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HANDBOOK

ONLINE TRAINING MANUAL IN TVET



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INTRODUCTION

ONLINE TRAINING MANUAL IN TVET

The Industry 4.0 has brought innumerable impacts on all socio-economic sectors and completely transformed the current production and governance system. Along with the strong development of information and communication technology (ICT), e-learning has been introduced as a teaching and learning revolutionary approach and an inevitable trend, and is now “booming” in many developed and developing countries, especially amid the COVID-19 pandemic.

The world economy is stepping in the era of the knowledge economy, in which the service sector will be attracting the largest share of workers who are highly knowledgeable. For this reason, the improved quality of education and training will be a crucial determinant for the survival and development of each nation, company, family and individual. E-learning is an effective response to this issue. Learning is not only confined to general and higher education but also TVET, which focuses on skills training.

Online learning is a mode of learning which occurs via a computer or mobile device connected to a server where relevant electronic instructional contents/software are readily stored for the purpose of learning across the distance. Teachers/instructors can upload images and sound via a broadband transmission line or wireless system (Wi-Fi/WiMAX) or local area network (LAN).

E-learning gives an excellent method of course delivery unbound by time or location allowing for the on-demand, instantaneous and immediate provision of knowledge and information. Learners are able to get learning contents/courses from anywhere such as workplace, home or cyber lounge, 24 hours a day and seven days a week.

The bright aspects of e-learning involve the 60% savings of traditional costs related to training venue, classroom facilities, teachers/instructors, etc.; 20-40% decrease of training time (as compared to offline mode) with less distractions and travel time; diverse options for learners to choose, from online instructor-led to interactive self-paced courses where they can have the comfort of learning with their own pace and improve their knowledge by using online libraries; and the consistency of training contents. E-learning also facilitates and tracks on the learner’s participation, learning progress and learning outcomes.

Since the early 2020, the outbreak and complicated developments of the COVID-19 pandemic have brought enormous challenges to the education and training system in general and TVET sector in particular. In this particular context and under the guidance of MOLISA’s and DVET’s leaders, online admission/training has been switched on as a response to the new situation by the TVET sector.

Despite a number of its benefits, e-learning is a new-fangled concept in the TVET system, which is characterised by practical training and skills development. The TVET institutes - which were historically used to the delivery of face-to-face training accompanied by practical experiences - are now required to shift into online format while the teachers’/trainers’ qualifications, experience and IT skills in many of these institutes are inadequately satisfactory. From a legal perspective, e-learning is governed by several regulations which have however not taken into account all possible emerging situations in reality. All these factors have led to various barriers to the adoption of e-learning in TVET sector.

With a view to addressing such obstacles, the DVET’s Department of Formal Training has, with the consent of the DVET’s leaders and the support from the Vietnamese German Programme “Reform of TVET in Viet Nam” (TVET Program implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH on behalf of the Federal Ministry for Economic Cooperation and Development (BMZ), taken its lead in preparing the e-version of “*Online training manual in TVET*”.

The “*Online training manual in TVET*” is a comprehensive and detailed collection of wide-ranging topics on the e-learning delivery within TVET institutes. It is intended to better equip teachers and TVET institutes with more information, knowledge and skills on how to manage and implement their e-learning courses. The Guide consists of the following main parts:

1. Overview of e-learning;
2. E-learning regulations and guidance;
3. User guide of e-learning software;
4. Guidance on the development of an open source LMS;
5. Appendix: Some guiding documents on e-learning.

The “*Online training manual in TVET*” is published on the web platform at: <https://daotaocq.gdnn.gov.vn/>, and its electronic version is also available on the website of the DVET’s Department of Formal Training. The Editors’ Board would like to express its sincere thanks to the Vietnamese – German Programme Reform of TVET in Viet Nam, IEG and experts from various enterprises and technology training institutions for their valuable support during the preparation of this manual.

Due to the limited resources and time, it is anticipated that the “*Online training manual in TVET*” may require further improvements, and the Editors’ Board would welcome all comments/feedback from the TVET institutes, experts and teachers for the following edition(s)/.

