

School Production Unit: A Production-based Learning Model in the Context of TVET Polytechnic Institutions

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Abstract

School-based production unit is a part a school practice area where material and human inputs could be combined for the creation of goods or provision of services. It is one of the important categories of work-based learning among cooperative work, field trips, internship and youth apprenticeship. Production-based learning model is a set of procedures that need to be adopted by the instructor to facilitate students to learn actively, interactively and in a participatory way, so as to produce either goods or services needed by society. This model can facilitate students in preparing to enter the world of work and gain competence as well as the entrepreneurial spirit. School-based production unit promotes work-based learning, increases the relevance of the curriculum, promote academic achievement and employability skill. It enhances entrepreneur sprit of learners, helps in income boost, increases the cooperation/collaboration ability with society and market likewise improves learning motivation, creativity and attitudes. Management of seed capital, human resources, modalities of operation and benefit sharing among stakeholders from income of products or services are major issues of production units. These issues should address before the planning of production.

Keywords: *TVET, School production unit, Work-based learning, Production-based learning model, employability skill*

Introduction

School-based production unit is a portion or part of the school laboratory or school practice area where material and human inputs could be combined in the creation of goods, items or provision of services. Production unit as an industrial sector where goods and/or services are produced by students under the supervision of qualified

instructors (Chukwu & Omeje, 2018). In Nepal, school production unit is a Council for Technical Education and Vocational Training (CTEVT) encouraged mechanism for its constituent school to enhance the relevance of schools with the view that the programme integrates classroom learning and learning transference through creativity

and innovations in making products and providing services (CTEVT, 2020). A Technical and Vocational Education and Training (TVET) institution having production units has the capacity of ensuring that students acquire market based skills beyond the requisite, ensuring that abstract learning are reinforced with practical skills, also that curriculum addresses the market demand and above all inculcate in the recipients the entrepreneurial spirit, innovative and creative skills necessary to be self-reliant (Ananda & Mukhadis, 2016). TVET institutions are required to prepare students to become productive workers who are able to meet the needs of the world of work and to change the status of the learners from being dependent on income from others to be an independent productive earner(Aw, 2019).

Production unit is set up for the production or services in institution and sales of products and services by ensuring students' acquisition of adequate practical skills, sufficient knowledge and certify a student's level of readiness to face the world of work before graduation (Ogumbe, 2015). Production/service unit also helps for the profiting and sustaining of hosting polytechnic institutions. Production or service units in TVET institutions are not only school laboratory or workshop, the objective of its establishment is a way to ensure continuous practice of knowledge learnt in classroom through meaningful engagement of students in real life (world of work) encounters amidst customers and masters of the skills (Chukwu & Omeje

2018)

School-based Production unit is one of the important categories of Work Based Learning (WBL) among cooperative work, field trips, internship and youth apprenticeship (Rabiu & Yusri, 2019). This learning also applied student-centered learning, according to Harmer (2014), instructor act as tutor that helps student in their learning process by supporting them, if necessary. It is expected that with less teacher control, students have more responsibility for their learning through school production unit. Production Based Learning focuses more on learners as learners and on issues that are authentic and relevant to be solved using all the knowledge they have or also from other sources. Students are required to be able to work in groups to achieve better results by the Production Based Learning model. Production Based Learning starts from defining problems regarding production, then students and instructor conduct discussions to equalize perceptions about problems and set goals and targets to be achieved. After that students look for planning of production materials and start to collect information about these materials from the library, the internet, or through personal interviews or observations.(Agustina,2019)

The objective of the school based-production unit is to provide students with work-related experiences to translate theory to practice within the school setting.

These units are linked to the technical subjects that are among the core subjects

at diploma level, namely the supply of facilities/equipment and the training of the faculty/staff, and translating these into real-life benefits for transferring learning from theory to practice, developing raw materials into finished goods, and integrating both learning with production principles into the related trade subjects by applying the school based enterprise. The school based-production unit helps students and local stockholders to start up and grow their new businesses through the delivery of educational resources for building capacity and empowerment. They provide work-based learning in the institute so that learners do not have to wait in vain for an in-plant or on job training. This school based-production unit are linked to the respected trade subjects taught in these TVET schools and the production units of the technical institutions.

