Integrated Curriculum: Concept, Characteristics and Consideration for Planning and Designing

Rajendra Kuwar 'Ph.D'
Associate Professor, Sanothimi Campus, Bhaktapur
E-mail: rajendrailam@gmail.com
Nara Hari Acharya,
Teaching Assistant, Sanothimi Campus, Bhaktapur
E-mail: nara.acharya@sac.tu.edu.np

Abstract

This article explores the conceptualization, characteristics, and framework for planning and designing an integrated curriculum with threefold objectives. The first is to examine the conceptual underpinnings of curriculum integration, emphasizing interconnectedness between subject areas and cross-disciplinary understanding; the second is to outline key characteristics of an integrated curriculum, including holistic learning, differentiated activities, balanced instruction, varied learning modes, critical and creative thinking, authentic assessment, and meaningful whole learning; and the third is to provide a comprehensive framework for effectively implementing an integrated curriculum. The review of the literature by different scholars is the main source of the data to address considerations for planning and designing an integrated curriculum, such as assessing learners, the school community, and context; identifying central themes; selecting and organising themes; sequencing; aligning with standards and objectives; selecting instructional strategies; developing authentic assessments; providing teacher professional development; involving stakeholders in participation and support; and developing instructional materials and resources. The careful planning and designing of the frameworks, along with the development of conceptual understanding and critical thinking skills in students to prepare for complexities of the 21st century, are the main parameters of the successful implementation of an integrated curriculum.

Keywords: Conceptualization, Implementation, Integrated curriculum, Integration, Planning, Real-world problems.

Introduction

An educational approach that emphasizes the interconnectedness of knowledge and skills across different subjects, as well as their relevance to the real world is integrated curriculum. It has its roots in the early 1900s with John Dewey, an

educational philosopher of the United States, and the initiator of the progressive movement (Beane, 1997). However, there is a lack of consensus in the terminology used to describe integration which is likely to cause confusion (Applebee et al., 2007; Harrell, 2010). Despite the different definitions, the literature highlights three common principles underlying integrated curricula. Effective implementation of these principles is thought to bring various benefits to students. However, there is no one-size-fits-all method for planning integration. Educators have the flexibility to apply these principles in different ways to develop their own integrated curriculum.

In New Zealand, secondary schools have been actively embracing this practice since the 1940s (Barnes, 2015). In the 1970s and 1980s, integration of various subjects, particularly in primary schools, gained global popularity. As stated by Kreijkes and Greatorex (2024), educators like Paul Hirst and Basil Bernstein played important roles in the discussions on curriculum integration during this time. Bernstein, in particular, advocated for prioritizing a relational idea over individual subject (Hammond, 2017). This approach aimed to increase student engagement and provide relevant real-world learning experiences. The shift towards an integrated curriculum represents a departure from the traditional subject-centred approach and is now gaining momentum worldwide. Proponents argue that it fosters comprehensive and meaningful learning experiences by connecting academic knowledge to real-life situations. Curriculum integration can be approached from different perspectives, such as epistemology, pedagogical methods, or overarching principles. Regardless of its foundation, the goal of curriculum integration is to structure human knowledge and understanding, along with the necessary skills and competencies, to foster thriving societies, economies, and cultures (Drake & Reid, 2018). In practice, curriculum integration occurs when learners encounter personally meaningful questions and participate in collaborative experiences that address those questions (Beane, 1997).

According to Murdoch (2015), an integrated curriculum focuses on organizing learning experiences to establish valid connections between disciplines. In a similar vein, Rennie et al. (2012) describe the cross-curricular approach to curriculum integration as a thematic combination of elements from various subjects through inquiry-based methods. Therefore, a compelling argument can be made for basing curriculum integration on two key ideas. Firstly, it entails bringing together traditional knowledge disciplines to address fundamental and significant problems and questions.

Secondly, it aligns with Deweyan constructivism, where a learner's prior knowledge is incorporated into the development of new understandings.

In the context of an integrated curriculum, curriculum planning and design are significant aspects of successful implementation and achieving the curriculum's goals. However, there is currently a lack of a comprehensive curriculum framework for planning and designing integrated curricula. Therefore, this article aims not only to explore a detailed descriptive framework for planning and designing an integrated curriculum but also to explore the conceptualization, characteristics, and framework of planning and designing an integrated curriculum. It seeks to foster the practical implications of integrated curriculum by providing consideration for planning and designing integrated curriculum.

Methodology

This study conducted a comprehensive review of existing literature to investigate the planning, designing, and integration of curriculum, which is considered a widespread trend in basic and primary education. The improvement of current school education in various countries worldwide has placed a strong emphasis on nurturing students' key competencies (Drake & Reid, 2020; OECD, 2019). However, achieving progress in curriculum and instruction requires comprehensive reforms rather than focusing on a single aspect. Despite being recognized as an independent discipline within the field of education, the planning, designing, and integration of curriculum have not received sufficient attention. Therefore, the objective of this study is to explore the concept, characteristics, and way of planning and designing an integrated curriculum with a focus on developing students' key competencies for comfort adjustment in modern society. This objective aligns with one of the primary responsibilities of curriculum planning and design, which is to foster the development of students' key competencies through subject-based teaching (Drake & Reid, 2020).

