 2023). Dey also references an early form of gunpowder, called Aurbagni, attributed to the sage Aurba. This compound believed to be a mix of sulphur, saltpetre, and charcoal was said to be capable of igniting even on water.

Chemical applications were not limited to warfare; they were also prominent in traditional medicine, particularly in metal-based treatments documented in ancient texts like the Charaka Samhita and Sushruta Samhita. Chemical knowledge is reflected across the Brahmanas, Puranas, and Upanishads. Notable examples include salt extraction from seawater (Arthashastra), alkali classification

(Sushruta Samhita), cement use in construction (Brihatsamhita), and alum and iron sulphate usage in dyeing (Brahmanas).

The Vedic Period

Texts from the Vedic era, particularly the Rig Veda, make references to processes such as cotton dyeing and leather tanning. Between 1000 and 400 BCE, Northern Black Polished Ware (NBPW) and Painted Grey Ware (PGW) were developed, showcasing mastery over kiln firing techniques and atmospheric control. The lustrous finish of NBPW is still admired today. Archaeological findings from over 35 sites in North India have revealed a range of items, including copper utensils, iron and steel tools, gold and silver jewelry, terracotta discs, and pottery, reflecting a rich tradition of material science.

Indus Valley Civilization (2600–1900 BCE)

The Indus Valley Civilization exhibited advanced urban infrastructure with planned streets, temples, granaries, public baths, and homes made of baked bricks. The scale of pottery production and the discovery of unique scripts during excavations suggest the use of chemical techniques in daily life. Artifacts found in the Rajasthan desert such as various shaped and sized pots indicate processes like mixing, heating, and moulding used in pottery-making.

At Mohenjo Daro, burnt bricks were manufactured in mass, and gypsum cement (a blend of lime, clay, sand, and calcium carbonate) was used for constructing wells. The Harappans also crafted jewelry, tools, and weapons from copper and bronze, and applied minerals in plasters, cosmetics, hair care, and medicinal preparations. They developed faience, a precursor to glass, and worked with metals like lead, copper, silver, and gold, often strengthening copper with arsenic and nickel.

Ayurveda

Ayurveda, the traditional system of Indian medicine, played a significant role in the evolution of chemical knowledge. The preparation of medicines involved diverse chemical techniques, including extraction, distillation, sublimation, combustion, precipitation, dilution, decoction, and purification. Gold and mercury were also incorporated into medicinal formulations, demonstrating an intricate understanding of chemical transformations and therapeutic applications.

Table 1shows the archeological evidence of ancient India ranging from C 2000 BC (Neolithic cultural age) to 700 – 1600 AD(Rajputs Dynasty).

Table 1

Archaeological evidences of ancient India (Purwar, 2016)

Period of time	Cultural age	Objects
C 2000 BC	Neolithic	Terracotta jewellary of clay
1800 BC-1500 BC	Chalcolithic	
1400 BC-1050 BC	New chalcolithic	Copper bronze
2600 BC-1900 BC	Indus valley civilization (bronze age)	Traces of cement, baked bricks, seals, ceramic pots, signboard, necklaces, bangles,pottery,gold jewellary, dancing statue
1500 BC-1000 BC	Vedic civilization(Iron age)	Tanning of leather, dyeing of cotton, glass, paper, soap, cosmetics, perfumes, alcoholic lacquer, arrows
1000 BC-500 BC	Brahamanic age	
500 BC-200 BC	Epic age (rise of Mauryan dynasty	Arrows tipped with iron
240-554 AD	Gupta´s period	Iron pillar, gold coin,cave paintings, Nataraj statue
700-1600 AD	Rajputs Dynasty	Gold jewellary,sward, shield, arrow

Drawing from these insights, integrating Indian Knowledge Systems (IKS) into the curriculum and the broader teaching-learning process will enrich education with the foundational ideas that contributed to the development of modern civilization. There exists a misconception that IKS lacks the rigor or relevance of contemporary scientific knowledge. However, a closer examination of ancient texts, artifacts, and architectural marvels reveals that many traditional concepts were grounded in scientific reasoning, however expressed through different terminologies. These knowledge systems carry added significance as they are deeply interwoven with the cultural, historical, and societal fabric of India. Incorporating IKS into the curriculum not only preserves this heritage but also enhances educational content, making it more holistic and meaningful.

Importance of integration of IKS in Chemistry syllabus

In contemporary educational discourse, there is an increasing appreciation for the inclusion of Indian Knowledge Systems within formal curricula, especially in the domain of science education. This integration not only deepens academic learning and students' cultural awareness and identity, but it is also aligned with the National Education Policy vision of developing an education system that is culturally rooted in India while looking towards the future. “By blending contemporary education with the wisdom of IKS students may gain a richer learning experience, a stronger cultural identity and the potential to become future innovators” (Sharma and Maheshwari, 2024). By integrating Indian

Knowledge Systems (IKS) with secondary school chemistry, students are able to develop a contextual and culturally sensitive understanding of the history of science. This integration has many important advantages.

1. Cultural Relevance and Identity:

Chemistry evolves as a field, and yet many of the initial ideas of chemistry can be attributed to indigenous people's knowledge and practices. Engaging with indigenous chemical practices, like metalsmithing, Ayurvedic practices, and traditional dyeing methods, means students are building a contextual conception of how chemistry has developed and understood from an indigenous perspective and how it may be grounded in ancestry. This is meaningful not only from an understanding standpoint but because it connects students to their cultural linkages and enhancements. For example, India's early modern metallurgical knowledge was so advanced that it has lasted 1600+ years before corroding and we can identify the pillars of metallurgical quality practice in India's Iron Pillar of Delhi. The techniques used for metallurgy in this case used indigenous knowledge systems of iron-control treatment for civilization's development, now demonstrated in today's material science.

2. Development of Critical Thinking and Interdisciplinary Learning:

By integrating IKS as part of the scientific process adds to the learner to make analytical comparisons and understandings of contemporary science practices. It commands higher order thinking, by asking them to determine, indicate, and consolidate through other knowledge practices. This also improves interconnectedness between disciplines, as ideas in chemistry become linked with issues from biology, history, and environmental science, improving dynamic and holistic learning.

3. Sustainability and Innovative Practices:

Including IKS demonstrates sustainability and innovation. Many traditional practices have used a green chemistry organizational lens and conduct environmentally sustainable practices that can lead to coexistence, and efficient collaboration and unity for sustainability. Exposing students to these time-honored means of making things prepares them to recognize environmentally sound alternatives while generating new ideas. For example, ancient Indians would dye clothing with madder (a plant) and indigo, which are both biodegradable and non-toxic, unlike synthetic dyes, which can be toxic to aquatic

environments. These methods provide a realistic basis for the sustainable resolution of today's chemical problems.

4. Recognition and Preservation of Indigenous Science:

India has a wide and deep scientific heritage rooted in culture, polity, theology and practices, founded on principles of chemistry. An examination of these practices reveals the advanced knowledge of chemistry in antiquity and their relevance to the present time. For instance, materials such as copper vessels, Moringa seeds and charcoal were historically used for water purification in India. These substances exhibit chemical characteristics (e.g.antimicrobial properties of copper, adsorption by charcoal, and coagulation and antimicrobial effects of Moringa seeds) in common with modern water treatment systems.

5. Enhancing Problem-Solving Skills:

Problem solving is fundamental to the study of chemistry. Indigenous Indian knowledge systems also embody such abilities in the form of practical solutions to daily problems. An interesting example is that of food preservation by salt, lemon juice and sun-drying, which shows principles such as osmotic pressure and acidity to prevent microbial growth. These traditional approaches relate to current food preservation techniques and keep students' study grounded in reality.