THE EDITORS’ BOARD

PART ONE

OVERVIEW OF E-LEARNING IN TVET

1. Concept of e-learning

E-learning is a modern IT-based training approach. With the current strong technological development, e-learning is becoming increasingly preferred for its flexibility and convenience in terms of time and location.

A number of e-learning definitions/interpretations can be found, and here are some of the most prevalent e-learning concepts.

- E-learning is the use of web and internet technologies in learning (William Horton);
- E-learning is a term used to designate ICT-based learning/training activities (Compare InfoBase Inc.);
- E-learning means the learning or training is prepared, delivered or managed using different ICT devices, and is done via a local or wide area network (MASIE Centre);
- The learning is delivered or supported through the use of electronic technologies and the delivery uses different methods such as Internet, TV, video tapes, smart teaching systems and computer-based training (CBT) (Sun Microsystems, Inc.);
- The delivery of training/learning contents, processes and events via electronic media such as Internet, intranet, extranet, CD-ROM, video tapes, DVD, TV, personal devices, etc. (e-learning site);
- "The use of technologies to create and deliver valuable data, information, learning contents and knowledge with the aim of enhancing organisational performance and developing personal capabilities." (Definition of Lance Dublin, Implement e-learning in the business);
- UNESCO defines that e-learning is the learning process that uses electronic and

ICT devices. E-learning enables learners to study anytime and anywhere, and is unbound by time or space in order to give everyone the opportunity to learn and also learn according to their needs (UNESCO, 2010) [99].

- According to Tony Bates, e-learning means all computer and Internet-based activities that support teaching and learning – both on-campus and at a distance, including administrative as well as academic uses of information and communication technologies that support learning, such as software that provides links between student data bases and teaching, for example, class lists, e-mail addresses, etc. Also, e-learning comes in different forms, ranging from classroom aids to fully online learning.

It can be seen that the e-learning concepts and connotations have been discussed by a number of authors, who have shown some of their similar observations on the e-learning as an IT-based learning approach as well as on the relationship between teachers and learners via teaching/learning activities, contents and methods. Thus, it can be interpreted that e-learning is the type of learning that uses electronic and ICT devices to transfer and share the knowledge between teachers and learners and is unbound by time or space.

2. Online vs traditional learning

E-learning shows various advantages, namely: Learning unbound by time and space with the widespread uses of the Internet, thus helping learners accommodate their busy time schedules; High attraction: With the support of multimedia technologies, the learning contents can be in the text formats integrated with images, sounds, videos, etc. in order to increase learners' interactions; Ease of access: It enables learners to choose from a large variety of knowledge units/materials, depending on their knowledge level and internet access conditions; Regular updates: the course contents are regularly updated and adapted to meet the learners' needs; and increased student-to-student and student-to-teacher interactions and discussions. A summary of e-learning advantages and its comparison with traditional mode can be found in the table below (Table 1):



Table 1: Online vs traditional learning

Factors	Traditional	Online
Class/ Classroom	<ul style="list-style-type: none"> - Restricted to the brick-and-mortar classroom space. - It requires sufficient pre-defined number of learners to set up a class. - The learning is confined to fixed contents, timings and seats. 	<ul style="list-style-type: none"> - No boundaries of space and time. - Almost no class concept needed; the learning can take place even with only one learner enrolled in a subject. - It is otherwise feasible if the setup of a class for a certain subject is needed. - Highly accessible and flexible. - Enabling learners to study anytime and anywhere - Self-directed learning - Can be applied to both offline and on-line formats
Learning contents/ aids	<ul style="list-style-type: none"> - PowerPoint presentations/over-head projectors; - Textbooks/libraries; - Videos; - Self-study is not fully exploited; - Limited contents, and restricted/delayed attainment of new knowledge. 	<ul style="list-style-type: none"> - Multimedia, simulations; - Digital libraries; - On-demand; - Synchronous or asynchronous communication; - Maximising learners' self-study capacity and creativity; - Rich contents and easy attainment of new knowledge, technologies, techniques and sciences.
Communi- cation/ interac- tions	<ul style="list-style-type: none"> - Low frequencies of direct discussions/interactions due to the fear of talking; - Restricted discussion topics and number of participants; only small groups can be set up; - Slow circulation and reception of information. 	<ul style="list-style-type: none"> - High frequencies of student-to-student and student-to-teacher interactions with no barriers that hinder participation - Diverse discussion topics with unlimited number of learners participating in 1 or more topics. Teachers/instructors can have complete control over the ongoing developments of discussions. - Quick circulation and reception of information via chat platforms, emails, forums, etc.
Time	<ul style="list-style-type: none"> - Teachers and learners must follow the pre-defined class schedule; - Time-consuming and confined to fixed timings. 	<ul style="list-style-type: none"> - Both teachers & learners can be flexible and customise their own schedules. - Time-saving and the downtime can be better used.
Formal assessment/ exams/ scoring	<ul style="list-style-type: none"> - Costly paperwork - Scoring/grading is time-consuming 	Automatic online scoring/grading system.

