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INTEGRATING LIFE SKILLS IN THE SCIENCE CURRICULUM: A COMPARATIVE ANALYSIS OF CBSE AND MBSE TEXTBOOKS IN THE NEP 2020 ERA

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ABSTRACT

The present study examines the integration of World Health Organization ten core Life Skills within Class X Science textbooks prescribed by the Central Board of Secondary Education and the Mizoram Board of School Education in alignment with the goals of the National Education Policy 2020. A qualitative research design was employed using thematic content analysis as the primary method. Both textbooks were analyzed across three major sections like content, activities and questions to identify Life Skills components under the three dimensions of Thinking Skills, Social Skills and Emotional/Coping Skills. Findings from the Central Board, Class X Science textbook reveal that out of a total of 473 Life Skills items were identified, Thinking Skills dominate with 459 items, followed by Social Skills (4) and Emotional Skills (10). The textbook reflects a strong emphasis on cognitive development through critical thinking, problem-solving, and creativity aligning well with NEP 2020's focus on inquiry-based and experiential learning. However, emotional and social dimensions such as empathy, communication and self-awareness are underrepresented. The State Board Class X Science textbook, on the other hand recorded a total of 555 Life Skills items, of which 532 belong to Thinking Skills, 2 items to Social Skills and 21items to Emotional Skills. While this textbook demonstrates strong alignment with cognitive and analytical learning objectives, it remains highly examination-oriented with limited experiential and socio-emotional content. The comparative analysis indicates that although both textbooks align with National Education Policy 2020 and Life Skills framework, they emphasize cognitive development over emotional and social growth. The study concludes that holistic education requires a balanced integration of all three dimensions. It recommends incorporating reflective activities, collaborative projects, ethical discussions and community-based learning to strengthen emotional and social competencies alongside cognitive development for achieving holistic education.

KEYWORDS: Life Skills, WHO, Science textbook, Curriculum, NEP 2020, CBSE, MBSE.

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1. INTRODUCTION

The educational landscape in India is undergoing a transformative shift with the advent of the National Education Policy 2020 (NEP 2020), which moves away from traditional rote-learning models towards a holistic, learner-centred, and skills-oriented approach. NEP 2020 explicitly emphasises the imperative of equipping students not only with academic knowledge but also with Life Skills that prepare them to navigate the complexities of the 21st century (Ministry of Education, 2020). These skills include cognitive, emotional, and social abilities that enable learners to respond effectively to challenges, communicate meaningfully, and make informed decisions in real-life contexts (World Health Organization, 1997).

Life Skills Education (LSE) has thus become a central focus in modern pedagogy, aligning with global goals such as those outlined in UNESCO's framework for Education for Sustainable Development and the Sustainable Development Goals (SDGs), particularly SDG 4, which aims to ensure inclusive and equitable quality education (UNESCO, 2017). The integration of life skills within school curricula enables learners to connect theoretical knowledge with experiential learning, thereby fostering holistic development and responsible citizenship. In the Indian context, NEP 2020's emphasis on experiential and competency-based learning underscores the need for a systemic review of existing textbooks and pedagogical materials to ensure alignment with its vision (National Council of Educational Research and Training NCERT, 2021).

Science education, in particular, offers vast opportunities for embedding life skills due to its practical and inquiry-based nature. It encourages learners to explore, question and apply reasoning skills that directly link with critical thinking, problem-solving and decision-making competencies. Through activities such as experimentation, observation and scientific reasoning, students can develop essential interpersonal and intrapersonal abilities, including empathy, communication and creative thinking (OECD, 2018). However, despite its potential, the integration of life skills in science textbooks remains inconsistent across educational boards, resulting in varied learner outcomes and engagement levels.

The Mizoram Board of School Education (MBSE) and the Central Board of Secondary Education (CBSE) are two major educational systems in India that provide science education at the secondary level. While CBSE follows NCERT guidelines that are periodically updated to align with NEP directives, MBSE designs regionally contextualized textbooks catering to local needs. This divergence presents a unique opportunity to comparatively examine how effectively both systems embed life skills within science content, teaching approaches and learning activities. Such comparative analyses are essential to identify gaps, strengths and areas for further enhancement in integrating life skills education within the NEP 2020 framework. This study therefore seeks to analyze the extent and manner in which life skills components are reflected in Class X science textbooks prescribed by MBSE and CBSE. It aims to explore how scientific concepts and activities contribute to developing the ten core life skills identified by the World Health Organization, while also assessing the degree to which these align with NEP 2020's competency-based and holistic learning objectives. The findings will offer valuable insights into the current state of life skills integration in Indian science education and propose recommendations for systemic improvement in alignment with NEP 2020's vision for transforming education in India.