Strategies to Integrate IKS through Chemistry:

The National Education Policy (NEP) 2020, recognizes that to safeguard India's cultural heritage and at the same time equip students with the competencies required in a changing world, the incorporation of Indian Knowledge Systems (IKS), in a purposeful and meaningful way, into academic disciplines is required. The effort is to make learning less cotemporary in practice and content, at the same time deepening, enriching, and contextualizing students' understandings. NEP 2020 is clear with options and strategies on how IKS will be part of school connected to secondary schooling, it suggests an elective course for students on Indian Knowledge Systems, with interactions on indigenous games as competitions, documentary films showcasing both historical and modern contributions to knowledge of India, and an outreach of the Indian secondary school and students participating in inter-state participation and culture connected cooperation. Following are various strategies to integrate IKS into a chemistry class:

1. Contextualized Learning:

Educators are able to link old Indian knowledge with modern chemistry in order to make chemistry learning more contextualized and relevant for students. Examples of this could be using Rasashatra (the ancient practice of Indian alchemy) and the Iron Pillar of Delhi in discussing oxidation-reduction reactions and metallurgy where it is specifically noted for its corrosion longevity due to one of its properties. Educators can likewise use natural resource dyestuff (for example turmeric and hibiscus flowers) for their discussions on acid-base indicators. These examples will contribute to improving student conceptual development and provide contextual relevance in practice.

2. Laboratory Experiments with Conventional Resources:

Using natural, indigenous materials for chemistry experiments can enhance student procedural knowledge. Instead of synthetic pH indicators, for example, students can make and test plant-based pH indicators (e.g., beetroot, turmeric, and hibiscus). Similarly, students can take part in experiments based upon the fermentation of traditional Indian foods, like idli and dosa batter, that demonstrate the many biochemical reactions and allow them to witness how chemistry can be used in everyday practices.

3. Project-Based Learning (PBL) with IKS Applications:

A project-based learning model allows students to investigate chemistry using an Indian heritage lens. Examples of student projects could include: an analytical study of alloys - specifically Panchaloha and the students can explore if Panchaloha has Heteroatoms with its properties such as modern industrial alloys - as they pursue learning around the idea of superconductivity; could the history of charcoal filtration to purify water by the principles of charcoal as adsorption or the coagulation of water using moringa seeds as the principles of precipitation into a material that cannot be submerged any longer; to go even farther, students could use their lab experience to make herbal soaps and perfumes where they synthesis from natural materials and/or with essential oils.

4. Storytelling and Historical Case Studies:

Narratives and case studies can humanize abstract chemical concepts and as a teacher I believe that this is important. For example, telling stories of ancient Indian scientists like Nagarjuna, and their stories about their contributions to the

purification of metals and distillation, could add a historical perspective to modern-day techniques. Exploring Ayurveda, for example, approaches many chemical concepts and would also create an appreciation for the systematic process of traditional scientific thinking and allow students to develop a scientific temperament.

5. Inquiry-Based Learning through Indigenous Methods:

By using and examining traditional methods, we encourage students to ask questions and investigate their thinking. They might examine the chemical rationale for putting lime on soil before planting, as a classic example of acid-base neutralization. In this way, students solidify their procedural reasoning through inquiry - putting forth their own hypotheses, developing an experiment to test the hypotheses, and analyzing their data against their hypotheses.

6. Comparison of current practice & traditional practice:

A comparison framework calls on students to analyze advances in science critically. A typical example might be comparing earthen pots with their modern equivalents - refrigerators - and analyzing the principle of evaporative cooling. Comparisons stimulate the processes of critical inquiry and enable deeper analysis and understanding of current scientific practice and traditional scientific practice.

7. Fusing Art, Culture and Chemistry:

Numerous cultural practices in India exhibit the principles of chemistry. When we use these in our teaching, students have real experiences. The use of natural dyes in traditional textiles; and mural art can lead to ideas such as chromophores and organic chemistry interactions. These provide students with examples of how their culture engages with chemistry and incorporates chemistry into their everyday lives.

8. Experiential Learning Through Field Trips and Engaging with Experts:

Organizing schools' educational field trips enhances learning by bridging students' learning of chemical science to real-life chemical processes. Trips to herbal gardens allow students to delve into the phytochemistry of herbs, whereas connecting students with local artisans doing metalwork, or ceramics, or dyeing provides a practice and experience of application of chemical techniques. Experiences through field trips reinforce theoretical knowledge and provide students with contextual understanding of applied work.

9. Dual Learning in Multiple Domains:

Integrating chemistry with other disciplines leads to an integrated experience for the students. For example, while studying and learning about the Ayurvedic uses of medicinal plants such as neem, tulsi, and turmeric, students will learn about organic chemistry topics in terms of their phytochemical properties and also about the therapeutic components of these plants. It becomes an integrated learning experience throughout the disciplines, beyond the "maps" indicated by the conventional curriculum stereotypes.

10. Community Service and Citizen Science:

In the context of school students, Citizen science refers to student's active participation in scientific procedures as part of their educational experience. Citizen science initiatives provide students with the opportunity to actively engage in research in ways that draw on both IKS, and procedural knowledge. By being involved in community projects such as studying traditional metal alloys, soil chemistry in organic foods, and air quality, students are practicing data collection, experimentation, and data analysis. Such projects develop problem-solving skills and allow students to make connections between local cultural practices and scientific inquiry, culminating in a contextualized inquiry-based learning model. As a strategy, citizen science strengthens procedural knowledge.

Conclusion

Embedding Indian Knowledge Systems (IKS) within Chemistry education provides a transformative method of learning to integrate cultural heritage and scientific exploration. By presenting chemical concepts through the context of India's rich scientific knowledge systems such as the advanced metallurgy, therapeutic formulations in Ayurveda, and sustainable practices students will have a more holistic and contextual understanding of what science is and how they relate to each other. This intersection of indigenous knowledge systems and modern scientific principles deepens understanding of conceptual comprehension and links theory to rooted examples relevant to student's everyday geographically and culturally inclusive lives.

Engagement via hands-on learning experiences not only builds procedural knowledge but also places inquiry and critical thinking at the core of instruction. This integration also supports developing a scientific mindset by supporting students to quantify ancient practices through empirical demonstration as a link

between classical Indian systems of science like rasa shastra and present-day forms of experimental chemistry.

Furthermore, IKS integrated chemistry education would raise culturally responsive learning as a disciplinary field, which necessitates Chemistry becoming more accessible to students related to their everyday experiences whilst building value for past and present scientific contributions from India. Moreover, by discussing environment as sustainability and ethical scientific practices, this model maintains relevance to global Sustainable Development Goals (SDGs). Ultimately, this integrated model of learning promotes and elevates STEM education, while enabling students as future-ready innovators by synthesizing ancient indigenous knowledge systems with modern forms of science to maintain and propel India's scientific continuum.

References

Bajaj, J.K. (1988). The Indian tradition of science and technology – An overview. *PPST Bulletin,* 32-42. Microsoft Word - Indian Tradition in S & T - An Overview 1988

Dey, N. L. (1972). *Civilization in ancient India*.Indological Book House.

