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Barriers to Effective Development and Utilization of Teaching and Learning Materials in Schools

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Abstract

This paper examines the development and use of teaching and learning materials (TLMs) in Nepalese schools, emphasizing their role in enhancing educational outcomes. It Draw the national performance data and international research, this study identifies inadequate use of instructional materials as a major factor contributing to low student achievement in Nepal. It also highlights the importance of diverse, contextually relevant, and low-cost materials, including locally sourced and ICT-integrated resources to promote student engagement, conceptual understanding, and knowledge retention. Despite supportive policies and government budget allocations, TLM integration remains inconsistent due to traditional teacher-entered practices, low levels teacher training, insufficient innovation, and lack of institutional support. This paper provides evidence-based insights into TLM effectiveness and it also offers practical recommendations for teachers, parents, school management committees, and government authorities to support development, accessibility, and classroom implementation. To Strength the use of TLMs is crucial for advancing inclusive, learner-centered education and to improve academic performance across Nepal's varied learning contexts.

Keywords: instructional materials; teaching and learning materials (TLMs); Nepalese education; student achievement; learner-centered pedagogy; educational innovation; ICT integration

Introduction

Instructional materials are fundamental to effective teaching, particularly in early education, where learners benefit most from visual, tactile, and interactive learning experiences. Teaching and learning materials (TLMs) co-created by teachers and students, especially those that are locally sourced and low-cost, play a vital role in fostering creativity, learner ownership, and contextual relevance within classroom instruction. These resources not only enhance student engagement but also facilitate deeper conceptual understanding by connecting learning to students' lived experiences.

The growing integration of information and communication technology (ICT) in education offers further opportunities to enrich classroom practices through interactive, multimodal, and inclusive learning content. ICT-based instructional resources can support differentiated instruction, enable personalized learning, and broaden access to educational materials beyond conventional textbooks. Despite these possibilities, in many schools, particularly in Nepal, the development and effective utilization of instructional materials remain limited and inconsistent. Classroom practices often continue to rely on traditional, teacher centered methods, with minimal incorporation of diverse and innovative TLMs.

This article undertakes a critical examination of current practices surrounding the development and use of teaching and learning materials in Nepalese classrooms. It evaluates the impact of integrating teaching and learning materials on students' academic performance, identifies key challenges to effective implementation, and explores strategic approaches to optimize the use of these materials. The Study ultimately aims to provide insights for promoting learner-

centered pedagogy and enhancing educational outcomes through the effective integration of instructional materials.

Student Learning Outcomes and Academic Performance in Nepal

Despite numerous policy initiatives and educational reforms, student performance in national assessments continues to reveal persistent learning challenges. Data from the 2020 National Assessment of Student Achievement (NASA) indicate that only 32.1% of Grade 8 student's attained the basic proficiency level in mathematics, while 37.7% met the standard in science. Language subjects showed slightly higher achievement, with 58.8% of students reaching proficiency in Nepali and 51.1% in English. These results reflect a significant decline in academic performance compared to prior assessment cycles (Education Review Office [ERO], 2020).

National examinations further underscore the ongoing challenges within Nepal's school system. The 2024 Secondary Education Examination (SEE) reported a pass rate of only 47.86%, with 52.14% of students classified as non-graded, failing to meet the minimum pass requirements (Kathmandu Post, 2024). Similarly, the 2024 Grade 12 Examination showed a pass rate of just 52.91%, leaving 47.09% of student's unable to fulfill graduation criteria (My Republica, 2024). These findings point to systemic issues related to curriculum delivery, teacher preparedness, and the utilization of educational materials.

Among the contributing factors, ineffective classroom instruction stands out as a key driver of poor academic performance. Traditional teacher-centered methods, predominantly reliant on verbal explanations, continue to dominate classrooms, with limited incorporation of diverse teaching and learning materials (Education Review Office, 2020; Rai & Pokharel, 2025). Research indicates that such approaches reduce student engagement, constrain active learning opportunities, and impede the development of critical thinking skills, ultimately contributing to suboptimal learning outcomes and persistent achievement gaps (Butterworth, 2023; Ghimire, 2024; Karki, 2022).