The research materials for this study consisted of scholarly works and principles related to the study of integrated curriculum planning and designing a curriculum framework. The authors primarily employed a content analysis approach to analyse the existing literature. By examining the scientific literature, this study exposed the association of integrated curriculum and identified its characteristics, establishing a basic framework for curriculum integration.

Results and Discussion

Conceptualization of Integrated Curriculum

The idea of an integrated curriculum has evolved over time, with contributions from different educational theorists and practitioners. An integrated curriculum is a holistic approach to teaching and learning that emphasizes the interconnectedness of knowledge across different subjects or disciplines (Burke & Lehane, 2023; Repko & Szostak, 2020). It challenges the traditional way of separating knowledge into distinct compartments and encourages learners to explore concepts, themes, or real-world issues from multiple perspectives (Drake & Reid, 2018).

The roots of integrated curriculum can be found in educational philosophies and theories such as progressivism, cognitive load theory, constructivism, and 21st-century skills. Progressivism, as advocated by John Dewey (1938), emphasizes hands-on, experiential learning and the integration of academic subjects with practical applications. This theory played a role in shaping the concept of an integrated curriculum.

Cognitive load theory focuses on how learners perceive information as a whole, making it easier for them to understand and conceptualize knowledge (Sweller, 2011). Similarly, in constructivism, learners actively construct knowledge by making connections and deriving meaning from their experiences (Piaget, 1976). Integrated curriculum facilitates this process by providing authentic, real-world contexts for learning. Additionally, integrated curriculum is seen as a way to develop communication, collaboration, critical thinking, problem-solving, and other essential skills needed for success in the modern world, often referred to as 21st-century skills (Bialik et al., 2015).

Recent conceptualizations of integrated curricula highlight the importance of authenticity, relevance, and student-centered learning experiences (Beane, 2005; Drake & Reid, 2018). Integrated curriculum is often associated with interdisciplinary or transdisciplinary approaches, where knowledge from different disciplines is combined to address complex issues or real-world problems (Repko & Szostak, 2020). The concept of an integrated curriculum aligns with the principles of culturally responsive teaching and the promotion of equity and diversity in education (Gay, 2018). By connecting learning to students' diverse backgrounds and experiences, the integrated curriculum can promote inclusivity and engage learners from various cultural contexts.

Different experts have provided various perspectives on curriculum integration. Gresnigt et al. (2014) discussed six approaches to curriculum integration: isolated/fragmented/cellular, connected, nested/fused, multidisciplinary, interdisciplinary, and transdisciplinary. Likewise, Drake and Reid (2020) outlined five ways of integrating curriculum: fusion, intradisciplinary, multidisciplinary, interdisciplinary, and transdisciplinary.

Integrated Curriculum

An integrated curriculum is an approach to teaching and learning that intentionally connects and blends various subjects or disciplines to promote a holistic understanding of complex concepts, themes, or real-world problems (Drake & Reid, 2018; Repko & Szostak, 2020). According to Beane (2005), an integrated curriculum focuses on comprehensive life problems or tasks, cutting across subject-matter lines. It emphasizes the interdependence and interconnectedness of knowledge, skills, and experiences rather than treating subjects as isolated areas (Jacobs, 1989).

According to Beane (1995), curriculum integration goes beyond superficial changes in lesson plans across subjects. It involves a fundamental shift in how we view education and the purpose of schools. Instead of focusing solely on individual subjects, an integrated curriculum starts with the belief that the curriculum should be driven by real-life problems, issues, and concerns. It emphasizes the practical application of knowledge and encourages students to explore and understand the interconnectedness of different areas of study. Wolfinger and Stockard (1997) describe an integrated curriculum as erasing the lines between subject areas and eliminating distinct disciplines. McBrien and Brandt (1997) view it as a teaching philosophy that draws content from various subjects to focus on a specific topic or theme, aligned with Burke and Lehane (2023). Wraga (1996) defines curriculum integration as a transdisciplinary curriculum, which aligns with the conceptualization by Drake and Reid (2018). According to Pring (1973), integration refers to the establishment of cohesion between different forms of knowledge and their corresponding disciplines. Jacobs (1989) describes interdisciplinary as the intentional use of methods and language from multiple disciplines to explore a theme, topic, or problem.

These definitions highlight the shared understanding of integrated curriculum as an approach that breaks down subject silos, fostering connections and synergies among different forms of knowledge and disciplines. It revolves around exploring

complex topics, themes, or real-world problems using multiple perspectives, creating a unified and holistic learning experience through project work. An integrated curriculum emphasises rich connections across disciplines, a student-centered approach, and meaningful and comprehensive learning. Integrated curriculum is a teaching philosophy that involves pulling content from multiple subjects to concentrate on a specific topic or theme. For example, the students can apply mathematics to calculate the pressure at various depths and use social studies to explore the different livelihoods of coastal and inland populations under the unit 'The Sea'.