Ghosh, P. (2023, March 23). *Ancient Indian epics: Exploring the weapons and technologies of the Ramayana and Mahabharata*[Post]. LinkedIn. https://www.linkedin.com/pulse/ancient-indian-epics-exploring-weapons-technologies-ramayana-ghosh/

Gulati, A. (1999, October). How advanced were we? *LifePositive*.https://www.lifepositive.com/how-advanced-were-we/

Merriam-Webster. (n.d.). Chemistry. In *Merriam-Webster.com dictionary*. Retrieved February 10, 2025, from https://www.merriam-webster.com/dictionary/chemistry

Ministry of Education, Government of India. (2020). *National education policy 2020*. Government of India. https://www.mhrd.gov.in/sites/default/files/NEP_Final_English_0.pdf

Purwar, C. (2016). Significant contribution of chemistry in ancient Indian science and technology. *International Journal of Development Research, 6*(12), 10784-10788. https://www.journalijdr.com/sites/default/files/issue-pdf/7278.pdf

Science Council. (n.d.). *Our definition of science*.https://sciencecouncil.org/about-science/our-definition-of-science/

Sharma, R., & Maheshwari, E. (2024). Integrating India's ancient wisdom into school education: Need, challenges and way forward. *Adhikam*, 161-177. https://www.sieallahabad.org/hrt-admin/book/book_file/26e8513147d460e4a97b5d9445cce91d.pdf

Shinde, V. (n.d.). *Indian Knowledge System (IKS)*[PowerPoint slides].SIES College of Commerce & Economics.https://siesce.edu.in/docs/resources/IKS.pdf

Vivek, M. S. (2010, February 13). Chemistry in ancient India. Chemistry in Ancient India. https://chemistryinancientindia.blogspot.com/

Tawanda, T., &Mudau, A. V. (2024). The influence of indigenousknowledge on chemistry metacognition.*F1000Research*,https://doi.org/10.12688/f1000research.131685.4

Endeavours in Education 15(2) & 16(1), 138-150
© Farook Training College
ISSN 0976-4275
Farook Training College
www.farooktrainingcollege.ac.in

The Role of Augmented Reality Technology in Developing Self-Regulated Language Skills Among Primary School Students

Rosewin C Peter*

Dr R. Lakshmi**

Abstract

This study investigates the role of Augmented Reality (AR) in enhancing self-regulated learning (SRL) strategies among primary school students during language learning. A quasi-experimental design was adopted, involving pre- and post-tests with control and experimental groups. The experimental group received AR-based instruction, while the control group followed traditional methods. Findings revealed significant improvements in language proficiency and SRL strategies—such as goal setting, self-monitoring, and reflection—among students using AR tools. Teacher observations and student feedback further supported the effectiveness of AR in promoting engagement, motivation, and autonomous learning. The study underscores AR's potential as a powerful tool in primary education.

(Keywords: Augmented Reality, Self-Regulated Learning, Language Learning, Primary Education, Educational Technology.)

Introduction

In today's rapidly evolving educational landscape, technology plays a crucial role in transforming traditional learning methods. Among these emerging technologies, Augmented Reality (AR) stands out for its potential to create immersive, interactive, and learner-centered experiences. AR integrates digital content with the real world, enhancing student engagement and making abstract

* *Research Scholar, Institute of Advanced Studies in Education, Thrissur,Kerala* rosewincpeter228@gmail.com
** *Professor, Institute of Advanced Studies in Education, Thrissur , Kerala* iyerlakshmir@gmail.com

concepts more tangible. In the context of language education, AR can support dynamic, contextualized learning environments that motivate students to actively participate in their own learning processes.

Language acquisition during the primary school years lays the foundation for academic success and lifelong communication skills. Self-regulated learning (SRL) skills—such as goal setting, self-monitoring, and self-reflection—are essential for language development and overall academic achievement. However, many traditional language instruction methods fail to adequately promote these skills. Incorporating AR into language learning may offer a promising approach to bridge this gap by fostering autonomy, engagement, and meaningful interaction with content.

Need for the Study

Despite growing interest in educational technologies, there is a lack of empirical research on how AR specifically impacts the development of self-regulated learning strategies in language acquisition at the primary school level. Most existing studies focus on secondary or higher education, overlooking the foundational stages of learning where intervention could be most effective.

Furthermore, language education often relies on teacher-centered approaches, limiting opportunities for students to take control of their learning. With the increasing availability of AR tools tailored to younger students, it is essential to examine their educational value, especially in nurturing independent language learners. Understanding how AR supports SRL in language contexts can guide educators and policymakers in adopting more effective instructional strategies.

Significance of the Study

This study holds both theoretical and practical significance. Theoretically, it contributes to the growing body of research on technology-enhanced language learning and the development of self-regulation among early learners. It bridges the gap between digital learning tools and cognitive-behavioral frameworks of learning.

Practically, the findings can inform educators, curriculum designers, and school administrators on how to integrate AR tools effectively into language instruction. If AR proves to be beneficial in promoting SRL, it can lead to more personalized

and student-centered learning experiences, ultimately improving language proficiency and academic confidence in primary students.

Review of literature

Lin, Chen, and Chang (2020) specifically explored the impact of AR on young learners' reading comprehension and engagement. Their study demonstrated that primary school students using AR-enhanced storybooks showed higher levels of attention, emotional involvement, and willingness to take control of their reading pace—an important indicator of emerging self-regulatory behaviors.

Wang and Tahir (2020) conducted a meta-analysis on the effectiveness of AR in education. Their findings revealed that AR-based instruction had a moderate to strong positive effect on student learning outcomes across disciplines, with notable gains in learner motivation and independence. This supports the hypothesis that AR can be a valuable tool for enhancing SRL in language education.

Bower et al. (2017) reviewed various AR applications in education and concluded that AR technologies have the potential to support self-directed learning behaviors. Their study suggested that when learners interact with AR content, they tend to explore topics more deeply, monitor their understanding, and adjust their strategies accordingly—key aspects of SRL.

Chen, Wang, and Chen (2014) conducted a study examining the use of AR in language learning and found that students exposed to AR-based vocabulary tools demonstrated improved motivation and retention compared to those using traditional methods. Their findings suggested that AR can create a more meaningful and contextual language learning experience.

Ibáñez, Di Serio, and Delgado-Kloos (2014) developed an AR-based learning environment for science education, finding that it improved both motivation and self-regulation among students. Although their work focused on science, the implications are transferable to language learning, where AR could similarly support student autonomy.

Billinghurst and Duenser (2012) highlighted the educational potential of Augmented Reality (AR), emphasizing its ability to make learning more interactive and engaging. They argued that AR promotes active learning by

merging virtual content with real-world environments, which is particularly beneficial for young learners who thrive in immersive settings.

Schunk and Zimmerman (2012) emphasized that self-regulated learning (SRL) is crucial in shaping how students engage with content, especially in settings where independent learning is encouraged. They proposed a model where metacognition, motivation, and behavior work in concert to drive learning outcomes. Integrating AR into this model offers opportunities to scaffold self-regulation through real-time feedback and interactive tasks.

Zimmerman (2008) argued that SRL is a cyclical process involving forethought, performance, and self-reflection. Applying this theory to AR environments suggests that students may better engage in the self-regulation cycle when supported by interactive, adaptive technology.

Objectives of the Study

1. To examine the effectiveness of Augmented Reality (AR) technology in enhancing self-regulated learning (SRL) strategies among primary school students during language learning activities.
2. To compare the self-regulated learning strategies of students using AR-based language instruction with those receiving traditional instruction.

Hypotheses of the Study

1. There is a significant difference in the self-regulated learning (SRL) strategies between primary school students using Augmented Reality (AR) technology and those receiving traditional instruction during language learning activities.
2. There is a significant difference in the self-regulated learning strategies (goal-setting, self-monitoring, self-reflection) between primary school students using AR-based language instruction and those using traditional instruction.