Resources and Tools for Education in the Classroom

According to LEAD School (2025), teaching and learning materials are essential resources that enhance the educational process by enhancing the effectiveness, interactivity, and engagement of classes. These resources comprise a broad range of resources that aid in improving students' comprehension of academic concepts, such as workbooks, textbooks, flashcards, digital media, and tactile things (ThoughtCo, 2025; Twinkl, n.d.). TLMs' main purpose is to close the gap between theoretical understanding and real-world application, which increases the significance, accessibility, and comprehensiveness of learning (EduEdify, 2022). When used effectively, TLMs help differentiated education by attending to students' various learning requirements and preferences. When these resources are integrated effectively, they promote critical thinking, active participation, and student engagement, all of which lead to better academic results (Extramarks, 2025).

Role of Resources in Effective Learning

There are several pedagogical benefits to incorporating teaching and learning materials (TLMs) into classroom instruction. By facilitating the visualization of difficult ideas, TLMs improve students' comprehension and make learning more approachable, interesting, and pleasurable. Because visual, aural, and hands-on experiences have been demonstrated to be more successful than traditional lecture-based training alone, they also promote better knowledge retention

beyond comprehension. TLMs encourage pupils to think creatively and imaginatively go beyond textbooks and come up with creative fixes for issues. They support a variety of learning methods, enabling students to engage with the material in ways that suit their unique interests and skills. In practice, TLMs also assist teachers in streamlining the delivery of lessons and give students access to resources that support learning and ease revision (Rathi, 2025).

Diverse Teaching and Learning Resources

There are many different types of teaching and learning materials (TLMs), and each one adds something special to the improvement of instruction in the classroom. As standardized tools, textbooks and workbooks provide an organized framework for teaching curriculum information charts and other visual aids. Because they make it easier to visualize abstract ideas and intricate relationships, diagrams, maps, and models are very useful in disciplines like physics and mathematics because they facilitate individualized instruction and allow for remote or blended learning, digital learning technologies like e-books, online simulations, educational applications, and interactive whiteboards have revolutionized modern education. Resources for experiential learning, these hands-on activities, which include STEM kits, manipulative, and virtual laboratories, are particularly helpful in the teaching of science, technology, engineering, and mathematics. Furthermore, language and social studies classrooms frequently use pedagogical techniques like role-playing, drama, and storytelling to foster deeper conceptual understanding, increase student engagement, and inspire creativity through immersive and interactive learning experiences (Rathi, 2025).

Empirical Evidence on the Impact of Instructional Materials

Teaching and learning materials (TLMs) significantly and favourably affect students' academic performance in all topics and educational levels, according to empirical study. For example, in a technical education study, Suleiman and Lawal (2020) discovered that students' engagement, participation, and understanding were greatly improved by the educational materials. According to the survey, 86% of students agreed that using instructional materials helped make concepts more tangible and intelligible, and 74% of students said that using them boosted their level of involvement.

Additionally, 68% of respondents agreed that lessons delivered with TLMs were more memorable, 65% reported increased interest in the subject, and 72% reported enhanced classroom engagement. visual aids, including images, graphs, models, and 72% of pupils reported improved comprehension, demonstrating the particular effectiveness of the specimens. In order to make classes more interesting and understandable, practical resources and instructional models were equally valued (Suleiman & Lawal, 2020). At Cape Coast Metropolis' Imam Khomeini Junior High School, a parallel study showed that TLMs greatly enhanced pupils' comprehension and interest in mathematics. Roughly 70% of pupils said they understood mathematical ideas better while. According to 57.1% of respondents, TLMs made it easier to create visual representations, which improved memory retention and visualisation. The effectiveness of TLMs in promoting student-centered learning is demonstrated by the rise in active involvement, with 57% reporting higher motivation and excitement and 57% strongly agreeing that they were more involved in classroom activities (Imam Khomeini Junior High School Study, 2020).