Key Features of an Integrated Curriculum

An integrated curriculum is designed to provide a holistic and interconnected approach to learning. Its key characteristics reflect a departure from traditional subject-based education models. Rather than compartmentalizing knowledge into discrete disciplines, an integrated curriculum emphasizes the inherent connections between different areas of study. It offers learning experiences that simultaneously develop students' attitudes, skills, and knowledge across multiple subjects. Activities are tailored to diverse abilities, allowing for differentiated instruction. There is a balanced blend of teacher-led and student-driven learning opportunities, encompassing whole-class, small-group, and individual tasks. Critical and creative thinking skills are intentionally cultivated through thought-provoking tasks that promote analysis, problem-solving, and innovation. Assessment methods align with this integrated approach, incorporating teacher evaluations, peer feedback, and self-reflection. Ultimately, an integrated curriculum aims to present learning as a cohesive and meaningful whole, enabling students to experience the natural overlap and relationships between various concepts and domains of knowledge. The key characteristics of an integrated curriculum are discussed briefly.

Holistic Learning Experiences. An integrated curriculum provides learning experiences designed to develop children's attitudes, skills, and knowledge simultaneously. These experiences help students make connections across different subject areas, fostering a comprehensive conceptual understanding of themes.

Differentiated Activities. The curriculum incorporates activities that cater to a range of abilities, ensuring that learners with diverse needs and learning styles can engage meaningfully with the content.

Balanced Instruction. Integrated curriculum involves a balance of teacher-initiated and directed activities, as well as child-initiated and directed activities. This approach promotes a combination of guided instruction and student-driven exploration.

Varied Learning Modes. Learning experiences are offered in various modes, including whole-class instruction, small-group work, and individual tasks. This variety accommodates different learning preferences and promotes collaboration as well as independent learning.

Critical and Creative Thinking. The curriculum provides opportunities for students to develop critical and creative thinking skills. Activities are designed to encourage analysis, evaluation, problem-solving, and innovative thinking.

Authentic Assessment. Assessment in an integrated curriculum involves a combination of teacher assessment, peer assessment, and self-assessment. This approach promotes authentic evaluation of students' learning and growth across different domains.

Meaningful Whole Learning. The curriculum aims to present learning as a meaningful whole, rather than compartmentalized subjects. Students are exposed to opportunities that help them experience learning as an interconnected and cohesive process.

An integrated curriculum, with its distinct characteristics, cultivates a holistic grasp of concepts within students. It nurtures the development of skills that transcend disciplinary boundaries. Moreover, this approach actively encourages learners to forge connections between diverse areas of knowledge. By design, an integrated curriculum fosters understanding, cross-disciplinary skill-building, and the ability to synthesize ideas from multiple domains. This approach aims to provide a more authentic and engaging learning experience that prepares students for the complexities of the real world.

Assumptions for Planning and Designing an Integrated Curriculum

Curriculum integration involves crafting a unified educational program that weaves together multiple subject areas and academic disciplines. Rather than teaching subjects in isolation, an integrated curriculum promotes interdisciplinary connections and synthesis. This approach enables learners to draw meaningful links between diverse bodies of knowledge, fostering a comprehensive and multifaceted understanding of complex topics or real-world issues (Drake & Reid, 2018). Furthermore, curriculum integration nurtures essential skills for the modern world. It

also helps to synthesize ideas from various sources, identify patterns, and construct a holistic perspective. This process encourages learners to transcend the boundaries of traditional disciplines and cultivate a broad, interconnected worldview.

The integrated curriculum design challenges students to apply knowledge from multiple domains simultaneously, mirroring the complexity of real-life situations. This pedagogical approach prepares learners to navigate the intricacies of our globalized society, where problems and challenges often require multidimensional solutions drawing upon diverse areas of expertise. When planning and developing an integrated curriculum, several considerations need to be taken into account to ensure its effective implementation and alignment with the desired learning outcomes. Accessibility and use of technology. Some key considerations for planning and developing an integrated curriculum are discussed below.

Identifying the Central Theme, Concept, or Issue

An integrated curriculum is designed around a central theme, concept, or real-world issue that acts as the focal point for connecting different disciplines (Drake & Reid, 2018; Repko & Szostak, 2020). This thematic approach serves as the common thread that weaves together diverse subject areas, making learning more cohesive and meaningful for students. By selecting a compelling and relevant theme that aligns with students' interests and experiences, educators can enhance engagement and promote a deeper understanding of the interconnectedness of knowledge across disciplines. This integration of knowledge and disciplines not only enriches the learning experience but also helps students see the relevance of their studies in the context of broader societal issues and challenges. When considering curriculum integration, it is essential to first reflect on the nature of the knowledge being merged (Burke & Lehane, 2023). Wyse and Manyukhina (2018) offer a perspective on knowledge as an "understanding of something acquired through learning, guidance, and practice", emphasizing a comprehensive grasp of a subject area beyond mere facts and skills. They underscore that knowledge can stem from various origins, encompassing traditional academic disciplines and every day or non-disciplinary sources. In parallel, the OECD (2019), while emphasizing competencies, also outlines diverse forms of knowledge that warrant inclusion in a curriculum. Their classification encompasses:

- Disciplinary knowledge: Specialized content and principles within a particular subject area
- Interdisciplinary knowledge: Fundamental concepts or overarching themes that transcend disciplinary boundaries
- Epistemic knowledge: Insight into expert thinking and problem-solving strategies within a field (e.g., historical analysis techniques)
- Procedural knowledge: Proficiency in executing tasks effectively, such as employing design-thinking methodologies

In curriculum integration, there are various levels of integration of knowledge, skills, and attitudes in the curriculum, either disciplinary or non-disciplinary. The disciplinary approach is a method of structuring knowledge, research, and academic endeavors based on specific fields or disciplines (Burke & Lehane, 2023). In this approach, the curriculum is divided into separate subjects or disciplines. It promotes specialization and fosters a thorough comprehension of a particular area of study, allowing individuals to develop expertise in a specific field. The disciplinary approach is also referred to as a subject-centered curriculum approach (Drake & Reid, 2018). As described by Beane (1997), Drake & Burns (2004), and Jacobs (1989), the major ways of integrating curriculum are discussed below.

Multidisciplinary Integration: Multidisciplinary approaches involve distinct subject boundaries, where various subjects are brought together to investigate a shared topic or theme (Burke & Lehane, 2023). Learning activities in this approach are driven by the content of the subjects, contributing to the exploration of the chosen theme.

Interdisciplinary Integration: The interdisciplinary approach incorporates multiple subjects to delve into a shared topic or theme, blurring the lines between disciplines (Burke & Lehane, 2023). Interdisciplinary approaches often focus on examining overarching concepts across disciplines, such as change or relationships. This allows for the exploration of both similarities and differences across subjects, and knowledge or skills acquired in one subject can be applied to another.

Transdisciplinary Integration: Transdisciplinary approaches prioritize addressing complex and contemporary problems by drawing on all relevant knowledge, regardless of traditional disciplinary boundaries (Burke & Lehane, 2023; Fam et al., 2018). Learners actively select and collaboratively explore these problems

in educational settings. While learning activities may draw from specific subjects, they also incorporate knowledge from beyond traditional disciplinary structures. This acknowledges that the knowledge needed in modern society extends beyond traditional disciplines (Albright, 2016).

Selecting and Organizing the Themes or Issues

When integrating a curriculum, the approach used to organize the contents and themes is crucial. There are two approaches commonly employed: the student-centered approach, introduced by Beane (1992), and the subject-centered approach, proposed by Jacob (1989). In the student-centered approach, the curriculum is designed with a focus on meeting the needs of the students. It places importance on fostering self-discovery and promoting an understanding of social concepts, which are considered essential for successful integration (Beane, 1995). The curriculum is structured around real-life issues that hold relevance and meaning for the students (Beane, 1995; Brown, 2011). This approach actively involves students in the curriculum development process, ensuring that it aligns with their inquiries and interests (Brown, 2011; Springer, 2006).

Conversely, the subject-centered approach prioritizes the disciplines themselves rather than the individual interests of students. In this approach, the development of the curriculum revolves around the different academic subjects (Gehrke, 1998). When constructing curricula from a subject-centered perspective, deliberate decisions are made regarding how the various disciplines interact, blend, and complement each other (Gehrke, 1998). This approach can be represented along a continuum or within a multidimensional domain, illustrating the diverse ways in which the disciplines can be integrated.

Determining the Scope and Sequence

A scope and sequence is a summary of what will be taught, the order in which it will be taught, and the specific learning outcomes that will be covered. It gives a concise overview of the main concepts and ideas that will be addressed in a particular stage or year of a learning program. Scope and sequences are adaptable documents that can be adjusted as needed. They offer a brief outline of the essential elements of a learning and teaching program, guiding what will be covered within a specific timeframe. Educators need to determine the scope of the integration, which disciplines or subject areas will be included, and the depth to which each discipline will be explored (Beane, 2005; Drake & Reid, 2018). Additionally, establishing a

logical sequence for introducing and connecting the various disciplinary perspectives is essential for coherent learning.

Scope and sequence help to organize the curriculum by outlining what it focuses on and how it supports learners at different stages of child development. The scope denotes the areas of development covered by the curriculum, including both the breadth (covering all domains of the curriculum) and the depth (addressing specific goals within each sub-domain). A curriculum that is rich in content ensures that the scope is deep enough to capture learners's interests across various learning experiences. Contrastingly, the sequence entails the formulation of strategies and provisions for educational encounters that foster and enrich children's learning across diverse stages of development. The sequence progresses from simpler to more complex activities, aiming to support children as they progress through their developmental milestones.

Aligning with Standards and Learning Objectives

When integrating different disciplines into the curriculum, it is crucial to ensure that the curriculum remains in line with applicable educational standards, benchmarks, and desired learning objectives (Drake & Reid, 2018; Jacobs, 1989). This alignment serves two important purposes. First, it helps uphold academic rigor by ensuring that the curriculum meets established quality standards. Secondly, it guarantees that students acquire the essential knowledge and skills outlined in the educational guidelines. By maintaining this alignment, educators can provide a well-rounded and comprehensive learning experience for students.