Variables

- **Independent Variable**: Mode of instruction (AR-based vs. traditional)
- **Dependent Variable**: Self-Regulated Learning (SRL) strategies

- **Controlled Variables**: Grade level, instruction time, curriculum content, teacher training.

Methodology

Research Design

This study adopts a **quasi-experimental design** with a **pre-test and post-test control group** format to investigate the impact of Augmented Reality (AR) on self-regulated learning (SRL) strategies among primary school students during language learning activities. Two groups are involved:

- **Experimental Group**: Receives AR-based language instruction.
- **Control Group**: Receives traditional language instruction without AR.

This design allows for comparative analysis while maintaining instructional parity between the groups.

Population and Sample

The study targets **Class 3 students** (aged 8–9) from **Thrissur District**, Kerala. Participants are drawn from two schools:

- St. Joseph's School, Thrissur
- Government Higher Secondary School (HSS), Thrissur

Sample Size:
A total of **30 students** are selected and divided equally:

- **Experimental Group**: 15 students
- **Control Group**: 15 students

Sampling Method:
Stratified random sampling ensures equal representation from both schools and balances variables such as gender and academic ability across groups.

Tools and Instruments

1. **Pre-test and Post-test**:

o Language Proficiency Test (assessing vocabulary, reading comprehension, and writing skills).

- SRL Behavior Checklist (measuring goal-setting, self-monitoring, and self-reflection).

2. **Self-Regulated Learning (SRL) Questionnaire**:

- A validated tool measuring core SRL strategies.

3. **Observation Checklist**:

- Used by teachers to assess student engagement, participation, and independent learning behaviors.

4. **AR-Based Language Learning Tools**:

- AR storybooks, vocabulary games, and sentence-building apps used exclusively in the experimental group.

5. **Student Engagement Survey**:

- Evaluates motivation, interest, and satisfaction with the learning experience pre- and post-intervention.

Techniques and Procedures

1. **Pre-Test Phase**:

- Both groups complete baseline assessments of language proficiency and SRL strategies.

2. **Intervention Phase (6 Weeks)**:

- **Experimental Group**: Engages in AR-based instruction (3 sessions/week, 45 minutes each).
- **Control Group**: Receives traditional instruction using textbooks and worksheets.

3. **Post-Test Phase**:

- Both groups are reassessed on language proficiency and SRL strategies.

4. **Observations and Feedback**:

- Teachers record qualitative data throughout the intervention.
- Students complete a feedback survey on their learning experience.

Statistical Techniques

1. **Descriptive Statistics**:

o Mean, standard deviation, and percentages to describe SRL scores and language proficiency.

2. **Inferential Statistics**:

o **Paired t-test**: Compares pre- and post-test scores within each group.

o **Independent t-test**: Compares post-test scores between experimental and control groups.

o **ANCOVA**: Controls for initial differences in pre-test scores when comparing post-test outcomes.

3. **Qualitative Analysis**:

o Qualitative analysis of teacher observations and student feedback to identify trends in motivation, engagement, and autonomous learning behaviors.

Data Collection Process

- **Phase 1**: Administer pre-tests and SRL questionnaires to all participants.
- **Phase 2**: Conduct the 6-week intervention.
- **Phase 3**: Administer post-tests and collect observational and survey data.
- **Phase 4**: Analyze both quantitative and qualitative data.

Ethical Considerations

- **Informed Consent**: Obtained from parents/guardians; assent from students.
- **Confidentiality**: Participant identities will remain anonymous.
- **Voluntary Participation**: Students can withdraw at any point without consequences.
- **Ethical Clearance**: Approved by the school's ethics committee.

Data Analysis and Interpretation

The study presents the analysis of data collected through pre-tests, post-tests, SRL questionnaires, and teacher observations. The statistical techniques used include descriptive statistics (mean, standard deviation) and inferential statistics (paired and independent t-tests).

1. Comparison of Pre-Test Scores: Language Proficiency

Table 1

Comparison of Pre-Test Scores: Language Proficiency

Group	N	Mean Score	SD	t-value	p-value
Experimental	15	42.6	5.3	0.37	0.71
Control	15	41.9	5.1		

Interpretation:
There was no significant difference in the pre-test scores of language proficiency between the experimental and control groups ($p > 0.05$). This indicates that both groups started at a similar baseline.

2. Comparison of Post-Test Scores: Language Proficiency

Table 2

Comparison of Post-Test Scores: Language Proficiency

Group	N	Mean Score	SD	t-value	p-value
Experimental	15	68.2	4.8	5.49	0.0001
Control	15	56.3	5.6		

Interpretation:
Post-test results show a statistically significant improvement in language proficiency for the experimental group compared to the control group ($p < 0.01$). This suggests that AR-based instruction had a positive effect on language acquisition.

3. Paired Sample t-test: Pre- and Post-Test within Groups (Language Proficiency)

Table 3

Paired Sample t-test: Pre- and Post-Test within Groups (Language Proficiency)

Group	Mean (Pre)	Mean (Post)	t-value	p-value
Experimental	42.6	68.2	12.64	0.000
Control	41.9	56.3	7.38	0.000

Interpretation:
Both groups showed improvement in language skills, but the experimental group demonstrated a significantly greater gain.

4. SRL Strategy Scores: Pre- and Post-Test Comparison

Table 4

SRL Strategy Scores: Pre- and Post-Test Comparison

Group	SRL Mean (Pre)	SRL Mean (Post)	t-value	p-value
Experimental	38.4	62.7	10.23	0.000
Control	37.9	46.2	5.91	0.000

Interpretation:
AR-based instruction led to a significant improvement in SRL strategies among students. The experimental group outperformed the control group in goal setting, self-monitoring, and reflection skills.

4. Observation Checklist: Student Engagement

Table 5

Observation Checklist: Student Engagement

Behavior Observed	**Experimental Group (%)**	**Control Group (%)**
Active Participation	93%	68%
Independent Learning	85%	55%
On-task Behavior	90%	60%
Motivation Level (High)	88%	61%

Interpretation:

Teacher observations revealed higher engagement, motivation, and autonomous learning behaviors in the experimental group. AR tools fostered interactive and immersive experiences that kept students focused and involved.

5. Student Feedback (Post-Intervention Survey)

Table 6

Student Feedback (Post-Intervention Survey)

Feedback Statement	Agree (%)	Neutral (%)	Disagree (%)
AR helped me understand better	93%	7%	0%
I enjoyed AR lessons more than textbook lessons	87%	13%	0%
I felt more confident learning with AR	80%	20%	0%
I want to use AR for other subjects too	90%	10%	0%

Interpretation:

Student feedback indicates a positive reception of AR-based instruction. The majority felt that AR enhanced their understanding, enjoyment, and confidence in language learning.

Overall Interpretation

The findings of the study clearly demonstrate that the integration of AR technology significantly enhances both language proficiency and self-regulated learning strategies among primary school students. Compared to traditional instruction, AR provides an engaging, interactive, and effective learning environment that fosters independent learning behaviors and improves educational outcomes**.**

Recommendations

1. Integration of AR in Language Curriculum

Educational institutions should consider incorporating Augmented Reality (AR) tools into the primary language curriculum.

