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Challenges and Opportunities for Industry-School Partnerships in Implementing Apprenticeships: A Case Study of Lumbini Province, Nepal

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Abstract

Apprenticeship programs serve as an effective approach to integrating technical education and industry needs, offering tangible benefits for students, employers, and educational institutions. This study explores the challenges and opportunities for industry-school partnerships in establishing and implementing apprenticeship programs in Nepal, focusing on Lumbini Province. The study employs a qualitative, exploratory case study approach, with interviews and focus group discussions involving 30 stakeholders. It assesses challenges, such as limited industry participation, inadequate legislative frameworks, reliance on foreign labor, and weak collaboration between government and industry. Key findings underscore the necessity of raising industry awareness, fostering government-industry partnerships, and establishing clear policies to institutionalize apprenticeship systems. The article identifies opportunities for strengthening partnerships through improved communication, collaboration in curriculum development, and a focus on addressing industry needs along with some existing challenges.

Keywords: TVET, apprenticeship, industry-school partnership

Introduction

Apprenticeship is a very useful model which creates a dynamic educational experience for all stakeholders by benefiting students through enhanced practical understanding, employability, and career clarity. Employers benefit through cost-effective labor, skilled recruits, and a culture of learning that reduces recruitment costs. Similarly, educational institutions through aligned programs, and continuous feedback, heighten student motivation, improve reputation, and support to channel additional resources through industry partnerships The Swiss-South African Cooperation Initiative, 2013. The realization of these benefits leads to an apprenticeship model of technical and vocational education and training (TVET) to integrate theoretical and practical learning. The implementation modality may have varied approaches offering

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pros and cons. Informal apprenticeship and dual apprenticeship, as seen in Benin, Bankolé and Nouatin (2020) offer flexibility and accessibility, allowing for a broad range of skills to be learned in real-world settings. However, it may lack standardized quality control and certification processes. According to Lerman (2012) extensive use of the market and public-private collaborations, coupled with a limited government role can drive innovation and responsiveness to industry. Coaching as an apprenticeship approach, (Salavert, 2015) provides personalized mentorship and targeted skill development, fostering strong professional relationships. It can be resource-intensive and dependent on the availability and quality of coaches. Work-school alteration (European Centre for the Development of Vocational Training [Cedefop], 2010) allows students to alternate between academic study and practical work experience, facilitating the integration of theory and practice. Nevertheless, it can be logistically challenging to coordinate and may create discontinuity in learning. Oviawe et al (2017) emphasize close partnerships between educational institutions and employers, ensuring curriculum relevance and a smooth transition to employment. So, the experiences with the success of the TVET programs under these various approaches are not uniform across the world which needs to consider the context of the implementation.

TVET indicates its contribution to country's economic development by enhancing productivity and reducing poverty, particularly in Asia and the Pacific (Pavlova, 2014). There is a strong correlation between the proportion of TVET students at the post-secondary level and per capita income, prompting many countries to bolster policy guidance and regulatory frameworks for TVET and to foster partnerships with the private sector (Pavlova, 2014).

Though apprenticeship programs are recognized for their benefits, which include integrating theoretical knowledge with practical experience, promoting problem-solving and workplace skills, obtaining nationally recognized qualifications, enhancing employability and educational experience; there is debate in the academic world about its drawbacks, which include its diverse nature, potential employer exploitation, and difficult integration between school and work (Ryan, 1998). Despite these critical voices, it is generally recognized that a strong partnership between vocational education and training (VET) schools and companies is essential for the development of an employment-oriented VET system (Bagale, 2018). This collaboration enables the creation of market-oriented VET programs, ensures that students gain valuable work-based learning experiences and improve their employability skills by equipping them with the skills demanded by the industry (Cedefop, 2021).

Apprenticeship in Nepal

Technical and vocational education and training is crucial for strengthening human resources and promoting socio-economic development in Nepal. In this regard, it is essential to develop partnerships between TVET institutions and industry. To effectively address the rapidly changing labor market demands, it is crucial to establish a common framework for educational institutions to collaborate and work together, ensuring a mutually beneficial link with the market.

