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Editorial

Continuing the Journey of Education, Training and Research

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The Journal of Training and Development has come up with issue 4, Volume 4 with the objectives of sharing the recent research findings in the field of Technical Vocational Education and Training (TVET) in research, training and development. This publication has a collection of valuable articles from TVET experts, scholars and educationalist. This training and development journals are considered to be valuable resources for the scholars, educationist and TVET experts and stakeholders.

This issue consists of seven articles on different aspects of Training and Development.

The first article by Anoj Bhattarai scrutinizes the current TVET practices, identifies the gap and predicts systemic TVET implementation mechanism that ensures affordable access to TVET and a decent job for the productive age group of Nepal. The paper concludes that it is very necessary to link TVET with the industry, the necessary skills and competencies must be demanded by the industries, graduates having the demanded skills and competencies will be easily employed, the industry plays a vital role in the implementation system, only then can we have optimum utilization of the human resource.

The article by Binayak Krishna Thapa and Aishwarya Rani Singh discuss about the end-goal of the approaches is human development. The main approaches to understand and implement TVET are mainly human capital and human rights approaches. Along with the abovementioned approaches, the authors has also included capability approach. They argue that this alternative approach is linked to human development. They conclude that along with productivity, employment and better incomes, TVET can also lead to human development.

Prakash C. Bhattarai carried out a case study to study the nature and importance of ethics care in TVET schools of Nepal as care for student is yet to be practice in TVET schools. The TVET students are from diverse geographical area, culture and traditions, who might require moral, psychosocial and emotional support. He concludes that care for students can be given through verbal and non-verbal language i.e. language, actions and behaviours. In addition, care is most crucial, inevitable and unavoidable part of school leadership in TVET and it also foster the relationship among stakeholders, instructors, students, principal, and other staff of the schools.

The article by Devendra Adhikari focuses on female participation on short term mobile repairing vocational training and describes how an adult woman exhibit readiness to participate in the short-term training program

in Nepal. The paper is based on a qualitative study with an interpretative paradigm following the narrative inquiry approach. The stories of these women reveal that, they believe that for social recognition in society they must enroll in the vocational training program like the short-term mobile skill-training. The findings of this research are useful in enclosing appropriate plans and policies for conducting short-term vocational training programs in mobile venues for bringing socio-economic changes in women's lives by respecting their family value system.

Jiwak Raj Bajracharya emphasized to enhance the instructors' competencies in carrying out technology integration during teaching and learning to develop and authorize the worked examples. The qualitative and quantitative data was used to develop and validate the worked examples and three instructors from teacher education was utilized during their teaching.The author attempted to develop and authorize Worked Examples to assist instructors in creating a technology-integrated lesson plan by providing the set of guidelines to address an extraneous cognitive load of instructors.

Amit Kumar and his colleagues believes that training can help to improve the performance of employees, training is one of the method for enhancing individual knowledge, skills, ability and attitude as well as improving the job environment. They mainly focus on the job training in bio tech industry to nurture employees with essential skills in all levels. They study on five task specific on-job trainings by trainers with essential theoretical, practical and demonstration skills. The result of such trainings was effective in terms of their learning parameters based on theoretical, practical and demonstration and grading for knowledge, skills, abilities, and attitudes of the technical employees. On the other hand, other advantages of this training is positive interaction with other departments and healthy technical discussion during the training within the organization.

Prithutam Bhattarai and his colleagues discuss on occupational health hazards faced by the secondary school teachers of Government schools due to their occupation. As teachers are the pillars of a school, they need to be healthy and fit to guide the students in the right direction by being both physically and mentally fit. The study explores to improve the work standards and quality of life for the teachers by conducting awareness programs, workshops and trainings programs regarding Occupational Health. The occupational health standard need to be developed with coordination with District Education office and District Public Health office.

Finally, TITI expresses its gratitude to Ministry of Education Science and Technology (MoEST)/ SKILL project for supporting to publish this journal. The editorial team would like to express our heartfelt gratitude to all the authors who have contributed by providing their relevant and valuable creations. We would also like to express gratitude to the reviewers and TITI management team for their continuous support in publishing this journal. The team would also like to welcome articles from TVET experts, trainers and stakeholders in the field of training, development and research. We are also grateful to Tribhuvan University Central Library (TUCL) for providing their professionals support and encouragement to publish thise journal online. Last but not least, we are thankful to the publisher for the publication of the print version of this journal.

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Skilling Youth through Industry Linkages: Case of Nepal

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Abstract

Nepal is in the phase of gaining its demographic dividend where more people have the potential to be productive and may contribute to achieve rapid economic growth. However, most of this productive age group lacks engagement in gainful employment both in domestic as well as international market. This paper scrutinizes the present TVET practices, identifies the gap and envisions systemic TVET implementation mechanism that ensures affordable access to TVET and a decent job for the productive age group of Nepal. The paper concludes that the linkage of industry with TVET, where industry plays a vital role in the implementation ecosystem, will serve in optimum utilization of the productive age-group.

Keywords: Technical and Vocational Education and Training (TVET), TVET curricula, workplace-based learning, decent job, employability skills

Preface

The population of Nepal stands at 26,494,504 with an annual growth rate of 1.35 percent. The population by age group up to 18 years is 44.42 percent and the share of the population of 15-49 age cohort is 50.6 per cent (Central Bureau of Statistics, 2011). The figure indicates that Nepal is in a demographic transition and stands to gain its demographic dividend where more people have the potential to be productive and may contribute to achieving rapid economic growth. However, in the present context of Nepal, many of this productive age group lacks engagement in decent and gainful employment in domestic as well as in international market. Poudyal (2013), claims that on an average at least one in every four households migrates in search of a job. Most of them migrate without essential competencies required for the decent job and therefore, the remuneration they get is also minimal. Thus, the migration of productive youth has started creating an unbalanced and adverse impression in economic as well as in social segment. The scenario of the domestic market is even worse.

To some extent, the cross-border workforce has captured the domestic market and even the domestic employers seem to prefer hiring cross-border workforce over domestic workers. Why is this so? Why are the domestic employers prefer avoiding local workforce? Is this because of a lack of affordable access to Technical and Vocational Education and Training (TVET) opportunities for the Nepali youths? Is this because of the lack of market-responsive TVET programs or is it because of skilling youth without industry linkages? Is this because Nepali TVET programs lack the skills required for the world of work? Or what else? This paper aims to seek answers to these questions by reviewing the existing policies, documents and practices in connection to the Nepali TVET system. Additionally, it envisions the systemic TVET implementation mechanism for Nepal.

TVET Setting of Nepal

Nepali TVET can be officially traced since 1929, with the establishment of Ayurvedic School. Then, an engineering school in 1930, twenty-nine multipurpose high schools in 1960, Balaju Technical Training Centre and Mechanical Training Centre in 1961, the National Vocational Training Center (NVTC) in 1967 were established. The new education system plan (NESP) was introduced in 1971 that attempted to establish vocational education in every secondary school throughout the country. Kamali Technical School and Skill Testing Authority were established in 1982 and 1983 respectively after the establishment of Directorate of Technical Education and Vocational Training in 1980 (CTEVT, 2019). Council for Technical Education and Vocational Training (CTEVT) was constituted under a separate CTEVT Act, 1989 as a national autonomous apex body with the mandate of the policy formulation, coordination, facilitation and implementation of all types of TVET programs/providers including quality assurance of TVET in Nepal (Ghimire, 2013) as depicted in Figure 1. In addition, CTEVT certifies and accredits skills that are learned formally or informally (CTEVT, 2016).

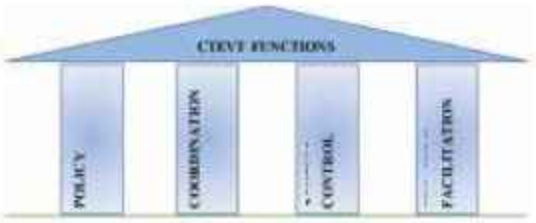

Figure 1. CTEVT Functions

Presently, TVET of Nepal is guided by the TVET Policy, 2012. The policy places Ministry of Education, Science and Technology (MoEST) at the principal position, and CTEVT as the regulator of TVET sector of Nepal. It has given emphasis on five key areas: expansion, inclusion and access, quality, integration and sustainable funding. Likewise, the government of Nepal has adopted the motto of *"Prosperous Nepal, Happy Nepalis"*. To strive for the success of this motto, there is a need to develop self-sustainable, competitive, innovative and value-oriented citizens for the socioeconomic transformation of the nation so that Nepal can elevate Nepal's status from a least developed country by 2022 and reach the status of a middle-income country by 2030 (National Planning Commission, 2016). This urges for the TVET system of Nepal to focus on quality by producing competent workforce who can cope with the global challenges of the 21st century. Similarly, after the promulgation of the Constitution of Federal Democratic Republic of Nepal in September 2015, Nepal government has expressed its commitment to make TVET as the mainstream education and has emphasized to link education with skill, skill with labour, labour with production, production with decent job and decent job with prosperity and establish at least one CTEVT recognized TVET institution in all 753 local units of Nepal. This urges for massive inclusive and affordable expansion, integration, sustainable funding and strong linkage between government, employer and TVET providers.

Presently, CTEVT has the capacity to produce 62015 mid-level skilled workforce with its diploma and technical school leaving certificate programs a year from 45 constituent, six partnership, 397 technical education in community schools and 429 private

TVET providing institutions. Additionally, 1081 short-term skill-oriented training providing institutions are registered with CTEVT and produce a significant number of the semi-skilled workforce (CTEVT, 2019). Figure 2 depicts serving volume of CTEVT.

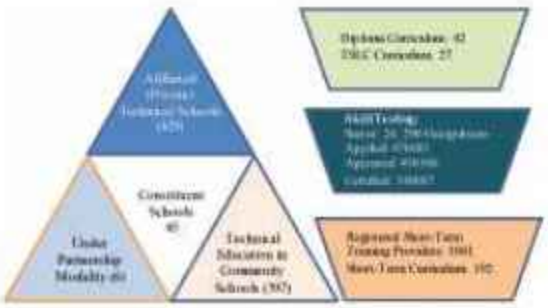

Figure 2: **Serving Volume of CTEVT**

In this connection, CTEVT as a national autonomous apex body with the mandate of policy formulation, coordination, facilitation and implementation of all types of TVET programs/providers including quality assurance, is continuously playing a vibrant and vital role to strengthen the TVET system of Nepal (Lamichhane, 2013). However, there are many emerging challenges, that need to be transformed into the opportunities. Afterall, TVET is important to bring radical changes in the socio-economic settings of the country.

In addition to CTEVT catered TVET providing institutions, there are many other TVET serving universities and institutions in Nepal. Various ministries, donor agencies/development partners and private sectors are also significantly contributing to TVET in Nepal (Acharya, 2011). All these TVET actors produce approximately 114,000 skilled to ; semi-skilled workforce (MoEST, 2017). The figure indicates that 77.73 percent of Nepali unskilled workforce enters into the labor market every year. This impulses Nepal to focus on the massive expansion of relevant, affordable and outcome-based TVET programs.

TVET Implementation Mechanism in Nepal

The plethora of TVET serving actors in Nepal do not necessarily follow a consistent mechanism for implementation. CTEVT, on the other hand, mandated by the Government of Nepal, practices an approach of analyzing, designing, developing, implementing and evaluating TVET programs. Presently practiced Nepali TVET implementation mechanism is shown in Figure 3.

During the analysis phase as depicted in Figure 3, CTEVT performs needs analysis; job (function) analysis; and tasks (behavior) analysis in association with line and other ministries, industries/market and TVET providing institutions. During the design phase, CTEVT designs competency-based market-oriented courses as per competency standards required by industry in association with industries/market and TVET providing institutions. During the development phase, TVET providing institutions develops the learning materials. During the implementation phase, TVET providing institutions implements the TVET courses, performs continuous and formative assessment and facilitate for summative evaluation.

On-the-Job training depends upon the nature of the occupation and duration of the course. CTEVT awards certificate to the successful graduates. CTEVT performs monitoring and evaluation in each stage. However, job placement is unsure.

Ideally, industries need to play a leading role in the Analysis and Design phase of the implementation mechanism. In Nepal, although industries are part of the ecosystem of this process, they seem to have a passive role.

Similarly, in the development and implementation stage, with an exception to on-the-job training (OJT), TVET institutions have the primary role while CTEVT operates as an influencing body. CTEVT conducts summative evaluation of the learners and is the prevailing body in the overall evaluation, monitoring and supervision process. The dominating role of CTEVT along with the government of Nepal and legal dilemma are distinctly apparent in the

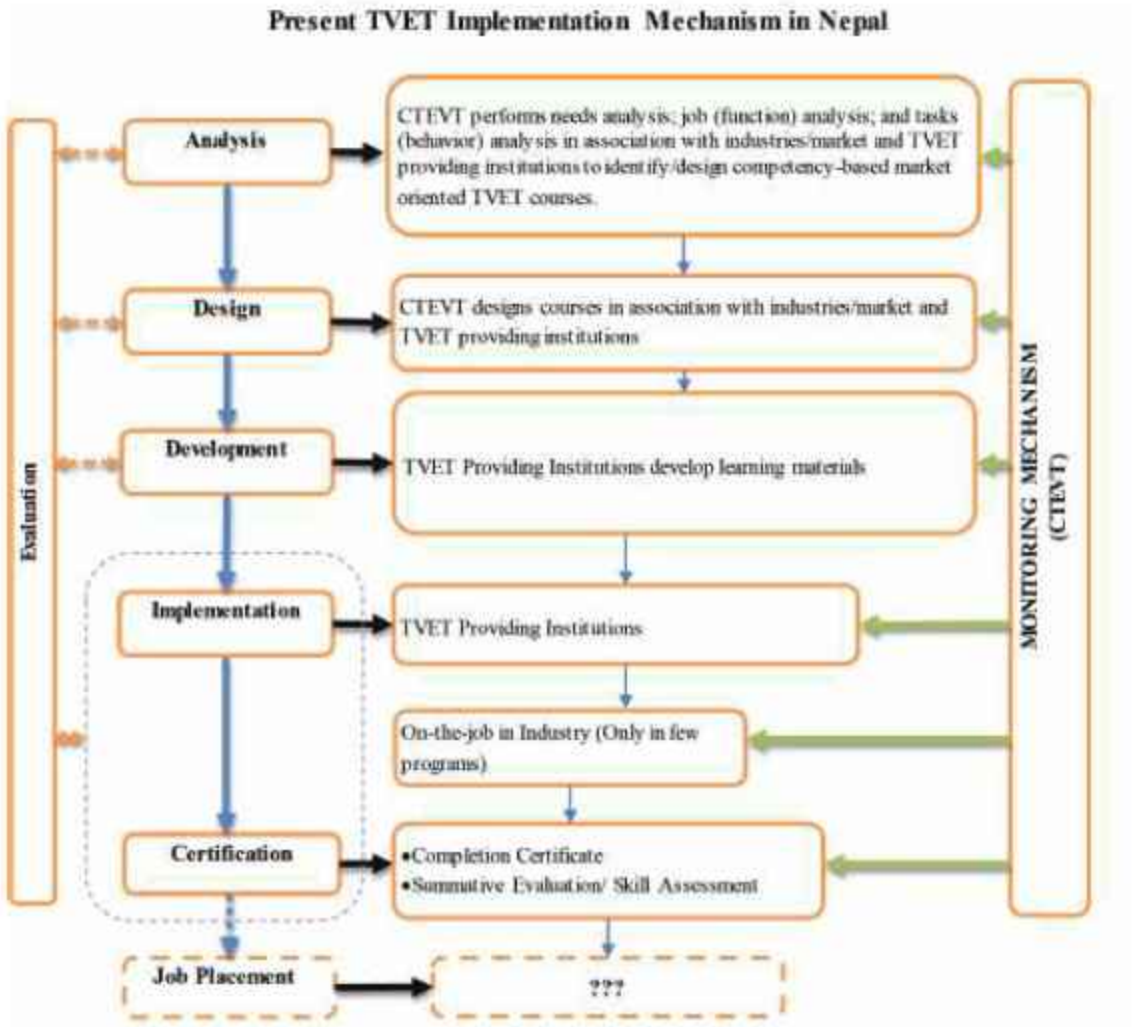

***Figure 3:* Present TVET Implementation Mechanism in Nepal**

(This diagram is created based on present practices)

TVET system. On the flip side, industries have taken a back seat on the overall process. Because of this, TVET providing institutes are training people without industry linkages. In addition to the lack of human resource planning and needs assessment, there is a mismatch in industry required workforce and TVET graduates. Although there are increasing number of graduates, the workforce demand from the industry has not been met. Industry exposure during the TVET implementation process is indispensable to build the attitude, skills and knowledge required to harvest industry level competencies. The networking and confidence of competencies allow industry to trust TVET programs and entrants to fulfil potential occupation that the industry might need in the future. This impulses for paradigm shift in TVET from the government dominated mechanism to equal contribution and cooperation between industry, government and TVET providing institutions.

Content Analysis of Nepali TVET Curricula

Nepali TVET curricula is developed by following a systematic approach of the occupational curriculum development process as portrayed in figure 4 and as detailed below.

The upper loop leads to a product for work context called a *'Task Catalog'*. A task catalog contains the title of the occupation, a list of duties and tasks that need to be performed, the performance standard expected by the industry and the procedure for performing the task. The task catalog has inputs only from industry. Task catalog is useful to develop job descriptions, standards, and training programs at different levels. The curriculum development experts, normally called the process experts, in association with employers identify the potential occupation for employment. The Technical Advisory Committee (TAC) consists of leading employers in the field under development provides input and suggestions into all phases of the curriculum development process. One of the job analysis approaches, *'Developing a curriculum (DACUM)'* is followed to identify the current duties and tasks that are performed by a successful worker in the occupation under study. After the job analysis, task analysis is carried out for each task to identify the performance standard required by the industry, the procedure to perform the task, related technical knowledge, specific tools and equipment and safety precautions to be observed during the performance of the task.

***Figure 4:* Occupational curricula development process in Nepal**

(Source: Unpublished Article of Dr. John Collum, Swisscontact, Nepal)

The lower loop leads to a product for education and training context called a *'Curriculum Guide'*. Before designing the program, TAC reviews the task catalog and provides initial recommendations into the modules in the program, the length of the program and desired program outcomes. The Subject Matter Experts (SMEs) take the tasks from the DACUM Chart, add, delete and modify these tasks based on other research and personal experience, and group related tasks into modules for instruction. These modules are then sequenced for effective learning. TAC makes recommendations to the module design and contents and provides additional input for program information such as TVET teacher's qualifications, facilities requirements, entry-level learner qualifications, etc. Performance objectives, suggested theory and practical times, a theory outline, and instructional suggestions are developed during the instructional design. Normally, a preview workshop with some selected TVET teachers is organized to examine a draft copy of the products and make final input, suggestions and recommendations. No curriculum guide is released without providing the users with an introduction

workshop. Nepali TVET curricula heavily focuses on the occupational specific tasks.