The alignment of learning objectives in the curriculum refers to the intentional connection between the desired outcomes of the curriculum and the specific goals set for student learning. It involves ensuring that the content, activities, and assessments within the curriculum are designed to support and achieve those learning objectives (Beane, 2005). When aligning learning objectives, educators consider various factors, such as educational standards, grade-level expectations, and the specific needs and abilities of the students. They carefully map out how the curriculum will progress from foundational knowledge and skills to more advanced concepts, ensuring a logical and coherent learning progression (Jacobs, 1989).

The alignment of learning objectives helps create a cohesive and purposeful curriculum. It ensures that the content and instructional strategies are focused on developing the knowledge, skills, and competencies that students need to achieve the

desired learning outcomes. Additionally, it allows for effective assessment practices, as assessments are designed to measure the extent to which students have mastered the intended learning objectives. Aligning learning objectives in the curriculum provides a clear roadmap for instruction, guides instructional decision-making, and enhances teaching and learning effectiveness.

Selecting Appropriate Instructional Strategies

An integrated curriculum is a forward-thinking approach to education that combines academic and technical content, emphasizing problem-solving and real-world applications of knowledge and skills (Chernus & Fowler, 2010). It involves multidisciplinary teams of teachers organizing instruction in a way that encourages students to make meaningful connections across different subject areas, as seen in the linked learning approach (Steinberg, 1997). The integrated curriculum approach is flexible and allows for the incorporation of initiative in creating meaningful learning experiences for students (Drake & Reid, 2018). Many disciplines have embraced integrated curricula in their course designs to promote interactive and participatory learning between teachers and learners.

Integrated curriculum refers to an educational approach that incorporates multiple disciplines and encourages connections between them. To effectively implement an integrated curriculum, a range of instructional strategies are utilized to promote interdisciplinary connections and active student engagement. Strategies such as problem-based learning, project-based learning, inquiry-based learning, and collaborative learning are discussed briefly. Project-based learning comprises students working on comprehensive projects that necessitate them to relate knowledge and skills from various subject areas. Through these projects, students actively explore real-world problems or topics, develop critical thinking skills, and engage in hands-on activities (Farrow et al., 2022). Problem-based learning focuses on offering students authentic, complex problems that require them to analyze and solve them using knowledge and skills from different disciplines (Singha & Singha, 2024). This approach encourages students to think critically, collaborate with peers, and develop problem-solving abilities (Widiastuti et al., 2023).

Inquiry-based learning involves students investigating questions, issues, or problems through active exploration and research. It promotes curiosity, independent thinking, and the development of research and analytical skills as students delve into interdisciplinary topics (Singha & Singha, 2024). Collaborative learning emphasizes

cooperative interactions among students. Through group work and discussions, students contribute their unique perspectives, share knowledge and skills, and collaborate to solve problems or complete projects (Singha & Singha, 2024). This fosters communication, teamwork, and the ability to work effectively in diverse groups (Farrow et al., 2022). Through the integration of these instructional strategies, educators have the opportunity to foster a dynamic learning environment that promotes interdisciplinary connections, active student engagement, and the cultivation of essential skills such as critical thinking, problem-solving, and collaboration.

Assessment and development of an Authentic Assessment Tool

Assessing the learner, the school community, and the context is the first and foremost action while planning and developing an integrated curriculum. Teachers need to carefully assess the needs, interests, prior knowledge, and experiences of their students (Moss et al., 2019). This allows them to tailor the integrated curriculum to be relevant and engaging for the specific group of learners. It's important to take into account the cultural context and backgrounds of the locality or school community (Burke & Lehane, 2023). This helps ensure the integrated curriculum is culturally responsive and resonates with the students' lived experiences. Similarly, teachers must look at the specific school context, such as available resources, support systems, and any mandated curricula or standards that need to be addressed (Burke & Lehane, 2023). This context informs how the integrated curriculum can be effectively implemented in that particular setting. After thoroughly assessing the learners, school community, and overall cultural context, the accessibility and use of technology at the local level are also essential before designing an integrated curriculum. It helps to select and incorporate the areas related to technology into an integrated curriculum for relevant and meaningful implementation of the curriculum. It boosts student engagement via interactive learning experiences, real-time feedback, and personalized content delivery, which hinge significantly on variables like the quality of implementation and the alignment with pedagogical objectives (Kulshreshtha et al., 2023). The assessment system poses challenges for educators in accurately measuring students' interdisciplinary knowledge and skills (Moss et al., 2019). An integrated curriculum emphasizes formative assessment rather than summative assessment.

To address this issue, there is an urgent need for high-quality assessment tools that align with integrated teaching approaches (Barnes et al., 2018; Moss et al., 2019). Authentic assessments, such as performance tasks, portfolios, and project-based

assessments, are designed to mirror real-world situations and provide students with opportunities to demonstrate their understanding and application of knowledge and skills in relevant contexts. These tasks can be designed to assess interdisciplinary understanding and the ability to integrate concepts from multiple disciplines. In an integrated curriculum, portfolios can include samples of student work from various subjects or projects, highlighting their ability to synthesize and apply knowledge across disciplines. Project-based assessments involve students in long-term, in-depth projects that require them to investigate complex issues or solve real-world problems. These assessment methods enable educators to assess students' ability to think critically, synthesize information, and apply knowledge and skills across different disciplines (Drake & Reid, 2018).