Factors	Traditional	Online
Costs	<ul style="list-style-type: none"> - High organisational and management costs - High costs of material printing and distribution for both teachers and learners 	<ul style="list-style-type: none"> - Low organisational and management costs - Almost no cost for material printing. - Savings from travel and accommodation costs for teachers and learners.
Self- practice/ self- assessment	<ul style="list-style-type: none"> - Practical skills are better trained; - Limited number of learning tasks; - The review of student self-assessment tasks is dependent on how fast or slow the teachers are while giving their opinions/feedback. 	<ul style="list-style-type: none"> - Practical skills are not as well-trained as done with the face-to-face mode; - Multiple-choice item system allows unlimited number of learning tasks; - The technology system enables the learners to get the immediate and instantaneous feedback on how well they did the tasks.

3. Several formats of e-learning

As mentioned earlier, e-learning is defined as a training process that uses electronic and ICT devices, and this is a definition of the broadest sense. In fact, e-training takes different formats, depending on the means and extent of IT applications.

■ Traditional classroom instruction

While students attend face-to-face classroom lectures, they are also given, as a normal practice/standard, an access to supplementary technology-based training resources and/or management tools;

■ Fully-online instruction

This can take various forms, and the best known is Massive Open Online Courses (MOOCs). Training programmes are now being delivered purely online in many training institutions, and learners are not required to attend on-campus sessions. Learning resources are provided online, and all interactions/communication and assessments take place via a learning management system or other technology-based platforms;

■ Blended learning

Currently, this is the most prevalent type of e-learning in education and training, especially amid the COVID-19 pandemic. Learners can attend some face-to-face classes and also get resources, have student-to-student and student-to-teacher interactions and participate in learning activities in an online environment. As part of a blended programme, online activities and offline learning/assessment can be mixed in several subjects. For example, learners may be asked to review some lesson contents in advance, complete online test items and simulation activities before practical/mentoring sessions take place in laboratories/practice facilities. Besides, some modules of the blended programme can be offered purely online (Figure 1).