Skills required for success in today's world of work at all employment levels and in all sectors are foundation skills, vocational/technical skills, professional/personal skills and core work skills. Foundation skills are a prerequisite for continuing learning such as literacy and numeracy skills. Vocational or technical skills are specialized competencies needed to perform occupation specific duties or tasks. Professional or personal skills are individual attributes relevant to work, such as honesty, integrity and work ethic. Core work skills are the abilities to learn and adapt; to read, write and compute competently, to listen and communicate effectively, to think creatively, to solve problems independently, to work in team or groups; to handle basic technology and to lead effectively (Brewer & Comyn, 2015). During content analysis of Nepali TVET curricula, it is found that Nepali TVET curricula heavily focus on vocational or technical skills and less emphasis is given to other key factors of employability (Neupane & Pradhan, 2014). This urges Nepal to reform TVET curriculum development process so that equal emphasis is given to all foundation, vocational/technical, professional/personal and core work skills. Additionally, all these required skills for the world of work are best learned and assessed in the workplace (Australian National Training Authority, 2004), this urges for the paradigm shift of Nepali TVET system from the institute based to the workplace-based one.

Technical and Vocational Education and Training (TVET): Theoretical Understanding

TVET is the integral part of the national education system in all societies. It involves the study of technologies and related sciences, and acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life and prepares people for the world of work. It is an integral part of general education and may occur in a variety of learning contexts (UNESCO-UNEVOC, 2013). It is an aspect of lifelong learning. The definition provides the framework to design TVET courses and matches with the concept of four pillars of education as prescribed in the Delor's report. Delor's report (1996) has identified four pillars of education: learning to know, learning to do, learning to be and learning to live together. The first pillar: learning to know focuses on the development of skills and knowledge needed to take benefits and function in this world. Acquisition of literacy, numeracy, critical thinking and general knowledge are some of the examples. The second pillar: learning to do highlights the learning of skills that would enable individuals to effectively participate in the global economy and society. It is the acquisition of applied competencies

Figure 5: **UNESCO's 5 Pillars of Education**

linked to professional success. The third pillar 'learning to be' emphasizes the learning that contributes to a person's mind, body and spirit. The fourth pillar 'learning to live together' places emphasis on the development of social skills and values such as respect and concern for others, and the appreciation of cultural diversity (Delors, 1996). UNESCO's Education for Sustainable Development Initiative (2012) added one more pillar: learning to transform oneself and society as shown in Figure 5. When individuals and groups gain knowledge, develop skills, and acquire new values as a result of learning, they are equipped with tools and mindsets for creating lasting change in organizations, communities, and societies. TVET, if designed and implemented based on the five pillars of education, increases the availability of viable human capital, who can

contribute to the overall development of the national economy. Likewise, another theoretical perspective relevant to TVET is the Triple Helix Model as suggested by Leydesdorff and Etzkowitz. Leydesdorff and Etzkowitz (1995) proposed the Triple Helix Model that describes the triadic relationship among the government, industry and academia or TVET providing institutions as shown in Figure 6

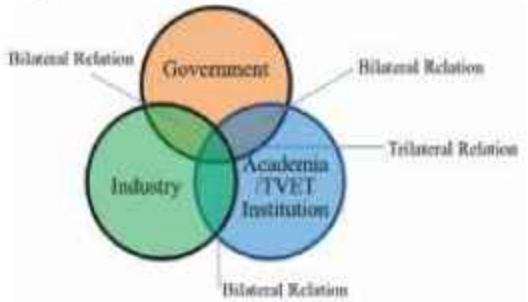

***Figure 6*: Triple Helix Model**
(Source: Etzkowitz and Leydesdorff (1995)

The Triple Helix theoretical framework prospects three modalities: Triple Helix I, Triple Helix II and Triple Helix III. In Triple Helix I modality, the government takes the lead role and drives the industry and academia whereas in Triple Helix II, the industry is the driving force with the other two spheres as secondary support structures. Triple Helix III foresees equal contribution and cooperation between academia, industry and government. Government facilitates academia-industry relation by providing adequate policies, plans, regulations, strategies and quality assurance mechanism. Industry and academia collaborate with government by involving and supporting the creation of educational strategies. Academia collaborates by providing the learner with real-life cases and problems, problem-based learning, work-based learning and according to the needs specified by the partners from industries. The industry supports academia to shape their curriculum based on their expectations of graduates' competencies. In this way, the industry operates in the Triple Helix as the locus of production; the government as the source of contractual relations that guarantees stable interactions and exchange; and the academia as a source of the production of the competent and relevant workforce (Etzkowitz & Leydesdorff, 2001). Nepal if transits from Triple Helix I modality to Triple Helix III modality and incorporates five pillars of education in TVET curricula as proposed in Figure 7, domestic employers would initiate hiring Nepali TVET graduates. As a result, Nepali youths would not have to subject themselves into forceful migration abroad in search for job opportunities. Domestic TVET providers can produce workforce based on the industry requirements and reduce the mismatch between demand and supply of semi-skilled and skilled workforce.

Conclusion

The linkage of industry with TVET will serve in the optimum utilization of the productive age-group. This will also help mitigate the adverse impact on social sector caused by fragile economic conditions and forceful migration of the country. Although Nepal has observed significant growth and development in TVET sector, there is an inadequacy in production of enough market responsive competent workforce. Passive participation of industry in TVET is the cause behind workforce not getting enough industrial exposure. On the other hand, even domestic industries are hesitant to onboard TVET graduates because existing TVET curricula lacks focus on employability skills. The absence of adequate industry linkage has resulted in dearth of workforce in certain occupation. Hence, it is in need to reform the TVET system of Nepal by adopting Triple Helix III modality and five pillars of education. If this were the case, domestic employers would noticeably initiate hiring Nepali TVET graduates rather than opting for cross border workforce. As a result, Nepali youths would not have to subject themselves into forceful migration in search for job opportunities. The workforce would be developed based on the industry requirements. Similarly, this would also eradicate the issue of workforce torrent in some occupations, and the issue of workforce scarcity in other occupations, caused by the mismatch in industry jobs and workforce produced. In order to systematically align education

with skill, skill with labour, labour with production, production with decent job and job with prosperity TVET reform and equal contribution and cooperation between government, TVET providers and industry is crucial. Similarly, this cooperation is also important to effectively utilize the available workforce, and to sustainably develop TVET.

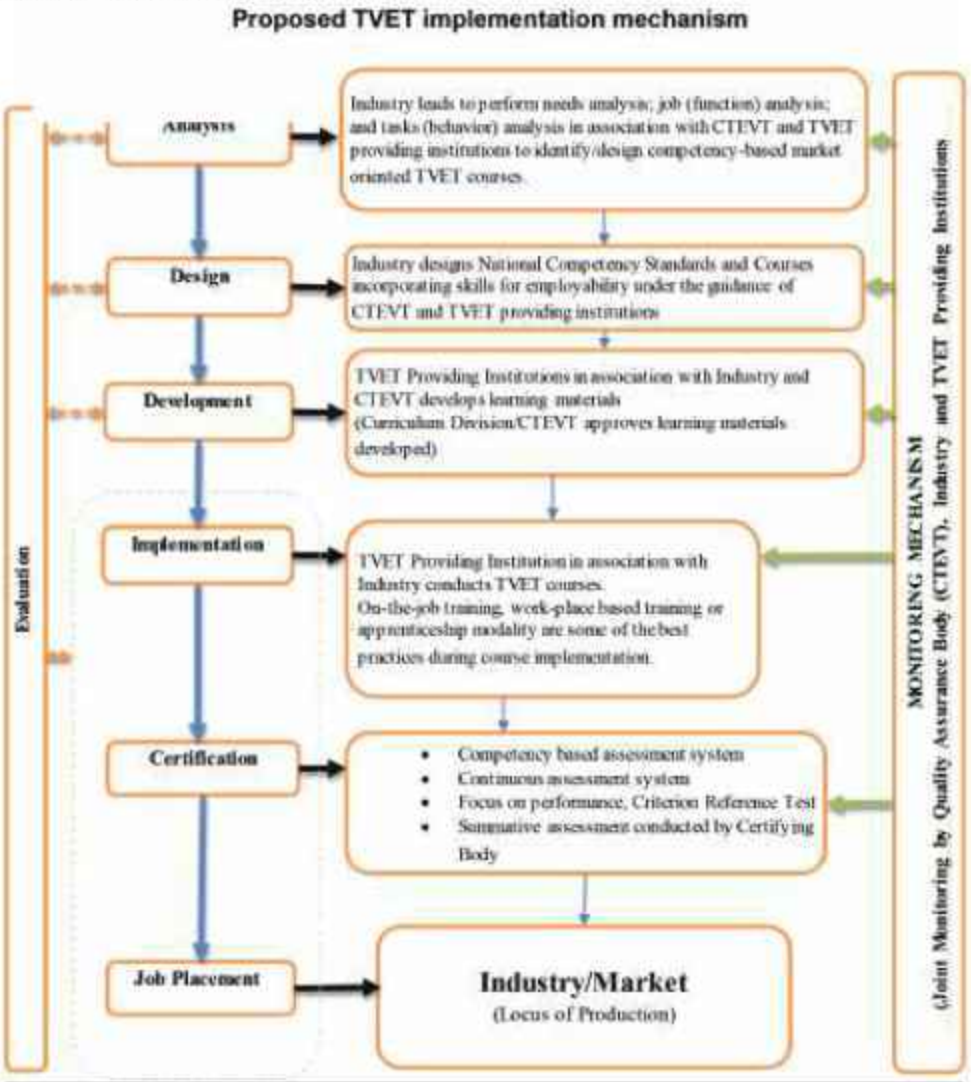

Figure 7: Proposed TVET implementation mechanism

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Ethics of Care among TVET Schools' Principals: Is It Reflected?

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Abstract

Ethics of care, a paradigm for mutual respect, compassion and attention to others in an organization, is considered as the most indispensable and unavoidable for a workplace. Particularly, it is essential in TVET schools as the students are mostly from diverse cultural, family and learning backgrounds and many of them require emotional and psychological support. However, TVET schools are often blamed as care within the schools is yet to be reflected in practice. In this context, a case study was carried out using humanistic paradigm to examine the nature and gravity of ethics of care in TVET schools in Nepal. Data were collected/generated from five TVET schools through prolonged interview by using interview protocol. The data were then analyzed and interpreted with relevant literature and personal reflection. This finding shows that care is imperative to lessen the anxiety and handle the complexities with the students. Care is communicated through language, actions and behaviors. In this regard, the principal maintains a comfortable channel of communication and interacts with the stakeholders to maintain care. However, each principal is unique in their approach of ethics of care. In this context, a discourse or research to explore the differences among the approaches of the principals help them learn from each other.

Keywords: Ethics of Care, Care in TVET Schools, Nepali TVET Schools, TVET School Leadership

Context of TVET Schools

In Nepal, TVET (Technical and Vocational Education and Training) had begun since long. However, the planed efforts of establishing TVET activities were emphasized after democracy was introduced in Nepal in 1951. At present, the TVET providers of Nepal consist of Council for Technical Education and Vocational Training (CTEVT), Tribhuvan University (TU), Kathmandu University (KU), BP Koirala Institute of Health Sciences, and National Academy for Medical Science (NAMS), Department of Cottage and Small Industries (DCSI) under the Ministry of Industry Commerce and Supplies, the Vocational and Skill Development Training Academy (VSDTA) under the Ministry of Labor Employment and Social Security, Nepal Academy of Tourism and Hotel

Management (NATHM) under the Ministry of Culture, Tourism and Civil Aviation, etc. Out of these TVET providers, the major TVET national enrolment capacity lies with CTEVT. It was obvious as the trend of establishing vocational institutions grew in number that demanded strategic planning and implementation on the part of government (Sharma, 2006). To address the needs, the Council for Technical Education and Vocational Training Act, 1988 (amended in 1993, 2006, 2010) was passed, which eventually established the Council for Technical Education and Vocational Training (CTEVT) (GON, 1988). This national umbrella organization was tasked with formulating TVET policies, coordinating programs, developing and expanding TVET and ensuring quality of TVET in the country under the CTEVT Act, 1988 and TVET policy, 2012.

Nevertheless, the TVET subsector has always been subject to uncoordinated and haphazard ways of operation (Khanal, 2013) which has consequently affected the ethical environment of knowledge production, management, and distribution in these schools. In the long run, this situation obstructs the ethical development of graduates who will be contributors to ethically sound and constructive climates in their future workplaces (Fan, 2011).

When the ethics within TVET schools come into consideration, ethics of care of all stakeholders such as principals, instructors, teachers, etc. is pertinent. Out of them, ethics of care of principals is imperative to ensure that leadership in school was welcoming and responsive to the students and showed kindness, considerations, and positive emotions. Eventually, on one hand, this brings a trust and harmony in a workplace while on the other hand, it cultivates ethics of care to the learners so that they can demonstrate their love and caring in future workplace. Consequently, it brings sustainable development to the organization and people where they work (Shapiro & Stefkovich, 2011). Therefore, the nature and gravity of care in TVET organizations have been explored through a study and have been presented in the following sections. In the beginning, the paradigm of the ethics of care has been examined.

Paradigm of Ethics of Care in Principals

The paradigm of ethics of care has been derived from the theory of relational ethics. The core elements of relational ethics are identified as engagement, mutual respect, embodied knowledge, and attention to an interdependent environment. These elements were informed by the concepts of "interdependency, relational personhood, authentic dialogue, and the importance of community" (Austin, 2006, p. 136). The idea of ethics of care have been established through the same line of caring as others who are in need of it.

Starratt (1991) stated that "earlier discussions of the ethic of justice took place in a theological context; more recent discussions have tended to ground the ethics of love and caring philosophy" (p. 195). The philosophy has its roots in the research of three major authors: Lowrence Kohlberg, Carol Gilligan and Nel Noddings who developed the concept in the form of ethics of caring.

The foundation of the ethics of care began with Gilligan's critique of Kohlberg's research. Kohlberg began his theory of moral development stage in 1955 with his doctoral dissertation proposal. The ethics of care was born when Carol Gilligan criticized Kohlberg's theory and offered a definition of ethics different from Kohlberg's in the resolution of moral dilemmas. For Gilligan (1982), the ethics of care included concepts of being there, listening, understanding, sharing responsibility for another's welfare, strengthening and maintaining relationships, attachment, and abandonment of relationships. She wrote about the differences by which men and women approach moral issues. She clarified that women tend to engage in actions that preserve and honor human relationships and demonstrate care for those they feel responsible for. In contrast, men tend to seek solutions by applying abstract rules of justice. Gilligan also found that females turned more often to 'caring' when responding to ethical dilemmas

than males, who tended to solve the same dilemmas using the lens of justice. Women and girls frequently turned to another voice that of care, concern, and connection, in finding answers to their moral dilemma. Noddings (2002) offered a similar view to that of Gilligan. However, her focus has always been on the approach of the mother which she called the feminine voice. Her argument starts from the position that care is basic in human life and that all people want to be cared for. For her, the four major components for nurturing the ethics of care include modeling, dialogue, practice, and confirmation. Therefore, she thinks that teachers ought to show students ways to care and engage them in dialogue about moral life. Moreover, teachers ought to engage themselves to supervise their practice in caring, and confirm them in developing their best selves. Starratt (1991) identified that "an ethic of care relates to the fundamental requirements of interpersonal relations, not from a contractual or legal standpoint but in terms of absolute respect" (p. 195). Langlois (2011) also considers human relations and welfare to be of major importance for the proper functioning of organizations. She emphasized the need of harmonious social relations for the management with people but not management of people. Additionally, Langlois (2011) believed that policies formulated considering the individuals within the organization and their designations express care for others. She stated that an organization practicing an ethic of care helps to promote interpersonal relations, quality of life at work, health of workers, and health of the community of workers. This idea seems relevant in the context of Nepal.

Ethic of care is not free from limitations. Langlois (2011) pointed out the limitations and their solutions. She believed that it can be challenging to announce a decision that may hurt someone or may be a source of concern. For example, a manager who knows that an employee is in the middle of a difficult personal situation might hesitate to share complaints from other colleagues about the person's performance at work. Familiarity between people can also make it hard to view situations in a more global manner. Such limitations can, however, be overcome by applying the other two forms of ethics, critique and justice.

Ethics of care gives a framework to decide our action and shows the consequences of our decision and action. It makes us think about the individuals benefitted and hurt from the leader's decision, the long-term effects of the decision made and the way individuals pay back in the future for the help they get at present (Shapiro & Stefkovich, 2011). Overall, this paradigm guides a school leader to make decisions with values in mind such as loyalty and trust. It does not only explain the principles of respect in the workplace but also provides a sense of love and compassion for each other.

Case Study: My Way of Exploration

I got two distinct philosophical foundations of case study literatures: post-positivists and humanistic. Some critics have suggested that Yin's research has been situated within a post-positivist paradigm, whereas Merriam's and Stake's approach have been non-positivist (Boblin, Ireland, Kirkpatrick, & Robertson, 2013; Brown, 2008). I used Merriam (1998) and Stake (2005) in this study considering multiple perspectives to examine ethics of care. However, this does not mean that I did not use Yin (2014). I got several guidelines from Yin's case study methods. For example, case selection guideline was considered through Yin (2014).

Data were collected/generated from five TVET schools through case study protocol but it was not structured and dedicated to confirm/disconfirm knowledge. The protocol was simply a guideline to generate information in the phase of case study. A prior interview was carried out to contextualize the protocol. The interview I chose for this study was "prolonged case study interview" (Yin, 2014, p. 110) with 2 to 4 sittings of approximately one to two hours each. During the interviews, I gave adequate opportunities for our research participants to express their opinions and each time I made attempts to be an empathic listener (Yin, 2011) and occasionally

probed in order to delve more deeply into particular lines of thought or descriptions. At the end of each interview, I asked the research participant if he or she wanted to add any further comments. Upon getting back from the field, I jotted down those expressions of the participants that I failed to capture during interactions in the field. I coded their remarks when I felt difficult to note them down on the spot. I reflected my field experiences in the note and summarized them in the end. I also observed the characteristics of the individuals during the interview. Those observations of the study participants and their contexts provided me with some essential insights at the time when the phenomenon was being observed.