Authentic assessment methods allow educators to assess students' interdisciplinary understanding, identify areas for development, and shape instruction to meet their varied needs (Moss et al., 2019). Additionally, robust assessment tools empower educators to track students' progress and showcase the effectiveness of integrated teaching approaches in fostering deep learning and interdisciplinary skills (Drake & Reid, 2018). Aligning assessment strategies with the integrated nature of the curriculum is essential for promoting interdisciplinary understanding and application (Burke & Lehane, 2023).

Teacher's Professional Development

Promoting teacher professional development is vital for successfully implementing an integrated curriculum (Beane, 1997; Drake & Reid, 2018). Recent research emphasizes the importance of providing ongoing training and support to educators to enhance their abilities in designing and implementing integrated curricula. Teacher professional development programs offer opportunities for educators to develop interdisciplinary perspectives, collaborative skills, and expertise in integrated curriculum design (Darling-Hammond et al., 2017). These programs focus on building teachers' knowledge of interdisciplinary connections, instructional strategies, and assessment methods that align with integrated curriculum goals.

Contemporary studies highlight the positive impact of professional development on teachers' ability to implement integrated curricula. According to Olivato et al. (2023), teachers who receive professional training demonstrate an enhanced understanding of interdisciplinary teaching practices and increased confidence in integrating multiple subject areas. In addition to knowledge and skills

development, recent research emphasizes the value of collaborative learning communities as a form of professional development for integrated curriculum implementation (Hargreaves & Fullan, 2012). These communities provide platforms for teachers to engage in ongoing discussions, share best practices, and learn from one another's experiences in integrating curriculum across disciplines.

To achieve successful implementation of an integrated curriculum, it is crucial to invest in high-quality professional development that supports teachers in developing interdisciplinary perspectives, collaborative skills, and expertise in integrated curriculum design (Olivato et al., 2023). Relevant and timely professional development opportunities enable educators to strengthen their abilities in planning, delivering, and assessing integrated learning experiences for students.

Stakeholder's Participation and Support

Stakeholders's cooperation and participation play a vital role in the appropriate implementation of an integrated curriculum. Recent research highlights the significance of engaging unbound stakeholders, such as parents, community members, leaders, members of civic organization members, industry professionals, etc., in the integrated curriculum implementation process. Such stakeholders can provide valuable insights, resources, and support that contribute to the success of integrated curriculum initiatives (Ibrahim et al., 2017). Involving parents in decision-making processes and keeping them informed about the benefits and goals of an integrated curriculum fosters a collaborative partnership between home and school. This partnership enhances student support and reinforces the relevance of integrated learning experiences.

Engaging community members and local organizations allows for the contextualization of the curriculum. Stakeholders's expertise not only provides authentic learning opportunities but also serves as mentors for students and helps them apply the knowledge in different contexts (Supasitthimethee et al., 2018). For example, industry professionals can provide insights into current trends, skills, and demands in the workforce, and their involvement in curriculum implementation helps align the curriculum with real-world needs and enhance students' career readiness.

According to Supasitthimethee et al. (2018), when educators actively engage unbound stakeholders, they can secure valuable support for the integrated curriculum, strengthen its authenticity and relevance, and generate a wider impact within the community. Additionally, the participation of stakeholders fosters a sense of

ownership and shared responsibility for the success of the integrated curriculum, leading to sustained support and continuous improvement. Their participation and support contribute to the authenticity, relevance, and sustainability of the curriculum, ultimately benefiting students' learning experiences and future opportunities.

Developing Instructional Materials and Resources

Developing instructional materials and resources is an essential part of the curriculum before implementation. Recent research emphasizes the importance of creating high-quality, interdisciplinary materials and real-world resources that support integrated learning experiences for students. Instructional materials in integrated curriculum implementation should align with the curriculum goals, promote connections across subject areas, and engage students in meaningful learning experiences (Drake & Reid, 2018). These materials should provide opportunities for students to explore complex problems, apply knowledge from multiple disciplines, and develop critical thinking and problem-solving skills (Beane, 1997). These resources can include primary sources, case studies, multimedia materials, and community-based resources that connect students to the broader world and highlight the relevance of their learning (Darling-Hammond & Richardson, 2009). By using authentic resources, educators can promote deeper understanding, engagement, and the transfer of knowledge across subject areas.

Furthermore, digital technologies and online platforms offer opportunities for the development and dissemination of instructional materials in integrated curriculum contexts. These technologies can provide access to a wide range of digital resources, interactive simulations, and collaborative tools that support interdisciplinary learning (Darling-Hammond et al., 2017). Educators can leverage these resources to enhance student engagement and facilitate connections between different disciplines.

Thus, developing instructional materials and resources that align with the goals of an integrated curriculum is crucial for effective implementation. Incorporating authentic resources, utilizing digital technologies, and fostering collaboration among stakeholders enable educators to create engaging and meaningful learning experiences in interdisciplinary contexts. So, careful planning and consideration of these factors can help educators create a cohesive, engaging, and meaningful integrated curriculum that promotes deep learning and prepares students for the complexities of the real world.