Establishment and operation of production unit in TVET institutions is expected to provide on-the-job training of students and provide commercial activities to sustain the day to-days running of the institution as well as help students to fulfill the concepts of learn, earn andy pay (CTEVT, 2020). Production units is set up for the production and sales of products while ensuring students' acquisition of sufficient practical skills, adequate knowledge and attitudes of production in line with area of specialization, and certify a student's level of readiness to face the world of work before graduation. (Ogumbe, 2015)

Production-Based Learning Model

The model is a reference which is arranges in a logical and systematic sequence to guide the conduct of an activity, while the method and approach are different ways or strategies for the implementation of learning, with the aim of involving active involvement of learners during the process of his/her education (Ganefri & Hidayata, 2015). The model are helpful in explaining that is difficult to describe and it may be an illustration and representation of something (Brown, & Green, 2016). According to Genfri 2013 Learning is a process of interaction between instructors and students who can support them to learn by active participation, interactively and use of practical methods, approaches, and media and appropriate learning environment.

Learning models is a direction from the implementation of learning which are applied by instructors with the aim to guide the students being active in the learning process. Learning model is one of the important mechanisms in supporting the learning process. Learning model is a procedure or steps which are needed by the instructor to facilitate their students to study actively, participative, and interactively with the aim to be able to achieve the aims of technical and vocational education and the development of self-potency of students optimally. (Ganefri & Hidayat, 2015) Therefore, learning model is important to develop by empowering and organizing production unit in institutions, to achieve desired goals. The learning model is work procedure which is regular

and systematic and containing of thoughts, description or explanation of a concept.

Production-based learning model is a process or steps that need to be done by instructors to facilitate students to learn by active participation and making more interactive and practical, with competence-oriented produce a product either goods or services needed by society (Ganefri, 2013). This learning model can facilitate students in preparing to enter the real world of work environment and increase their capability as a whole with entrepreneurial spirit (Ganefri & Hidayat, 2015). Technical and vocational education is responsible for preparing individual for the world of work for gaining skills, knowledge and attitude to serve community as well as improve his/her socioeconomic condition. Practical knowledge and work-based learning is important for individual to gain employment. Production-based learning model is in line with the concept of vocational education. Production-based learning model is a process of expertise or technical and vocational skills that are designed and implemented based on standard working procedures and real job to produce goods or services that suit the demands of markets or customers.

Production-based learning model emphasizes learning, where students can undertake the production of goods or services that meet the standards of the business world and society(). Production based learning model allows arrangement of the curriculum needed the business, industry, services and the community with the availability of the

quality of learners who are competent, qualified students can be seen from the increase in study results (Ganefri, Hidayat, Kusumaningrung, Dewy, & Anori, (2017). Students are invited to produce innovative quality products based on the needs of the market, industry and society are standardized, after the completion of production students must make a business plan from products made (Kusumaningrum, Ganefri & Hidayat, 2015), all of these activities realized or not are an impact on the increasing of interest in student entrepreneurship. Production-based learning model is the learning model that gives learners the opportunity to improve their skills and capability to think and work together. In the learning process with this production-based learning model, students are required can be as active as raises significant questions relating to the goods and services to be made.