For the analysis purpose, I transcribed all the data generated from our field participants. The transcribed data were then edited with original record and the data were coded. The coded data were categorized to develop themes. During this study, I made the best efforts to maintain credibility at every stage of this research. Particularly, credibility was maintained through: (a) considering if there were credibility violation by means of our thinking and preset minds, (b) considering at our implementation strategies such as member checking, thick description, etc., (c) our critical and reflexive role during every stage of research process. I also made efforts to maintain ethics by not harming participants by any ways. For example, I conducted interviews in their leisure time and I gave pseudo name to all the participants in presenting their narration. After data were generated and analyzed, they were presented and interpreted into the headings of importance, communication and gravity of care. Then, meaning was sought under the heading of influence of caring in TVET schools: An ongoing phenomena.

Importance of Caring in the Life of Principals

The term care is defined as "the sense of loving, nurturing, tending and upbringing" (Vogt, 2002). The data analysis of this study also indicated that care in the context of school goes together with students' loving and nurturing needs. To address the needs, participants hold ample and strong evidences on how and why the school leaders (principals) under this study adopted "care" in their life of principals. In this context, Brahma Sharma (male, aged 55), a principal of TVET school, stated that ethics regarding care is imperative to the school principals because:

> *Some students in this school are from socially deprived, economically backward and poor peasant family. These children are mostly emotionally challenged, economically fragile and socially depressed... As a school principal, I think that my care towards them would help them to be emotionally sound, which would further help them participate in the learning processes creatively.*

As said by the principal, this kind of caring attribute of the school leadership is imperative (Myers, 2013). The importance of administrative care was emphasized to ensure that leadership in school was welcoming and responsive to the students. Therefore, a nurturing environment in this context is the approach to communicate care in which students (disregarding their class, castes, gender, religion, etc.) may uncover their individual potential under the kindness, considerations, and positive emotions of the school leaders.

The principal's caring attitude and behaviors also help the students revitalize their emotional regulations, which, in turn, promote them to move towards academic success vigorously. This new dimension encouraged me to explore the role of care in fostering other dimensions. While enquiring, Rishi Baniya (male, aged 51), one of the principals, said, "Principals' care lessens the anxiety of the students." While describing the anxiety of the students the principal noted:

> *The students come to school from different family backgrounds. They are often anxious of the new environment of the school. They are also worried about the social relationship, academic performance and the challenges ahead which are unknown*

> *to them. My role in this context is to help them identify their challenges, course of action and the way to deal with the new school atmosphere in which they are supposed to perform.*

The above narration shows that students are worried about their personal and academic life when they are new to the schools. Principles' caring in the context help the students to tackle the situation without much difficulty.

Communication of Care in TVET Schools

In the TVET schools where I based my research, students were admitted after grade 10. The environment for these newcomers in the schools is completely different from what they experience in their earlier schools. Particularly, in the new environment, a student often observes unfamiliarity to the circumstances in which s/he is supposed to perform his/her action. One of the students named Biraj Adhikari of Diploma in engineering shared,

> *In the early days, the context of this school was very unusual to me. For example, I had to live in the hostel, which I had never done before. I was involved in several whole day activities as per my daily schedule which was overburden to me.*

This shows that the students require some new approaches to adapt themselves in the new environment, which they have never seen before. Schools' codes of conduct, the social relationship between the students and the school administration, and also the relationship among the students can be some approaches in this regard. However, students feel hard to adjust at first since they cannot perform their actions, behaviors and attitudes in accordance with the needs of those approaches. According to Rajan Thapa (male, aged 44), one of the principals under this study,

> *In the beginning, the students often find it difficult to identify and develop a new approach for coping with the problems that arise in the new environment, and they get anxious. Anxiety might lead to frustration, which further impedes his/her performance.*

Phillips (1991) also said that care often tends to lessen the level of anxiety on the part of the students. It ensures the emotional well-being and regulates students' emotions in a right way. This recreates the congenial atmosphere within the school premises in which the students are encouraged to display better learning performance.

In many cases, the participants (principals) of the study approached such students with some micro level of psychosocial individual dealing aiming at lessening or removing the students' anxiety. In the context of this study, I aimed at exploring how the principals of technical schools under this study use "care" as a psychosocial tool as a part of their ethical leadership. In this regard I asked Brahma Sharma about the way he communicates care and love to the students studying in his school. In reply, he said, "Care needs to be communicated through language, actions and behaviors." His explanation regarding his action and behavior to communicate his "care" to the students is as follows:

> *I often tend to appear before students in an easy and comfortable way. They often find me easy to share their personal, social and academic concerns. I listen to them and show keen interest regarding their concerns. If needed, I deal with them individually. Individual dealing with students provides me with an opportunity to counsel them and help me identify their sufferings and give them solutions. I empathize with the pain and pleasure of my students. I also enquire about their concerns informally whenever they meet me at the corridor, dining hall, playground, etc. When they come back to the school hostel from home, I ask about their family. I often make them feel that I am behind them to assist in their hardships as far as possible.*

The above quotation shows that there needs to be a

congenial environment for students in a school where they can find easy access to their principal. The more amicable the principal becomes, the students find it easier to share their emotions. The parent-like counseling delivered by the principal plays a therapeutic role in redirecting the students' emotions and in building up their confidence. The students need a sound official (administrative) care to tie up their psychosocial and academic performances. This care helps them keep their fear and anxiety away. Informal interaction with the students by principals is the other way of communicating care. Informal interaction also opens grounds for a principal to discuss the personal and social concerns of the students. Discussion with students in natural setting (not official) helps the principal to communicate care and love in a more sustainable way. According to the participants, care can also be communicated imperceptibly by performing administrative responsibilities in the daily professional life. The purpose of care, in this concern, is to create enabling environment for achieving the better performance within the school premises.

The care of a school principal also becomes visible while settling arguments, disputes and conflicts that possibly take place between/among the students, teachers and administrative staff. Rishi Baniya (male, aged 51), one of the principals of a technical school, narrated an event of conflict in his school and his role in pacifying the conflict, in the following way:

> *A student complained to me against an instructor time and again claiming that the instructor did not teach well; and that he often came out of the classroom to talk to his friends on the cell phone. After repeated complaints, I supervised the instructor and found him to be innocent. I then called the student and inquired why he had accused the instructor. I came to know that the family of the student had a dispute with the instructor on some social matter. The boy wanted to trouble the instructor as a part of revenge... I convinced him not to trouble the instructor. But he made a group of friends in the community to take revenge on the instructor. I, as a principal, called his parents and discussed about the questionable behavior of the boy. Later, the student realized his mistake and apologized for his wrong behaviors.*

There can be a number of events of wrong deeds done by the students, instructors and the other staff of the schools. In some circumstances, a principal needs to forgive the wrong doers and provide them a chance to rectify their wrong behaviors and actions. The principal, in the data mentioned above, showed his care towards the guilty student as a part of his leadership. He listened to the student's complaints carefully. He also investigated to ensure whether the complaint was genuine. After finding out that the teacher was innocent, he counseled the student and made an effort to establish good relation between the instructor and the student. For this principal, making mistake is a natural phenomenon. He believes that it is wrong to take action against anyone for a remediable mistake. He claims that forgiveness is an essential attribute to communicate "love" and "care" to the students. It helps the principal in developing the sense of oneness, unity and respect among the students. This indicates that giving chance to improve behavior also begets honesty, dedication and trust towards the principal and the school as a whole. The boy, in the above anecdote, turned to be honest and loyal to the principal after being forgiven for his mistake

Care of the school leadership can justifiably take place if the principal of the school maintains an easy, comfortable and effective channel of communication within the school system. During the interviews with the principals under this study, I discussed the existing channel of communication to address the grievances of the concerned individual (students and non/teaching staff) in the schools. Bal Krishna Shrestha (male, aged 48) told me that the students make attempt to get their grievances addressed either by their class teacher or the committee head of the extra-curricular activities of the school. The principal

told me, "If the grievances are serious, I personally involve myself in addressing them." For the principal, giving care to all contributes to establishing harmony and developing the sense of "acceptance" among the school family members. The principal assured that he was to arrange for a complaint box through which he would collect the complaints and grievances of the instructors and students. He also importantly emphasized that he personally visited the classroom and interacted with the students about all the spheres of school life, which helped him to know the students' challenges, their needs and demands, their feelings and emotions. This shows that interaction, either individually or in group, is the best way to impart care to the target students. It assists in addressing the collective concerns, which convince the group of students that the principal is conscious to fulfill their needs.

Communicating, interacting, inviting, and contacting the immediate stakeholders of the schools in society is another approach to community care. In the process, the stakeholders (parents, civil, political party leaders, etc.) of the school get an opportunity to participate in the social affairs. Asserting the need of caring the community for the school's development, Bibek Pokhrel (male, aged 42), one of the principals, told me that he invited the members of local civil society, representatives of different political parties and consumers' group at local level to participate in the school programs like entrance exam and School Annual Day. The principal also claimed that he personally meets the community people and local political leaders to strengthen his personal and professional relationship with them. According to the principal, such care as a part of his ethical leadership contributes in establishing trust and harmony between the school and the society.

Gravity of Care in TVET Principals

The case of 'caring' in the part of the principal was not the same in some technical schools in several occasions. I observed that the gravity of caring in the part of some principals was shallow. Describing the status of "caring" of a principal, a student named Bina BK of ANM stream said:

> *A girl studying in JTA course married a boy studying in the same course in the school. After marriage, they left their studies. The principal did not take this issue into his notice. The principal should have called the boy and the girl and convinced them to study even after their marriage. He should have inspired them to prioritize studies and to marry after completion of study. He should have also consulted their parents to induce them to continue their studies, which was not done. In such a case, the principal needed to be caring but he was not so.*

To Bina, administrative care in the part of the principals (in some cases) was weak and repulsive. Therefore, the quality of being caring does not lie equally strong among all the principals under this study. In the above case, the principal lacked the quality of being caring particularly in guiding and reorienting the students who left their studies simply in the name of marriage.

Therefore, care as the part of ethical leadership is very important to bridge the stakeholders of the school. Care in the part of school principals helps to develop an environment where the stakeholders are interlinked by their performances.

Influence of Caring in TVET Schools: An Ongoing Phenomena

Care in TVET schools is the nurturing attempt by which the principals implant in stakeholders a sense of cooperation, collaboration and support. While describing the nurturing attempts, Noddings (2002) emphasized engaging students in dialogue about moral life, supervising the practice of care, and assisting in their attempts at developing their best selves. In the caring and nurturing of the leadership, all the school staffs including the students are interwoven in a network in which everyone performs their duty independently. Yet there is a close interlink and dependence in terms of cooperation, support and collaboration. The Vedic literature also declares

that being a leader one needs to be caring and should perform leadership by maintaining harmonious relationship and congenial working environment. For example, *Rigved (9-5-9)*, a collection of hymns written probably during 2nd millennium BC in classical Sanskrit and known to be a treasure of knowledge declares. *"Indurindro brisha harih pavmaan prajapati."*

Interpreting the above verse, Misra (2007) says that the person engaged in rearing, cultivating and taking care of the people ought to be possessed of six qualities. For him, Vrisa denotes the quality of being strong, *Indra* indicates affluence and strength to destroy the enemy, Hariah is for removing the pains and agonies of the people, *Pavamanah* being pious oneself and making others pious, *Induh* giving peace and happiness to the people, and *Prajapatih* cherishing the quality of a preserver of the people to make them joyful.

The above verse is much relevant in the context of school leadership. Following the quality of *Indra*, the principal as the head of the educational institution requires having the courage to deal with the issues and threats that are likely to hamper the schools' activities and performances. Similarly, as in *Induh*, the leader needs to perform the activities that maintain peace and happiness to the school stakeholders. The *Vrisa* in the sense of school activities can be interpreted as being strong enough to handle school activities for the benefit of students. The term Harih can be interpreted in the role of a school's principal for removing pains and suffering of the students. *Pavamanah* is another term in the aforesaid *Vedic* verse which asserts that a school leader has to perform his duties as a devotee, ensuring the optimum development of the organization. Remaining with the quality of *Prajapatih*, the principal needs to ensure preservation, growth and development of the students. These are not only the qualities of school principal, but also are the ways of caring in the school system.

I have elicited a series of assertions from the data obtained from this study findings regarding how care is exhibited in the ethical practices of a school principal. Personal approaches of principals to establish "near and dear" relationships with the instructors, students and community members were observed to be basic and fundamental assumption of care. Personal approach in this context indicates the individual characteristics of principals that comprise the sense of showing concern about the others; openness, clarity and accuracy in dealing with the students, instructors and community members (Starratt, 2011).The principals under this study emphasized listening to the grievances of the concerned students and instructors and also address them with due care as a part of ethics. Austin (2006) has also asserted that core elements of relational ethics (termed as care in this study) are identified as engagement, mutual respect, embodied knowledge, and attention to an interdependent environment. Also, these elements are informed by the concepts of interdependency, relational personhood, authentic dialogue, and the importance of community (p. 136). This idea is very similar to what I explored in TVET schools, that care was communicated in schools by using proper language, actions and behaviors; interacting informally with the students and stakeholders; forgiving the wrong doers and providing them a chance to rectify their wrong behaviors and actions; maintaining an easy, comfortable and effective channel of communication within the school system; and communicating, interacting, inviting and contacting the stakeholders.

Conclusions

Care is the most indispensable, unavoidable and inevitable part of school leadership in TVET in the sense that it does not only foster the students-administration relationship but also strengthens and tends to perfect the congenial relationship between and among all stakeholders such as instructors, students, principal, and other school staff of the schools. This dimension is also very imperative to ensure that leadership in school was welcoming and responsive to the students. Consequently, it lessens the anxiety of the students and helps to bring the

academic success. This is pertinent as the students of TVET schools are from various family backgrounds, academic performances and anxious of the new environment of the school. Care often tends to lessen the level of anxiety on the part of the students. It ensures the emotional well-being and regulates students' emotions in a right way. In some cases, care becomes the psychosocial tool to handle the complexities with the students and it is communicated through language, actions and behaviors. Informal interaction can also be the part of caring in some occasions. Caring is also used in finding a solution to arguments and disputes in schools. In this regard, the principal uses various approaches to demonstrate his/her ethics of care. The principal maintains an easy, comfortable and effective channel of communication within the school system. Interacting, inviting, and contacting students and other stakeholders are other approaches of maintaining a caring environment in schools. However, depending upon socialization of the principals, caring of each principal differs. As ethics of care is rooted in Vedic tradition, their exposure towards the culture and values contributes to grow their extent of care. The culture and values what they learn differ from individual to individual, they apply their own way of caring which is unique in some occasions. A research or the continuous discourse on the differences can be helpful to each principal of TVET schools to learn from each other and reflect the comparative perspectives in their practices to be the innovative principal of the 21st century.

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Cosmological Orientation in Promoting the Enrollment in Short-Term Mobile Skill-Trainings: A Narrative Inquiry on Women's Lives in Nepal[1]

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Abstract

The Government of Nepal has prioritized the need of mobile skill-training program for imparting the skill-training opportunities to the potential beneficiaries in their own settlement both in urban and rural areas. It is different from the centrally based training program as it is conducted by setting temporary training venues in particular settlement where the training participants are residing in the majority. This paper describes how adult women exhibit readiness to participate in the short-term mobile skill-training program in Nepal. The paper is based on a qualitative study with an interpretative paradigm following the narrative inquiry approach. The four participants were selected based on their experiences of receiving the training through mobile skill training program and currently employed in the trained trades. The interpretations of their life stories reveals that women in Nepal choose to enroll in the short-term mobile skill-training program as they believe it to be a gateway for them to get social recognition. Likewise, they prefer closer training venue and short duration training program due to their responsibilities towards their family. The findings of this research are useful in framing appropriate plans and policies for conducting short-term vocational training programs in mobile venues for bringing socio-economic changes in women's lives by respecting their family value system.

Keywords: Social recognition, Mobile skill-training, Soft skills, Local cosmology

Technical Education in Nepal's Planned Development: Gender Perspectives

There is a long history in the development of technical education and vocational training in Nepal. The first education commission report of Nepal in 1954, suggested that "technical and professional training institutions should be started at once" (The Nepal National Education Planning Commission, 1954, p.

1 This article is completely based on my M. Phil thesis entitled " Contribution of Short-term skills Training: A Narrative Inquiry on women's Lives " submitted to Kathmandu University.

64). During that period, scholarship were provided to students to motivate them to learn technical skills. It also emphasized on providing a uniform type of education system for both boys and girls. The report prepared at that period by the government agencies was an important milestone in modernizing the education system in Nepal and promoting girls' education.

The establishment of the Council of Technical Education and Vocational Training (CTEVT) in 1989 was an important milestone and an historical achievement in the vocational training sector of Nepal. It was formed as an autonomous institution to coordinate and facilitate the progress of the entire TVET sector of the country. Besides, its role is to assure the quality of TVET programs, grading the skill competency of an individual, capacity building of technical trainers, study and research, monitoring and evaluation and coordinating agency among the training service providers. Under this apex body, a large chain of 34 affiliated schools, 185 schools following TVET curriculum, 429 private TVET institutes, and 650 short-term training providing institutes have been formed (CTEVT, 2018). Similarly, the secondary level education has also started to incorporate the technical and vocational education (Ministry of Education [MoE], 2016 a). The declaration of providing free education up to the secondary level to every citizen by the constitution of Nepal (2015) has even enlarged hope in the capacity development activities among the socially and culturally discriminated groups including women.

CTEVT is imparting technical education and vocational training in the form of diploma, technical school leaving certificate, special technical education and short-term technical education course. The short-term training is most preferred by the youths as they become skillful in a short span of time. The training service providers can conduct the short-term mobile skill training as a central training program, mobile-skill-training program, and apprenticeship-training program (CTEVT, 2017a). In central training program, the training venues are confined in city areas or in already established infrastructural setup venues of training service providers. Likewise, apprenticeship training is industry-based training, where the participants learn the skill in the real workplace. Alternatively, the mobile skill-training program is the decentralized form of the training program, where the training programs are conducted at particular settlements where most of the training participants are residing.

The skill impartment has generated a large number of skilled human resources in the country. Nevertheless, the recent data of the government shows that out of 922,445 industrial establishments in Nepal, the total 3,408,746 people are employed, in which 2,044,989 are males and 1,363,757 are females. The sex ratio of employment status is 150 (CBS, 2018). This indicates that women have less contribution to the productive sector in comparison to their male counterparts in Nepal. This could be the reason the Government of Nepal has been providing vocational skill development activities to both male and female from the fiscal year 2005/06 to 2016/17 (till first 8 months), in which 1,03,873 females and 95,295 males have received the vocational skills training in different trades till now (Ministry of Finance [MoF], 2017). The capacity building opportunity given to a large number of females in this period through vocational training activities is a concrete step taken by the Government of Nepal to reduce economic disparity in gender by promoting their involvement in productive income generating sectors through their skill development. In other words, the country's policies, donors' progressive steps, and civil society movements have really feminized the vocational training sector in Nepal.