Conclusion

Developing an integrated curriculum requires careful planning and consideration for effective implementation. The integrated approach illuminates conceptual linkages, igniting deeper comprehension. Synthesizing diverse perspectives sparks critical analysis while anchoring learning in authentic contexts. Through holistic cross-pollination of ideas, students construct an applicable understanding primed for real-world complexities. Key considerations for planning and implementing an integrated curriculum can help educators develop a curriculum that prepares students for the complexities of the modern world and equips them with the necessary skills and knowledge. High-quality curriculum and instruction development are crucial for enhancing students' key abilities and essential qualities in the 21st century. This study contributes to understanding curriculum and instruction integration by examining its meaning and characteristics based on educational practice. It proposes an integrated model that focuses on developing students' key competencies. It can help teachers hold their teaching reforms effectively, avoid misunderstandings in learning tasks or large-unit teaching, and establish practical relationships among teachers, students, and the curriculum.

However, it's important to recognize that curriculum integration is a long-term process. It requires the creation of a comprehensive curriculum development system tailored to specific school contexts as well as the promotion of the orderly implementation of specific courses. It should be closely aligned with overall education planning and development at regional and school levels. By pursuing the common goal of promoting students' key competencies, various curricula and practical activities can achieve overall and organised development under a well-defined operating mechanism. The integrated model serves as a foundation for determining this internal integration operating mechanism. This article provides a valuable reference for planning and implementing an integrated curriculum, fostering the development of key competencies, and realizing high-quality curriculum development. It highlights the importance of thoughtful planning, collaboration, and ongoing reflection to ensure the successful implementation of an integrated curriculum that prepares students for a rapidly evolving world.

Authors Contribution

The authors have equal and collaborative contributions. Both authors actively participated in this manuscript writing process, and they have reviewed and approved the final version for submission.

Funding

The study has no any funding.

Conflicts of Interest

The authors affirm that they have no conflicts of interest related to the publication of this paper.

Acknowledgments

We are thankful to the reviewers for encouraging feedback and thoughtful suggestions. Similarly, the authors would like to acknowledge the TUTA Sanothimi Campus Bhaktapur for their support, assistance, and publication of the manuscript.

References

Albright, J. (2016). Transdisciplinarity in curricular theory and practice. In D. Wyse, L. Hayward, & J. Pandya (Eds.), *The sage handbook of curriculum, pedagogy and assessment* (Vol. 2, pp. 525–543). Sage Publication.

Applebee, A. N., Adler, M., & Flihan, S. (2007). Interdisciplinary curricula in middle and high school classrooms: Case studies of approaches to curriculum and instruction. *American Educational Research Journal, 44,* 1002–1039. https://doi.org/10.3102/0002831207308219

Barnes, J. (2015). *Cross-curricular learning 3–14.* Sage Publication.

Barnes, M., Moore, D., & Almeida, S. (2018). Sustainability in Australian schools: A cross-curriculum priority? *Prospects*, *47*(4), 377–392. https://doi.org/10.1007/s11125-018-9437-x

Beane, J. (1997). *Curriculum integration designing the core of democratic education*. Teacher's College Press.

Beane, J. (2005). *A reason to teach: Creating classrooms of dignity and hope: The power of the democratic way.* Portsmouth, NH: Heinemann.

Beane, J. A. (1992). Creating an integrative curriculum: Making the connections. *NASSP Bulletin* 76: 46–54.

Beane, J. A. (1997). *Curriculum integration: Designing the core of democratic education*, New York, NY: Teachers College Press

Bialik, M., Bogan, M., Fadel, C., & Horvathova, M. (2015). *Character education for the 21st century: What should students learn?* Boston, MA: Center for Curriculum Redesign.

Brown, D. F. (2011). Curriculum integration: Meaningful learning based on students' questions. *Middle Grades Research Journal*, 6(4), 193–206.

Burke, P. & Lehane, P. (2023). *Conceptualising curriculum integration: A synthesis of theory, research and practice*. Dublin: National Council for Curriculum and Assessment.

Darling-Hammond, L., Hyler, M. E., & Gardner, M. (2017). *Effective teacher professional development.* Learning Policy Institute.

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

Drake, S. M., & Burns, R. C. (2004). *Meeting standards through integrated curriculum*. Association for Supervision and Curriculum Development.

Drake, S. M., & Reid, C. L. (2018). Integrated curriculum as an effective way to teach 21st-century capabilities. *Asia Pacific Journal of Educational Research, 1*(1), 31-50.

Drake, S. M., & Reid, J. L. (2020). 21st century competencies in light of the history of integrated curriculum. *Frontiers in Education, 5*, 521084. https://doi.org/10.3389/feduc.2020.00122

Fam, D., Neuhauser, L., & Gibbs, P. (Eds.). (2018). *Transdisciplinary theory, practice and education: The art of collaborative research and collective learning*. Springer International Publishing. https://doi.org/10.1007/978-3-319-93743-4

Farrow, J., Kavanagh, S. S., & Samudra, P. (2022). Exploring relationships between professional development and teachers' enactments of project-based learning. *Education Sciences*, *12*(4), 282. https://doi.org/10.3390/educsci12040282

Gay, G. (2018). *Culturally responsive teaching: Theory, research, and practice* (3rd ed.). Teachers College Press.