Learning that takes place in the real work environment and with a VET provider is commonly referred to as "apprenticeship" and represents an innovative approach to skills development. It combines theoretical knowledge taught in the classroom with practical experience gained through active learning in the company (Paudel & Eberhardt, 2023). Approximately 75% of learning takes place in industry, allowing trainees to participate in real production processes under the guidance and supervision of experienced in-company trainers. According to Bhandari (2011), apprenticeship as a system of experiential learning is critical to meeting the skills needs of industry by bridging the gap between theoretical and practical experience. The partnership between industry and VET providers can manifest in three major areas; pooling of resources, joint ventures, and improvements to training models, often through formal agreements (Callan & Ashworth, 2004) highlighting the importance of promoting

resource pooling, flexibility and programme alignment, successful collaborations that lead to financial sustainability, improved capacity, and the elimination of skills gaps, over and above immediate profitability, and the challenges of partnership such as procedural complexity, organizational structures and accountability mechanisms. While industry-TVET institute partnership is underscored for developing successful apprenticeship program for market-based skill development.

A study conducted by Hussain et al. (2021) reveals that Malaysian government's strategy of quadrupling tax reduction incentives for industries contributing to TVET programs since 2016 and introducing pay subsidies in 2020 resulted in internships, upskilling, new-skilling programs, and job-retention programs, significantly contributing to human resource development in Malaysia. The Malaysian government's corporatist model, inspired by the German Dual-Apprenticeship System, promotes collaboration between the TVET system and local industries, offering incentives, tax reductions, training, and wage subsidies to strengthen the relationship which led to successful implementation of policies focusing on collaboration and active industry participation in vocational training programs overseen by the Department of Skills Development; however, Malaysia area of improvement could be further collaboration by introducing specific legal frameworks that encourage industries to contribute to human-capital development (Hussain et al., 2021). This approach of Malaysian government could be a good example in the context of Nepal where industry-TVET provider partnership is its initial stage.

Although apprenticeships have been informally embedded in Nepali culture and society since the *Rishimuni* era – mostly the informal and family-based apprenticeship- formal education has failed to become long-term practice-oriented and co-located with practical learning sites (Ministry of Education, Science and Technology [MoEST], 2022).This is illustrated by the fact that when the Norwegian engineer Odd Huftun was building the hospital in 1963, he was confronted with a shortage of skilled labor and he introduced four-year apprenticeship training courses through the Butwal Technical Institute (BTI) to fill the skills gap (Grierson, 1989).This initiative was beneficial for both youth and industries. Despite the program's benefits, its reach remained limited, and it was not integrated into the mainstream education system. Due to this limited outreach and failure to be addressed by subsequent policies, the initiative was not expanded nationwide. However, following on from these successful initiatives, attempts have been made in Nepal to re-establish dual TVET. The article illustrates how an attempt was made to establish dual training in the Lumbini Province. It illustrates initial experiences and assessments and, based on this, formulates further research questions.

Methodology

This study employed a qualitative, exploratory case study approach to examine the early stages of implementing industry-school partnerships for apprenticeship programs in Lumbini Province, Nepal. The case study design allows for an in-depth exploration of a specific context, focusing on a rich understanding of the challenges and opportunities within the Lumbini Province. An extensive literature review laid the groundwork for the research by providing a fundamental understanding of vocational training programs and apprenticeships in Nepal and globally. This review identified key themes such as challenges, opportunities, and theoretical underpinnings of apprenticeship programs. The respective qualitative study, conducted in July 2023, relied heavily on interviews with a wide range of stakeholders (including trainees, industry representatives, and government officials, a total of 30 interviewees). The study utilized a purposive sampling strategy to recruit participants with knowledge and experience in apprenticeship programs. I interviewed industry representatives, TVET instructors, apprentices, and government officials. Industry representatives represented sectors like tourism, manufacturing, and agriculture, TVET instructors provided insights from the educational perspective, and apprentices were recruited through collaboration with TVET schools. Government officials were also interviewed to gain insights into policy

frameworks and government involvement in apprenticeship programs. Thematic analysis was used to identify recurring themes and patterns within the collected interview transcripts and focus group discussion notes. Information was hand-coded, categorizing segments of text based on emerging themes and refined to develop a thematic framework representing the core findings. The study aimed to provide a comprehensive understanding of Lumbini's apprenticeship programs and their impact on the industry.