These conclusions are supported by additional data from other circumstances. Babajide and Aluko (2023) found a significant positive relationship between students' utilisation of educational resources and achievement in Nigerian classrooms, demonstrating that students

who were exposed to both standardised and improvised materials did better than their counterparts who were taught using conventional lecture techniques. According to experimental research conducted at Cross River State, chemistry students who received instruction using instructional materials outperformed their conventional counterparts in terms of academic performance. The utilisation of instructional materials and student achievement in social studies were also found to be strongly positively correlated ($r = .62$, $p < .05$) by Olumorin and Aremu (2022), underscoring the importance of physical resources in improving learning outcomes. Yobe State structural equation modelling showed that visual and audio teaching resources enhanced English language understanding, whereas Musanze District in Rwanda showed a significant improvement in pupils' maths performance using methodical integration of TLM (Uwitonze et al., 2022). In India, similar outcomes have been reported. The measurable impact of material-based instruction was confirmed in Mayurbhanj District, Odisha, where students' mean achievement scores increased from 24.15 to 28.72 ($t = 2.89$, $p < .01$) after a 12-day instructional intervention using targeted materials. Furthermore, self-instructional materials proven to be helpful in tertiary-level skill development in Indian engineering colleges, as seen by the notable improvements in students' reading and writing abilities.

When taken as a whole, these studies highlight how effectively planned and executed teaching resources can significantly improve student engagement, academic performance, and conceptual understanding across all subject areas and educational levels. The data clearly indicates that greater to maximize learning results, TLM development and teacher professional development require institutional commitment, policy support, and consistent funding. Osei-Himah and Adu-Gyamfi (2022) provide other examples of how TLMs have a pedagogical impact on science education. Three interconnected aspects of TLM efficacy were recognized by teachers: teacher facilitation, sharing authority, and sharing information. TLMs encourage group learning, facilitating knowledge sharing among students through peer interaction and group projects, which improves conceptual comprehension. Additionally, when TLM is used effectively, the focus of the classroom changes from teacher-centered to student-centered learning, promoting autonomous inquiry, forecasting, and critical thinking. In order to foster self-directed learning, confidence, and problem-solving abilities, teachers serve as facilitators, directing tasks like observation, classification, experimentation, and organizing of scientific data. All participating teachers believed that TLMs foster a supportive learning environment where students actively construct knowledge, despite the lack of quantitative measures of student progress in this study. These findings are consistent with constructivist learning theory, which highlights active participation and hands-on experiences as essential for maintaining information and putting it into practice. (Bada, 2015; Bušljeta, 2013, as referenced in Osei-Himah & Adu Gyamfi, 2022). The study did, however, also draw attention to implementation issues, such as restricted access to technology (such as computers and the internet) and inadequate teacher preparation for TLM integration.These limitations hinder regular use and could lessen the efficacy of education. The study suggests that policymakers address budget constraints and fund extensive, practice-oriented professional development programs in order to fully realise the promise of TLMs centred on how teaching resources are used pedagogically in classrooms (Osei-Himah & Adu-Gyamfi, 2022).

Availability and Implementation of Teaching and Learning Materials in Nepalese Schools

Practical, activity-based, and learner-centred approaches have been prioritised in Nepalese schools' recent curriculum revisions, especially for the elementary and junior levels. Because of these pedagogical changes, teaching and learning materials (TLMs) must be used

across all topics to improve overall learning results, intellectual understanding,and studentengagement.

Learner-centred pedagogy is expressly supported by the national curriculum, which places instructional materials at the forefront of successful classroom management. TLMs are incorporated into the "Teaching–Learning Activities" portion of the Basic Education Curriculum for Grades 5–6 and 7–9, emphasising its significance as a crucial teaching tactic (Curriculum Development Centre [CDC], 2021). The program promotes using a wide variety of resources, ranging from free and inexpensive locally accessible materials to low-, mid-, and high-tech tools that are specific to the subject matter and educational setting.

While teacher guides offer comprehensive suggestions on the resources needed for certain classes, textbooks regularly make use of appropriate TLMs to facilitate the delivery of content. In order to promote involvement and a sense of ownership in the learning process, students are actively encouraged to assist in the gathering and creation of basic teaching resources. Teachers are professionally trained in the creation, design, and efficient use of both commercially manufactured and handcrafted teaching resources. Additionally, specialized programs are designed to meet the needs of diverse learners and subjects. The Nepali government funds the acquisition, creation, and administration of TLMs, including ICT-based resources, for all public schools each year in order to promote these activities. It is anticipated that schools will incorporate instructional resources into their regular teaching methods with the help of these financial and technical support mechanisms, fostering inclusive, high-quality education nationwide.