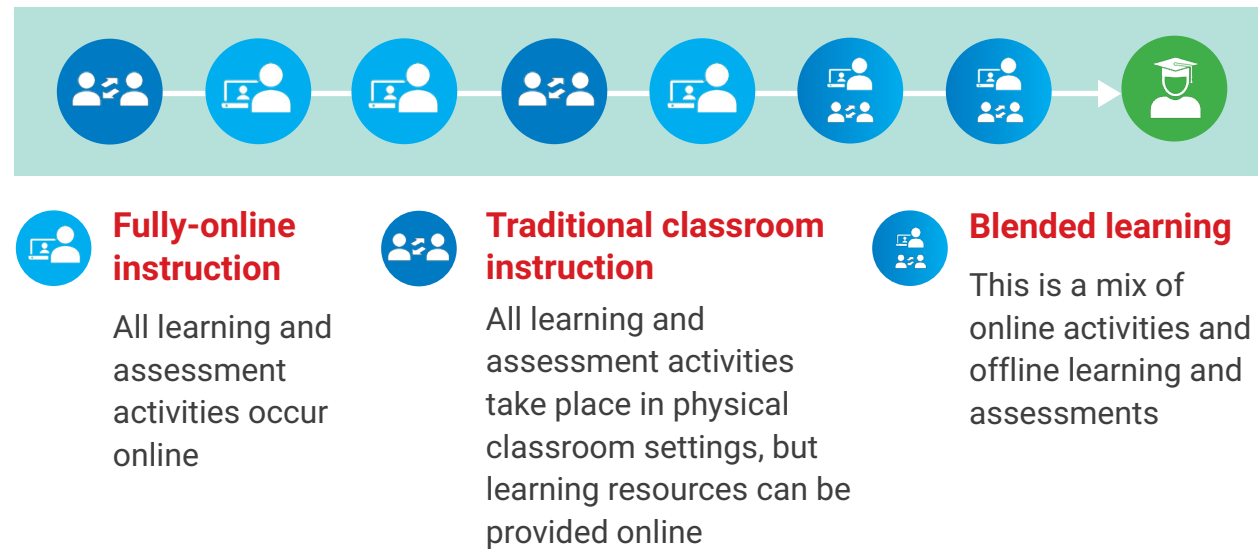


Figure 1. Blended learning structure

(Source: Taken from the research document on "Quality Assurance in Online Learning" by the Melbourne Centre for the Study of Higher Education, University of Melbourne)

4. Different levels of e-learning

- Considering the ICT impacts on learning activities, e-learning can be classified into 5 levels as follows:

+ **Level 1:** e-learning as an assistant mode. The share of internet-based learning activities is 0% -10% with e-learning as an assistant mode to traditional classrooms;

+ **Level 2:** e-learning as a complement/adjunct to traditional mode. The share of internet-based learning activities is 11% - 39% with online learning support;

+ **Level 3:** blended learning. The share of internet-based learning activities is 40% - 59% with an equal mix of both online and face-to-face instruction;

+ **Level 4:** traditional direct training mode as a complement/adjunct to e-learning. The share of internet-based learning activities is 60% - 89% with a significant portion of online learning support;

+ **Level 5:** fully-online learning with 90% - 100% of internet-connected learning activities. The learning takes place on the basis of electronic and digital technologies.

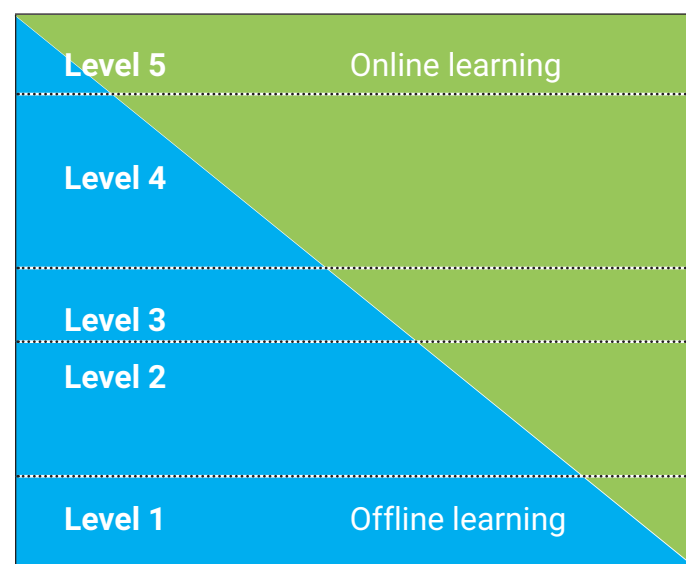


Figure 2. Organisational structure for ICT-mediated e-learning

- From a system-based perspective, the e-learning is divided into 3 levels:

- 1 Online - CBT (Computer-Based Training) & WBT (Web-Based Training), which are the foundation for all e-learning models. At this level, learners study via the Web and electronic materials that allow their self-paced learning with low cost and no instructor(s) needed;
 - 2 Instructor-led e-learning via Internet/Intranet, where the instructor and learner are virtually present at the same time and have interactions. The instructor can give instantaneous feedback/responses, engage students with questions, grade student work and walk them through various options for higher-level courses and programmes. At this level, a LMS is used;
 - 3 Virtual classrooms where the learning takes place via Internet/Intranet, and a LMS is used. A virtual classroom is organised online like a conventional one. "Live" sessions are arranged to discuss "case studies". The teacher can provide hands-on instruction using such streaming technologies as VOD, Elap, econnect, wiziq, etc. Students can study live or watch lectures again at different times and work on assignments offline, similar to what they normally do with face-to-face sessions. All online courses can be managed and monitored like traditional ones.
- These classification levels are introduced on the basis of content distribution