1.1. Rationale of the Study

The present study is undertaken to examine the integration of WHO's ten core Life Skills within the secondary school Science textbooks prescribed by CBSE and MBSE. The rationale for conducting this study lies in the growing recognition that education should not be limited to academic achievement alone but should also equip learners with essential life competencies such as critical thinking, creativity, communication, empathy, and decision-making. Science, being an experimental and inquiry-based subject, provides an ideal platform for developing these skills. However, the emotional and interpersonal aspects of learning are often neglected in classroom instruction and textbook design. In line with the vision of the National Education Policy (NEP) 2020, which emphasizes holistic and skill-oriented education, this study seeks to assess how effectively Science textbooks reflect these goals. By analyzing the content, activities, and questions presented in the textbooks, the study aims to determine the extent to which they promote cognitive, emotional, and social development among learners. Textbooks play a crucial role in shaping students' understanding, values, and behaviour; therefore, evaluating their alignment with Life Skills education provides meaningful insights into the current educational framework. The study also addresses the gap between policy and practice by

identifying areas where Life Skills are either adequately represented or insufficiently integrated. The findings are expected to guide curriculum developers, educators, and policymakers in improving textbook content and pedagogy. Ultimately, the rationale is to strengthen Science education so that it nurtures well-rounded learners capable of thinking critically, acting responsibly, and adapting effectively to real-life situations.

1.2. Statement of the Problem

For the present study, the researcher aim to extract and identify WHO ten core Life Skills components from CBSE and MBSE class – X Science textbook with the alignment of NEP 2020.

1.3. Research Objective

For the current study, the following objectives are given:

1. To study and compare how Life Skills components are integrated into CBSE and MBSE class – X Science textbook.
2. To analyze how WHO's ten core Life Skills components are aligned with NEP 2020 goal in the textbook.
3. To give recommendations for further integration of Life Skills components in the textbook.

1.4. Research Questions

The following research questions are frame for the present study:

1. How are different Life Skills components integrated in the CBSE and MBSE Science curriculum?
2. How are WHO's ten core Life Skills components align with NEP's goal?

2. METHODOLOGY OF THE STUDY

For the present study, Qualitative research design is employed with thematic content analysis as the primary method for the analysis of textbooks. This design is adopted not only to measure phenomena but to interpret, describe and understand how Life Skills Education and NEP 2020 principles are embedded in Science textbooks used under the Central Board of Secondary Education (CBSE) and Mizoram Board of School Education (MBSE) textbook.

The textbooks are analyzed using WHO's ten core Life Skills components as the guiding principle to extract the different Life Skills from the textbook. WHO's ten core Life Skills components are divided into three dimensions like Thinking Skills, Social Skills and Emotional Skills in which different skills are distributed across the three dimensions given below:

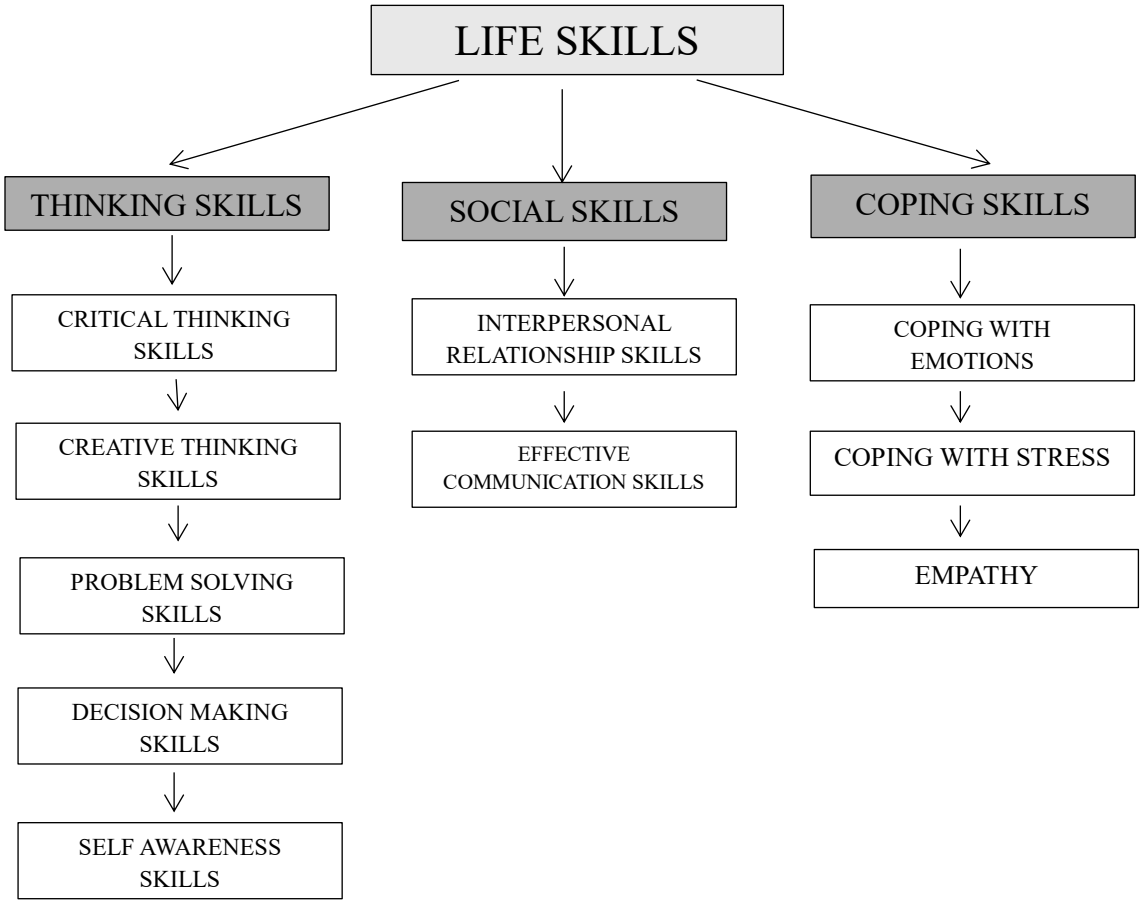

Figure 1: Classification of Life Skills in Different Dimension.

3. FINDINGS OF THE STUDY

Objective 1:

To identify the WHO's ten core Life Skills components from both textbooks CBSE and MBSE boards, the textbooks were analyzed based on the activities, content and question sections.

For the first phase, let us discuss the CBSE Class – X Science textbook prepared by NCERT for the present study:

3.1. Analysis of CBSE Class – X Science Textbook with reference to WHO Life Skills Components

Table 1: Life Skills Component-Wise Distribution in CBSE Class – X Science Textbook

	Life Skills Components	Content	Activities	Question	Total
Thinking Skills	Critical thinking skills	102	24	110	236
	Creative thinking skills	25	5	34	64
	Problem solving skills	43	58	39	140
	Decision making skills	3	0	2	5
	Self- Awareness skills	14	0	0	14
Social Skills	Inter-personal relationship skills	1	0	0	1
	Effective Communication skills	0	3	0	3
Coping Skills	Coping with Emotions	2	0	0	2
	Coping with Stress	2	0	1	3
	Empathy	5	0	0	5
Total		197	90	186	473

From the above table, a clear picture is depicting that CBSE Class – X Science textbook consist of a large number of Life Skills items from the given chapters, contents, activities and question sections which is a good sign that this textbook align clearly with WHO's Life Skills which is crucial for the holistic development of the learner for shaping their overall growth i.e., body, mind and spirit. In this textbook, a total of 13 chapters was given to the learner to enhance and develop their understanding and knowledge towards scientific enquiry, complex chemical equations, biological science and physical components which can be incorporated and inter related into their daily life activities.

In this textbook, a wide coverage of analysis was done in order to extract the WHO's ten core Life Skills from the textbook. Thus, a total of 473 Life Skills items were identified while analyzing the book. In order to acquire the different Life Skills from the textbook, the textbook was analyzed based on the Content section, Activity section and Question section. Under Content section, 197 Life Skills items are identified while analyzing the textbook. But under this section, all the different skills are identified and present but a total absent of Effective Communication skills. Under Activity section, 90 items are identified from the analysis of the textbook. But in this section, skills like Decision making, Self awareness, Inter personal relationship, Coping with Emotions, Coping with Stress and Empathy are totally absent under this section. Under Question section, a total of 186 Life Skills items are identified during the analysis of the textbook. Unfortunately, Self awareness, Inter personal relationship, Effective

Communication, Coping with Emotions and Empathy are absent from this section.