Apprenticeship in the Lumbini Province

The apprenticeship program connects two major learning avenues, i.e. technical schools and industries, and it supports in the transition process from education to employment. This module could be an innovative approach to address the issue of skill gaps. To increase the access dual-VET apprenticeship program, the Swiss Agency for Development and Cooperation (SDC), a major actor with long history of working in the sector of skill development, launched the project 'Enhanced Skill for Sustainable and Rewarding Employment (ENSSURE)' to implement the dual vocational educationa and training system in Nepal.

The ENSSURE Project

ENSSURE was launched in 2016 (SDC, 2023) as a bilateral initiative between the governments of Nepal and Switzerland. The ENSSURE project is designed to promote dual learning. It is planned that the trainees will spend 3.5 months learning intensively at the technical colleges. Here, qualified instructors impart both theoretical knowledge and practical skills in controlled laboratory situations. During this time, the apprentices are familiarized with basic concepts and prepared for the real-life applications of their chosen professions (Apprenticeship Program Implementation Guidebook, 2022). Following the foundational training, the apprentices will transition to a 19.5-month industry-based learning phase. Within this phase, they will have the opportunity to work alongside qualified and experienced in-company trainers. Guided by these experienced mentors, apprentices will delve deep into their respective fields, gaining insights into the nuances of their chosen trades (Apprenticeship Program Implementation Guidebook, 2022). As the program advances, apprentices will undergo a 1-month block release period. During this time, they will temporarily step away from their industry placements and return to the technical schools. This block release phase serves as a time for reflection, consolidation of learning, and preparation for the final examination. The culminating point of the program arrives with the completion of the cycle, marked by the final examination. This assessment evaluates the comprehensive knowledge and skills that apprentices have amassed over the course of their journey (Apprenticeship Program Implementation Guidebook, 2022).

To implement such a program, essential framework conditions must be established. Finally, it is important to involve the main stakeholders of apprenticeships (schools and industry) and to find young people who are interested in this new form of training. The following steps have been taken to onboard industries and technical schools for apprenticeship:

- **Mapping and Orientation to Potential Industries and Technical Schools:**

  The Ministry of Social Development (MoSD) initially undertook the task of mapping potential industries and technical schools in support with Project Support Unit (PSU); a list of such institutions was subsequently compiled. The MoSD subsequently coordinated apprenticeship program orientation workshop. The purpose of this workshop was to provide technical schools and industries with an understanding of the apprenticeship program, including its implementation process and the significant advantages it provides to both young people and industries.

- **Call published for the implementation of Apprenticeship:**

  The MoSD issued a call through prominent newspapers in Lumbini

province, inviting technical schools to submit letters of interest for the implementation of the Apprenticeship Program, with backstopping support from PSU. Several technical schools expressed interest in participating by submitting proposals. After careful consideration, 11 technical schools were chosen to participate in the apprenticeship program in 2022 and 15 Technical schools in 2023.

- **Memorandum of Understanding (MoU) between Technical Schools and MoSD:**

  A total of 11 and 15 selected schools entered into partnership with the MoSD through MoU in 2022 and 2023 respectively. The MoU formalized this partnership, outlining the responsibilities and expectations of both technical schools and the MoSD. The technical schools assumed various roles in the process, including disseminating information about enrollment notices, conducting interviews for applicants, managing the admission process, executing classes, and overseeing the instructors and lab facilities. On the other hand, the MoSD was primarily engaged in activities related to raising awareness about the apprenticeship program. The MoSD also had the responsibility of monitoring and providing feedback on the interview process, ongoing classes, and releasing funds to the technical schools.

- **Memorandum of Understanding (MoU) with Chamber of Industries**: The objective of the MoU was to establish and bolster public-private partnerships, particularly since industries play a pivotal role in the success of apprenticeship programs, the project-initiated MoU signings with the Chamber of Industries. As part of this initiative, the establishment of the Skill Development Unit (SDU) within the Chamber of Industries was pivotal. The SDU played a crucial role in engaging with industries, creating awareness about the apprenticeship program, and highlighting its benefits for industries. The unit was expected to actively motivate industries to participate in the apprenticeship program, encouraging them to hire apprentices and providing information about the advantages of such engagement. Additionally, the SDU was supposed to play a key role in gathering the demand volume for apprenticeships from industries, contributing directly to the process of setting targets by the MoSD.