5. The importance and influences of e-learning in TVET

E-learning is becoming increasingly important and gradually transforming the learning models and the way that many targeted population groups (such as learners, students, government officials, etc.) attain their knowledge. Online instruction is making learning more enjoyable, appealing and compelling.

* General roles

- E-learning is the catalyst that is changing the entire learning paradigm in this century. Everyone can, regardless of age and geographical distance, participate in learning. E-learning helps to reduce the pre-existing dependence on passive learning. Learners are no longer required to be present in the brick-and-mortar classroom with the routine "read and write" learning style, but to focus on their interactivity and "learning by doing" instead. Learners can watch flash-based lectures while doing practice on the device;

- E-learning makes learning more exciting, appealing and compelling. Difficult or boring subjects may become easier or more enjoyable;

- E-learning can assist "learning by engaging in discussions and exchanging point of views" via virtual communities;

- E-learning enables learners to manage their own learning pace in the most convenient way. They can apply many different ways of learning such as reading, research, practice, interactions, communication, discussions and knowledge-sharing. E-learning means that learners have access to a huge variety of material and human resources for learning purposes. With e-learning, everyone has his/her own right to pick up a learning mode that best suits their capacities and conditions;

- E-learning can eliminate all barriers of time and space, which may hinder the learners' participation in offline school-based learning programmes. It makes the learning possible for working people while at work, especially at the point when the enterprises have increasingly understood that learning does not only occur in the traditional classroom environment. Learners are no longer required to travel long distances to take a training course. Instead, they have the luxury of choosing to study whenever they want - day or night and wherever that is convenient - from home, work environment or in-house library.

- E-learning has changed the way of teaching and learning and introduced a few "fresh" criteria such as: learning anywhere/anytime, lifelong learning and teaching anyone and at all different levels of learning.

** E-learning benefits for learners*

- E-learning transforms the ways of learning as well as the learners' roles, which are central and proactive in the process of their knowledge mastery. E-learning is best suited for different types of learners for each of them has a unique learning style and can define their own way of how to pursue different knowledge sources. With e-learning, they have also the luxury of deciding on a fluid learning schedule, pace and relevant contents, so this helps enhance training opportunities for a wider range of target population;

- E-learning appeals many groups of target learner population. For the majority of learners, they will be fascinated by multimedia lectures with authentic sounds/images, animation techniques, highly educational games and simulation lessons of virtual lab/library, etc. with higher student-to-content interactions. This enhances the efficacy of learning as well as the students' excitement/passion while acquiring knowledge. For working adults, e-learning provides them with much comfort, flexibility of time and training cost effectiveness, and more importantly, they can pick up what is most needed/relevant for their current jobs/occupations.

- E-learning allows learners to decide on their own learning process including when to learn, how much knowledge is needed and the sequence of lessons. Especially, learners can have immediate and online access to the relevant content/knowledge, review lessons quickly and freely interact with their peers or teachers during the content delivery.

** E-learning benefits for educators*

- E-learning promotes an open education, enhances the ease of access to a huge amount of multi-dimensional information and eradicates all boundaries of space and time. With the presence of multi-dimensional information, educational activities are inevitably more democratic with less one-way imposition and more freedom of thought, thus enhancing independent thinking and capacity development.

- E-learning facilitates the comprehensive renovation of education system, embraces a shift from knowledge provision to learner capacity development, reduces "chalk and talk" lessons, increases self-study and advocates for the "less talking and more learning" by providing learners with better self-study and problem-solving skills. The knowledge transmission/provision will be IT-led, thus helping to compensate teachers' shortage of time and to give teachers better opportunities to teach more relevant learning approaches, problem-solving skills and practical learning experiences.