Thus, a clear picture is showing that CBSE Class – X Science textbook provide a comprehensive coverage of different chapters and contents across the textbook in order to enhance the learners cognitive skills towards scientific knowledge by overexpressing a large number of skills which are under the category of Thinking skills with 459 items identified. Other skill dimensions like Social skills with 4 items identified and Emotional skills with 10 items expressed which are quite underrepresented and provide a lesser impact upon the textbook according to the number of items identified from each skills.

For the second phase, let us discuss the MBSE Class – X Science textbook prepared by the State Board for the present study:

3.2. Analysis of MBSE Class – X Science Textbook with reference to WHO Life Skills Components

Table 2: Life Skills Component-Wise Distribution In MBSE Class – X Science Textbook.

	Life Skills Components	Content	Activities	Question	Total
THINKING SKILLS	Critical thinking skills	37	5	314	356
	Creative thinking skills	13	0	44	57
	Problem solving skills	79	6	30	115
	Decision making skills	0	0	2	2
	Self- Awareness skills	1	1	0	2
SOCIAL SKILLS	Inter-personal relationship skills	1	1	0	2
	Effective Communication skills	0	0	0	0
COPING SKILLS	Coping with Emotions	3	0	0	3
	Coping with Stress	14	0	0	14
	Empathy	4	0	0	4
TOTAL		152	13	390	555

From the table given, a clear condition is showing that MBSE Class – X Science textbook gives a huge number of Life Skills with 555 items being identified. The textbook was identified based on the Content section, Activity section and Question section to have a wide coverage of the entire textbook. This textbook had a clear alignment with WHO's Life Skills which is necessary for the holistic development of the learner. In this textbook, a total of 16 chapters was imbibed to develop, enhance and inculcate scientific knowledge and phenomena which can be incorporated in their daily life activities.

In this textbook, in order to extract Life Skills components from the textbook a well prepared framework develop by WHO is employed to extract the desired skills. Therefore, the textbook was examined based on the Content section with 152 items identified but unfortunately Decision making skill and Effective Communication skill were absent in this section, 13 items under Activity section but a large absence of skills like Decision making skill, Effective Communication skill, Coping with Emotions, Coping with Stress and Empathy were absent under this section. Under Question section, a total of 390 items are identified but unfortunately a huge gap is identified that most of the essential skills like Self-awareness skills, Inter personal relationship skills, Effective communication skills, Coping with

Stress, Coping with Emotions and Empathy were totally absent from the given analysis of the textbook. This scenario of the textbook shows that even though different Life Skills components are present slightly or largely, a huge gap is observed that even though different sections are analyze systematically, important sections like Activity and Question section emphasised with specific skills by neglecting coping and social skills which is one of the big challenges in this textbook. It clearly shows that the textbook give partial preference to specific skills by largely emphasizing a specific dimension and skills.

Therefore, MBSE Class – X Science textbook is a comprehensive textbook which cover all the essential contents and unit to be included in the book. In this textbook, a large portion of the skills identified are under thinking skills with 532 Life Skills items identified and extracted from the textbook. Under Social skills, a total of 2 items were identified which is the least skills identified from the three dimensions. Under Emotional skills, 21 Life Skills items were given which seems to be only just a fraction for the overall completion of the skills required. Thus, in this textbook, some skills are overly expressed while other skills are underrepresented which as if seems to be giving less impact in the framing of the textbook towards Life Skills education.

3.3. Comparative Analysis of CBSE and MBSE Class X Science Textbooks with reference to WHO Life Skills Components

The comparative analysis of CBSE and MBSE Class X Science textbooks reveals both similarities and variations in the integration of WHO's ten core Life Skills. The CBSE textbook contains a total of 473 Life Skills items, while the MBSE textbook has 555 items identified across the Content, Activity, and Question sections. Although the MBSE textbook shows a higher numerical representation, the CBSE textbook presents a more balanced distribution of Life Skills across different sections, thereby demonstrating a more diversified learning approach.

A close observation indicates that both textbooks strongly emphasize the domain of Thinking Skills, which accounts for the majority of the total Life Skills identified. In the CBSE textbook, 459 items fall under Thinking Skills, whereas in the MBSE textbook, 532 items belong to this category.

This dominance of cognitive aspects such as critical thinking, problem solving, and creative thinking reflects a clear alignment with the objectives of Science education that aim to develop analytical and logical reasoning among learners. However, this overrepresentation of cognitive elements leads to a noticeable imbalance, as social and emotional dimensions remain underemphasized in both textbooks.