- **Enrollment Notice Published:**

  As per the terms mentioned in the bilateral agreement, the Council for Technical Education and Vocational Training (CTEVT) and the MoSD exchanged the list of chosen schools, along with designated professions and desired enrollment figures. After that, a call for enrollment was released in national newspapers, with the objective of admitting 460 young people in 2023 and 420 young people in 2022. To distribute information via multiple channels, PSU, MoSD technical schools, and the Skill Development Unit (SDU) worked together. This involved using social media, interacting with various networks, and running campaigns to raise awareness. Visits to communities were also undertaken as part of these initiatives. Consequently, 412 youths were admitted in 2022, and 450 youths in 2023.

- **Tripartite Agreement made between Technical School, Industry and Apprentice:**

  To ensure industry-based learning, 11 technical schools, in coordination with the MoSD, SDU and PSU signed a tripartite agreement between technical schools, industry and apprentices. This agreement delineated the roles and responsibilities of the

participating technical schools, apprentices, and the industries involved. The agreement was expected to maintain clarity and alignment among all stakeholders and provide a structured framework for the apprenticeship program's smooth operation. With this MoU, 112 industries were onboarded to secure the industry-based learning of apprentices.

Impressions From the field: First Assessments on Apprenticeship

Meanwhile the MoSD was managing a 24-month apprenticeship program, multiple technical schools were offering this program, which covered seven vocational fields: Automobile Engineering, Civil Engineering, Electrical Engineering, Early Child Development Facilitator, Information Technology, Mechanical Engineering, and Hotel Management. The 2022 batch had completed institute-based learning and was in industry-based learning. Meanwhile, the 2023 class would begin the institute-based learning by December. To substantiate the above discussion and to dig further into the different aspects of dual-VET apprenticeship context, several interviews were conducted focusing on the initiatives taking place in the Lumbini Province. The interviews helped to dig out the understanding of the actors/stakeholders involved.

Case 1: A Manufacturer of Metal Components

Since 2019, a leading manufacturer of vital metal components for hydropower has actively involved apprentices, with a particular emphasis on mechanical engineering. The owner, a BTI apprenticeship program graduate, demonstrated a deep understanding of the value of apprenticeships. What distinguished it from others industry was its immediate compensation for apprentices during their industry-based learning. The industry actively promoted diversity by welcoming and encouraging female apprentices, breaking away from traditional norms. The owner praised female apprentices' dedication and generosity, challenging stereotypes prevalent in some industries which were hesitant to hire them. The industry had also a track record of hiring apprentices as employees who had completed their apprenticeship program. Notably, he addressed a broader labor force issue, stating that due to a shortage of skilled workers in the local market, Indian workers made up more than half of the workforce in the Nepalese industries. He saw apprenticeship programs as a potential solution for developing a skilled workforce that is tailored to the needs of the industry. The owner was pleased with the approach's success, emphasizing its benefits not only for the apprentices but also for the company. This strategy ensured a long-term dedicated and supportive workforce, significantly contributing to the production process. The successful assessments of the apprenticeship program were flanked by the statements of the in-company trainer who described the demands that the implementation of apprenticeship placed on the qualifications of the staff:

> *Industry-based learning stands out as an excellent platform for acquiring market-relevant skills, and I am honored to be a part of the apprentices' learning journey. I strive to effectively transfer my knowledge and expertise to apprentices, thanks to a solid educational background and training in instructional skills. Recognizing the importance of continuous improvement, we can still improve our pedagogical approaches. Given their remarkable enthusiasm for skill acquisition, strengthening this aspect would allow us to guide apprentices more effectively*. (Interview with in-company trainer, conducted on 12 July 2023)

In broadening the scope, the owner shed light on the challenges of Nepal's federalized structure, where the role of provinces remains unclear. He expressed his dissatisfaction with the government for only promoting youth for foreign employment while ignoring the status and needs of the local labor market. He highlighted the limited initiatives of provincial industry ministries, emphasizing the need for clearer roles and proactive support for

industries. In this regard, he advocated for clear roles and favorable policies from provincial ministries, as well as better coordination between industries and these agencies. Furthermore, the owner emphasized the importance of publicizing apprenticeship programs, urging local and provincial governments to actively promote and advocate for such initiatives. That, he believed, would not only improve individual career development but also promote overall industry growth and productivity. Obviously, apprenticeship not only benefits the economy, but also the learners. One of the trainees described the benefits of apprenticeship for the individual as follows:

> *So far, the learning environment has been commendable, providing valuable insights into the dynamics of a real workplace. I am truly happy to be a part of the apprenticeship program, gaining practical experience in addition to theoretical knowledge. The program has not only broadened my understanding of a real-world work environment, but it has also fueled my desire to learn new skills*. (Female apprentice, interview conducted on12th July 2023)

Case 2: A Renowned Resort

A renowned resort in Ghorahi Sub-metropolitan city was actively engaged in the apprenticeship program, specifically targeting students pursuing hotel management courses. The resort used to welcome apprentices by providing a solid platform for industry-based learning as well as extending remuneration and additional benefits to help them grow. The owner acknowledged the abundance of job opportunities in the hospitality industry, but emphasized the social stigma that surrounds it, making it difficult to find skilled labor. Furthermore, the problem was exacerbated by skilled workers migrating to countries such as Dubai and Qatar in search of better pay. Considering these challenges, the owner emphasized the potential of apprenticeship programs to address the local labor shortage.

The apprenticeship program in that company lasted approximately 20 months and the company provided participants with the necessary skills for success in the hotel industry. One of the trainees interviewed described his experiences as follows:

> *This apprenticeship has given me the invaluable opportunity to learn about and contribute to the hotel's four major departments. I've noticed a significant increase in my confidence, particularly when dealing with foreign guests, which used to make me nervous. Company's learning environment has aided my personal and professional development. Furthermore, the provision of a stipend, duty meals, and other associated benefits adds to the overall positive experience, allowing me to be truly satisfied with my apprenticeship*" (Female apprentice, interview conducted on 19th July 2023)

The owner expressed satisfaction and pride in contributing to the development of skilled human resources, viewing the program not only as a benefit to individual apprentices but also as a way for the hospitality industry to actively contribute to the cultivation of expertise in the local labor market. The initiative not only improved the skills of the apprentices, but it also helped to alleviate the shortage of skilled professionals in the hospitality industry. In this regard, one of the in-company trainers put his observations emphasizing the internal learning processes:

> *Engaging and guiding apprentices daily is not only enjoyable for me, but also a continuous learning experience. This process gives me a lot of satisfaction, especially because the apprenticeship concept emphasizes industry-based learning, which I really appreciate and find extremely beneficial. Recognizing the significance of a consistent connection between educational institutions and industry, I see opportunities for further improvement through increased coordination and course content discussions. Similarly, I see that only a few hotels are aware of this*

> *program; collaboration should be expanded*" (In-company trainer, interview conducted on 19th July 2023)

Findings: Current Challenges of Apprenticeship Implementation in Nepal

This article describes the status of co-operation between vocational schools and industry to create an employment-oriented vocational training system in Nepal and sheds light on the challenges that lie ahead for further implementation. It highlights the disparity between labor approvals and highly skilled workers, highlighting the need for a dual VET model that integrates theoretical classroom knowledge with hands-on industrial experience. The starting point here was to look at the global landscape of TVET and apprenticeships and to highlight the different approaches derived from some countries such as Germany, Switzerland, and Malaysia.

While the level of awareness among the industry representatives about the importance of apprenticeship seemed sufficient in the above mentioned two cases, their limited participation might indicate that industry-at-large were yet to be reached out with effective information by the agencies working to promote apprenticeship. This is further substantiated by the survey done by ENSSURE project which shows that only 7% out of 210 industries are aware of any kind of apprenticeship programs including ENSSURE (Skill Needs Assessment Report, 2023).This hinders the effectiveness of these programs in addressing skill gaps and reducing unemployment. However, the finding of the study calls for stronger partnerships between TVET schools and industries to develop market-based skills and to ensure that industries are sufficiently equipped with locally available skilled human resources. With rigorous effort of ENSSURE project, the project experienced gradual improvement in industry involvement for apprenticeship among partnered industries. However, the focus group discussion conducted in July 2023 with industry people revealed that the participation and role of industry in apprenticeship programs was limited. One of the representatives of the industry in FGD expressed:

> *Apprenticeship selection procedure restricts the industry's role by allowing participation as a representative only within the selection committee on the other hand, I support industry leadership in the hiring process*. (Industry representative in FGD, 26th July 2023)

However, first findings indicate that industry participation is not yet having the desired and meaningful result to address the existing skill gaps. There is no separate law or policy that institutionalizes or defines the role of employers for apprenticeship. This lack of formalization has resulted in disregard for the private sector as a key actor.