- E-learning improves the quality and efficiency of teaching work. The quality of education depends a lot on the teacher's capacity; in other words, a right-fit teacher for this work can perform an equal workload of many incapable teachers, and therefore he/she is capable of concurrently teaching learners from different places, whether near or far. Eradicating the boundaries of geographical distance, level of education, local/regional culture, age and even language will contribute to creating a learning and/or life-long learning society.

** E-learning benefits for educational administrators*

- An e-learning system should be a concerted solution, which ensures the more adequate, systematic, transparent, democratic and optimised management of learners, human resources, programmes/courses, training plans, and learning and financial resources. It secures the fair and transparent assessment and evaluation of learners and training institutions, thereby making available extra prospects for educational administrators to introduce a variety of solutions in a timely fashion to improved quality and efficiency of TVET institutes.

- With the rise of Industry 4.0, school-based settings will not be the only solution to knowledge creation and delivery. The cooperative "school-business" model will be fair enough in the sense that there is a need for knowledge products that are the proper mix of "theory and practice". Therefore, e-learning will motivate local educational administrators to shape their human resource development roadmaps in such a way that will produce knowledge products of locally socio-economic relevance.

In addition, as described in the research document on "Quality Assurance in Online Learning" by the Melbourne Centre for the Study of Higher Education, University of Melbourne [38], e-learning helps eliminate barriers of time and space that have the potential of hindering learner's participation in traditional school-based programmes. Recent advances in technology and teaching methods support the evidence that e-learning can provide learners with high-quality and authentic learning experiences - even within "highly-practical" programmes like engineering and medicine.

Thus, it can be said that e-learning has a role to accommodate all learning needs, especially in building a learning and/or life-long learning society.

6. Several limitations of e-learning

** General limitations*

The TVET is mainly characterised by the provision of skills based (competency based) training for learners. The core of TVET-related teaching methods is practical training method, i.e. learning by doing. Therefore, e-learning may not be suitable for this purpose, especially for highly occupational skills in engineering and technology fields.

** At the learners' side*

- Learners' distancing: Distant learners may be geographically isolated from the school, teachers and other students. In addition, the learning that takes place at off-site locations such as the workplace/public places may deteriorate the concentration. It also limits the opportunities for learning communications and explanations.

- Learners' personalised needs: Distant learners come from different backgrounds and places. They have their own jobs and wide range of ages. Thus, their learning needs are not the same, and distance education brings them a control over the learning materials provided, time flexibility for self-study and interactions with teachers. Learners' personalised needs are diverse due to the learner's characteristics and conditions, thus calling for more actions to be taken to support the groups of learners who have similar learning conditions and needs.

- Dropout/absenteeism: The management of learners becomes really challenging due to the geographical distance. The problem of dropout/ absenteeism is found common in e-learning courses;

- Exposure to new learning approaches: Learners will not be familiar with the self-study method and IT applications for the first time they joint the system.

- Online learners may undergo a high level of isolation, frustration and anxiety if there is a lack of interpersonal communication and interactions with others during the course delivery.

** At the teachers' side*

- As online/web-based learning is not conducted on a regular basis, many teachers may be puzzled with how to do it;

- The reproduction of traditional teaching methods in e-learning programmes is not easy for a lot of adaptations/changes are needed;

- Many teachers are not good at IT and e-learning software applications and consequently have less effective performance. Moreover, most of them are used to face-to-face learning environment, and will become more confused or less confident delivering online courses.

** At the side of training institutions*

- Quality control is needed for various stages, from the preparation of training prerequisites to the process of teaching, learning and assessment.

- The level of e-learning and its application varies a lot among TVET institutes due to a number of technological platform challenges. For the success of e-learning delivery, TVET institutes are required to address various cost- and technology-related factors, including their strategies for technology investment and innovation.

- Teachers' online teaching methods and skills. Teachers' lack of confidence and limited understanding of new technologies is more likely to deteriorate the teaching efficiency;

- The nature and level of student-to-student and student-to-teacher interactions in an online learning environment may be less effective than that of traditional training format if there are no assurances for standardised technology infrastructure, training contents and delivery methods.