Gehrke, N. J. (1998). A look at curriculum integration from the bridge. *Curriculum Journal* 9, 247–260. https://doi.org/10.1080/0958517970090209.

Hammond, D. J. (2017). *An investigation into the impact of an integrated curriculum on learning in the primary school* [Doctoral thesis]. Durham University. Retrieved from http://etheses.dur.ac.uk/12025/

Hargreaves, A., & Fullan, M. (2012). *Professional capital: Transforming teaching in every school.* Teachers College Press.

Harrell, P. E. (2010). Teaching an integrated science curriculum: Linking teacher knowledge and teaching assignments. *Issues in Teacher Education 19*, 145–165.

Ibrahim, Y., Rozita, A., Dani, S. (2017). Relevance of stakeholders in policy implementation. *Journal of Public Management*, *3*(1), 1-16. https://doi.org/10.5296/JPMR.V3I1.10632

Jacobs, H. H. (1989). *Interdisciplinary curriculum: Design and implementation*. Association for Supervision and Curriculum Development.

Kreijkes, P., & Greatorex, J. (2024). *Differential effects of subject-based and integrated curriculum approaches on students' learning outcomes: A review of reviews*. Review of Education. Advance online publication. https://doi.org/10.1002/rev3.3465

Kulshreshtha, M., Chinta, S., Saxena, T., Mishra, P., & Baliga, D. B. (2023). The effects of technology-integrated curriculum on student engagement and outcomes. *Journal of Harbin Engineering University, 44*(8), 1338-1347.

McBrien, J. L. & Brandt, R. S. (1997). *The language of learning: A guide to education terms.* Alexandria, VA: Association for Supervision and Curriculum Development.

Moss, J., Godinho, S., & Chao, E. (2019). Enacting the Australian curriculum: Primary and secondary teachers' approaches to integrating the curriculum. *Australian Journal of Teacher Education, 44*(3), 24–41. https://doi.org/10.14221/ajte.2018v44n3.2

Murdoch, K. (2015). *The power of inquiry.* Seastar Education

Olivato, J. A., Olivato, J. A., Silva, J. C., & Silva, J. C. (2023). Interdisciplinary teaching practices in STEAM education in Brazil. *London Review of Education*, *21*(1), 38. https://doi.org/10.14324/LRE.21.1.38

Organization for Economic Co-operation and Development (OECD) (2019). *Student Agency for 2030: Concept Note*. Organization for Economic Co-operation and Development.

Piaget, J. (1976). Cognitive development in children: Piaget development and learning. *Journal of Research in Science Teaching*, *2*, 176-186. https://doi.org/10.1002/tea.3660020306

Pring, R. (1973). Curriculum integration. In R. S. Peters (Ed.), *The philosophy of education* (pp. 123–149). London: Oxford University Press.

Rennie, L., Venville, G., & Wallace, J. (2012). *Knowledge that counts in a global community: Exploring the contribution of integrated curriculum.* New York, NY: Routledge.

Repko, A. F., & Szostak, R. (2020). *Interdisciplinary research: Process and theory*. Sage Publication.

Singha, R. & Singha, S. (2024). Application of experiential, inquiry-based, problem-based, and project-based learning in sustainable education. In C. Goi (Ed.), *Teaching and Learning for a Sustainable Future: Innovative Strategies and Best Practices* (pp. 109-128). IGI Global. https://doi.org/10.4018/978-1-6684-9859-0.ch006

Springer, M. (2006). *Soundings: A democratic student-centered education*, Westerville, OH: National Middle School Association.

Supasitthimethee, U., Waraporn, N., Porkaew, K., & Charoenkitkarn, N. (2018). *Stakeholder involvement in teaching and learning.* Proceedings of the Canadian Engineering Education Association (CEEA), March 2018. https://doi.org/10.24908/pceea.v0i0.10620

Sweller, J. (2011). Cognitive load theory. In J. P. Mestre & B. H. Ross (Eds.), *The psychology of learning and motivation: Cognition in education* (pp. 37–76). Elsevier Academic Press. https://doi.org/10.1016/B978-0-12-387691-1.00002-8

Widiastuti, I. A., Mantra, I. N., Utami, I. P., Sukanadi, N. L., & Susrawan, I. A. (2023). Implementing problem-based learning to develop students' critical and creative thinking skills. *Journal Pendidikan Indonesia*, *12*(4), 658-667. https://doi.org/10.23887/jpiundiksha.v12i4.63588

Wolfinger, D. M., & Stockard, J. W. (1997). *Elementary methods: An integrated curriculum*. New York: Longman.

Wraga, W. G. (1996). A century of interdisciplinary curricula in American schools'. In Hlebowitsh, P. S. and Wraga, W. G. (Eds.), *Annual review of research for school leaders*. New York: Leadership Policy Research.

Wyse, D., & Manyukhina, Y. (2018). *The place of knowledge in curricula: A research-informed analysis*. National Council for Curriculum and Assessment.