It was found that awareness of apprenticeship programs among employers was limited. They had limited knowledge and access to the prerequisites of apprenticeship programs like curriculum development and enrolment of apprentices. Employers showed reluctance to pay the apprentices in the initial time of apprenticeship program. These and others are the reason why apprenticeship is still very limited. Furthermore, there are some more challenges of apprenticeship implementation in Nepali context.

First, Nepal shares common hurdles with other developing nations in establishing a connection between industries and educational institutions through apprenticeship programs (Obwoge et al., 2013). While persistent efforts have led to a gradual improvement in industry participation, there remains a critical gap in the form of legislative frameworks and regulatory guidance aimed at sustaining this connection. Notably, the Industrial Enterprises Act specifically sections 51 pertaining to the Industry and Investment Promotion Fund and section 54 concerning Corporate Social Responsibility, fails to address the issue of apprenticeships (The Industrial Enterprise Act of Nepal 2076, 2020). Moreover, industries have played a limited role in adhering to the defined apprenticeship guidelines set forth by CTEVT.

Second is the reluctance of industries in the process of developing skilled work force. In the

process of nurturing a skilled work force, companies or employers are expected to take on a dual role as both producers and consumers (Caves & Renold, 2016). Nevertheless, in Nepal, companies tend to primarily fulfill the role of consumers, rather than actively engaging in the production or development of skilled labor.

Third, there is dominance of skilled work force from India in the Nepali industries. The significant remittance outflow from Nepal to India, amounting to 1596.07 million US dollars in the year 2022 (Statista, 2022), serves as a clear evidence of the prevailing dominance of the Indian skilled labor force in the Nepali job market. The open border facilitates an easy inflow of skilled labor from India, thereby reducing the motivation for companies to invest in training and development initiatives.

Finally, a challenge exists in the effective coordination between the government and the private sector. During focus group discussions with industries and the government, it was experienced that both sectors sometimes engaged in a blame game, with each side attributing the responsibility for skilled labor development in the country to the other.

Conclusion

This article highlights the urgent need for transformational actions within Nepal's TVET system, specifically in the Lumbini Province. The apprenticeship program, which is recognized as a viable model of dual VET, presents itself as a possible solution for addressing this disparity by combining technical knowledge with practical industry experience. This research examines the global environment and highlights the diverse outcomes of apprenticeship programs implemented in some countries. The article highlights several challenges that hinder the effectiveness of apprenticeship programs in Nepal, particularly in Lumbini Province. These include limited industry participation, legislative and policy gaps, and a focus on companies as consumers rather than producers. Some of the employers had limited knowledge about program details, hesitant to pay apprentices, and limited roles in selection processes. The collaboration between the government and private sector is also hindered by a "blame game" mentality, preventing effective skills development. These challenges call for further discussion and potential solutions to improve apprenticeship programs in Nepal such as raising industry awareness through comprehensive information campaigns and workshops to educate employers about the benefits of apprenticeship programs and their role within them.

Similarly, strengthening industry-school partnerships in curriculum development, internship placements, and mentorship to ensure programs address industry needs and provide valuable practical experience. For that, advocacy for clear legislation that defines employer roles in apprenticeships, while also allowing flexibility for adaptation across different industries.

This study opened a window into the challenges hindering the implementation of apprenticeship programs in the Lumbini Province, Nepal, particularly the limited role of industries and the lack of formal frameworks. Further research can be conducted about the apprenticeship programs such as longitudinal studies to assess their long-term impact on graduates' employability, career advancement, and industry productivity. Cost-benefit analysis can be conducted to consider both initial investment and long-term economic benefits. Industry-specific studies can identify unique needs and challenges in specific sectors. Comparative studies with successful developing countries can provide insights into best practices. Government and private sector collaboration can be explored to bridge the gap between the two sectors, potentially through incentive programs or public-private partnerships to encourage investment in apprenticeship programs.

References

Bagale, S. (2018). Necessity of linkage of TEVT with industry in Nepal. *International Journal of Social Sciences and Management*, *5*(4), 237-242.