In the CBSE textbook, a total of 197 Life Skills items are identified from the Content section, 90 from Activities, and 186 from the Question section. The MBSE textbook, on the other hand, records 152 items in the Content section, 13 in the Activity section, and 390 in the Question section. This data clearly shows that the CBSE textbook integrates learning opportunities more evenly across different sections, while the MBSE textbook relies heavily on question-based learning. The excessive focus on questions in the MBSE textbook, although numerically higher, tends to promote knowledge recall rather than deep conceptual understanding and skill application. In contrast, the CBSE textbook promotes a more experiential and activity-oriented approach, which helps in developing multiple life skills through interaction, experimentation, and application.

Further analysis shows that both textbooks have significant gaps in the areas of Social and Coping Skills. The CBSE textbook identifies only four items under Social Skills and ten under Coping Skills, whereas the MBSE textbook has two and twenty-one items respectively under these categories. The complete absence of Effective Communication Skills in the MBSE textbook and its very limited presence in the CBSE textbook highlight a critical gap, as communication and interpersonal abilities are essential for collaborative learning and social adaptation. Similarly, skills such as Self-awareness, Empathy, and Coping with Emotions are minimally represented, showing that emotional intelligence and personal development have not yet received adequate attention in both textbooks.

Overall, the findings reveal that both CBSE and MBSE Science textbooks reflect a positive alignment with WHO's Life Skills framework and the spirit of NEP 2020, especially in cultivating cognitive and analytical abilities. Nevertheless, both still exhibit imbalance in skill representation. The CBSE textbook provides a more activity-based and balanced approach that encourages inquiry and reflective thinking, while the MBSE textbook, despite having a higher count of Life Skills items, is more examination-oriented and emphasizes theoretical understanding.

Therefore, to achieve the holistic development envisioned by NEP 2020, both textbooks need to integrate more experiential learning components, emotional and social skill activities, and real-life applications that enable learners to connect scientific

knowledge with everyday life experiences.

Table 3: Comparative Distribution of Life Skills Components in CBSE and MBSE Class X Science Textbooks.

Life Skills Dimension	Life Skills Components	CBSE Total Items	MBSE Total Items	Remarks / Observations
Thinking Skills	Critical Thinking	236	356	Both emphasize this skill strongly; MBSE has a higher count, especially through questions.
	Creative Thinking	64	57	CBSE provides slightly better creative engagement through content and activities.
	Problem Solving	140	115	Both emphasize problem-solving, but CBSE integrates more through activities.
	Decision making	5	2	Very low in both; requires more real-life decision-making contexts.
	Self-Awareness	14	2	Stronger presence in CBSE content; MBSE lacks focus here.
Social Skills	Interpersonal Relationship	1	2	Minimum
	Effective Communication	3	0	Absent in MBSE; CBSE at least introduces some elements in activities.
Coping Skills	Coping with Emotions	2	3	Very low in both; emotional awareness activities are scarce.
	Coping with Stress	3	14	MBSE shows better stress-related skill integration.
	Empathy	5	4	Both contain minimal references; needs stronger inclusion.
Total Life Skills Items Identified		473	555	MBSE textbook overall has more life skills items, mainly due to the large number of questions.

Objective 2

Both the CBSE and MBSE Class X Science textbooks, though developed under different educational boards, share a common vision of nurturing holistic learners through scientific understanding, critical inquiry, and problem-solving. These objectives resonate deeply with the National Education Policy (NEP) 2020, which emphasizes the integration of Life Skills education as an essential part of holistic development. The present analysis compares how the WHO's ten core Life Skills criticism goals of NEP 2020 within these two Science textbooks.

The analysis of both textbooks demonstrates that WHO's Life Skills framework is implicitly woven into the content and structure of Science education, but the degree of integration varies considerably. The CBSE Class X Science textbook, inquiry-based, creative, and experiential learning. It encourages learners to think critically, explore alternatives, and apply scientific reasoning to real-life contexts. The activities and experiments embedded in the CBSE textbook foster creativity and problem-solving, which correspond to NEP's emphasis on developing 21st-century competencies. However, the textbook still shows limited inclusion of emotional and social life skills such as empathy, interpersonal relationship, and communication, which are essential for holistic growth as envisioned by NEP 2020.