PART TWO

REGULATIONS ON E-LEARNING IN TVET

E-learning is a new form of training in the TVET sector. Nevertheless, the legal provisions on e-learning are already essentially laid down in the Circular No. 09/TT-BLĐTBXH dated 13/3/2017 stipulating the delivery of intermediate-/college-level training programmes of year-based or module/credit-based mode and the rules for testing, examinations and graduation certification; the Circular No. 33/2018/TT-BLĐTBXH dated 26/12/2018 by the Minister of Labour, War Invalids and Social Affairs stipulating the college-, intermediate- and elementary-level programmes of distance training and guided self-study modes; and many other guiding documents promulgated by MoLISA's DVET, specifically:

- Official Letter No. 345/TCGDNN-ĐTCQ dated 21/02/2020 prescribing the enhanced IT applications in admissions and training delivery amid the COVID-19 pandemic;

- Official Letter No. 587/TCGDNN-ĐTCQ dated 17/3/2020 guiding the IT applications in training delivery amid the COVID-19 pandemic;

- Official Letter No. 1301/LĐTBXH-TCGDNN dated 14/4/2020 providing for the e-learning management, delivery and assessment;

- Official Letter No. 1673/LĐTBXH-TCGDNN dated 15/5/2020 on the continuation of online teaching and learning;

- Official Letter No. 1819/TCGDNN-ĐTCQ dated 11/8/2020 stipulating the admissions and training delivery amid the resurgence of the COVID-19 pandemic.

I. E-learning curricula/syllabi

- The e-learning curricula/syllabi of college, intermediate and elementary levels are precisely the curricula/syllabi that are applicable to corresponding occupations/fields of formal training mode and suitably tailored by the TVET institute to match the learners' competences, training format and training duration;

- The head of the TVET institute takes his/her responsibilities for the preparation or selection, approval and use of college- and intermediate-level e-learning curricula/syllabi in accordance with provisions as set forth in the Circular No. 03/2017/TT-BLĐTBXH dated 01/3/2017 by the Minister of Labour, War Invalids and Social Affairs, providing for the procedures for the curriculum design, appraisal and issuance; arrangements for the development, selection and appraisal of intermediate- and college-level training syllabi. The e-learning curriculum map complies with what are described in Box 1 below.

Box 1. E-learning curriculum map

The curriculum structure for each training occupation/field consists of the following:

1. Title of the training occupation/field
2. Code of the training occupation/field
3. Training level(s)
4. Target learner population
5. Training time
6. Training objectives
7. Course duration
8. Knowledge volume of the entire course
9. List and duration of subjects/modules
10. Detailed description of subjects/modules
11. Guide to the application of the training curriculum

(Article 4, Circular No. 03/2017/TT-BLĐTBXH dated 01/3/2017)

II. Course duration and unit of time as set forth in the curriculum

1. The course duration is calculated on an academic year, semester and week basis

* Year-based course duration

The college-level course duration is 2-3 academic years and necessary to meet the minimum requirement for the knowledge volume of 60 credits.

The intermediate-level course duration is 1-2 academic years and necessary to meet the minimum requirement for the knowledge volume of 35 and 50 credits for learners with upper and lower secondary graduation diplomas, respectively.

The training time includes the actual training period and exam(s), end-of-subject/module test(s), revisions and graduation exam. The actual training period is inclusive of classroom instruction, experimental activities, discussions, internship or integrated theory and practice in the practice facilities.

The time allocated for general activities include school opening ceremony, end-of-year ceremony, semester preliminary review, academic-year review, summer vacation, national holidays, New Year, public labour activities and contingency time.

* Module/credit-based course duration:

This is the duration for learners to accumulate a sufficient number of modules and credits for each training programme.

The training time involves the actual training period and exam(s) and end-of-subject/module test(s). The actual training period is calculated for the instruction of different subjects/modules. Each subject or module consists of 2 to 6 credits, depending on its designed structure. Some special subjects/modules may require less than 2 or more than 6 credits.

The time allocated for general activities include school opening ceremony, end-of-year ceremony, semester preliminary review, school-year review, summer vacation, national holidays, New Year, public labour activities and contingency time.