Bankolé, R. A., & Nouatin, G. S. (2020). Dual apprenticeship in Benin: Between theory and practice. *African Educational*

Research Journal, *8*(1), 46-56.

Bhandari, U. (2011). Apprenticeship system: The boundless opportunity for experiential learning. *Journal of Technical and Vocational Education and Training*, *17*(1), 82-92. https://doi.org/10.3126/tvet.v17i1.52425.

Callan, V., & Ashworth, P. (2004). *Working together: Industry and VET provider training partnerships*. National Centre for Vocational Education Research.

Caves, K., & Renold, U. (2016). *Intermediary research report. KOF Studies, 72*. http://dx.doi.org/10.3929/ethz-a-010696626.

Cedefop. (2010). *Guiding at-risk youth through learning to work.* Publications Office of the European Union. https://doi.org/10.2801/2258

Cedefop. (2021). *Apprenticeship governance and in-company training: Where labour market and education meet* (Cedefop working paper, No 3). Publications Office of the European Union. https://doi.org/10.2801/065622

Council for Technical Education and Vocational Training. (2022). *Apprenticeship program implementation guidebook.*

Enhanced Skill for Sustainable and Rewarding Employment. (2023). *Skill needs assessment report.*

Ministry of Labour, Employment and Security. (2022). *Nepal labour migration report.* Government of Nepal. Kathmandu. https://www.ceslam.org/uploads/backup/Nepal%20Labour%20Migration%20Report_2022.pdf

Grierson, J. P. (1989). *Sustainability, Self-sufficiency and management simplicity*. http://hdl.handle.net/1826/698

Hussain, M. A. M., Zulkifli, R. M., Kamis, A., Threeton, M. D., & Omar, K. (2021). Industrial engagement in the technical and vocational training (TVET) system. *International Journal of Learning, Teaching and Educational Research*, *20*(12), 19-34. https://doi.org/10.26803/IJLTER.20.12.2

Lerman, R. L. (2012). *Can the United States expand apprenticeship? Lessons from experience* (IZA Policy Paper No. 46). https://hdl.handle.net/10419/91788

Ministry of Education, Science, and Technology. (2022). TVET sector strategic plan (2023-2032 AD). Government of Nepal.

Obwoge, M. E., Mwangi, S. M., & Nyongesa, W. J. (2013). Linking TVET institutions and industry in Kenya: Where are we? *International Journal of Economy, Management and Social Sciences*, *2*(4), 91-96.

Oviawe, J. I., Uwameiye, R., & Uddin, P. S. (2017). Bridging skill gap to meet technical, vocational education and training: School-workplace collaboration in the 21st century. *International Journal of Vocational Education and Training Research*, *3*(1), 7-14. http://dx.doi.org/10.11648/j.ijvetr.20170301.12.

Pavlova, M. (2014). *TVET as an important factor in country's economic development. SpringerPlus*, *3*(Suppl. 1), K3. https://doi.org/10.1186/2193-1801-3-S1-K3

Paudel, P. K., & Eberhardt, C. (2023). Approaching apprenticeship in Nepal: Lessons from dual-VET of Germany. *Journal of Technical and Vocational Education and Training*, *17*(1), 1–18. https://doi.org/10.3126/tvet.v17i1.52405

Ryan, P. (1998). Is apprenticeship better? A review of the economic evidence. *Journal of Vocational Education and Training*, *50*(2), 289-325. http://dx.doi.org/10.1080/13636829800200050.

Salavert, R. (2015). Coaching: An apprenticeship approach for the 21st

century. *International Journal of Educational Leadership and Management*, *3*(1), 4-24. http://dx.doi.org/10.17583/ijelm.2015.1104.

Swiss Agency for Development and Cooperation. (2023, Sept. 16). Economy and employment. https://www.eda.admin.ch/deza/en/home/countries/nepal.html#

The Swiss-South African Cooperation Initiative. (2013). *A framework for providing work-integrated learning in technical vocational education and training colleges.* Department of Higher Education and Training, Republic of South Africa.

Statista Search Department. (2022). *Value of remittances sent from/to Nepal to/from other countries or territories worldwide in 2021*. https://www.statista.com/statistics/1382735/bilateral-remittances-nepal/

Government of Nepal. (2020). *Industrial enterprises act, 2076*. UNEP Law and Environment Assistance Platform.