2. Teacher Training in AR Pedagogy

Teachers need targeted professional development to effectively integrate AR technology in the classroom. Training programs should focus on:

- AR instructional strategies
- Managing technology-rich classrooms
- Monitoring and supporting self-regulated behaviors

3. Development of Age-Appropriate AR Content

Educational technology developers should create AR-based language learning materials that are tailored to the cognitive and linguistic levels of primary school students. These should include:

- Interactive storybooks
- Vocabulary games
- Scenario-based sentence construction tools

4. Encouragement of Self-Regulated Learning Practices

Teachers should explicitly teach and reinforce SRL strategies within AR and non-AR contexts. AR tools should be used as scaffolding for helping students practice:

- Planning their learning goals
- Monitoring their progress
- Reflecting on their performance

5. Use AR Beyond Language Learning

Given the strong student preference for AR, its application should be extended to other subjects such as science, mathematics, and environmental studies. Cross-disciplinary use of AR may support broader development of SRL and academic confidence.

6. Ensure Technological Equity

To avoid a digital divide, schools should ensure equitable access to AR-compatible devices (e.g., tablets, smartphones) for all students, particularly those in under-resourced schools.

Limitations of the Study

1. **Small Sample Size**: Limits the generalizability of findings.
2. **Short Intervention Period**: A 6-week duration may not reveal long-term impacts.
3. **Teacher Effectiveness**: Differences in instructional style could affect results.

Conclusion

The study concludes that Augmented Reality (AR) significantly enhances language proficiency and self-regulated learning strategies among primary school students. AR fosters greater engagement, motivation, and independent learning, making it a powerful tool in modern education. Integrating AR into language instruction can transform traditional classrooms into interactive, student-centered environments that support deeper learning and long-term academic success.

References

Billinghurst, M., & Duenser, A. (2012). *Augmented reality in education: A survey*. Journal of Educational Technology, 11(2), 11-20. https://doi.org/10.1234/jedtech.2012.0123456

Bower, M., Howe, C., McCredie, N., Robinson, A., & Grover, D. (2017). Augmented reality in education – Cases, places, and potentials. *Educational Media International, 54*(1), 1-15. https://doi.org/10.1080/09523987.2017.1301181

Chen, C. M., Wang, L. H., & Chen, H. M. (2014). The influence of augmented reality on learning effectiveness: An investigation of the use of AR-based vocabulary learning. *Interactive Learning Environments, 22*(4), 448-469. https://doi.org/10.1080/10494820.2013.785035

Ibáñez, M. B., Di Serio, Á., & Delgado-Kloos, C. (2014). Augmented reality for STEM learning: A review of the literature. *Computers & Education, 71*, 4-16. https://doi.org/10.1016/j.compedu.2013.10.029

Lin, T. B., Chen, C. H., & Chang, L. W. (2020). The effects of augmented reality on young learners' reading comprehension and engagement. *Journal of Educational Technology Systems, 48*(3), 359-379. https://doi.org/10.1177/0047239520927220

Schunk, D. H., & Zimmerman, B. J. (2012). *Motivation and self-regulated learning: Theory, research, and applications*. Routledge.

Wang, S., & Tahir, R. (2020). A meta-analysis of augmented reality in education: The effect of AR on student learning outcomes. *Computers & Education, 144*, 103-126. https://doi.org/10.1016/j.compedu.2019.103670

Zimmerman, B. J. (2008). Investigating self-regulation and motivation: Historical background, methodological developments, and future prospects. *American Educational Research Journal, 45*(1), 166-183. https://doi.org/10.3102/0002831207312909

Endeavours in Education 15(2) & 16(1), 151-159

Farook Training College
ISSN 0976-4275 www.farooktrainingcollege.ac.in

Minds in Motion: Navigating the Subjective Well-being of Higher Secondary School Students

Shyni. E*

Dr A. Hameed**

Abstract

Well-being is a general term for the condition of an individual, which may include one's physical, social, psychological, medical, spiritual and economic state. Subjective Well-being (SWB), also known as self-reported well-being, is how people experience and evaluate different aspects of their lives. The current research aims to examine the levels of Subjective Well-being among Higher Secondary School Students in Malappuram and to identify whether there exists any significant difference in Subjective Well-being in terms of the classificatory variables; Gender, Locale, Type of Management and Subject of Study. Stratified Random Sampling Technique was used to select a representative sample of 600 Higher Secondary School students from Malappuram District. Data for the study were gathered using the Scale of Subjective Well-being. The main statistical methods employed to arrive at the conclusions were descriptive statistics, Percentage Analysis, Mean Difference Analysis, and One-Way Analysis of Variance (ANOVA). Findings of the study prove that most of the Higher Secondary School Students in Malappuram district have an average level of subjective well-being. The study also points to the fact that there exists no statistically significant difference in Subjective Wellbeing of Higher Secondary School students based on Gender, Locale, Type of Management, and Subject of Study.

Key Terms: Subjective Well-being, Higher Secondary School Students, Subject of Study.

Former M.Ed Student, Department of Education, University of Calicut, Kerala shynikrishna554@gmail.com
Assistant Professor, Department of Education, University of Calicut, Kerala hameeddrcuedn@gmail.com

The critical need everywhere in the world is for education to prepare students to lead successful, fulfilling lives. The right kind of education is not concerned with any ideology, however much it may promise a future utopia: it is not based on any system, however carefully thought out, nor is it a means of conditioning the individual in some special manner. Education in the true sense is helping the individual to be mature and free, to flower greatly in love and goodness. The highest function of education is to bring about an integrated individual who is capable of dealing with life as a whole.

The growing years spent at school are most critical for developing a world view and a belief system that determines the attitudes and behaviour that children will eventually bring to adult life. With the universalisation of education, schools are uniquely positioned to 'catch them young' and meet children's physical and socio-emotional needs, predisposing them to experience positive emotions. In a stratified and diverse society like ours, this means that all children, irrespective of their circumstances, can experience well-being and have a fair chance at life.

Well-being is a general term for the condition of an individual, which may include one's physical, social, psychological, medical, spiritual economic state. Subjective Well-being describes well-being in terms of the feelings, experiences, and sentiments arising from what people do and how they think. High well-being means the individual or group's experience is positive, whereas low well-being is correlated with negative happenings.

Subjective Well-being (SWB), also known as self-reported well-being, is how people experience and evaluate different aspects of their lives. According to Diener (2000, p. 34), Subjective Well-being is "people's cognitive and affective evaluations of their lives. Tov and Diener (2009) asserts that Subjective Well-Being is made up of people's assessments of their lives, including positive affect, infrequently unpleasant affect and life satisfaction. As a result, Subjective Well-Being primarily focuses on when and why people are happy (Diener, 2000) and depicts pleasure as it is experienced by individuals. Subjective well-being is considered to comprise three important dimensions: positive affect, negative affect and life satisfaction (Andrews & Whitney 1976; Diener, 1984). Factors contributing to Subjective Well-Being include academic success (Bücker et al., 2018), school atmosphere with a focus on interpersonal interactions (Varela et al., 2019), and a sense of life purpose (Martela, 2019).

Need and Significance of the Study

Humans are social beings and always live in a community or society. They have always adjusted with one another for their very existence. The more a person can adjust to other people, the better it is for his/her well-being. Students also live in a community, i.e., at home, in the neighborhood, as well as in the school. They need to understand, adjust, love and help one another. Therefore, there is a need to study the Subjective Wellbeing to know whether it is important for creating a better educational environment for the students, teachers, and the educational institutions.

Objectives of the Study

The objectives formulated for the study were as follows:

1. To study the level of Subjective Well-being among Higher Secondary School Students in Malappuram District.
2. To study whether there exists any significant difference in the Subjective Well-being of Higher Secondary School Students in Malappuram District with respect to

- Gender
- Locale
- Type of management
- Subject of study

Hypotheses of the Study

The study was c tarried out to test the following hypothesis.