Mobile Skill-training Program: Changing Lives at Micro Level

Mobile skill-training program is conducted at the settlement level by conducting training need assessment or rapid market appraisal there. The temporary training venues are set by hiring rooms at community schools, buildings, or making a

temporary hall in an open space. The training is conducted with all necessary inputs like trainers, tools, equipment, daily consumables, and safety measures. The main intention of this training program is to provide training opportunities to the deserving participants at their own place. Thus the skill transfer through the mobile skill-training program has become an important means of human development in our rural villages as well as in the urban settlements, where people cannot travel long distance daily to take part in the training program.

The neo-liberal concept of expansion of skill development activities in Nepal is also expected to have linked with the regular growth in productivity. It is argued that "the neoliberal state should favor strong individual private property rights, the rule of law, and the institutions of freely functioning market and free trade" (Harvey, 2005, p. 64). Nonetheless, the various claims of development partners and the Government of Nepal are quite pessimistic towards the contributing role of the vocational training sector in the macroeconomic perspectives in Nepal. A report of Asian Development Bank has identified the key issues which have deflated the TVET sector as " insufficient and inequitable access, poor quality, low market relevancy, and weak and outdated institutional capacity'"(ADB, 2013, p. 2). Even, government data shows the generation of skilled labor and the creation of employment opportunities have not been achieved till date. Government data from the Ministry of Finance (MoF) shows the generation of the skilled workforce and the creation of employment opportunities have not been achieved as needed in Nepal. There are still thousands of youths leaving Nepal every day out of which only 1.5 % of them are skilled, 24 % are semi-skilled and 74% are unskilled. Altogether 500 thousand youths are estimated to enter in the labor market every year but only below 25,000 youths are recorded to be trained through vocational skill annually (MoF, 2018). If the generation of the skilled human resource is low, the productive contribution from them in the economic growth to the macro-economy cannot be envisaged. Similarly, a report of the Central Bureau of Statistics claims that women are more engaged in the non-productive sector than their male counterpart in Nepal (CBS, 2018).

Instead of these facts, I have witnessed that a large number of women still attracted to short-term mobile skill-training program for empowering and changing their lives socially and economically. Garbuja and Pasa (2016) have also highlighted that the skilled and employed women are playing a vital role in the society in making community decision, leading different sectors that affect their living and acting as a change agent in the society. However, the literature is silent on the types of training program that women want to get enrolled. In this discourse, though there are many policy discussions and donors' concern regarding the skill development sector in Nepal, a study on the narrative voices of the trained female graduates of the mobile skill-training program about their preference for choosing and enrolling in the mobile skill-training program is still missing. Thus the purpose of this paper is to explore the reasons behind exhibiting the readiness of women to get enrolled in a short-term mobile skill-training program by bringing the narrations of their life experiences.

Research Methodology: Narrative Inquiry

Hearing stories about the life experiences of the research participants and observations of the enterprise opened by them were the methods of information collections, which I used to explore the multiple realities of the lives of my participants. With these, I came across the hurdles that obstruct the conversion of the learned skills into enterprises by women.

For the research site, I chose a heterogeneous settlement in ward no. 14 of Lalitpur Metropolitan city as many women there had already received the skill-training program through the mobile skill-training program and they have changed their living by establishing enterprises or doing the job in the trained trade. In this paper, I gathered the stories of my four graduates from two different training trades: assistant beautician and tailoring. My research participants are Gamala Chhetri (29), Bharati Chhetri

(27) Safali Tamang (30) and Sulochana Brahmin (40). Gamala , a newly married daughter in law, received a three months assistant beautician training from the venue, funded by the donor at the venue just half an hour far from her home. She has opened a parlor cum cosmetics shop. Sulochana, a victim of gender-based violence, received the same training along with Gamala. Similarly, Bharati received the assistant beautician training at a private training institute nearby city center. Likewise, Safali received the tailoring training through the mobile skill-training program and opened a tailor at her own home. These participants have been selected on the assurance that they have sufficient knowledge and experience and express their readiness to get enrolled in the mobile skill-training program.

In this regard, I chose narrative inquiry to inquire as I was studying the lives of individuals and asking them to provide stories of their life (Willis, 2007). I chose the literature of Clandinin and Huber (2010), where the stories of the participants are gathered in the periphery of time, place and society and the meaning making is made throughout these dimensions. For the information gathering, I visited the enterprises of the participant for at least three times until I got the required information. I interacted with them using Nepali Language and the same narrations have been used as the field-text of this research. I used persistent observation of their enterprising activities and conducted in-depth interviews for gathering the information. I was engaged in the field for more than six months and even conducted the peer debriefing with my University professors, research supervisors and colleagues. This helped me to get different insights by understanding the stories of the lives of my participants. Regarding the ethical consideration, I did not cause any harm to my participants, have maintained confidentiality of their identity and seriously undertaken the gender issues. The meanings have been aligned with the research question and are informed by the theory of social recognition.

Theorizing the Discussion

In our society, most of the women are enrolled in the training programs for changing their prevailing condition due to the exclusion caused by social and economic structure here. Kompridis (2007) focuses that an individual suffering from the injustices like social, political and cultural discriminations, which hinders him/her from realizing self, cannot become what he/she wants to be in the future and cannot shape their destiny. This is the deadliest form of injustice that an individual suffers in his/her life. This pushes the individuals to introduce themselves as enabling the persons of the society by integrating themselves in this social setting. As soon as they get the freedom to govern self after getting a kind of identity in society, they materialize their dream into reality, which leads to their social recognition. With the use of the above-mentioned theory, I have interpreted the stories of the lives of my participants by generating the following themes. The narrations of the participants have exposed that enrolling in the training program was the turning point in their lives enabling them to achieve the status of being recognizable in society.

Facing Discrimination: Because I am a Girl

Most of the women in our society, who have chosen to acquire the vocational skills in their lives in their adulthood, have desired a change in their lives. Willingness for the change means their earlier living was not comfortable. Some of them have even witnessed different types of injustice during their childhood days, which was misrecognition to their presence in this society.

Gamala revealed that she is only tenth grade passed. Her mother, father, and single brother at *maiti*[2] are also not much educated. Until the primary grades, her parents admitted her at a local government school and then she was later transferred to a private school. She was very weak in English. She hardly passed the SLC exam and joined grade eleven in a government campus. However, she could not complete all her papers and failed in English even

2 A birth home of a girl before marriage

in the second attempt. She was already twenty-one years old. Her family then started searching for a good family for her marriage and finally, she got married. She said:

> *I had a desire to study up to Bachelor level and work as a teacher. However, I stopped in grade eleven. Neither did I succeeded in passing, nor did my family members motivated me to focus on my studies. Therefore, I dropped my education there. Then my parents arranged for my marriage. After the marriage, I was afraid to talk with other people, going to the market, visiting the relatives and neighbors thinking that I am different and immensely behind the other people in good qualities So, I enjoyed working inside my house and taking care of the sick mother-in-law.*

Listening to Gamala's story, I was surprised to learn that even the family members of college going girls plan for their marriage if they could not pass their exams. The girls in our society do not even have any options than to go along with the choices of their parents who make the decision for them which shapes their lives. Psychologically, they become enslaved with the family decision. This was a kind of unjustifiable situation in their lives.

Upon discussion with another participant Sulochana, I found that she was a victim of child marriage and had even faced severe gender violence from her husband. Upon probing, she revealed that she was married at the age of thirteen. By then, she had just completed grade three. She was the eldest among five siblings (four daughters and one son). For the desire of a son, her parents had had four daughters before finally getting a son. As per the culture, a son is desired by every family. Poudel (2018) has also mentioned that in Nepal if there is son on the first delivery, then the parents do not wish to have another child. In contrast, if there is a daughter as the first child, most of the parents do identification of the fetus during the pregnancy period and go for an abortion if there is again a daughter. This is a bitter reality of our society.

Due to this deep-rooted social practice, parents are in a hurry to find a husband for their daughter thinking that they will become free from their parental responsibilities and can better take care of their son. Sulochana faced the same thing in her life, she could not oppose her parents as she was not mature at that time. Therefore, she happily tied a nuptial knot with the person who was seven years older than her. But her parents' good wishes towards her life did not take place. She further said:

> *After marriage, my husband and I were living together happily and I gave birth to two children. As time passed, I do not know why my husband's behavior started to change. He started having an extramarital relationship with another woman. He started scolding and beating me. Later on, he married that woman and started living separately.*

The above-mentioned disheartening story of Sulochana reveals her sufferings due to child marriage and the exploitation she suffered from her husband. Just for being a female, she faced extreme gender-based violence in the name of early marriage or polygamy.

A Girl's Family: Equally Responsible for Her Good Future

Examining the narrations of the participants from different angles, I have further revealed that the perception of the family members towards their daughters is always not patriarchal in our society. When the girls are grown, it is a common societal rule that father or elder brother seeks good bridegroom for them. The social structure is constructed as such. I continued to do probing whether the parental structures in the eastern societies always follow the discriminatory practices towards the girls or there are some other meanings. For Gamala, though her parents were not serious about her studies, they were very much alert that her future husband should be from a good family

background having at least a house in Kathmandu. They searched and talked with different families through the network of relatives and finally, they agreed with the person who was qualified, employed and had a house in Kathmandu. Gamala was chosen as the bride of that family primarily to take care of her husband, sick mother-in-law and for doing kitchen work. At her *maiti*, she was instructed as it was the duty of the husband to earn money and her role was to manage the household affairs. With those teachings of her *maiti*, she became ready to tie the nuptial knot with the person at the settlement (research area). She said:

Though my first wish was to complete my college degree before marriage. At the same time, I could not object to my parents' wish for my good future after marrying a well-educated person. But I do not have any regret for doing so. I entered this house as a "ghar-garne[3] " buhari[4] .

This narration of Gamala shows the support of the family members towards her good and secured future. A *ghar-garne buhari* has the major responsibility to look after the household works only. She has to take care of sick mother-in-law and husband. As her educational attainment was also very less, it would be very difficult for her to find official jobs. This was the reason her father and mother agreed about her marriage in that family. Marrying at the age of twenty-one was the right age for Gamala, and it should not be viewed from the perspective that they arranged for her marriage just to get rid of their parental responsibilities.

Sulochana always had some dissatisfaction with her *maiti's* mother and father. Hoping to give birth to a son, her mother had already given birth to four daughters before finally bearing a son. She agreed that due to large number of children made her parents poorer. She said:

> *It was very difficult for my father to buy school dresses, stationeries for four daughters and a son at a time. He used to work very hard, but we always had hands to mouth problem. Even they had no other options for feeding and caring such a large family. They dreamed that my husband and his family would take good care of me. So, that might be the reason, he arranged for my marriage, when I was just thirteen*

I was surprised to know the bitter reality of our society. The impact of a big family has serious consequences with the education, hygiene, and nutrition of the children. Early marriage of the daughter is not the construct of our society, and rather the poverty plays a vital role in it. Further discussion with her reveled that her *maiti* continued to support her even after her marriage. When her husband started to torture her and started extramarital relation with another woman, the first thing she did was go to her *maiti* for help. She revealed all the incidents and behavior with her mother. Then immediately, her father and uncle went to meet her husband to settle the matter through family negotiation. The narrations of Sulochana revealed that the love and care of the *maiti's* father and mother did not stop even after her husband abandoned her. So, they regularly motivated their daughter to fight for getting justice, not losing hope and taking care of the children. Eventhough their economic condition was not good; their moral support always helped her to face any trouble coming in her life. Therefore, she neither divorced her husband who betrayed her nor leave the husband's home and children. Later on, her husband himself stopped coming to there. The support of the family members of her *maiti* plays a crucial role in this situation.

Safali had a bitter childhood experience. She came to Kathmandu to work as a domestic child labor at a rich person's home. Her father had accompanied her during her first journey. I was a little bit upset upon hearing her sad stories. Some questions that arose in my mind were: How could any father and mother be so cruel to send to their small daughter

3 To look after the household works only
4 Daughter-in-law

of just age twelve to an unknown hand? With this, I continued to probe her flashback stories of her to dig out why her parents were compelled to send her to work as domestic child labor. She continued saying:

> *No sir, my father is a very good person and so is my mother. My house is in the remote village of Rasuwa district. We were very poor. My parents did not have other sources of income, except agriculture. Meanwhile, my father had knowing relation with one rich Rana family in Kathmandu. He talked with them and brought me to Kathmandu from the village to work as a labor in their house. He made a verbal agreement with them that they should provide the monthly salary as well as admit me at a government school. Instead, the Rana family just provided me with the said money, but they did not enroll me at schools. On yearly visits, my father frequently requested them to fulfill their promise. Nevertheless, no one in the host family considered my father's request.*

Listening to the heart touching story of Safali and other participants, I made an interpretation that the reality what we believe existed is subjective. It is the poverty, which compels the innocent parents to send their small daughters to work at other people's home, arrange for their early marriage and so on. The parents have an equally serious concern and care towards their children, boy or girl. In the case of Safali too, her father handed her over to a known-host family hoping that she might get good care and education. He himself came to drop her and made an annual visit. Thus the love and care of parents do not cease even if the daughters are not in their sight. This is our social construct.

A Girl in the Midst of Injustice and Care: Dream of Change Bubbling

The unjustifiable situations in the forefront and the supportive behavior in the backstage by the family structure in the lives of most of the women provoked them to get some identity inside their home and in the broader society. As they gradually became mature, they started envisioning of enrolling in the vocational training program, opening self-enterprises or engaging in the related jobs and changing their lives. This stage appeared gradually as their maturity and awareness level developed.

While listening to the life stories of Gamala, she continued that as the time elapsed, her child began to go to school. There was also pressure from the family members, community people and her parents at *maiti* to engage in some earning work, as there was little to do at home. Her parents also told her that if she could earn something herself, it would definitely contribute to the household expenses. In addition, in her surroundings, she saw other women going to work and earn money. This motivated her to get enrolled in the training. She said:

> *In this place (study area), there are many young married women who are employed as a teacher, banker, as money collector in cooperatives, as a receptionist in colleges, as a nurse in hospitals and so on, as they are qualified. Therefore, I felt that I should engage myself in some works, otherwise the people in the community would dominate me. I even started thinking that people in society would compare my educational status with my husband's and start their useless gossiping. Some wild ideas came in mind that I should change my status from unemployed and unqualified women. So, I chose to be self-employed and for it, learning a skill and opening some kind of enterprise at my home was the only option for me as my academic qualification was very less. And I also had to look after my sick mother-in-law, small child and do the daily household activities. So, I wished to join the skill-training.*

Hearing the conversation of Gamala, I made meaning that these extrinsic motivations of the family members and the internal realization triggered them into

experimenting with some new things to change the existing distressful situation. Besides, if the social structure of the new community views that the women's engagement in professional work is a good practice so that they can share the economic burden of the family members, and it will also inspire them to become self-dependent. For the first time, I realized that triangular connections between the family support, community people's encouragement, and self-dream drove these women towards the skill-training program.

Governing Self and Enrolling in the MST[5] : By Balancing the Family Structure

After cherishing the dream, adult women wait for some favorable conditions in their lives, which allow them to live their lives as per their dream. This is the transformational stage in their lives for governing self with the personal decision of being admitted into the skill-training activities. This phase appeared in most of their lives after their marriage or developing adulthood in them. Having developed courage towards changing their prevailing livelihood helped them towards living life as per their wish. They started to think and act accordingly by hearing their own inner voice to build their brighter career at this stage.

Gamala's life passed normally until she became a mother and her child started to go to school. After she gave birth to a son, the situation at her home became good. Her husband used to go to the office and her previously sick mother-in-law gradually became healthy. Then she wanted to change her living conditions by receiving some vocational training. However, being a *buhari*[6] of a family and mother of a small child, it was not possible for her to participate in training programs which was conducted at venues far from home. For this reason, she waited until she knew about the training program, which was going to be conducted within walking distance from her home.

Luckily, she got the information about the training, which wa to be conducted at Hattiban, Lalitpur which was only thirty-five minutes walk from her house. In addition, the training was free of cost financed by the Enhanced Vocational Education and Training project under the Ministry of Education and the schedule was only for short period, i.e. 390 hours (three months). The training service provider was a private training service provider, headquartered in Butwal, western Nepal, and the Hattiban training venue was a mobile skill-training venue. In this regard, Gamala articulated:

> *I consulted my husband about my interest in receiving the training and he agreed on it saying that I should not compromise to give daily medicines to my mother in law. Then I got enrolled in the training by filling the form during the skill fair at Brihikuti Mandap. I was very much excited to know that the training was going to be conducted around Satdobato area, which would be very close to my house. In addition, it was free of cost, with a free lunch of Rs. 50 daily. Moreover, after passing the training we would get the certificate of CTEVT, Level-1. I would never achieve this if the training program was conducted at other areas far from my home.*

From her experience, it can be said that adult women are always ready to learn new things. Though there are social and cultural restrictions for women to learn the vocational skills, they mostly prefer the training venues that are close to their house and choose the training program that makes them skillful in a short period. Besides, the training was government funded, free of cost, conducted as per the standard of CTEVT, provision of free lunch during the training and provision of free exam of National Skill Testing Board was enough motivating for women to get enrolled in the training program. Thus, freedom from household works and parental restrictions played a vital role in encouraging her to

5 Mobile skill-training
6 Daughter-in-law

get enrolled in the skill-training program. This helped her to get closer to her dream to get a recognizable status in society by being skilled and then employed.

The case of Bharati was different. after completing the School Leaving Certificate exam, there is three months break from school in Nepal. Her friends joined basic computer courses and bridge courses to get enrolled in college and language classes to develop different skills. With lots of dilemma in mind, she listened to the inner core of her heart and she got enrolled in the beautician training class. By making a grim face, she said:

> *It was my hobby to do the work of beautician and it dragged me to get that training. So, I got enrolled in beautician training. Learning the English language and computer course were not matters of my interest.*

She searched for many training institutes for the training. Among them, she got enrolled in ITC training center at Lagankhel as she heard that ITC was a good network of beauty parlor training institutes. Though it's main operating office was at Kathmandu, its branch offices were in the major city areas of the country. She got enrolled at the Lagankhel branch as it was not very far from her living place, which could be feasible for her daily up down. Bharati's stories disclose that for a hard working person, the education barrier does not restrict to live their lives as per their interest and plans. The discrimination faced by women from an early age probably nurtures low esteem in them. Instead, if they choose to learn and utilize the vocational skill to bring positive changes in their lives, it will develop their inner strength and help them set their future goals of survival as per their inner wish. The gradual growth in their adulthood drives them to live their life independently in achieving their desired aim.