Challenges in the Creation and Integration of TLMs in the Classroom

Poor student learning outcomes in Nepalese schools, despite encouraging policies and curriculum requirements, are mostly caused by a lack of innovation in teaching methods and the inefficient creation and application of instructional resources (TLMs). These difficulties have their origins in teacher preparation, classroom pedagogy, and institutional support networks. In secondary-level geography education, Dhakal (2020) identified a number of obstacles to the efficient use of instructional materials, such as a lack of resources, teacher indifference, a lack of skills and instructional strategies, financial limitations, inappropriate textbook content, a lack of administrative support, a lack of subject-specific resource rooms, and limited instructional time.

The continuous use of conventional, teacher-centered teaching strategies is a significant and enduring problem. Many teachers are still hesitant to use cutting-edge, learner-centered strategies that call for a variety of teaching resources. Even seasoned educators who recognize the significance of TLMs in theory frequently fall short in practice, creating disconnect between knowledge and application that reduces their potential influence.

Another crucial issue is teacher training programs. These curricula are usually too supply-driven and theoretical, with little connection to practical classroom situations or curriculum goals. As a result, educators find it difficult to convert training materials into useful teaching techniques. Additionally, there is a lack of acceptance of student-centered and kid-friendly pedagogies since many educators still use the same old techniques they were taught in school.

There is still little use of educational technology in the classroom. Schools frequently neglect to systematically integrate technology into instructional planning, and many teachers are

unfamiliar with ICT technologies. A prevailing culture that is focused on textbooks makes matters worse.

The issue by giving syllabus fulfilment precedence over in-depth learning, which restricts students' chances for creativity, critical thinking, inquiry, and hands-on learning. Another major barrier to the development of instructional materials is institutional support. At the beginning of the academic year, schools and pertinent government organizations frequently allot insufficient time, money, and training for TLM preparation. An additional factor undermining the efficient use of educational resources is the lack of organized planning, oversight, and accountability systems.

When taken as a whole, these systemic issues limit the effective use of learner-centered pedagogy and impede significant learning results for students. A multidimensional approach is needed to address these problems, including encouraging kid-friendly pedagogies, improving ICT integration, revising teacher training to be more practical and context-specific, and guaranteeing continuous institutional backing for the creation and application of TLM. Nepal can enhance educational quality and learning outcomes in a variety of school environments by coordinating efforts at the institutional, classroom, and policy levels.

Recommendations for Improving the Use of Educational Resources

The following thorough recommendations are put forth for important stakeholders, including teachers, parents, School Management Committees (SMCs), and local, provincial, and federal government authorities, in light of the difficulties and policy directives surrounding the use of teaching and learning materials (TLMs) in Nepalese schools. In order to improve student learning outcomes, encourage innovation, and support inclusive, learner-centered educational methods, these proposals seek to improve the gathering, creation, and efficient use of instructional resources in the classroom.

Recommendations for Teachers

When planning lessons each day, teachers should actively incorporate the creation and use of teaching and learning materials (TLMs), choosing or producing resources that complement curricula. Goals and satisfy the educational requirements of the pupils. To promote thematic, experiential, and hands-on learning activities, they should work with children to collect locally accessible, inexpensive, or free items including leaves, sticks, bottle caps, and recycled newspapers.

Additionally, instructors are urged to take part in hands-on workshops and school-based professional development programs that emphasize TLM design, including the use of ICT-based resources. It is essential to use these abilities consistently in class practice. In order to foster creativity, reflective practice, and the growth of professional learning communities, schools should also encourage the peer-sharing of successful TLM initiatives.

Advice for Parents

Parents should be encouraged to donate recyclable or domestic products for educational purposes and informed of the educational value of teaching and learning materials (TLMs). In addition to participating in basic TLM activities at home, such making charts or models, they can help their kids gather locally accessible resources that are in line with the curriculum.

Parent-Teacher Associations (PTAs) can help in this endeavor by planning community projects and awareness campaigns to encourage parental participation in creating kid-friendly educational resources.