In contrast, the MBSE Class X Science textbook demonstrates a higher quantitative presence of life skills items, yet its structure is predominantly question-driven. This emphasis on problem-based evaluation strengthens critical and analytical thinking but reduces opportunities for creative expression, collaboration, and emotional development. While it aligns with NEP 2020's focus on conceptual understanding and application of knowledge, it falls short in promoting experiential learning and socio-emotional competencies. Skills such as self-awareness, empathy, and communication remain largely underrepresented, indicating a gap between academic achievement and personal development objectives.

In conclusion, both CBSE and MBSE Science textbooks align to a significant extent with NEP 2020 through their focus on cognitive growth, critical reasoning, and problem-solving abilities that reflect WHO's core Life Skills framework. However, a holistic alignment with NEP 2020's goal of fostering "whole-child development" which includes emotional balance, social participation, and ethical awareness requires a more deliberate and explicit integration of emotional, coping, and interpersonal skills. To fulfill NEP 2020's vision of nurturing individuals who are not only academically competent but also emotionally intelligent and socially responsible, both textbooks must move beyond knowledge acquisition and actively embed opportunities for experiential, reflective, and collaborative learning linked to WHO's Life Skills framework.

Table 4: Alignment of WHO Life Skills with NEP 2020 Goals in CBSE and MBSE Class X Science Textbooks.

WHO Life Skill	*Alignment with NEP 2020 (brief)*	*CBSE Class X Science (Content / Activities / Questions = total)*	*CBSE — NEP alignment (qualitative)*	*MBSE Class X Science (Content / Activities / Questions = total)*	*MBSE — NEP alignment (qualitative)*	*Recommendation (what to add to better align with NEP)*
Critical thinking	NEP emphasises inquiry-based learning, analysis, evaluation and evidence-based reasoning.	102 / 24 / 110 = 236	Strong: well-distributed across content, activities and questions; supports inquiry and reasoning.	37 / 5 / 314 = 356	Strong but skewed: extremely heavy in question items (application/recall) with fewer activities; good for assessment but weaker in experiential inquiry.	Add more classroom investigations, reflective prompts, and open-ended tasks in MBSE; sustain activities in CBSE that require evidence evaluation.
Creative thinking	NEP promotes innovation, imagination, divergent thinking and project-based tasks.	25 / 5 / 34 = 64	Moderate: present in content and questions and a few activities; supports some imaginative tasks.	13 / 0 / 44 = 57	Moderate-weak: mostly in questions; activities lacking, limiting hands-on creative exploration.	Introduce design challenges, brainstorming tasks and student-led mini-projects in both textbooks; add explicit prompts for divergent solutions.
Problem solving	NEP calls for experiential, contextual problem	43 / 58 / 39 = 140	Strong: substantial activities and balanced distribution	79 / 6 / 30 = 115	Moderate: content-rich but few activities; questions present but	Increase lab-based, contextual problems and group problem-solving activities in MBSE;

	solving and real-world application.		promote applied problem solving.		fewer experiential problems.	retain CBSE's activity emphasis while adding real-life contexts.
Decision making	NEP encourages responsible, ethical, contextual decision-making through situational learning.	3 / 0 / 2 = 5	Weak: very limited instances; almost no activities that simulate decision contexts.	0 / 0 / 2 = 2	Very weak: virtually absent except minimal question prompts; lacks situational/ethical tasks.	Embed scenario-based tasks, case studies, and role-play that require choices and reflection on consequences in both textbooks.
Self-awareness	NEP highlights reflective practices, metacognition and learner agency for personal growth.	14 / 0 / 0 = 14	Partial: some content prompts reflection but activities and questions seldom support metacognition.	1 / 1 / 0 = 2	Very weak: negligible representation; almost no prompts for reflection or self-assessment.	Add reflective journals, self-assessment rubrics, think-aloud exercises and metacognitive questions in both; MBSE needs considerable insertion.
Effective communication	NEP encourages collaborative learning, presentation skills and disciplined articulation.	0 / 3 / 0 = 3	Weak: present only in a few activities; overall limited opportunities for students to practise communication.	0 / 0 / 0 = 0	Absent: no identifiable items that explicitly foster communication skills.	Include structured group discussions, presentation tasks, write-and-share activities, and peer feedback opportunities in both texts (urgent for MBSE).
Interpersonal relationship	NEP supports cooperative, collaborative and peer-learning environments.	1 / 0 / 0 = 1	Very weak: almost no tasks promoting collaboration or social learning in textbook materials.	1 / 1 / 0 = 2	Very weak: marginal presence; minimal collaborative activities.	Integrate collaborative lab tasks, team investigations, peer-teaching opportunities and explicit cooperative-learning instructions.
Coping with emotions	NEP recognises socio-emotional development and well-being as part of	2 / 0 / 0 = 2	Very weak: emotional-awareness references are rare and lack associated	3 / 0 / 0 = 3	Very weak: slightly more references but still no practical exercises to develop emotion regulation.	Add classroom discussions about scientific setbacks, resilience-focused stories, reflection prompts and guided discussions about emotions related to learning.