Mobile Skill-Training Program: Gateway towards Social Recognition

The participants' stories have revealed that they participated in the vocational training program to make themselves recognizable in the broader society, apart from getting economic empowerment. Fluck (2012) has also stated that misrecognition has become a great threat to the democratic norms and values of today's society. If people are misrecognized in the name of gender, discrimination or exclusion from the societal rules, then it is an extreme form of social injustice. Thus if the social-cultural identities and values of the voiceless group of the society are not wholly recognized, then there is a damaging effect on their identities. The initial narrations of the participants also signify that they were discriminated just for being a woman. This provoked them to get a respected identity in society in their adult life. Barbosa and Dujo (2015) mentioned that the social conflict in the periphery of recognition can be addressed by quality education. Education can be a mediating tool for helping the voiceless people in building their empowerment for fighting against exclusion and getting their rights. Thus the learning through non-formal education, i.e. imparting the vocational skills through the mobile skill-training program has enlarged the wishes of most of the females being recognized in the prevailing social structure of Nepal.

It is necessary that every individual in the society gets equal respect and value. Heidegren (2004) has explained recognition as the process of integrating the members in a society. Likewise, viewing from the micro level, it is related to the "socialization and the identity" of an individual (Heidren, 2004, p.365). The female participants of this research are also in search of getting ways to introduce themselves as an important members of the society. Their socialization process was very weak and they faced different levels of gender-based violence during their childhood and adulthood period, which caused them to live life in a suppressive way.

Kompridis (2007) has described recognition as self-recognition and social recognition. In the literature, we can find three constructs of social recognition: injustice, identity, and freedom. The writings argue that not just injustice and identity-less make an

individual misrecognized but it is an "unjustifiable curtailment of our freedom to govern ourselves" (p. 287). The long years of suppression faced by voiceless group in the society put them in the stage of injustice and being identity-less. However, during their adulthood, they started to see the right and wrong in society and what has been happening to them. This motivated them to seek broader freedom in their lives. Thus recognition is the matter of injustice and identity in the primitive stage and it is a matter of getting freedom in the latter stage. The stage of transformation from injustice to getting identity and identity to freedom makes an individual recognized in the larger society.

Besides, in this research, along with the niches of recognition theory: injustice, identity, and freedom, the participant stories have revealed some other important claims, which are contextual and relevant to our social socio-cultural structure. Whenever they had freedom from their parental responsibilities and they would have an influential role in their houses in decision-making level, they chose to learn vocational training through the skill-training program as a means for being recognized in the society and to get economic empowerment. In line with this, they have chosen the training program, which is conducted for a short period and the training venues, which are close to their home. This is because they have different parental and socio-cultural responsibilities, being *buharis* of the family. In this way, they become ready to learn through short-term mobile skill-training program as a gateway for entering towards a better life.

There is no doubt that the discrimination towards the female is rampant. The only thing that can minimize this is by imparting value education as it gradually develops good human characters (Chaudhari, 2016). However, this is only a partial truth as claimed by Kompridis (2007) that the excluded groups suffer from the injustice that is hindering them to integrate into society. Besides, in eastern societies, there are promoting factors like the culture of love, care and respects towards the girls in our society. It is the poverty, which forces the parents to marry off their daughter at an early age, providing them with poor education, or forcing the girls to work as child labor at others' home. The parents are always worried about the good future of their daughters after marriage whether or not they will get a noble husband and caring in-laws. It is the parents of the *maiti*, who stand behind the married women if they get any trauma and sufferings in their post-marriage life. Additionally, the females, whenever get the freedom of governing self, they do not go against the family traditions by disrespecting the seniors of the family, without taking their consent to participate in the training or without performing their assigned duty. In this research, after the females get the freedom to get enrolled in the training program, they choose the training venue that is very close to their house and the training program being conducted for a short span of time. This helped them as they could manage time to look after their small children, prepare food for all family members, take care of old and sick in-laws, take care of their farm and livestock. In this way, they get a chance to develop their capacity through the skill-training and easily manage their family affairs as well.

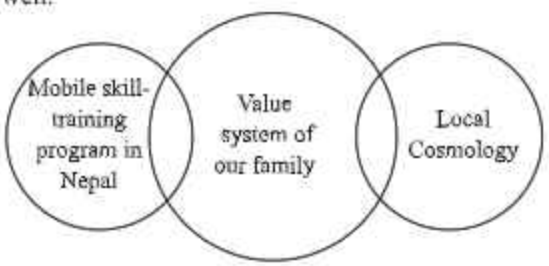

Figure 1: Chart showing the intersection between Mobile skill-training program and local cosmology in Nepal

Choosing a closer training venue for enrollment and capacity building is guided by the family's value system of our eastern societies. Awasthi and Yamphu (2017) have pointed out that the local cosmology is speculative insights that help to interpret the constructed truth in a particular context since generation. The practice, rules, and ways of the living

are not the byproducts of a couple of years. It takes thousands of years to generate a pearl of wisdom, which guides the society. Our eastern local cosmology helps to give shape to the family system, cultural rituals, festivals, and beliefs. These have become our approach to existence from generations. Of course, all of the research participants here are not from the Hindu community though they have been influenced by the Hindu way of life because for a long period in our history, Nepal remained a Hindu dominant state and this religion holds some "state power and policy attached to it" (Awasthi, 2004, p. 89).

Winding Up and Implications

The participants in this research were in the dire need of some vocational training programs that could bring some renovations in their lives. In the midst of so-called discrimination and care, they dream of change bubbles in their lives. When they got enough freedom to govern self, they chose the pathway of learning skills through the short-term mobile skill-training program. For this also, they did not revolt against the family system but convinced all the family members about their plan to change themselves and support the family's burden by developing their capacity through the skill development program. They got enrolled in the training program with the family's effort as well. In order to perform the regular household works, take care of small children and old family member as well as sick in-laws, look after the family farm and livestock, they chose the training venue close to their home with short duration, which is jargoned as a short-term mobile skill-training program. This signifies that they wanted to get recognition in the society after learning the skills by respecting the value system of the family. Besides, initiating different poverty minimization campaigns and incorporation of value education based on eastern philosophies in our academic curriculum can gradually reduce the discriminatory practices against women in our society. Thus policymakers and practitioners should promote the short-term mobile skill-training program in Nepal as it very suitable for women, where they can get easy enrollment and support of their family.

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TPACK-integrated Worked Examples for Technology Integration

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Abstract

The purpose of the study was to develop and validate the Worked Examples to enhance the instructors' competencies in carrying out technology integration during teaching and learning. Worked Examples in the study was developed based on the Gagne's Nine Event of Instruction, which is one of the classroom-oriented micro level Instructional Design Models. Technology integration in the study is defined as an implementation of technological resources and pedagogical strategies to deliver the required content knowledge during classroom instruction. Thus, Technological Pedagogical and Content Knowledge (TPACK) was integrated in the developed Worked Examples. Development and Design research design was implemented to develop and validate the Worked Examples, employing qualitative and quantitative data, where three instructors from Teacher Education Program utilized Worked Examples during their classroom instruction. Extraneous cognitive load of instructors found to be addressed because of employing Worked Examples. Furthermore, pre-service teachers learning outcomes was also significantly improved because of instructors' instructions with Worked Examples.

Keywords: TPACK; Worked Examples; Technology Integration; Instructional Design Model

Technology Integration

As argued by numerous researchers and practitioners, technology integration has become an integral part of the educational system in the twenty-first century learning environment in the developed and developing countries (Clements & Sarama, 2003; Haugland, 2005; McKenney & Voogt, 2012; Parette & Blum, 2013; Yelland, 2005). Kozma (2002, p.2) highlighted that increased utilization of "technology into classroom and curricula" is to improve educational systems and prepare the learners for the twenty-first century. Further, United National Educational, Scientific and Cultural Organization (UNESCO) has been providing technical assistance for the enhancement of instructors' competencies in the developing countries (UNESCO, 2008). These efforts from various stakeholders including national bodies, international organizations, and donor

agencies were focused on enhancing the instructors' technical competencies for the utilization of technology in classroom instruction.

As reported by numerous studies, the utilization of technology in classroom instruction is crucial because technology opens up numerous opportunities, such as promoting teaching and learning effectiveness, addressing the teaching and learning load, making teaching and learning more flexible, and enhancing classroom interactions (Hall & Higgins, 2005; Kennewell, 2001; Lopez, 2010, Smith, Higgins, Wall, & Miller, 2005). Furthermore, technology supports learners to understand the subject matter (Taylor, Harlow, & Forret, 2010) while enhancing their engagement in the classroom activities leading to purposeful learning (Jang, 2012). YouTube videos, educational blogs, social media, software, and applications, which encourage learners to think beyond the four walls of the classroom, play important roles in education to improve learning (Bajracharya, 2017; Gilory, 2010; Haddad & Draxler, 2002). In addition, technology helps learners to be critical thinkers, communicators, collaborators, creators, and problem-solvers to eventually become effective and efficient citizens, workers, and future leaders of the nation (Cynthia, 2015). Technology in education, therefore, is important to improve teaching and learning in the twenty-first century society.

However, as Bitner and Bitner (2002), Gulbahar (2007), and Pierson (2001) mentioned for technology to be truly effective in education, appropriate technology integration in teaching and learning is essential. The U.S. Department of Education (2002, p.174) has defined the term technology integration as "the incorporation of technology resources and technology-based practices" into teaching and learning. As mentioned by Hunter (2015), an incorporation of technology resources refers to the use of technological tools in teaching and learning in general content areas. Further, technology-based practices serve to enhance instruction that also supports the learners' learning (Amy & Katina, 2014; Richard, 2009).

Meanwhile, Mishra and Koehler (2006) argued that technology integration is not about putting technological resources together and replacing the technical skills in regular classrooms to enhance the learners' learning. As noted by Norris, Shullivan, and Poirot (2003), the availability of technological tools and instructors' technical competencies could create the possibility of technology integration but their competencies in creating a technology-integrated instruction by implementing pedagogical strategies for the content are also crucial for carrying out technology integration. Therefore, technological resources and instructors' technical competencies could not be enough for bringing technology integration during classroom instruction.

Technological Pedagogical and Content Knowledge (TPACK)

Recent developments in the field of educational technology have led to a renewed interest in considering the three specific elements in technology integration consisting of *Technology, Pedagogy*, and *Content* as specified by Koehler and Mishra (2005). Further, Mishra and Koehler (2006) organized those elements into three major areas of knowledge including *Technological Knowledge, Pedagogical Knowledge*, and Content Knowledge required by instructors for technology integration, which is termed as Technological Pedagogical and Content Knowledge (TPACK). TPACK is a conceptual framework that builds on Shulman's (1986, p.12) theoretical basis of Pedagogical Content Knowledge (PCK) referring to the "instructors' understanding of technologies and PCK" for bringing technology integration in the classroom instruction (Koehler & Mishra, 2008; Mecoli, 2013). A TPACK framework addresses the complexity of teaching by integrating technologies and pedagogical strategies simultaneously to deliver the required content during classroom instruction, which focuses on the enhancement of instructors' competencies for technology integration (Bajracharya, 2015; Mishra & Koehler, 2006; Mishra & Koehler, 2009; Mishra,

Koehler, & Kereluik, 2009). Thus, in the study, technology integration is defined as an implementation of technological resources and pedagogical strategies to deliver the required content knowledge during classroom instruction.

Barriers to Technology Integration

As found by Hunter (2015, p.5), technology integration "is not easy" because many instructors prefer to simply add technological tools to the classroom, for example by utilizing word processing for literacy tasks and Excel spreadsheets for entering numerical data without considering its effects on learners' learning experiences. In addition, Dockstader (1999, p.73) argued that the substitution of 30 minutes of reading with 30 minutes of computer skill development is a poor example of technology integration. All these studies reveal that the act of technology integration into teaching and learning is a complex process hindered by several barriers. Brickner (1995), Ertmer (1999), and Tsai and Chai (2012) discussed three types of barriers to technology integration, such as first-order, second-order, and third-order barriers. The first-order barrier is an external factor that includes lack of adequate resources, time, training, and institutional support. The second-order barrier is related to personal beliefs which is more instructor-centered relating to instructors' attitudes toward technology integration. These attitudes consist of the instructors' self-efficacy toward technology integration and attitude toward technology. The second-order barriers are the main causes for the instructors' willingness to adopt technology in education in the first place. The third-order barrier refers to instructors' competency in creating a technology-integrated lesson plan for the classroom instruction. It is associated with the utilization of technological resources with appropriate pedagogical strategies to deliver the content during classroom instruction.

As argued by the number of authors, even if the first-order and second-order barriers are resolved, technology integration may not necessarily proceed naturally without addressing the third-order barriers which are associated with the instructors' competencies for creating technology-integrated lesson plans (Albirini, 2006; Almekhlafi & Almeqhadi, 2010; Goktas, Yildirim, & Yildirim, 2009; Lim & Chai, 2008; Lim & Pannen, 2012; Tsai & Chai, 2012). In particular, Jhurree (2005) argued that instructors from developing countries possess a high level of apprehension to integrate technology in the classroom because they lack the necessary competencies to create a technology-integrated lesson plan, even if they possess high levels of technical knowledge. This shows that the instructors' competencies for creating a technology-integrated lesson plan are crucial for implementing technology integration in the classroom.

In the context of Nepal, Karmacharya (2015) reported that Nepalese instructors require a lot of continuous guidance and support to integrate technology while delivering instruction, even if they were willing to practicing technology integration in the classroom. The finding was based on a mega project named *Open Learning Exchange Nepal* (OLE-Nepal) which was conducted in 26 academic institutions across six districts of Nepal. During the training period of the project, instructors were trained to enhance their technical competencies and were provided with the required technological resources for carrying out technology integration. This evidence highlighted that even if Nepalese instructors possess the technological resources, training, and willingness, which are necessary for technology integration in the classroom, their low level of competencies to create a technology-integrated lesson plan are need to be addressed. Further, Wagle (2013) emphasized that technology needs to be used as an effective instructional tool by instructors for enhancing the learners' learning, which should not be limited to simply enhancing the instructors' technical competencies.

Existing Issues

The above discussions suggest that a developing country like Nepal may need further detailed guidance for instructors in creating and implementing

technology-integrated instructions regardless of their technical competencies. Studies done by Bauer and Kenton (2005) and Mishra and Koehler (2006) also highlighted that instructors' high level of technical competencies are not enough for technology integration. Thus, in a developing country like Nepal where efforts have been prioritized to provide technological resources and skill-based trainings to enhance instructors' technical competencies with the aid of international agencies, there is a need to urgently consider an applicable way to assist instructors in creating and implementing technology-integrated instructions for carrying out technology integration in the classroom.

Studies revealed that developing countries suffer considerably from the first-order barriers to technology integration (technological infrastructures and trainings) because of issues related to national policies and funding, which are beyond the control of most instructors (Jhurree, 2005; Khan, Hossain, Hasan, & Clement, 2012). However, as discussed above in the Nepalese context, third-order barrier: creating a technology-integrated instruction is hurdle to technology integration in the classroom instruction, which is termed as the instructors' competencies in the study (the term *instructors' competencies* is used throughout the study in the place of the instructors' knowledge and skills to create technology-integrated instructions).

Numerous studies revealed that instructors' competencies for technology integration could be improved with an appropriate technology integration model in a Teacher Education Program to train pre-service teachers (Dawson, 2008; Kirschner & Selinger, 2003; Stuart & Thurlow, 2000; Tearle & Golder, 2008; Tondeur, van Braak, Sang, Voogt, Fisser, & Ottenbreit-Leftwich, 2012). A study done by Stuart and Thurlow (2000) argued that pre-service teachers need to be adequately trained for assisting instructors to carry out technology integration. Further, Hare, Howard, and Pope (2002, p.193) conducted a study with 26 pre-service teachers to examine *a gap between what pre-service teachers are taught about the technology integration* and *how they could implement those competencies to teach in the classroom*. The authors found that the pre-service teachers trained with technology-integrated instructions had a high level of beliefs and confidence to integrate technology in the classroom instruction compared with those pre-service teachers who were trained under as usual instruction.

As discussed by Chai, Koh, and Tsai (2010), Niess (2005), Tondeur, Pareja Roblin, van Braak, Voogt, and Prestridge (2017), Teacher Education Program is a platform to educate future instructors to enhance the willingness as well as a competency that required for carrying out technology integration in the classroom instruction. Among which, Teacher Education program also appears to be crucial for enhancing positive attitudes toward technology integration (Shirvani, 2014; Wang, Ertmer, & Newby, 2004).

Studies done by Lee (2014), and Lee and Sparks (2014) in the Nepalese context, argued that even if Nepalese instructors had access to mobile phones, computers, and digital cameras, there are continued hurdles for technology integration. Based on the focus group interview with 27 Nepalese instructors and follow-up of individual interviews, the authors found that the instructors lacked enough competencies to create a technology-integrated lesson plan for classroom instruction. Therefore, the authors suggested that the availability of detailed guidance could assist instructors to create and implement technology-integrated instructions, which could bring a significant improvement in carrying out technology integration. Similarly, Khan, Hossain, Hasan, and Clement (2012) also revealed that the instructors of developing countries require detailed structure in accomplishing the procedures that assist them to create technology-integrated instructions.

Carlson and Gadio (2002) argued that instructors could experience an extraneous cognitive load because of lacking detailed guidance in creating and implementing technology-integrated instructions

based on the available models and framework [existing Instructional Design (ID) models, Substitution, Augmentation, Modification, and Redefinition (SMAR) model, TPACK framework, and TPACK-based instructional design models) for technology integration, van Merrienboer and Sweller (2005) found that an extraneous cognitive load could be alleviated by effective instructional interventions. One idea from a study done by Saravanan and Nagadeeps (2017) in India recommended that the extraneous cognitive load could be minimized by offering scaffolding process with *Worked Examples* for instructors.

Worked Examples

Worked Examples are a kind of scaffolding consisting of a detailed set of guidelines for instructors to accomplish a task based on a demonstration (Atkinson, Derry, Renkl, & Wortham, 2000). As mentioned by Ayres and Sweller (2000), Worked Examples assist by addressing an extraneous cognitive load. Further, a study done by Mayer and Moreno (2003) suggested that *Worked Examples* are effective instructional strategies for addressing an extraneous cognitive load that deals with learning and problem-solving difficulties. Even more, recently Chen, Woolcott, and Sweller (2017) recommended that *Worked Examples* are the strategies to minimize an extraneous cognitive load.