Enhancing Resource Management and School Leadership

The creation and application of teaching and learning materials (TLMs) ought to be specifically covered by the school's budget and annual improvement plan, according to school management committees. They should collaborate closely with school administration to ensure appropriate storage, upkeep, and fair access, and they should routinely observe classroom procedures to assess how well educational resources are being used. In order to help TLM development and resource mobilization, SMCs can also collaborate with local enterprises, non-governmental organizations (NGOs), and other stakeholders.

Suggestions for the Administration of Local Education

The purchase and creation of teaching and learning materials (TLMs) should receive specialized yearly financing from local education authorities, with an emphasis on low-cost, locally relevant, as well as online resources. They should set up school-level technical support teams to help with the integration of ICT-based instructional tools and regularly host practical training workshops to improve teachers' abilities to use and create TLMs. In order to encourage schools to demonstrate, discuss, and scale innovative teaching approaches, local authorities might also organize TLM exhibitions or fairs at the municipal level.

Suggestions for Education at the Provincial Level

To facilitate the efficient use of contextually relevant teaching and learning materials (TLMs) in multilingual, inclusive, and rural settings, provincial education authorities should create explicit guidelines. Instead of concentrating only on theoretical pedagogy, teacher education institutions should receive assistance in revising their curricula to emphasize more on the real-world creation and classroom implementation of instructional materials. In order to test, evaluate, and disseminate creative TLM techniques and enable the wider adoption and scaling of successful tactics, provinces can also support collaborations between educational institutions and schools.

Federal Education Authorities' Recommendations

Within national education policy, the federal government should create a thorough framework that outlines responsibilities, financing sources, and accountability procedures at all governmental levels for the creation and application of teaching and learning materials (TLMs). In order to improve capabilities in instructional material development, pre-service and in-service teacher education programs should place a strong emphasis on school-based practicums, practical workshops, and the incorporation of ICT. To track TLM usage, offer continuous feedback, and guarantee instructional efficacy, a national framework for monitoring, mentoring, and quality assurance should be put in place. In order to boost the creation, digitization, and fair distribution of educational resources with an emphasis on underfunded schools in particular public-private collaborations should also be promoted.

Nepal can establish a long-lasting system where TLMs are successfully used to enhance student learning outcomes, encourage creativity, and support inclusive, learner-centered education nationwide by coordinating efforts across all stakeholder levels, from classroom teachers to federal policymakers.

In conclusion

Improving the quality of education in Nepal requires the development and efficient application of teaching and learning materials (TLMs), particularly in the framework of inclusive and learner-centred teaching methodologies. Even with curricular changes and pro-learning policies that highlight the importance of educational resources, many schools still only seldom and unevenly employ them in the classroom. Recent exam results and data from national evaluations point to a persistent learning problem that is mostly caused by conventional, textbook-focused teaching strategies that don't actively involve pupils.

Research from both domestic and foreign research demonstrates that effectively planned and executed teaching resources can significantly raise students' conceptual comprehension, engagement, creativity, and general academic achievement. TLMs encourage collaborative, immersive, and active learning, which is very compatible with contemporary educational objectives including inclusive education, learner autonomy, and critical thinking. Nonetheless, the potential impact of instructional materials in Nepal is still constrained by structural issues such poor institutional design, poor finance, poor integration of educational technology, and inadequate teacher training.

Coordinated and well-thought-out interventions at all educational levels are needed to address these problems. Teachers should have access to chances for collaborative learning as well as hands-on, classroom-focused professional development. Local groups and parents can help by helping to gather and prepare inexpensive, locally appropriate teaching resources. The use of TLMs in planning, budgeting, and monitoring activities at schools should be formally established by school management committees. Furthermore, in order to facilitate systematic TLM integration, it is the joint duty of local, provincial, and federal authorities to guarantee steady investment, capacity building, and efficient policy execution.

In the end, enhancing Nepal's educational system necessitates going beyond policy declarations to real classroom instruction, where instructional resources are viewed as essential components of curriculum delivery and pedagogical innovation rather than as elective add-ons. Nepal can fully use the advantages of TLMs to improve student learning, fortify educational quality, and close the gap between policy goals and classroom realities by taking a multi-level, inclusive, and contextually responsive approach.

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