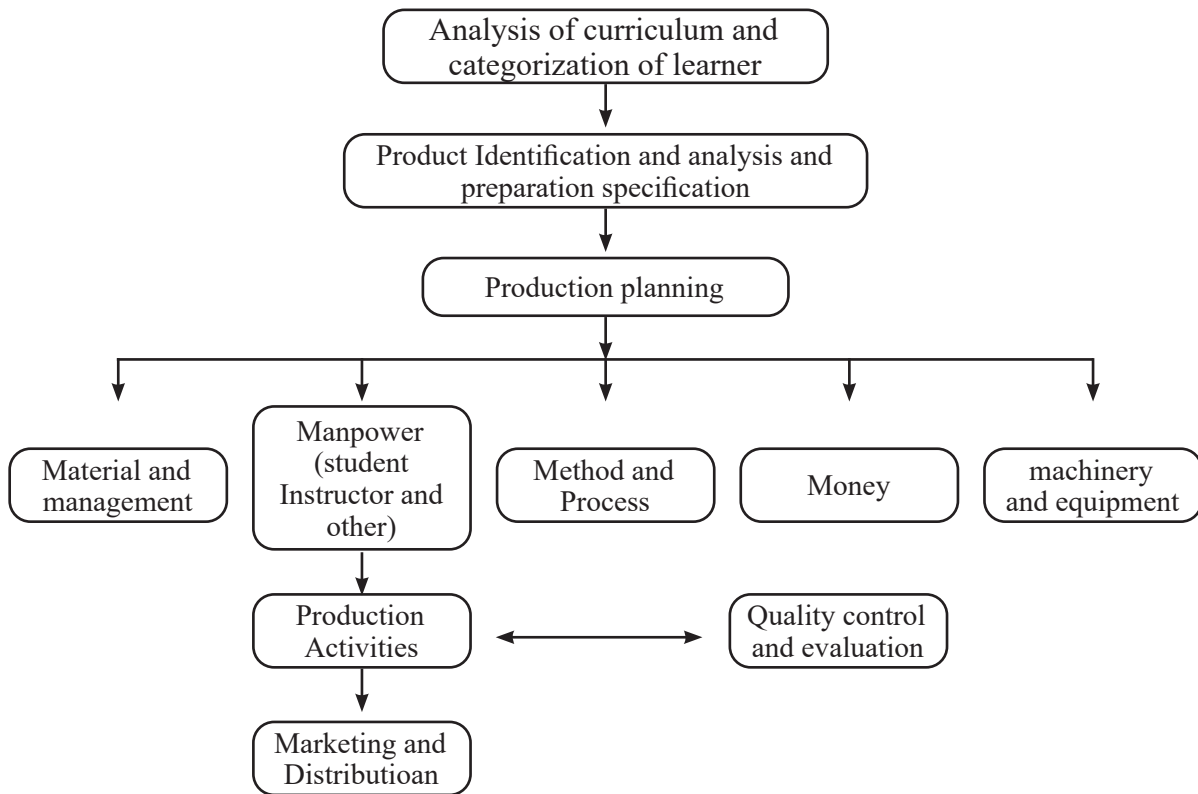
Improvements should make to make students feel motivated since they are given real problem, as in real manufacturer, each member has a specific task and responsible with their task. Students will have to make a standard operational procedure (SOP) on each production step for production with the help of qualified instructors, so that production process will control and evaluate. Production based learning improve student's hardkill as well as soft skill (employability skills) especially the ability to work in the group (Hanney & Savin, 2013), in production based learning, students are exposed to a complex series of interaction and active participation between group members and

they develop their communication, planning and team working skill with their team.

Figure 1 shows the production based learning model in TVET school. Production Based

and preparation specification according to market and community need. The next step is production planning. Production planning is the crucial step for production unit. It is a

Figure-1 Production Based Learning Model in TVET School



Learning starts from analysis of curriculum and categorization of learner likewise defining

problems related to their technical subjects, then students conduct discussions to equalize perceptions about problems and set goals and targets to be achieved After that students look for product identification, analysis

planning and management of raw materials, human resources management, management of money, management of proper machineries and equipments and management work proceeder with workstations to fulfill manufacturing orders on time. Students can use optimum available resources with help of a good production plan . After production plan students have to start production as per

their planning under the supervision of the skilled instructor with regular monitoring to assure the production of quality of product according to predefined specifications

Application/Benefits of production unit in TVET Sector

Promote Work-based learning(WBL)

School-based Production unit is one of the important categories of Work Based Learning (WBL) among cooperative work, field trips, internship and youth apprenticeship (Rabiu & Yusri, 2019). Work-based learning (WBL) is an experiential learning programme which uses work environment as a crucial element of the curriculum. WBL entails beyond the notion that it implies two characteristics: learning in a work context and learning through practice (Amadi, 2013). School based-production unit provides students with work-related experiences to translate theory to practice within the school setting, These units are linked to the technical subjects that are among the core subjects at diploma level. School-based Production unit holds career development as one of its elements that provides an exposure of different work settings to learners which then helps them to make appropriate decisions for their future career choices, Hence, School-based Production unit enhance WBL by learning at work, learning through work, and learning for work.

Increase the relevance of the curriculum

Production unit affords the opportunity to

see the relevance and application of learning through work based learning (Ogumbe, 2015). By enhancing theory and practice integration, production unit increase the relevance of the curriculum by addressing issues like curriculum mismatch, curriculum failure in addressing market demands, obsolete curriculum etc in expressing the challenge of TVET teaching and learning in terms of meeting the expectations of the labor force. It also enables TVET institutions to regularly check the relevance of teaching and learning in meeting market demands from first experiences with new technologies and products through school-production unit.