Recently, Saravanan and Nagadeeps (2017) conducted a study in India in a Teacher Education Program with instructors and pre-service teachers to explore the barriers in technology integration. The authors found that the instructors had experienced an extraneous cognitive load during technology integration because they had to spend additional time to create a technology-integrated lesson plan. However, based on the findings of the study, most of the pre-service teachers benefited from technology-integrated instructions having high engagement within the classroom. Thus, the authors suggested that *Worked Examples* could be an effective instructional strategy for addressing instructors' extraneous cognitive load that could occur while creating and implementing technology-integrated instructions by providing step-by-step instructional demonstration of a skill or a task performance.

The problem which initiated this study was the need for a *Worked Examples* to consider three key elements of technology integration as: content, pedagogy, and technology based on a systems thinking approach within a generic micro level instructional design process to assist instructors in creating and implementing technology-integrated instructions for carrying-out technology integration during the classroom instruction.

In this study, *Worked Examples* was developed based on a Gagne's Nine Events of Instruction includes nine steps from attention to retention and transfer (Solanki, 2014), which is a class-room oriented Instructional Design Model to create a technology-integrated lesson plan. Thus, it is necessary to investigate how instructors in a Teacher Education Program could utilize a *Worked Examples* for technology integration in the classroom instruction. Further investigation needs to be carried out to understand the changes that could be found in the learning experiences of pre-service teachers because of technology-integrated instructions carried out by instructors based on a *Worked Examples*.

Instructional Design

ID is a procedure for developing an educational or training program, curricula, or courses in a sequential and authentic manner (Branch & Merrill, 2011, p. 8). This procedure enables instructors to create a lesson plan that involves the "systematic planning of instruction" (Smith & Ragan, 2005, p.8), ranging from instructional analysis to evaluation (Mager, 1984). It can also be referred to as a "systematic and reflective process of translating principles of learning and instruction into plans for instructional materials, activities, information resources, and evaluation" (Smith & Ragan, 2005, p.4). These definitions explored that ID is a framework which provides the process to create the instructions based on the necessity of a teaching and learning environment.

Thus, ID can be defined as a process to develop directions and specifications using learning and instructional theory to ensure the quality of instruction.

ID has also been perceived as both a science and an art to creating instructions from the planning to the evaluation stages in which revisions can be made after implementation of the program (Carr-Chellman & Reigeluth, 2009, pp. 5-9). Science and the arts are both core concepts of ID and are useful in creating and implementing instruction, a complicated process involving human ingenuity, software and hardware components (Piskurich, 2006, p.3). Essentially, ID is all about a set of rules constituting a chronological process. For instance, development of a training program involves a series of methods such as analyzing, designing, developing, implementing, and evaluating to create quality learning experiences and environments. In summary, the primary goal of the ID process is to generate the instruction to achieve the objectives of the program and training.

Creating a Technology-integrated Lesson Plan through Worked Examples

As discussed above, *Worked Examples* were provided to instructors to create a technology-integrated lesson plan, *Worked Examples* were offered to the three instructors. Explanation under technology integration was carried out based on the triangulating source of information such as: classroom observations, interviews, and reflective journals as described below:

Technology integration. Classroom observations revealed that the instructors utilized *Worked Examples* for indexing specific information a *topic of a lesson, pre-service teachers need to learn*, and *pre-service teachers need to understand at an end of the classroom instruction*. It was also confirmed by the reflective journals that all the instructors had developed their lesson plans and detailed notes about content, pedagogy, and technology. Since detailed guidance was provided in the *Worked Examples*, instructors had utilized the various pedagogies and technologies presented to gain attention and inform objectives, to recall and present the content, to perform and gather feedback, and to enhance retention transfer.

Interviews with the instructors clarified that based on the detailed information about content, pedagogy, and they had designed and developed a technology-integrated lesson plan. Instructor-1 mentioned that

> *"Since detailed guidance with a key purpose was provided, I had followed those guides to develop a technology-integrated lesson plan. Further, based on that plan, I created a required material for classroom instruction" (Interview, Instructor-1).*

The above statement of instructor-1 clarifies that *Worked Examples* provided the detailed guidance to integrate content, pedagogy, and technology for a technology-integrated lesson plan. Similarly, Instructor-2 further added:

> *"I just followed the Worked Examples to design and develop a technology-integrated lesson plan; however, sometimes I was unable to follow all the detailed guidance because I found it was too much" (Interview, Instructor-2).*

An interview with instructor-2 revealed that even if *Worked Examples* were self-guided instructions, the instructors might not cover all the detailed guidance. However, Instructor-3 revealed that

> *"I just follow"For a technical instructor like me, this type of Worked Examples is very helpful that provide detailed guidance (Interview, Instructor 3).*

Based on the above evidences, it was clarified that *Worked Examples* provided a detailed guidance which helped the instructors to design and develop a technology-integrated lesson plan.

Further, based on the interviews with three instructors, even if, they had practiced a technology-integrated lesson plan in the past, they still lacked the competencies needed to create a technology-

integrated lesson and materials for classroom instruction. For example, Instructor-1 mentioned that

> *"Previously, I had used videos during classroom instruction to enhance the understanding level of pre-service teachers in terms of the contents, but I was not sure whether they were perceiving knowledge or not. However, Worked Examples to create a technology-integrated lesson and materials helps me to consider content, pedagogy, and technology simultaneously, which enhance the engagement level of pre-service teachers in the classroom instructions, further, it confirms their perceived knowledge too" (Interview, Instructor-1).*

The above statement by instructor-1 justifies that, the pedagogical strategies were not practiced previously to deliver a technology-integrated classroom instruction. The *Worked Examples* offered to the instructor-1, helped him to consider the content, pedagogy, and technology for carrying out technology integration. Further, it also assisted the pre-service teachers to internalize the delivered instructions. Similarly, instructor-2 added that

> *"Even if, I am aware of the potential of technology integration, however, I was afraid of using technologies during classroom instruction because of my low technical ability. In the past, I always have to request my colleagues for assisting in delivering a technology-integrated lesson. However, I became surprised by knowing smartphones could enhance vocabulary of pre service teachers and Facebook for sharing the opinions. I must have to say that it allows me a freedom to select my desired technologies" (Interview, Instructor-2).*

The instructors' reflections show that *Worked Examples* provide the freedom for instructors to select the appropriate technologies. Furthermore, Instructor-3 revealed that

> *"I used to teach technical subjects that modify often in terms of applications, software versions, and hardware tools. Worked Examples provide a roadmap to consider various instructional strategies to deliver required contents. However, even various pedagogical strategies could be considered but I was unable to utilize pedagogies in my classroom" (Interview, Instructor-3).*

Reflection by Instructor-3 revealed that *Worked Examples* could be much more profitable in a technical subject compared with non-technical subjects. Based on the classroom observations, it could be further elaborated that classroom instruction based on the *Worked Examples* provide a technology-integrated instruction in terms of content, pedagogy, and technology compared with the classroom instruction that was based on the typical instruction used previously.

Pre-service Teachers' Learning Outcomes

Learning outcomes of pre-service teachers were investigated based on their level of perceived knowledge and paper-based test. To achieve this, three instructors (In the study 3 cases was understood as class delivered by 3 instructors) divide their regular classes into two groups: treatment and control group based on random sampling for three weeks (18 class lectures), where treatment group of pre-service teachers were taught via *Worked Examples* and control group of pre-service teachers were taught via as usual instructions. The pretest and posttest were similar test instruments for perceived knowledge, which is adapted by Bajracharya (2015). It consisted of 33 items, which were on scale from one to five from strongly disagree as 1 and strongly agree as 5.

Pre-service teachers' perceived knowledge.

Table 1 shows the mean (M) and standard deviation (SD) of all three cases.

Table 1
Mean (M) and Standard Deviation (SD) of Pretest and Posttest for Treatment and Control Groups (N=28)

		Pretest		Posttest	
Cases		M	SD	M	SD
1	Treatment (n=14)	3.00	.555	3.64	.497
	Control (n=14)	2.71	.469	2.86	.143
2	Treatment (n=14)	3.43	.514	3.93	.267
	Control (n=14)	3.93	.267	4.07	.267
3	Treatment (n=14)	3.64	.497	3.93	.469
	Control (n=14)	3.71	.469	3.86	.535

Table 2 represents a paired t test analysis of the three cases. In Case 1, significant differences were not found in the scores between the treatment group (M = 3.00, SD = .555) and control group (M = 2.71, SD = .469), t (13) = 1.749, p = 0.104, d = 0.47. The effect size of this analysis was Cohen's d = 0.47 and was found to be a small effect d = 0.20. These results suggest that there were no differences in learning outcomes in the pretest between the treatment and control groups. The results also indicate that both the treatment and control groups were equal in ability for learning outcomes before a classroom instruction with a technology-integrated lesson plan based on a *Worked Examples* (the term intervention is used throughout the chapter in the place of classroom instruction with a technology-integrated lesson plan based on a *Worked Examples*).

However, statistical significance was found in the test scores of the pretest (M = 3.00, SD = 0.555) to posttest (M = 3.64, SD = 0.497). t (13) = -3.798, p = .002, d = 1.01. The effect size for this analysis was Cohen's d = 1.01 and was found to exceed Cohen's (1988) convention for a large effect (d = 0.80). These results suggest that the pre-service teachers in the treatment group performed significantly better in the posttest than in the pretest. It also indicates that the treatment group which gained classroom instruction based on an intervention was large in effect size. Further, the pretest and posttest for the control group were compared as pair 2. The analysis shows that there was no statistically significant difference in the scores for the pretest (M = 2.71, SD = 0.469) and posttest (M = 2.86, SD = 0.143), t (13) = -1.472, p = 0.165, d = 0.39. The size for this analysis was Cohen's d = 0.39 and was found as a small effect (d = 0.20). These results suggest that the effect of the perceived knowledge was also small.

Table 2
Paired t Test of Pretest and Posttest of Treatment and Control Groups (N=28)

			Paired t test						
Cases			Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		T	df	Sig. (2-tailed)
						Lower	Upper			
1	Pair	Pretest-treatment-pretest-control	-.286	.611	.163	-.067	.639	1.749	13	.104
	Pair1	Pretest-treatment-posttest-treatment	-.643	.633	.169	-1.009	-.277	-3.798	13	.002**
	Pair2	Pretest-control-posttest-control	-.143	.363	.097	-.353	.067	-1.472	13	.165

2	Pair1	Pretest-treatment-posttest-treatment	-.500	.519	.139	-.800	-.200	-3.606	13	.003**
	Pair2	Pretest-control-posttest-control	.143	.363	.097	-.353	.067	-1.472	13	.165
3	Pair1	Pretest-treatment-posttest-treatment	-.286	.611	.163	-.639	.067	-1.749	13	.104
	Pair2	Pretest-control-posttest-control	-.143	.663	.177	-.526	.240	-.806	13	.435

In Case 2, the pretest score of the treatment group (M = 3.43, SD = 0.514) to posttest (M = 3.93, SD = 0.267), t(13) = -3.606, p = 0.003, d = 0.96 revealed that there was a statistically significant difference with a large effect compared to the pretest score of the control group (M = 3.93, SD = 0.267) to posttest (M = 4.07, SD = 0.267), t(13) = -1.472, p = 0.165, d = 0.39, which showed that there was no significant difference and effect size was also small. Their findings show that an intervention could bring a huge change in perceived knowledge of pre-service teachers.

Similarly, in Case 2, the pretest score shows that there was no statistical difference in the test scores from the pretest (M = 3.64, SD = 0.497) to posttest (M = 3.93, SD = 0.469), t (13) = -1.749, p = 0.104, d = 0.46 in treatment group, and test scores from the pretest (M = 3.71, SD = 0.469) to posttest (M = 3.86, SD = 0.535), t (13) = -0.806, p = 0.435, d = 0.21.The effect size revealed that even if the differences were not found to be statistically significant, the level of knowledge perceived by treatment group was high.

Pre-service teachers' paper-based test. The study involved three different cases and the mean scores of the paper-based test of Cases 1, 2 and 3 were measured to identify the specific content knowledge of the PST among the treatment and control groups. Table 4.3 represents the paper-based test scores; PST in the treatment group secured higher test scores in the posttests compared to that of the pretests. For instance, PST from the control treatment group scored 10% (pretest) to 67% (posttest) in Case 1, 15% (pretest) to 78% (posttest) in Case 2 and 18% (pretest) to 61% (posttest) in Case 3.

Accordingly, the increase in test scores was also found in the control group of PST. For example: 15% (pretest) to 31% (posttest) in Case 1; 19% (pretest) to 43% (posttest) in Case 2; and 19% (pretest) to 51% (posttest) in Case 3. These results indicate that the PST under the treatment group appeared to perform better than that of the control group. These findings justify that the pre-service teachers had performed better with an instructors' instruction with Worked Examples.

Table 3
Paper-based Test Scores

Cases	Treatment group		Control group	
	Pretest (%)	Posttest (%)	Pretest (%)	Posttest (%)
1	10	67	15	31
2	15	78	19	43
3	18	61	19	51

Discussions and Conclusions

This study attempted to develop and validate a *Worked Examples* to assist instructors in creating a technology-integrated lesson plan by providing the set of guidelines (Appendix A) to address an extraneous cognitive load of instructors.

Several studies suggest that *Worked Examples* is an

effective instructional strategy to explain the several steps for novices (Clark, Nguyen, Sweller, 2006; Renkl, 2005; Salden, Aleven, Schwonke, Renkl, 2008). In the present study, *Worked Examples* were offered to assist instructors for creating technology-integrated lessons, found to be very effective as self-guided instructions. This finding reinforces the belief of Chi, Bassok, Lewis, Reimann, and Glaser (1989) and Kalyuga, Chandler, and Sweller (2000) that highlighted the idea that *Worked Examples* actively explained how to accomplish the tasks. Even more, Renkl (2005) added that both active and passive instructors need to be active with self-paced instructions such as *Worked Examples* in addressing an extraneous cognitive load.

The present study revealed that *Worked Examples* with various chunks in terms of key phases and key components assist instructors in creating technology-integrated lessons in carrying out technology integration during classroom instruction. As highlighted by Alber (2011), providing support by breaking information into the chunks is a crucial step for achieving concrete structure. The process of breaking such instructions into the chunks is termed as scaffolding (Alber, 2011). This concept was initially carried out by Wood, Bruner, and Ross (1976) in learning, who define it as a process to enable a novice in achieving a goal via self-guided instructions.

Furthermore, the study revealed that *Worked Examples* also save time in creating technology-integrated lessons, even for instructors with low technological competencies. The study done by Bauer and Kenton (2005) highlighted that instructors were not carrying out technology integration even if they were highly educated, skilled with technology and capable of overcoming obstacles because they still needed extra time for creating technology-integrated lessons. Thus *Worked Examples* can assist in carrying out technology integration.

As highlighted by Renkl (2005), *Worked Examples* consist of a well-structured step in accomplishing the final goal. Even more, Van Gog, Kester and Paas (2011) revealed that instructors can develop their skills to produce several strategies based on a well-structured step provided by *Worked Examples*. In the present study, findings from observations revealed that instructors design and develop the technology-integrated lessons/ and materials simultaneously instead of accomplishing in two phases as prescribed by *Worked Examples*. In addition, findings from the interviews also revealed that the present study provided *Worked Examples* having the integration of texts and diagrams assisted instructors to bring out such strategies, which was also found by Tabbers, Martens, and van Merriënboer (2000) and highlighted that such integration of text and diagrams are the key characteristics of an effective *Worked Examples*.

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Appendix A

Worked Examples

Course Name:	Chapter:	Duration of Class:

Lesson Objectives:	To know what the instructors needs teach and what pre-service teachers' need to learn and understand by the end of the class.

Topic of the lesson

Pre-service teachers need to learn

Pre-service teachers need to understand/ be able to do at the end of class

STEP 1

Gain Attention and Inform Objective:	• To ensure pre-service teachers are ready to learn while the instructors teaches the lesson. • To inform pre-service teachers of the objectives/outcomes to help them understand what they are to learn during the course.	*Time:*

Contents	*Pedagogies*	*Technologies*
• Lesson keyword • Lesson objective	Open questions, Ice breakers, Rubrics and many more.	Black-board, PowerPoint with over-head projector, YouTube videos, and many more.

STEP 2

Recall and Present the Content:	• To help pre-service teachers make sense of new information by relating it to something they already know or to something they have already experienced. • To present the content effectively.	*Time:*
Contents	*Pedagogies*	*Technologies*
• Preservice teachers' previous experiences/concepts • Organize and chunk content in meaningful way • Provide examples	Demonstration, Readings, Web discussion, Discussion, Lecture, Game, Peer work, Quizzes and many more.	Mobile phones, VCD, PowerPoint with over-head projector, YouTube videos, social network and many more.

STEP 3

Performance and Feedback:	• To activate pre-service teachers' processing to help them internalize new skills and knowledge. • To confirm correct understanding for application and allow them to receive feedback on individual/group tasks.	*Time:*
Contents	*Pedagogies*	*Technologies*
• Elicit pre-service teachers' activities • Elicit recall strategies • Help preservice to integrate new knowledge. • Confirmatory feedback • Analytical feedback	Role play and many more 	PowerPoint with over-head projector, Word, Excel, Google application, YouTube videos and many more

STEP 4

Enhance retention transfer to new situations:	To help the pre-service teachers to internalize the information.	*Time:*
Contents	*Pedagogies*	*Technologies*
• Debrief the class on what had been learned. • Summarize the learning that has been occurred and apply it to a new situation • Write a reflection on their learning experience	Open Question, Quiz's, written comments and many more.	Comment sheet, PowerPoint with over-head projector and many more.

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Significant Impact of Successive On-Job Trainings on Performance of Technical Employee in Biotech Industry

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Abstract

Training is essential to the growth and economic well-being of industry and technical employees are main key of any Biotech Industry. Therefore training is required to nourish employee skills of all level in any organization. There are two possible ways to train the industrial employees through on-job training i.e. common for all employees and specific for work oriented at their work place. In this study, we performed five task specific on-job trainings by trainers acquainted with theoretical, practical and demonstration skills. In other words, the training is one of the most pervasive methods for enhancing individual knowledge, skills, ability and attitude as well as improving job performance in the work environment. The current study designed only five On-job training programs and the successive On-job trainings performed in upcoming continuous three years from 2016 to 2018. Training effectiveness must cause behaviour change i.e. skill transfer for job performance, thereby resulting in organizational performance. The results of this study shows that on-job training is strongly and positively affects the technical employee in terms of result oriented, target achievement and improvement in their work quality.