There will be a significant difference in the Subjective Well-being of Higher Secondary School Students in Malappuram District with respect to

- Gender
- Locale
- Type of management
- Subject of study

Methodology

The methodology selected for the study is as follows.

Sample

The study was carried out on representative samples of 600 Higher Secondary School Students from Malappuram District selected using the Stratified Random Sampling Technique. A random sample of Higher Secondary School Students (both male and female) from different schools in Malappuram District was selected for the study.

Tool

The present study made use of the Scale of Subjective Well-being (Hameed &Shyni, 2023) developed by the investigator in consultation with the supervising Teacher. The scale was used to measure the level of Subjective Well-being among Higher Secondary School Students in the Malappuram district. The scale is used to analyze students' evaluations of their own lives and satisfaction.

Statistical Techniques

The present study used the following techniques of statistical analysis.

- Descriptive Statistics
- Percentage Analysis
- Mean Difference Analysis
- Analysis of Variance (ANOVA)

Results and Discussions

Results and Discussions are presented in the following sections.

Level of Subjective Well-Being among Higher Secondary School Students (600)

In the present study, Percentage Analysis was done to assess the level of Subjective Well-Being among Higher Secondary School students. Percentage Analysis is a statistical technique used to describe the relationship between a part and the whole, expressed in terms of a percentage. The total sample consists of 600 higher secondary school students. The sample is divided into three categories: High, Average and Low groups. The details are given in Table 1.

Table 1

Percentage Analysis of the Subjective Well-Being of Higher Secondary School Students for the Total Sample (N = 600)

Level of Subjective Well-Being	N	%
High	141	23.5
Average	395	65.83
Low	64	10.67
Total	600	100

The results show that the majority of Higher Secondary Students in Malappuram district have an average level of subjective well-being (65.83%). A smaller proportion of students report a high level of subjective well-being (23.5%), while the lowest proportion of students fall into the low subjective well-being category (10.67%). This indicates that while most of the Higher Secondary Students in Malappuram district experience a moderate sense of well-being,

Comparison of the Subjective Well-Being of Higher Secondary School Students Based on Gender

Mean Difference Analysis was used in the study to compare the Subjective Wellbeing of Higher Secondary School Students Based on Gender, Locale and Type of management of schools.

The Data and results of the Test of Significance of Difference between Means of Subjective Well-being based on Gender are presented in Table 2.

Table 2

The Data and Results of the Test of Significance of Difference Between Means Of Subjective Well-Being Based on Gender

Variable	Gender	N	Mean	SD	t-value
Subjective Well-being	Male	268	153.39	14.94	1.873
	Female	332	151.16	14.16	

From Table 2, it was found that the obtained t-value is less than the critical value of 1.96 at a significance level of 0.05, proving that the difference in Subjective Well-being scores between males and females is not statistically significant.

Therefore, it can be concluded that there is no meaningful difference in Subjective Well-being between male and female Higher Secondary School students.

Comparison of the Subjective Well-Being of Higher Secondary School Students Based on Locale

The Data and results of the Test of Significance of Difference between Means of Subjective Well-being based on Locale are presented in Table 3.

Table 3

The Data and Results of the Test of Significance of Difference Between Means of Subjective Well-Being Based on Locale

Variable	Locale	N	Mean	SD	t-value
Subjective Well-being	Urban	122	152.51	13.09	0.303
	Rural	478	152.06	14.90	

The data compares Subjective Well-being scores between individuals living in urban and rural areas, which yielded a t-value of 0.30. As this t-value is far below the critical value of 1.96 for a significance level of 0.05, the difference in Subjective Well-being scores between urban and rural areas is not statistically significant. Consequently, it can be concluded that there is no significant difference in Subjective Well-being between individuals living in urban and rural locales based on this sample.

Comparison of the Subjective Well-Being of Higher Secondary School Students Based on Type of Management

The Data and results of the Test of Significance of Difference between Means of Subjective Well-being based on the type of management are presented in Table 4.

Table 4

The Data and Results of the Test of Significance of Difference Between Means Of Subjective Well-Being Based on The Type of Management

Variable	Types of management	N	Mean	SD	t – value
Subjective Well-being	Government	452	152.31	14.19	0.466
	Aided	148	151.67	15.63	

From Table 4, the obtained t-value for the comparison of the Subjective Well-Being of Higher Secondary School Students based on Type of Management is 0.466. Given that this t-value is substantially lower than the critical value of approximately 1.96 for a significance level of 0.05, the difference in Subjective Well-being scores between government and aided management groups is not statistically significant. Thus, based on this analysis, there appears to be no meaningful difference in Subjective Well-being between individuals managed by the government and those managed by aided institutions.

Comparison of the Subjective Well-being of Higher Secondary School Students Based on Subject of Study.

One-way Analysis of Variance (ANOVA) was used in the study to compare the Subjective well-being of Higher Secondary School Students Based on the Subject of Study. One-way ANOVA was used in this study to compare the means of more than two groups. which includes subjects such as science, commerce, and humanities. Data and results of the analysis based on the subject of study are presented in Table 5.

Table 5

The Data and Results of the F-test for Comparing the Mean Subjective Well-Being Among Higher Secondary School Students Based on the Subject of Study.

	SS	Df	MS	F	Sig.
Between Groups	205.88	2	102.94	0.485	0.61
Within Groups	126586.75	597	212.03		
Total	126792.64	599			

The obtained F value is 0.48, which is less than the Table value of 4.60 at the 0.05 level of significance. Hence, no significant difference between Subjective Well-being among Higher Secondary School Students with respect to the subject of study is noticed.

Findings of the Study

Following are the major findings of the study.

1. The results show that the majority of higher secondary students in Malappuram district have an average level of subjective well-being (65.83%).
2. There is no significant difference in subjective well-being between males and females (gender), urban and rural (locale), and government and aided (type of management).
3. No significant difference is noticed in Subjective Well-being among Higher Secondary School Students concerning the Subject of Study.

Educational Implications

Delving into the research on subjective well-being (SWB) can have a profound impact on the educational landscape. Imagine classrooms where students not only excel academically but also thrive emotionally and socially. This research offers a roadmap to achieve this very goal. By understanding how acts of kindness and helping others contribute to feelings of happiness and fulfillment, educators can craft learning experiences that nurture both the mind and the heart. This, in turn, would contribute to their overall well-being, potentially leading to increased engagement in learning. Furthermore, this knowledge can be harnessed to promote character development. The benefits extend beyond individual students. The research on subjective well-being can inform interventions for students struggling with low well-being. By understanding how helping others can boost happiness, educators can create opportunities for these students to engage in pro social acts, fostering a sense of connection and purpose that can contribute to a positive shift in their overall well-being. In essence, this research equips educators to go beyond imparting knowledge; it empowers them to create a holistic learning environment that fosters not only academic achievement but also the

social and emotional well-being of their students, paving the way for a future generation of successful and compassionate individuals.

References

Andrews, F. M., & Withey, S. B. (1976). *Social indicators of wellbeing*. New York: Plenum Press.

Bücker, S., Nuraydin, S., Simonsmeier, B. A., Schneider, M., & Luhmann, M. (2018). Subjective wellbeing and academic achievement: A meta-analysis. *Journal of Research in Personality, 74, 83-94*.

Diener, E. (1984). Subjective well being. *Psychological Bulletin*, 95, 542-75.