Increase students' academic achievement and employability skill.

With the help of Production-Based Learning, students get knowledge, technical and generic skills, and attitudes. In Production-based learning students and instructor create tasks or problems which are more concrete, and arrange potential resolutions by using theoretical and practical knowledge. Production-based learning can be an effective model for producing gains in academic achievement to increase employability skill (Ergul & Kargin, 2014). An employability skill are set for skills, knowledge and attributes that likely make individual to increase, maintain and excel in employment, gain new employment, move between roles within the same institution and to get promotion (Rasul, Bekun & Akadiri 2017). There are three categories of employability

skills stated in the literature across the world, namely Core (technical) Skills, Generic (soft) Skills and Personal Attributes (Zaharim, Yusoff, Omar, Mohamed, & Muhamad, 2009). Production-Based Learning (PBL) provides students with an opportunity to learn these skills which cannot be obtained in the classroom leaning in technical and vocational training institutes (Cunningham, Dawes & Bennet, 2004). In production-based learning, Instructor can focus on the development of a range of skills like personal, social, communication, problem solving, creativity and organizational skills, that result students can acquire core technical, academic, and employability skills by working in the real world of work environments (Holzer & Lerman, 2014) as well as professional practical experiences, learning about business and marketing practices, and engaging in production and work-based learning activities (Hoffman Spada, & Fox, 2016). Production units in schools provide employment opportunities for graduates. As a result, young creative, innovative and talented graduates are attracted and engaged actively in the production sector of the school where their potentials are greatly harnessed.

Increase entrepreneur spirit

Production-based learning, which is one of category of work-based learning, is one example that can help learners to foster their interest in entrepreneurship. Production-based learning model can help learners in preparing to enter the world of work and competence with the entrepreneurial spirit

(Ganefri & Hidayat, 2015). Entrepreneurial spirit makes one ready for job creation over job searching. It is imperative therefore that entrepreneurship through production units has the capacity to transform the copper economy to production-based economy using the wealth of knowledge, attitudes and skills available in institutions. This can be extended as well when individual recipient of education transfers successfully the idea of production as observed and inculcated. Production unit is required as a cure to the dependency culture. Entrepreneurship Interest is a motivation to start doing entrepreneur activities, in the form of services or goods. However, this entrepreneurial interest is also similar with doing something different and interested innovation and breakthrough in the institutions. Entrepreneurial spirit cannot be taught by conventional educational methods, so that the necessary changes not only in the learning process but also the development of an entrepreneurial culture (Eka, Panjaitan & Muslim, 2015) The implementation of production based learning with entrepreneurship approach using workshop based lectures, qualitatively improved the quality and meaningfulness of the learning production-based learning should also be innovative, unique, and attentive on solving problems interrelated to the lives of the learners or the needs of the community or the local industry. According to Gugerty, Foley, Frank, and Olson, (2008), School-based production provide linkages, context, and realize the learning resources that are not

learned in the classroom, it provide a product or service to the problems that exist in the community or school, face the challenge of a different nature with modern education to engage students in a cooperative effort (community collage), it increase students' awareness about the relationship between social welfare and employment, similarly it allows the students to feel proud of their work and it allow students to develop confidence in their leadership abilities (Gugerty, Foley, Frank, & Olson, 2008)

Income boost and sustainability

Production unit is expected to lead TVET institutions to self-sustainable through income. generation through product or services. Students can increase their income in cash by selling of goods/services provided, commercialization of knowledge and skills etc. that could be ploughed back into the system for better production capacity (Chukwu & Omeje 2017). The practice of production unit over time will enable TVET institutions stand the test of time, become sustainable, and reduce dependency on external resources and save the economy. It helps learn, earn and pay the concept and helpful for students having poor economic condition.

Platform for increases cooperation/ collaboration ability

With production-based learning, students work in teams and they collaborate learning in their group discussions, increases collaboration and communication behaviors.