Keywords: Biotech industry, Technical employee, Manufacturing and Quality Control Departments, On-job trainings, Assessment, Learning parameters

Introduction

In current scenario, there have been rapid technological changes and automation on existing jobs, which have called for continual training and re-training of employees in Biotech Industries. Some technical employees in the industries may lack the immediate knowledge of their jobs, either due to inadequate qualifications or lack of relevant technical skills to continue. Training will help to upgrade employees' knowledge, skills, ability and attitude to suit modern technological changes in the relevant fields in these industries. As we know that employee of any organization is a blood stream especially technical employees in Biotech industries. Inadequate skill, knowledge, ability and attitude of those employees in Biotech industry are therefore some

of the factors responsible for inefficiency and low productivity in the industry. Training could be a positive measure for re-directing various employees' perspectives and ideas to the goals and objectives of the organization (Elnaga & Imran, 2013). Employee's behaviour or attitude could either favour or retard the growth of an organization. Training can improve the performance and productivity of the employee and ensure that they have the relevant skills. Training focuses on doing activities today to develop employees for their current jobs and development is preparing employees for future roles and responsibilities (Kinicki & Kreitner, 2007).

Training is an important and imperative tool for the organization to revamp the performance of the entire employee for organizational growth and success. It is beneficial to both employers and employees of an organization. An employee will become more efficient and productive, if he or she is trained well. Firms can develop and enhance the quality of the current employees by providing comprehensive training and development. Training is essential not only to increase productivity but also to inspire workers by letting them know how important their jobs are and giving them all the information they need to perform those jobs (Anonymous, 1998). The general benefits received from employee training are: increased job satisfaction and morale, increased motivation, increased efficiencies in processes, resulting in financial gain, increased capacity to adopt new technologies and methods, and increased innovation in strategies and products.

Training methods could be classified as cognitive and behavioural approaches. Cognitive methods provide verbal or written information, demonstrate relationships among concepts, or provide the rules for how to do something. These types of methods can also be called as off-job training methods. On the other hand, behavioural methods allow trainee to practice behaviour in real or simulated fashion. They stimulate learning through behaviour which is best for knowledge development, skill development and attitude change. These methods can be called as on-job training methods. Thus; either behavioural or cognitive learning methods can effectively be used to change attitudes, though they do so through different means. Cognitive methods are best for improving knowledge and skills and behavioural methods for skills (Blanchard & Thacker, 1998). The decision about what approach to take to training depends on several factors that include the amount of funding available for training, specificity and complexity of the knowledge and skills needed, timeliness of training needed, and the capacity and motivation of the learner. Different forms of on-job training methods were previously discussed in detail such as job instruction technique, job rotation, coaching and apprenticeship training (Alipour, 2009). In present study, the purpose of the successive on-job training session is to provide employee with task-specific knowledge and skills in work area for continuously three years from 2016 to 2018. The knowledge, skills, ability and attitude presented during on-job training are directly related to full fill their job requirements and to improve in their work quality.

Objective of the study

The present study was based on need of on-job trainings and their impact assessment for technical employees from manufacturing and quality control departments in Bharat Immunologicals and Biologicals Corporation Limited (BIBCOL), Bulandshahr, Uttar Pradesh, India as a Biotech industry. On the basis of training need, total five trainings were taken under consideration and conducted with the following objectives:

i) To identify on-job training for technical employees of manufacturing and quality control departments on the basis of need.
ii) To design and conduct the trainings.
iii) To develop and maintain the training records in our organization.
iv) To assess the training impact on the departmental technical employee

Methodology

On-Job trainings and its Participant

A total 54 numbers of employees were participated in five on-job trainings from manufacturing and quality control departments of BIBCOL, Bulandshahr, Uttar Pradesh, India viz. 26 employees from manufacturing and 28 employees from Quality Control department of the organization. It is also necessary to make the employees use the newly acquired skills from the training program. Therefore all technical employees from Manufacturing and Quality Control departments are included in the on-job training as participants.

As described in Table 1, on-job trainings (Training Code OJT-001 to OJT-005) of the employees were designed according to need of the participants. The trainings were organized from OJT-001 to OJT-003 in month of April 2016 and OJT-004 to OJT-005 in month of June 2016 after approval of the Training Head. Records of individual participant for the trainings were maintained such as mark attendance, lecture deliver in form of power point presentation, demonstration, evaluation through question & answer session and monthly report submission.

Trainer for On-Job trainings

For on-job training to be effective, the best is to have the appropriate expertise trainer within the organisation. An advantage using an existing employee to become a trainer is that trainer already has experience in the field and knowledge of the work within organization. An on-job trainer acquainted with title knowledge, preparation of power point slides, effective presentation skill and dealing with topic related difficulties. Finally trainers are an officer of grade not less than Manager Designation from production, quality control, quality assurance and training departments. There are two categories of trainers on the basis of their responsibilities as previously recommended (Solter, 1997).

i) Conducted trainers for performing the training through lecture, demonstration etc.
ii) Panel trainers for supervision, evaluation, assessment etc.

Data presentation and analysis

Present study data was compiled and presented in tabular form by using Microsoft word software. Assessment of all five on-job trainings impact through learning parameters (theoretical, practical and demonstration) need for employees was determined according to previously described method of Pfau, R.H. (2005) and following symbolic grading system was adapted and applied to measure the learning parameters on the employee's performance after completion of the on-job trainings. Symbols for the grading system stand for:

i) + = somewhat useful in developing such learning
ii) ++ = often very useful and effective
iii) +++ = highly useful and very effective

Successive three years On-Job Trainings

Out of 54 numbers participants, only 10 participants were attended training program from OJT-001 to OJT-005 in three consecutive years from 2016 to 2018. Data of these participants were compiled and analysed as described above.

Study Findings and its Interpretation

All the successive On-Job trainings were designed as per need of technical employees and prepared the schedule. These trainings were conducted according to the schedule and it was communicated to the trainees and trainers in well advance. During the period of the on-job trainings, the employees were showing positive response and attending with interest. Record of the conducted training was maintained for its impact assessment purpose after completion of the trainings.

Identification designed and conducted on-job trainings

Total five on-job trainings were included in this study and detail of the trainings with code and department wise participants as described in table 1. The departmental employees were participated actively with positive and learning attitude in training codes from OJT-001 to OJT-005 and were assessed

after successfully completion. A total 54 employees were participated in all five on-job trainings and training wise participation of the employees summarized in following table for different on-job trainings. Employees from manufacturing and quality control department were participated in OJT-001 to OJT-004 trainings. OJT-005 training was specially designed for quality control employees and they were only participated in the training.

Table 1: *Number of participants from Manufacturing and Quality Control division in On-job Training*

Training Code	Title	Department		Total
		Manufacturing	Quality Control	
OJT-001	Weighing Tasks and Procedures	05	09	14
OJT-002	Pipetting Techniques in QC Testing Procedure	07	06	13
OJT-003	Working in a LAF	07	04	11
OJT-004	Non-Destructive filter integrity testing	07	03	10
OJT-005	Cell Maintenance and Preservation	00	06	06
	Total	26	28	5

Development and maintained of the training records

Records of on-job trainings from OJT-001 to OJT-005 were generated and maintained date-wise in form of marked attendance of each trainee; lectures with the topics, brief outline of lectures, stepwise detail of presentations and demonstrations of individual conducted trainer including name, designation & signature for each training and supervision, evaluation & assessment record of individual Panel trainer including name, designation & signature for each training.

Impact assessment of the trainings

Impact assessment of on-job training on the technical employees in our organization was done individually on the basis of maintained the records. Results of individual on-job training was compiled and summarized with different learning parameters (theoretical, practical and demonstration) for departmental technical employee as participants in following table 2.

Table 2: *Learning parameters of each On-Job Training for participants*

Training Code	Learning Parameter	Knowledge	Skills	Abilities	Attitudes
OJT-001	1. Theoretical				
	1.1. Action	+++	++	+++	++
	1.2. Coaching	++	++	++	++
	1.3. Job Instructions	+++	+++	+++	+++
	1.4. Reading	++	+++	++	++
	1.5. Feedback	++	+++	+++	++
	2. Practical				
	2.1. Action	+++	++	+++	+++

	2.2. Coaching	++	++	++	++
	2.3. Job Instructions	+++	+++	+++	+++
	2.4. Learning observation	+++	+++	+++	+++
	2.5. Feedback	+++	+++	++	++
	3. Demonstration				
	3.1. Action	++	+++	++	++
	3.2. Briefings	++	++	++	+++
	3.3. Orientation	++	++	+	++
	3.4. Learning by doing	+++	++	+++	+++
	3.5. Feedback	+++	++	+++	++
OJT-002	1. Theoretical				
	1.1. Action	++	++	+++	+++
	1.2. Coaching	+++	++	++	++
	1.3. Job Instructions	+++	+++	+++	+++
	1.4. Reading	++	+++	+++	++
	1.5. Feedback	++	++	++	+++
	2. Practical				
	2.1. Action	+++	++	+++	+++
	2.2. Coaching	++	++	+++	++
	2.3. Job Instructions	+++	+++	+++	+++
	2.4. Learning observation	++	+++	++	+++
	2.5. Feedback	+++	+++	++	++
	3. Demonstration				
	3.1. Action	++	+++	++	++
	3.2. Briefings	++	++	++	+++
	3.3. Orientation	++	++	+	++
	3.4. Learning by doing	+++	++	+++	+++
	3.5. Feedback	+++	++	+++	++
OJT-003	1. Theoretical				
	1.1. Action	++	++	+++	++
	1.2. Coaching	++	++	++	+++
	1.3. Job Instructions	++	+++	+++	++
	1.4. Reading	++	+++	+++	+++
	1.5. Feedback	++	++	+++	++
	2. Practical				
	2.1. Action	++	++	+++	+++
	2.2. Coaching	++	++	++	++
	2.3. Job Instructions	++	+++	+++	+++
	2.4. Learning observation	++	++	+++	++

	2.5. Feedback	+++	+++	++	+++
	3. Demonstration				
	3.1. Action	++	++	++	++
	3.2. Briefings	++	++	++	++
	3.3. Orientation	++	++	+	++
	3.4. Learning by doing	+++	++	++	+++
	3.5. Feedback	+++	++	+++	+
OJT-004	1. Theoretical				
	1.1. Action	++	++	+++	++
	1.2. Coaching	++	++	++	+++
	1.3. Job Instructions	+++	+++	++	+++
	1.4. Reading	++	++	++	+++
	1.5. Feedback	++	+++	+++	++
	2. Practical				
	2.1. Action	+++	++	+++	+++
	2.2. Coaching	++	++	++	++
	2.3. Job Instructions	+++	+++	++	+++
	2.4. Learning observation	+++	++	++	++
	2.5. Feedback	+++	+++	++	++
	3. Demonstration				
	3.1. Action	++	+++	++	+ +
	3.2. Briefings	++	++	++	+++
	3.3. Orientation	++	++	+	++
	3.4. Learning by doing	+++	++	+++	+++
	3.5. Feedback	++	++	++	++
OJT-005	1. Theoretical				
	1.1. Action	++	++	+++	+++
	1.2. Coaching	+++	++	++	+++
	1.3. Job Instructions	+++	+++	+++	+++
	1.4. Reading	++	+++	+++	+++
	1.5. Feedback	++	+++	+++	+++
	2. Practical				
	2.1. Action	+++	++	+++	+++
	2.2. Coaching	++	++	+++	++
	2.3. Job Instructions	+++	+++	+++	+++
	2.4. Learning observation	+++	+++	+++	+++
	2.5. Feedback	+++	+++	++	++
	3. Demonstration				
	3.1. Action	++	+++	++	++

3.2. Briefings	++	++	++	+++
3.3. Orientation	++	+++	+	++
3.4. Learning by doing	+++	++	+++	+++
3.5. Feedback	+++	++	+++	++

All technical employees from manufacturing and quality control departments were participated actively with learning enthusiasm throughout the on-job trainings. The trainings have positive impact on knowledge, skills, abilities and attitudes of the participants from manufacturing and quality control departments except orientation ability in the demonstration. In this study, the single positive (+) symbol was also considered significant because it represents here "somewhat useful in developing such learning". The participants are engaged in their specific job only and they performed first time the orientation for demonstration purpose during the study. As inferred from the responses of the participants and trainers, the on-job training course objectives were accomplished and it might be contributed in enhancement of different learning parameters for employees, which in turn contributed to the overall outcome at their work places.

Significance of Successive On-Job Trainings

The study was initiated in the year 2016 and completed in 2018. Data was complied and analysed on the year wise and the grading system was applied to measure the learning parameters on the employee's performance after completion of the on-job trainings. Finally, the impact assessment was done to find out improvement of the successive On-Job trainings within the continuous three years from 2016 to 2018. Data was presented and discussed in detail of the On-job trainings that were conducted in the year 2016. But data for the year 2011 and 201 was not shown.

Significance of successive On-job trainings was indicated for all the three years. The data was summarised in table 3 and represented in form of the significance with the learning parameters of theoretical, practical and demonstration for conducted On-job trainings during the year 2016, 2017 and 2018. Overall data was found significant as "S" indicated in the table except orientation ability in the demonstration during the year 2016. But the parameter was improved significantly in OJT-001, OJT-002 and OJT-003 during the year 2017 and OJT-005 in addition of the three training was found significant improvement in the year of 2018. This study finding revealed that participants can be improved significantly their learning parameter through successive On-job trainings.

Table 3: *Year wise successive impact of On-Job Trainings*

Year	Learning Parameter	Training code OJT-001	OJT-002	OJT-003	OJT-004	OJT-005
2016	Theoretical					
	Knowledge	S	S	S	S	S
	Skills	S	S	S	S	S
	Abilities	S	S	S	S	S
	Attitude	S	S	S	S	S
	Practical					
	Knowledge	S	S	S	S	S
	Skills	S	S	S	S	S
	Abilities	S	S	S	S	S
	Attitude	S	S	S	S	S

	Demonstration					
	Knowledge	S	S	S	S	S
	Skills	S	S	S	S	S
	Abilities	Sn	Sn	Sn	Sn	Sn
	Attitude	S	S	S	S	S
2017	Theoretical					
	Knowledge	S	S	S	S	S
	Skills	S	S	S	S	S
	Abilities	S	S	S	S	S
	Attitude	S	S	S	S	S
	Practical					
	Knowledge	S	S	S	S	S
	Skills	S	S	S	S	S
	Abilities	S	S	S	S	S
	Attitude	S	S	S	S	S
	Demonstration					
	Knowledge	S	S	S	S	S
	Skills	S	S	S	S	S
	Abilities	S	S	S	Sn	Sn
	Attitude	S	S	S	S	S
2018	Theoretical					
	Knowledge	S	S	S	S	S
	Skills	S	S	S	S	S
	Abilities	S	S	S	S	S
	Attitude	S	S	S	S	S
	Practical					
	Knowledge	S	S	S	S	S
	Skills	S	S	S	S	S
	Abilities	S	S	S	S	S
	Attitude	S	S	S	S	S
	Demonstration					
	Knowledge	S	S	S	S	S
	Skills	S	S	S	S	S
	Abilities	S	S	S	Sn	S
	Attitude	S	S	S	S	S

Note: "S" stands for significance and "Sn" stands for significance except orientation ability in the demonstration.

Improved capabilities, knowledge and skills of the talented workforce proved to be a major source of competitive advantage in a global market (McKinsey, 2006). To develop the desired knowledge, skills and abilities of the employees, to perform well at their workplace, requires effective training programs that may also effect employee motivation and commitment (Meyer & Smith, 2000). In order to prepare their workers to do their job as desired, organizations provides training as to optimize their employee's potential. Most of the firms, by applying long term planning, invest in the building new skills by their workforce, enabling them to cope with the uncertain conditions that they may face in future, thus, improving the employee performance through superior level of motivation and commitment. When employees recognize their organization interest in them through offering training programs, they in turn apply their best efforts to achieve organizational goals, and show high performance on job. In continuation of this, current study was conducted and its impact assessment was also performed. It has also indicated that the on-job training courses have positive impacts on learning parameters as well as enhance other positive impacts such as employee enhanced confidence level, create working environment, improved quality of work and output (Truitt, 2011 & Shah, 2016). The training courses have contributed to the personal development such as improved communication skills, work knowledge and other relevant skills necessary for performing tasks that were covered in the trainings. It is well documented that on-job training is a most effective tool through designing basics (Timsal, 2016) and specific training programs and it is always useful to improve employee understanding towards their work within organization (Hameed & Waheed, 2011). Therefore the training is crucial and result-oriented of each employee in any organization. In present study, training department initiated, marked, developed and performed on-job trainings with learning parameters like theoretical, practical and demonstration aspects to nourish and update technical skills and job proficiency of technical employees, those are working for manufacturing and quality control departments in our organization as a Biotech industry.

Conclusions

The on-job trainings are based on basic techniques and used in routine basis by technical employees working in manufacturing and quality control departments. Therefore the training were needed and conducted in our organization. For assessment of the on-job training impact on the departmental technical employee, the study was carried out in our organization. The conducted trainings were found effective in terms of their learning parameters based on theoretical, practical and demonstration and grading for knowledge, skills, abilities, and attitudes of the technical employees. In spite of the above, there are other important benefits such as interaction with other departmental employee and healthy technical discussion during the training within organization. Finally, present study suggested that the successive On-Job trainings have positive impact on the departmental technical employees based on the different learning parameters, if it has conducted on yearly basis.

In-spite of the above, these trainings have some limitation such as conducting the training sequentially on define period like yearly basis, its consistency, experienced trainer, attend regularly by trainee etc. The training is being considered as key component to improve the employee theoretical and practical knowledge and skill in Biotech industries. Impact of the on-job training program was impressive and remarkable based on analysis and findings of the study. Therefore it is strongly recommended that this type of on-job training is being organized in Biotech and other industries like Biopharmaceuticals, pharama for the better future of company as well as their employees.