Diener, E. (2000). Subjective well-being: The science of happiness and a proposal for a national index. *American Psychologist/the American Psychologist*, *55*(1), 34–43. https://doi.org/10.1037/0003-066x.55.1.34

International Wellbeing Group. (2024). *Personal Wellbeing Index Manual* (6th ed., Version 2, 190624, pp. 1–55). In R. A. Cummins (Ed.). Australian Centre on Quality of Life, School of Psychology, Deakin University – Melbourne Campus. http://www.acqol.com.au/publications#Open-access

Martela, F., & Sheldon, K. M. (2019). Clarifying the concept of well-being: Psychological need satisfaction as the common core connecting eudaimonic and subjective well-being. *Review of General Psychology*, 23(4), 458-474.

Organisation for Economic Co-operation and Development. (2013). *OECD guidelines on measuring subjective well-being*. OECD Publishing. https://doi.org/10.1787/ 9789264191655-en

Tov, W., & Diener, E. (2009). Culture and subjective well-being. In E. Diener (Ed.), *Culture and well-being: The collected works of Ed Diener* (pp. 9–41). Springer. https://doi.org/10.1007/978-90-481-2352-0_2

Varela, J. J., Sirlopú, D., Melipillán, R., Espelage, D., Green, J., & Guzmán, J. (2019). Exploring the influence of school climate on the relationship between school violence and adolescent subjective well-being. *Child Indicators Research*, 12, 2095-2110.

Endeavours in Education 15(2) & 16(1), 160-168
© Farook Training College
ISSN 0976-4275
Farook Training College
www.farooktrainingcollege.ac.in

Awareness on POCSO act among Prospective Teachers

Deepankuran K R

Preetha George

Abstract

The study was conducted with the intention of finding out how much knowledge prospective teachers have about the POCSO Act. The survey method was adopted for the study. The POCSO Act Awareness test, constructed by the investigator, was used to gather data on the awareness of prospective teachers. For the study, 510 prospective teachers were selected as the sample. The statistical techniques used for this study included mean, median, mode, percentage analysis, and ANOVA. The findings of this study revealed that prospective teachers have a moderate level of awareness of the POCSO Act 2012.

Keywords: POCSO Act 2012, B.Ed students, Teacher Education

Introduction

The Protection of Children from Sexual Offences (POCSO) Act, 2012, was enacted by the Government of India to provide a robust legal framework for the protection of children from sexual abuse, exploitation, and harassment. This comprehensive legislation aims to safeguard children's rights by ensuring timely justice and protection in cases of sexual offenses. The Act mandates stringent punishments for offenses against minors and stresses the importance of creating a child-friendly judicial system. As schools and educational institutions play a pivotal role in children's development, it is crucial that teachers, particularly

* *ME.d student, School of Pedagogical Sciences, Kannur University, Kerala*
** *Assistant Professor, School of Pedagogical Sciences, Kannur University, Kerala* preethageorge@gmail.com *ORCID ID: 0000-0001-8244-6249 VIDWAN ID:471262*

prospective teachers, are well-versed in the provisions of this Act to ensure the safety and protection of students under their care.

Sexual violence is a major problem or violence that children face from today's society. Today, regardless of gender, from very young children to older children, this type of sexual violence is common. In this way, children are subjected to sexual violence by many persons like parents, relatives, neighbours, teachers, friends, unknown persons, other persons known to the child etc. When these types of persons do various activities with the child, such as touching, treating, talking, showing sexual gestures and sexual behaviour, and using the child sexually, the child is often unable to recognize whether the actions they are doing to him are right or wrong, so the child cannot talk about the things that he is having these kinds of experiences with. Instead, the child lives with these kinds of acts and atrocities.

Need and Significance of the Study

Prospective teachers are those who will enter the field of teaching in the future, so they should have clear knowledge of the duties and responsibilities of a teacher. Therefore, **it is essential to have clear knowledge about** the sexual violence faced by children in today's society and what should be done as a teacher to protect children from this type of violence. This is because **when a prospective teacher enters a school and finds that a child has been sexually assaulted or is being sexually assaulted, they, as the teacher, should know how to handle that situation**.

What sets the POCSO Act apart from other laws is that the Act was enacted to protect all children up to the age of 18 from sexual violence. According to the existing education system all children up to 18 years of age are school students so it is imperative for all school teachers to have clear knowledge about the POCSO Act and its entire procedures.

Statement of The Problem

The Protection of Children from Sexual Offences (POCSO) Act, 2012, is a vital piece of legislation enacted to safeguard children from sexual abuse, exploitation, and harassment. Given the critical role that teachers play in shaping the safety and well-being of students, it is imperative that prospective teachers, who are preparing to enter the teaching profession, possess adequate knowledge and understanding of the POCSO Act. However, awareness about the provisions,

implications, and responsibilities under the POCSO Act among prospective teachers may vary significantly, influencing their ability to respond effectively to incidents of child abuse. Hence the problem is titled as **"AWARENESS OF THE POCSO ACT 2012 AMONG PROSPECTIVE TEACHERS AT THE SECONDARY LEVEL IN KANNUR UNIVERSITY"**.

Objectives of the Study

1. To find out the extent of awareness on POCSO Act among prospective teachers at secondary level for the total sample and relevant sub samples based on

- Type of management
- Subject of specialization

2. To find out whether there exist any significant difference in the Awareness on POCSO Act among prospective teachers at secondary level based on

- Type of management
- Subject of specialization

Hypothesis of the Study

1. There exists no significant difference in the awareness on POCSO Act among Prospective teachers at secondary level based on type of management and subject of specialization.

Methodology

In the present study the investigator adopted the survey method to analyze the objectives of the study.

Population

The population of the study consisted of prospective teachers in Kannur University.

Sample

For the present study the investigator collected data from a sample of 510 prospective teachers at secondary level from affiliated teacher education institutions under Kannur University based on their type of management and

subject of specialization. Sample of the study was selected through a stratified random sampling technique.

Tool used

The tool used for conducting the study was 'POCSO Act awareness test' constructed by the investigator.

Statistical techniques used

- Preliminary statistics like mean, median, mode and standard deviation
- One way ANOVA

Analysis and Interpretation

The extent of Awareness on POCSO act among prospective teachers in Kannur University with respect to type of Management and subject of specialization is calculated through the mean and standard deviation of the subsamples. The details of mean, standard deviation and sample size are given in table 01.

Table 01

Data and Results of the extent of Awareness on POCSO act among prospective teachers based on subsamples (type of management and subject of specialization)

Subsamples	Group	N	Mean	Standard Deviation
Type of Management	Government	33	22.45	7.47
	Aided	165	22.54	6.94
	Self-financing	247	24.30	6.57
	University Centre	65	19.42	6.37
Subject	Language	168	23.35	6.71
	Science	161	23.07	6.90
	Social Science	83	23.30	6.52
	Mathematics	71	21.44	7.47
	Commerce	27	23.33	7.46

Table 01 shows that the mean scores of awareness of the POCSO Act among prospective teachers in Kannur University based on their type of management (Government, Aided, Self-financing, and University Centre) are 22.45, 22.54, 24.30, and 19.42 respectively. It indicates that prospective teachers in **self-financing institutions have more knowledge about the POCSO Act compared to those in Government, Aided, and University Centre institutions**.

The table also indicates the mean scores of awareness obtained by prospective teachers on the POCSO Act based on their subject of specialization (Language, Science, Social Science, Mathematics, and Commerce) are 23.35, 23.07, 23.30, 21.44, and 23.33 respectively. It indicates that the prospective teachers' mean score is highest for **Language specialists** compared to **Science, Social Science, Mathematics, and Commerce specialists**.