All students have the opportunity to interact and develop skills with the incorporation of cooperative or collaborative learning (Ganefri & Hidayata, 2015). Collaboration in the learning process is a higher level of cooperation. The production-based learning has several characteristics that would stop the students from one way activities of classroom study and make them more active, participatory and dynamic. Production-based learning help students in learning and improving skills in the problem solving. The production-based learning support students to develop real-world skills such as the capability to collaborate well with others people, make decisions and help them in facing a complex problem solving, better communication and self-management (Yalçın,Turgut, & Buyukkasap 2009). Students develop their self-confidence and independence to work together in a real-world setting by collaborating on a task which they have defined for themselves (Blumenfeld., Soloway,, Marx, Krajcik, Guzdia & Palincsar, 1991). production-based learning helps students to improve their social relationship, often lead to increase their attendance in work-place and reduce discipline problems in the classroom.

To increases students' learning motivation, creativity and attitudes toward learning

Production-based learning increases the motivation and creativity of students. When teachers successfully implement production-based learning, students can be highly motivated, active involvement in their

learning, and produce better, high-quality work (Blumenfeld et al., 1991). Production-based learning meets the students' needs with different levels of skills and learning styles. Morgil et al. (2008) found that there is a direct relationship between students' attitudes toward activeness with their performance. Students can learn a lot with Production-based learning compared to traditional methods. In the application of the production-based project, the students benefit from simulation experiments practice. Simulation experiment practice becomes their visual resource and also they can look back on when needed.

Issues to manage production units in TVET school Budget Allocation and Managemnet: In the TVET institutions where equipment are available, funds become a challenge. In Nepal, Council for Technical Education and Vocational Training (CTEVT) had allocated budgets for school-production unit to promote work-based learning in its constituent polytechnic institute. It is lacking in other community and private TVET schools. In the same way, an institution with a clear vision of her intended production/service unit can map out budgeting strategy from internally generated revenue to operate their production units. (Chukwu & Omeje, 2017).

Human Resources Managemnt: The human inputs required for proper take off could be insufficient especially in TVET institutions where technical and technology staff are required and number of members are

few. Use of students and their managemnet in production is also a challenge. In the light of this, employment should create for individuals with the capacities who should be paired with students and younger staff members for assistance. Nevertheless, institutions intending to float a production unit could begin with outfits where it is most capable to handle in order to reduce initial cost implications (Chukwu & Omeje, 2017).

Modalities of Operation: Vision, mission and objective of the institute, school management relationship with workers-teachers and students, income distribution and sharing are important areas in working document. All standard operating proceder should made and validate them with help of the expert before starting production. School production units are for both learning/academic and commercial purposes. Like such students' time management is considered in the planning for proper exposure and sufficient practical experiences. Efforts of teachers and instructors should ensure that students are not relegated to passive players and observers but are actively involved in the entire stages. More so, the relationship of the workers with the teacher/instructors is vital in achieving the dual purpose of production units. There should be stipulating on workers' job security to foster their confidence to share technical information easier, enable trust and cordial rapport with all involved.

Benefit Sharing: Income distribution proceed with disbursement, and management

issues are most important issues to run school production unit. Sharing of benefit obtaining from selling product and providing service from school production unit should be on the basis of standard rules and regulation. Allowances and incentives should be provided and paid to all involved persons in percentages in which all are agreed. It is believed that the support, sustenance, growth and expansion of any production unit hinges majorly on how its modalities are articulated and the degree of acceptance it receives among workers in TVET institutions.

Illustration of a Case

In Nepal, school production unit is a Council for Technical Education and Vocational Training (CTEVT) encouraged mechanism for its constituent school to increase work-based learning practices. CTEVT had allocated budget for establishment of production unit to each constituent school that can improve the student skills through work practices. Bhimdatta Polytechnic Institute (BDPI), Baitadi, is one of the constituent school of CTEVT running school production unit to develop learners' skills and ability to think and work together, to enhance their level of readiness to face the world of work before graduation, and to promote learn, earn and pay concept. Currently BDPI is producing off seasons vegetables, mushrooms, fish and poultry production through school production unit. BDPI is planning to produce paver block through production unit from next months through its production unit.

Conclusions

Production-based learning is one of the important learning approaches of work-based learning by focuses more on learners as learners in work places of TVET polytechnic institutions. TVET polytechnic institution has the responsibility of producing skilled and competent workforce having entrepreneurial spirit, creative and innovative with employability skill abilities in the students before their graduation. Every TVET polytechnic institutions have the capacity to run at least one production unit according to their trade so as to properly link its learning to demands of the market and societal needs. Production based learning model in TVET can help students in preparing entering the world of real work, be able to develop critical thinking, active participation in learning and having good morale.

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