	holistic education.		activities or reflections.			
Coping with stress	NEP stresses resilience, adaptability and mental well-being strategies.	2 / 0 / 1 = 3	Weak: minimal presence, practically no activities that teach stress management.	14 / 0 / 0 = 14	Partial: more content references in MBSE but activities/questions to practise coping are absent.	Incorporate short modules on time-management for projects, breathing/mindfulness exercises tied to lab work, and guided strategies for exam/project stress in both curricula; MBSE can convert content references into practice.
Empathy	NEP aims at social sensitivity, inclusivity and value education embedded across subjects.	5 / 0 / 0 = 5	Very weak: a few content references exist but no activities/questions to practise empathetic understanding.	4 / 0 / 0 = 4	Very weak: similar limited content mentions without experiential tasks.	Build cross-disciplinary examples, community-linked projects, perspective-taking prompts and ethical dilemmas that require considering others' viewpoints.

Objective 3

Both the CBSE and MBSE Class X Science textbooks contribute significantly to the intellectual and conceptual growth of students. The CBSE Science textbook, prepared by NCERT, reflects the aims of NEP 2020 by offering a structured, inquiry-based approach that encourages critical and problem-solving abilities. The MBSE Science textbook, designed by the State Board, provides contextually relevant and conceptually rich content suitable for regional learners, but it tends to emphasize factual learning and knowledge acquisition rather than reflective or creative engagement. Although both textbooks incorporate essential cognitive and analytical components of life skills, they show a noticeable gap in the social, emotional, and ethical dimensions of learning that NEP 2020 stresses for holistic development. To address these gaps and make the textbooks more aligned with NEP's holistic education framework, the following recommendations are given:

1. Both the CBSE and MBSE Class X Science textbooks are rich in content and play a vital role in developing scientific understanding among students. However, their integration of WHO's Life Skills varies, with CBSE showing stronger alignment with NEP 2020 goals through inquiry-based learning and problem-solving, while MBSE focuses more on factual and conceptual learning with limited emphasis on practical skill application.
2. Both textbooks should include life skill-based learning outcomes within each chapter to help teachers and learners identify which specific life skills are being developed. This would make the connection between academic learning and personal development more visible and meaningful.
3. Experiential and inquiry-based learning should be further expanded to include real-life and community-based activities. These would allow students to apply scientific knowledge in local contexts, strengthening skills such as problem-solving, critical thinking, and empathy.
4. Creative and critical thinking should be enhanced by including open-ended and imaginative questions that encourage learners to think beyond textbook knowledge. This would nurture curiosity and innovation in line with the NEP's vision of inquiry-driven learning.
5. Communication and interpersonal relationship skills should be developed by including more collaborative and discussion-based exercises. Group experiments, classroom debates, and peer interactions would help students build teamwork, listening, and communication abilities.
6. Self-awareness and emotional intelligence should be encouraged through short reflection exercises after activities or experiments. Asking students to think about their experiences and challenges would help them develop coping

mechanisms and emotional balance.

7. Decision-making and ethical understanding can be promoted by including real-world scientific dilemmas and case-based discussions in the textbook. This would help learners evaluate situations critically and make responsible choices, fostering moral reasoning.

8. Coping with stress and resilience can be taught by highlighting stories of scientists who overcame obstacles. Such examples would inspire learners to persist through difficulties and view challenges as part of the learning process.

9. Collaborative projects should be included to promote empathy, problem-solving, and teamwork. These projects would connect scientific knowledge to social and environmental responsibility, fostering a sense of global citizenship.

10. Teacher and student support materials should be developed to guide the integration of life skills in the classroom. Teacher manuals and student worksheets should include life skill connections, reflection activities, and self-assessment exercises to make learning more holistic.

11. Continuous assessment of life skills should be introduced through methods such as reflective journals, peer evaluation, and project rubrics. This would help track the emotional, social, and cognitive progress of students alongside academic achievement.