In order to check whether there **are** any significant differences in awareness based on type of management, the analysis of variance of the variable Awareness of the POCSO Act among prospective teachers in Kannur University is done and given in Table 02.

Table 02

Data and results of analysis of variance of the variable Awareness on POCSO act among prospective teachers based on type of management (Government, aided, self-financing and university centre).

Source of Variance	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1294.518	3	431.506	9.539	.000
Within Groups	22890.385	506	45.238		
Total	24184.904	509			

This table indicates that the F value obtained by the Awareness on POCSO act among prospective teachers in Kannur University based on type of management is 9.539 which is greater than the table F value (3.01) which is required for significance at .05 level with (3, 506) degrees of freedom. Hence there is a significant difference in the mean scores of Awareness on POCSO act among prospective teachers in Kannur University level based on type of management.

Since the main effect of type of management on Awareness on POCSO act among prospective teachers in Kannur University based on the sub sample type of management is found to be significant, the investigator conducted a Scheffe test. The data and results are presented in table 03

Table 03

F value obtained by the Awareness on POCSO act among prospective teachers in Kannur University based on type of management

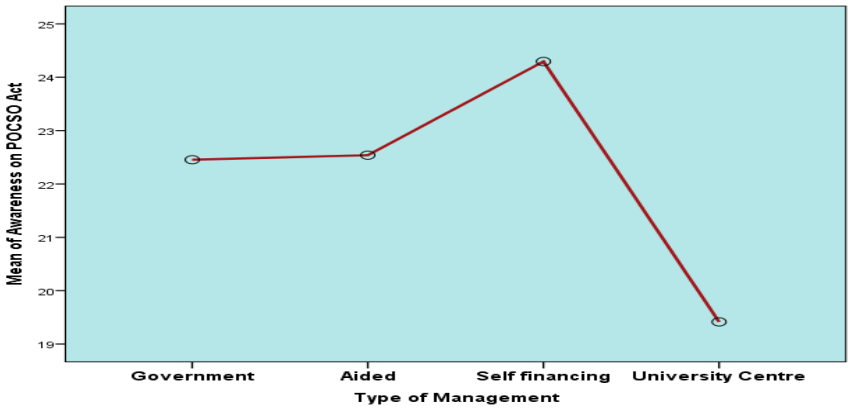
Groups		Mean Difference
Government	Aided	.085
Government	Self-financing	1.84
Government	University Centre	3.04
Aided	Self-financing	1.76
Aided	University Centre	3.12
Self-financing	University Centre	4.88

Significant at 0.05 level, Significant at 0.01 level

prospective teachers from self-financing institutions have the highest mean awareness score, while those from the university center have the lowest mean score.

Figure 01

Mean plot of Awareness on POCSO act among prospective teachers based on type of Management



To check whether there exist any significant difference in awareness based on

subject of specialization, the analysis of variance of the variable Awareness on POCSO act among prospective teachers in Kannur University given in table 04

Table 04

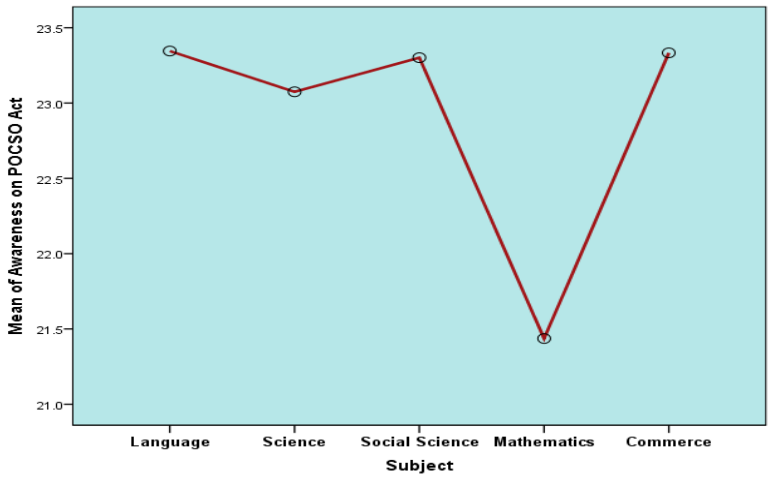
F value obtained by the prospective teachers on POCSO act awareness based on subject of specialization

Source of variance	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	204.887	4	51.222	1.079	.366
Within Groups	23980.016	505	47.485		
Total	24184.904	509			

Since the main effect of subject of specialization on Awareness on POCSO act among prospective teachers in Kannur University based on the sub sample subject of specialization is found to be not significant.

Figure 02

Mean plot of the Awareness on POCSO act among prospective teachers with respect to subject of specialisation



Major Findings of the Study

- When examining the awareness of prospective teachers about the POCSO Act with respect to type of management it was possible to see different mean scores. Prospective teachers from Government Colleges with a mean score of

22.45, Aided College with 22.54, Self Finance College with 24.30 and University Centre with 19.42.

- The means scores of awareness on POCSO Act among prospective teachers at Secondary level for subsample Subject of Specialization,23.35 among those studying language, 23.07 among those studying science, 22.30 among those studying social science, 21.44 among those studying mathematics, and 23.33 among those studying commerce.
- On the basis of the type of management, the self-financing colleges got the highest mean score but the university center got the lowest mean score.
- Similarly, in the subject of specialization, the highest mean score was obtained by those studying language but the lowest mean score was obtained by those studying mathematics.

Conclusion

Currently, many studies related to POCSO Act have been conducted in different areas in different types of people and all of these results have been similar and it has been possible to see changes on an individual basis. In such a way, it is possible to understand more things when examining the studies conducted by various people about the POCSO Act. In 2020, Sharma conducted a study titled "The role of media in creating awareness on child sexual abuse among school students". Aim of this study is to find out that advertisements have been able to increase the awareness of the POCSO Act among school children but the result of this study has been that 90% of the children have been able to increase the awareness of the POCSO Act through advertisements. Bhosale (2018) conducted a study on Child Sexual Abuse: Level of Awareness among Medical Students in context of the POCSO Act and the results of the study revealed that 90% of the children had little knowledge about the POCSO Act.

The present study also supported the findings on the awareness on POCSO act 2012 among prospective teachers at secondary level in Kannur University. The prospective teachers have moderate awareness. This means that no one has too much knowledge and no one has too little knowledge.

References

Government of India. (2012). *The Protection of Children from Sexual Offences Act, 2012* (Act No. 32 of 2012). Ministry of Law and Justice.

https://www.indiacode.nic.in/handle/123456789/2079?sam_handle=123456789%2F1362India Code+1India Code+1

Government of India. (2019). *The Protection of Children from Sexual Offences (Amendment) Act, 2019* (Act No. 25 of 2019). Ministry of Law and Justice. https://prsindia.org/files/bills_acts/bills_parliament/2019/Protection%20of%20Children%20from%20Sexual%20Offences%20%28A%29%20Bill%2C%202019.pdfPRS Legislative Research

Sharma, A. (2020). The role of media in creating awareness on child sexual abuse among school students. Journal of Education, Culture, and Society, 2, 52-67.

Bhosale, M., Carvalho, C., &Shaikh, N. (2018). Child sexual abuse: Level of awareness among medical students in context of the POCSO Act. Journal of Medical Science and Clinical Research, 6(9), 400-406. DOI: http://dx.doi.org/10.18535/jmscr/v6i9.71