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Study on Occupational Health Status of Secondary Level Teachers Teaching in Government School of Kathmandu District

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Abstract

Introduction: *Occupational health hazards of teaching includes ill health, poor physical posture and confusion that plays a vital role in triggering other diseases which are associated with musculoskeletal, cardiovascular, gastrointestinal, vocal cord, skin and other health problems. Most of the teachers develop occupational health problems after being enrolled into this profession, identification of such problems should be carried out in the initial phase of the profession.* ***Objective:*** *To access the health status of teachers in terms of age, gender, health problem and types of health problem. To access the association between gender, years in profession and health problem.* ***Methodology:*** *Cross-sectional study was conducted among teachers of selected secondary level Government school of Kathmandu i.e. 50 schools. Sample size of 270 was calculated. Random sampling was used for school selection. Response rate was 95.5 % i.e. 258 samples were collected.* ***Result:*** *Majority of the teachers i.e. 69% were facing some kind of health problem. Respondents who were above 30 years were found to have different kinds of health problems. Significant association between teaching for more than 10 years and health problem was observed among Males (72.7%, P<0.05) and females (82.5%, P< 0.05).* ***Conclusion:*** *The proportion of health problem was slightly higher among male teachers than in female teachers. It is necessary to improve the work standards and quality of life of teachers, through establishment of routine health checkups and strong coordination between District Education office and District Public Health office.*

Keywords: Occupational Health, Occupational disease, Occupation, Teachers, Secondary School

Introduction:

According to World Health Organization and International Labor Organization. As noted by Lie, A., Baranski, B., Husman, K. and Westerholm, P. (2002) occupational health is the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations by preventing departures from health, controlling risks and the adaptation of work to people, and people to their jobs.

Mesaria, S. and Jaiswal, N. (2015) stated that school

is an integral part of society which is responsible for determining the way for future generation. Teachers are the main role-player who help in shaping young children to morally valued and cultured adults and they have their overall physical and mental development responsibility. According to Erick, P. and Smith, D. (2013) teachers sometimes utilize their physical and mental capacity to the fullest which results in unwanted stress and physical and mental health problems. They get insufficient time to recover from these, which ultimately causes lifelong health issues. The role of teacher is not only to teach students but also to maintain class discipline, built lesson plans, evaluate overall performance of the students, dictate students, other works such as check note books, take students for field visit and sports activities, due to these burdens of activity, teachers suffer from physical and psychological health issues.

Occupational health hazards of teaching includes ill health, poor physical posture, confusion etc that plays a vital role in triggering other diseases which are associated with musculoskeletal, cardiovascular, gastrointestinal, vocal cord related, skin related and other health problems Manikandan (2012). As given by Nagra, V. and Kaur, H. (2014) Other problems related to teaching profession are depression, blood pressure, anger, irritability, eye related, respiratory, constant negative thoughts, neurological, etc. Attention should be paid to employee's health which includes physical, spiritual, psychological and emotional factors, for all this to be achieved consideration of occupational health factors should be given upmost priority. Zadeh M.N. and Fakhri S.L. (2011) states that most of the teachers develop occupational health problems after they have been enrolled in their profession, identification of such problems should be carried out in the initial phase of their profession.

In Nepal almost 20000 workers have experienced accident at their workplace, this resulted in nearly 200 deaths as cited in the article by Gautam, P.R. and Prasain, N.J. (2011). Monitoring, recording, reporting and evaluation of occupational health safety and formulation of policy is very poor. Establishment of safe and environmental friendly facility, hazard free workplace and insurance scheme for workers will help in increasing the productivity and efficiency of the workers which ultimately lead to development of the nation. As stated by Gautam, P.R. and Prasain, N.J. (2011) there is an urgent need to safeguard the health of workers which can be done through designing safe work system to reduce risk, engineering controls, organizational and administrative methods, personal protective equipment and proper segregation of work time or routine.

Occupational Health of teachers teaching the secondary level in government school of Nepal is an important issues since it deals with the occupational health status of the teachers and the different kind of health problems they are facing due to their occupation. As teachers are the guardians of the students, their health status directly affects the health of the students. So, to find out the actual health condition of the teachers, such kind of study is very important and needs to be done. Teachers are the role model of students. Their health status affects the health of students who are the building blocks of nation. (Note-This study was conducted in 2013 AD September – October)

Objectives:

1. To access the health status of teachers in terms of age, gender, health problem and type of health problem
2. To access the association between gender, years in profession and health problem

Research question:

1. What is the health status of Teachers teaching in Public School of Kathmandu District?
2. What is the association between gender, years in profession and health problem?

Limitations.

This study was not conducted using the randomization sampling technique so it has a very low generalizability. The sampling technique is purposive and the study design was cross sectional, which in itself isn't the robust design. The sample size in terms of age, sex, and ethnicity were not in proportional manner. Also the study questionnaire are more knowledge based testing rather than finding the prevalence of occupational diseases.

Methodology:

A Cross-sectional study was carried out with the purposive sampling, on selected secondary level Government school of Kathmandu Districts which accounted of 50 schools. Using population of school teachers as 903 and Error 5%, sample size of 270 was calculated. Random sampling (Lottery Method for school selection), and simple random sampling method was used for respondent selection). Finally, the response rate was 95.5 % i.e. 258 samples were collected. Semi structured questionnaire was used as a tool for data collection and data was collected by self-administered method. The questionnaire was pre-tested. Participants of the pre-test were not included in the study. Other staffs of school like administrative staffs, security guards, office helpers and teachers outside from the Kathmandu valley were also excluded. Confidentiality of the information obtained was maintained and assured to all the participants during the process of data collection.

Data analysis:

The collected data were edited and coded. Data was analyzed by using the statistical package for social sciences (SPSS) version 16 and Micro soft Excel. Chi square test was used to know the level of significance. Level of significance was $p < 0.05$.

Result:

In Kathmandu valley there are 153 secondary level schools which have approximately 903 secondary level teachers. Through random sampling method 54 schools were selected out of which 270 samples were given self-administered questioners to fill. From the 270 teachers who received questionnaire 258 completed and returned the questionnaire. This equates to 95.5% response rate.

The study found that majority of the respondents were males 193 (74.8). Age of the respondents also indicates that there are high number of teachers who are more than 30 years of age, which is approximately 232 (90.0%) teachers who are more than 30 years. Teachers from Brahmin ethnic group were found to be in high number that is 175 (67.8%) followed by Cheetri 45 (17.4%), Janajati 34 (13.2%) and Dalits 4 (1.6%).

Majority i.e. 169 (66.0%) of the teachers had done their Master's degree while 72 (28.1%) teachers had completed their bachelor's degree. 120 (47.6%) teachers had income level of NRs. 20000 to 25000 whereas 90 (35.7%) teachers had income level of NRs. 15000 to 20000. Teachers having work experience of more than 10 years were 172 (66.67%) where as teachers having work experience of less than 10 years was found to be 86 (33.33%). (Refer Table 1). Maximum respondents, 178 (69.0%) said that they were suffering from health problem. (Refer Table 2).

It was seen that irrespective of gender, respondents who were above 30 years were suffering from health related problems, and large number of females who were above 50 years were facing health problems i.e. (90.9%). (Refer Table 3)

Males were observed to have different health problems than compared to females. Likewise in terms of age group, respondents who were above 30 years were found to have different kinds of health problems in higher number. (Refer Table 4) Chi square test was used to observe the association between gender, health status and years in profession. Significant association between teaching for more than 10 years and health problem was observed among Males (72.7%, $P<0.05$) and females (82.5%, $P< 0.05$). Similarly for both the sex significant

association was observed between more than 10 years of teaching and health problem, where 69.0%, ($P<0.05$) of the teachers were having health problem. (Refer Table 5)

Table 1: Socio demographic data

Indicator	(N)	(%)
Gender		
Male	193	74.8
Female	65	25.2
Age		
20 to 29	26	10
30 to 39	91	35.3
40 to 49	105	40.7
50 and above	36	14.0
Ethnicity		
Bhramin	175	67.8
Chettri	45	17.4
Janajati	34	13.2
Dalit	4	1.6
Educational Status		
Intermediate	9	3.5
Bachelors	72	28.1
Masters	169	66.0
M Phill / PhD	6	2.4
Monthly Income		
15000 – 20000 NR	90	35.7
20000 – 25000 NR	120	47.6
25000 – 30000 NR	31	12.3
More than 30000 NR	11	4.4
Years in Profession		
10 years and less	86	33.3
More than 10 years	172	66.7

From the socioeconomic table it seems that at the time of study i.e., 2013 AD, September-October, the monthly income range of the teachers was about NRs. 20,000-25,000 and most of participants had more than 10 years of teaching experience. Majority of the respondents were from the Brahmin ethnic group whereas the dalits and janajati had low sample size. Most of the respondents were in the age group of 40-49 years. While the number of participants of 20-29 age groups were few. Moving to the gender, majority of the respondents were male. Majority of the respondents had a qualification of master's degree.

Table 2: Health Status of the respondent

Health problems	N	(%)
Present	178	69.0
Absent	80	31.0
Total	258	100.0

Table 3: Prevalance of disease with, Age, Gender and Health problem

Age In years	Gender	Health problems		Total
		Present	Absent	
20 to 29	Male	7 38.9%	11 61.1%	18 100.0%
	Female	3 37.5%	5 62.5%	8 100.0%
	Total	10 38.5%	16 61.5%	26 100.0%
30 to 39	Male	50 68.5%	23 31.5%	73 100.0%
	Female	14 77.8%	4 22.2%	18 100.0%
	Total	64 70.3%	27 29.7%	91 100.0%
40 to 49	Male	54 70.1%	23 29.9%	77 100.0%
	Female	21 75.0%	7 25.0%	28 100.0%
	Total	75 71.4%	30 28.6%	105 100.0%
50 and above	Male	19 76.0%	6 24.0%	25 100.0%
	Female	10 90.9%	1 9.1%	11 100.0%
	Total	29 80.6%	7 19.4%	36 100.0%

Table 4: Prevalence of health problems with Age, Gender and type health problem suffered by the respondent.

Type of health problem Suffered	Gender		Age in Years			
	Male	Female	20 to 29	30 to 39	40 to 49	50 and above
Respiratory	37 67.3%	18 32.7%	3 5.5%	20 36.4%	20 36.4%	12 21.8%
Cardiovascular	9 69.2%	4 30.8%	0 .0%	4 30.8%	6 46.2%	3 23.1%
Gastrointestinal	20 83.3%	4 16.7%	1 4.2%	6 25.0%	12 50.0%	5 20.8%
Neurological	8 72.7%	3 27.3%	0 .0%	4 36.4%	4 36.4%	3 27.3%
Psychiatric	10 76.9%	3 23.1%	2 15.4%	7 53.8%	4 30.8%	0 .0%

Dermatology	9 90.0%	1 10.0%	0 .0%	8 80.0%	1 10.0%	1 10.0%
Bone and Joints	32 60.4%	20 38.5%	3 5.8%	20 38.5%	23 44.2%	6 11.5%
Stress and stress related problems	42 85.7%	7 14.3%	3 6.1%	20 40.8%	20 40.8%	6 12.2%
ENT	52 65.0%	28 35.0%	5 6.2%	34 42.5%	31 38.8%	10 12.5%
Throat and vocal problem	42 70.0%	17 28.8%	5 8.5%	24 40.7%	24 40.7%	6 10.2%
Eye related problem	32 72.7%	12 27.3%	2 4.5%	9 20.5%	21 47.7%	12 27.3%
Total	130	49	10	64	75	29

Analysis

From the above data we can tell that male teachers are at higher risk of having health problems. This may be due to other confounding variables and lower sample size of females. From the table, all of the diseases have high prevalence in male like eye related problems, throat and vocal problems, respiratory, cardiovascular, gastrointestinal, Neurological, Psychiatric, Dermatological, bone and joints etc. From the table, it becomes clear that the teachers in the age group between 30-49 years have high rate of disease prevalence. The major reason behind this may be due to high exposure to the risk factor. higher sample size at this group and the other associated variables and compounding variables. The 50 plus age group have shown low prevalence of occupational disease, which may be due to lower samples and may be due to other factor like lower sample size and confounders.

Table 5: Association between Gender, Years in Profession and Health problem

Gender	Health Problem	Exposure to teaching Environment (In terms of years)		Total	χ^2 Value	P Value
		10 years and less	More than 10 years	130 67.4%		
Male	Present	34 55.7%	96 72.7%	63 32.6%	5.477	0.016 (**)
	Absent	27 44.3%	36 27.3%	193 100.0%		
	Total	61 100.0%	132 100.0%	48 73.8%		
Female	Present	15 60.0%	33 82.5%	17 26.2%	4.033	0.044 (**)
	Absent	10 40.0%	7 17.5%	65 100.0%		
	Total	25	40	178		

	Present	49 57.0%	129 75.0%	178 69.0%	8.706	0.003 (**)
Combined	Absent	37 43.0%	43 25.0%	80 31.0%		
(Male and Female)	Total	86 33.3%	172 66.7%	258 100.0%		

*(** P value is less than 0.05)*

A) In Male Teachers:

We wish to test the hypothesis by using chi-square as a test tool to find out whether there is an association between health problem and the years of exposure in categories among male teachers i.e. greater than 10 years and less than 10 years. At this case the null hypothesis will be -There is no association between the years of teaching exposure and the occupational disease, whereas the alternative hypothesis is- There is association between the years of exposure and the occupational disease. The p- value at this case is found to be 0.016 which is less than 0.05. Which means we reject the Null hypothesis and accept the alternative hypothesis. Hence it is verified that the occupational disease prevalence is higher in those male teachers having more than 10 years of teaching exposure.

B) In Female Teachers:

We wish to test the hypothesis by using chi-square as a test tool to find out whether there is an association between health problem and the years of exposure in categories among female teachers i.e. greater than 10 years and less than 10 years. At this case the null hypothesis will be, there is no association between the years of teaching exposure and the occupational disease, whereas the alternative hypothesis is, there is association between the years of exposure and the occupational disease. The p- value at this case is found to be 0.044 which is less than 0.05. Which means we reject the Null hypothesis and accept the alternative hypothesis. Hence it is verified that the occupational disease prevalence is higher in those female teachers having more than 10 years of teaching exposure.

Discussion:

In the present study it was found that of the total 258 respondents 74.8% of them were male and 25.2% were female, whereas a study done conducted by Chong et al., 2010 revealed that number of males were less 27.9% then compared to females 72.1%. While a study in Nepal by Kayastha, D.P. and Kayastha, (2012) revealed that number of males were 80.6% than compared to females 19.4%. The prevalence of health complaints was found to be very high: 93.75 percent of the respondents reported they were or had been suffering from at least one type of health complaint. It is an comparatively serious public health issue whereas a survey conducted in Kathmandu had revealed that 70 percent of the school teacherssuffered from one or more diseases (Bishwokarma, 2012). A study conducted by Pahadi TN in Banke district have shown that10 most frequently reported health complaints among the teachers were tiredness (93.75%), eyestrain (78.75%), anxiety (75.0%), voice disorder (75.0%), sleep problems (71.25%), shoulder pain (71.25%), neck pain (66.25%), headache (62.5%), sadness/depression (53.75%), and lower-back pain (53.75%).

Age of the respondents also indicates that there are high number of teachers who are more than 30 years of age, approximately 90% teachers are more than 30 years old whereas only 10 % teachers are less than 30 years of age. A similar figure was seen in a study conducted by Chong, L.E. and Chan, H.A. (2010) and Erick et al., (2013) where about 80% respondents were above the age of 30. According to WHO, health is a state of complete physical, mental and social wellbeing and not merely

the absence of disease. Health determines the overall capability of human being. This study is also focused in the general health status of the teachers. The respondents were asked if they had suffered from any kinds of health related problems, maximum number of respondents that is 69% told that they were suffering from health problem while the remaining 31% told that they had not suffered from any kinds of health related problems. This indicates that there are high numbers of teachers who are suffering from at least one kind of health related problems. These health problems has resulted in their performance issues as they could not give their full effort while teaching the students.

The study revealed that the number of female teachers i.e. 73.8% suffering from any one kind of health related problem was slightly higher than the male teachers i.e. 67.4%, a similar result was also seen in a study conducted by Hingnekar, H.R. and Ahmed, N.D. (2014) where health related problems was seen in 60% and 64% of the male and female respondents respectively.

Of those 69% respondents who had suffered from health problems, 19.4% of the respondents suffered from ENT, likewise 14.6% suffered from throat and vocal problem, 13.3% of the respondents which is similar to the study carried out by Smith et al.,(1997), suffered from respiratory problem, 12.9% suffered from Bone and joint problem , 11.9% suffered stress and stress related problem, 10.7% suffered from Eye related problem and other common health issues were Gastrointestinal, cardiovascular, Neurological Psychiatric and Dermatology problems. In a study conducted by Chong et al., (2010) out of 24 Item severities scale for musculoskeletal problem, the mean was 7.98, whereas out of 21 Item severity scale for Gastrointestinal, the mean was 4.97 and out of 15 Item severity scale for Eye problem, the mean was 4.15.

While accessing the correlation between age, gender and health we observed that there was no significant difference between gender, age and health problem (Refer table 4). Nevertheless, with the increment in age, the teachers started to suffer from at least one health related problem. For the age group of above 50 years, female teachers had higher number of health issues as compare to their male counterparts. In respect to the type of health problem suffered, more male teachers suffered from at least one type of health related problems as compared to the female teachers. With the increment in age the prevalence of health problem also increased. Larger numbers of health problems were seen in participants between the age of 30 to 49 years. Health problems like, Dermatology, Gastrointestinal, Stress and related factors, were higher among male teacher, while other problems like Bone and joints problem, respiratory and Ear Nose Throat (ENT) was higher among female teachers.

Association between Gender, Health Status and Years in Profession having significant difference was observed in the study (P value < 0.05). In both genders, health problems was present in those who had 10 years or more working experience. The proportion of health problem was higher among males then females.

Conclusion:

Majority of the teachers i.e. 69% were suffering from at least one health related problem. Significant association related to teaching for more than 10 years and health problem was observed among Males (72.7%, $P<0.05$) and females (82.5%, $P< 0.05$). It is necessary to improve the work standards and quality of life for the teachers. Awareness program, workshops and trainings program regarding Occupational Health should be provided to the teachers. Strong coordination between District Education office and District Public Health office should be established in order to improve the health status of the teachers teaching in secondary level government schools. Regular health check up in the workplace is equally important to screen the disease and treat it in time. Teachers teaching in the secondary level Government school were only selected for this study. Although this isn't the robust study design,

this study can give some insight on the occupational disease prevalence in teachers teaching in the secondary level Government school within the Kathmandu valley. Healthy universities and healthy colleges are the basic requirements to promote the health of the teachers.. Promotion of healthy work environment in schools, colleges and universities across the country should be given top priority for the protection and promotion of teachers' health. Appropriate health promotion programmes targeted at teachers should be developed. The results of this study demands teacher friendly universities and colleges, which is the most neglected part of public health in Nepal. The instructors working in the TVET sectors may also have such problems of occupational diseases, so we may have to conduct a similar research in the TVET sector too.

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