While both CBSE and MBSE textbooks provide meaningful scientific learning, the CBSE textbook better aligns with NEP 2020 by promoting inquiry and reasoning, whereas the MBSE textbook needs greater inclusion of activities that foster creativity, collaboration, and socio-emotional skills. A balanced integration of cognitive, social, and emotional learning through experiential tasks, reflection, and community engagement would ensure holistic development consistent with the goals of NEP 2020 and WHO's Life Skills framework.

4. CONCLUSION

The overall analysis of the CBSE and MBSE Class X Science textbooks with reference to WHO's ten core Life Skills and NEP 2020 reveals that both textbooks contribute significantly to cognitive and conceptual development but differ in the depth of life skill integration. The CBSE textbook, developed by NCERT, aligns more closely with the holistic goals of NEP 2020 as it encourages inquiry-based learning, critical thinking, and problem-solving through activities and questions that challenge students to think analytically. It effectively cultivates thinking skills but still needs more emphasis on emotional and social skills such as empathy, communication, and coping with stress.

In contrast, the MBSE textbook is content-rich and contextually relevant, helping students understand science in real-world and regional contexts. However, it focuses heavily on factual learning and examination-oriented content, offering fewer opportunities for experiential, creative, or reflective engagement. Life skills such as decision-making, self-awareness, and effective communication are underrepresented, which limits the textbook's ability to foster holistic growth among learners.

Both textbooks, therefore, demonstrate the need for a more balanced integration of cognitive, emotional, and social dimensions of learning. Future textbook designs should consciously embed reflective activities, ethical discussions, community-based projects, and inquiry-oriented learning experiences that promote life skills alongside academic understanding. Aligning scientific education with WHO's Life Skills and NEP 2020's vision of holistic and value-based learning will help nurture learners who are not only scientifically competent but also emotionally resilient, socially responsible, and equipped to face real-life challenges effectively.

REFERENCES

Khine, S.M.(2013). Analysis of Science Textbooks for Instructional Effectiveness, Springer, DOI:10.1007/978-94-007-4168-3_15.

Tufail, M, Malik, S.K.(2018). Analysis Of Textbook Of Biology For Higher Secondary Students With Reference To 21st century Life Skills, Journal of Research in Social Sciences-JRSS June, 2016 Vol: 4 Number 2.ISSN: (E) 2306-112X (P) 2305-6533

Amer, M.B , Singha, K.G.(2023). The Life Skills Included in Secondary Stage English Language Textbooks in Jordan, International Research Journal of Educational Research Vol. 14(2) pp. 1-11, February, 2023.

Azizkhani, A., et.al.(2022). A Content Analysis Exploring Life Skills Components in Elementary School Social Studies Textbooks, Iranian Evolutionary and Educational Psychology Journal, Vol. 4, No. 4, 2022, 32-41 http://ieepj.hormozgan.ac.ir/

Masri, A.A, et.al.(2016).The Inclusion of Life Skills in English Textbooks in Jordan, Journal of Education and Practice ISSN 2222-1735 (Paper) ISSN 2222-288X (Online) Vol.7, No.16, 2016

Shah, N.H, et.al.(2022).Analysis Of English Textbook With Reference To Life Skills' Content Of 10th Grade, Pakistan Journal of Educational Research, Vol. 5, Issue 2.

Teacher's Manual on Life Skills for Classes - IX-X (first ed).(2010). Central Board of Secondary Education, The Secretary, Central Board of Secondary Education, Shiksha Kendra, 2, Community Centre, Preet Vihar, Delhi - 110092.

Programme on Mental Health Life Skills Education in School.(1997). Division Of Mental Health And Prevention Of Substance Abuse World Health Organization, WHO/MNH/PSF/93.7A.Rev.2 English only Distr. General

Hand Book and Resource Materials on Life Skills and Team Building.(February 2017) .Ministry of Youth Affairs and Sports, Govt. of India, Sriperumbudur, Tamil Nadu 602105.

Ministry of Education. (2020). National Education Policy 2020. Government of India. https://www.education.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf

National Council of Educational Research and Training (NCERT). (2021). Position paper on National Curriculum Framework 2021. NCERT.

Nair, S., & Thomas, A. (2020). Integrating life skills through science education: A pedagogical approach. Journal(12), 45–52.

Organisation for Economic Co-operation and Development (OECD). (2018). The future of education and skills: Education 2030. OECD Publishing.

World Health Organization. (1997). Life skills education for children and adolescents in schools (WHO/MNH/PSF/93.7A.Rev.2). WHO.