** The time duration for theories, practice, internship and experimental activities should depend on each training occupation/field and ensure the following:*

- For intermediate level: 25% - 45% for theories; 55% - 75% for practice, internship and experimental activities.

- For college level: 30% - 50% for theories; 50% - 70% for practice, internship and experimental activities.

2. Unit of time as defined in the curriculum

a) General provisions

- The training time is calculated on an hour basis and converted into credits in order to determine the minimum learning volume for each training level. The unit of time is converted as follows:

+ One credit is equivalent to a minimum of 15 hours of theory learning plus 30 hours of self-study and guided individual preparations or 30 hours of practice, discussions and experimental activities plus 15 hours of self-study and guided individual preparations or 45 hours of workplace-based practice, essay work, assignments, project work and graduation thesis. The time for self-study and guided individual preparations are needed for learners to acquire knowledge/skills, but not converted into credit hours in the training programme.

+ The length of a practice/integrated learning session is 60 minutes; and this is 45 minutes for a theoretical session.

+ The length of a practice/integrated learning day should not be more than 8 hours; and this number is not more than 6 hours for a theoretical learning day.

+ The length of a training week should not be more than 40 hours of practice/integrated learning or 30 hours of theoretical learning.

- The course duration is the total time needed for a learner to complete the training curriculum, and elastically applied and suitably determined by the head of the TVET institute for each specific training occupation/field and learners.

- The training delivery is flexibly organised to accommodate learners' needs via face-to-face/online instruction, software and learning materials, but must fulfil the requirements for training contents as set forth in the curriculum.

b) Specific provisions

- E-learning should be undertaken for not longer than 5 hours per day (45 minutes per theory session), in which a minimum of 20-30 minutes in each session should be spent on direct online instruction (if possible), and the remaining time should be for indirect online instruction, discussions, clarifications/explanations and task assignments. If the internet connection is not stable at the learners' side, such time can be used by the teacher for indirect online instruction (as stipulated in the Official Letter No. 587/TCGDNN-ĐTCQ dated 17/3/2020 by the DVET, guiding the IT applications in training delivery amid the COVID-19 pandemic);

- Teaching hours for (both direct or indirect) online instruction should be counted for the teacher engaged. The head of the TVET institute should, on the basis of teaching hours and class size, determine the standard number of teaching hours applicable to his/her teachers in accordance with the Circular No. 07/2017/TT-BLĐTBXH dated 10/03/2017 issued by MoLISA, prescribing the working regime for TVET teachers;

- The daily e-learning hour(s) and activities should be flexibly implemented, depending on the actual conditions and circumstances of each TVET institute as determined by the head of such institute.

III. E-learning management system

1. A learning management system includes:

The web portal: is for circulating the training curriculum contents; and enrolment/admission information and criteria;

Learning hierarchy: is for learners' access to distance learning contents, and also for their self-study, self-assessments and tracking their own learning progress and outcomes;

Teaching hierarchy: is for teachers/lecturers to administer distance learning materials, set up learning rules, return test results and organise tests; to follow, interact with, assist and provide guidance for learners; to verify and oversee the learners' learning process; and to manage learners and the class;

Exam/assessment hierarchy: is for the TVET institute to organise the exams and assessment/recognition of learners' learning progress and outcomes;

Online class hierarchy: is for organising real-time online classes;

Mobile application: is to facilitate the teaching and learning on mobile devices;

Reporting hierarchy: is to extract information/data on the training process and teachers'/learners' activities;

A team of teachers, technicians, support staff and system administrators is needed for training delivery and system administration/operations

2. Technical infrastructure

The server system and connection infrastructure must be equipped with adequate bandwidth and capacity to ensure the user's access; at least two technical infrastructure systems must be readily available for back-up purposes.

IV. Training delivery

1. General provisions

- The e-learning can be applicable to the entire training programme or to only a few subjects/modules/credits of relevant contents. It is up to the head of the TVET institute to determine which approach should be taken;

- At the beginning of each training course, the TVET institute should run a screening analysis to determine any possible waivers of subject content(s), module(s) and credit(s) that a learner has already completed or satisfactorily passed, or the number of modules/credits that a learner has accumulated prior to training;

- During the training delivery process, it is important to ensure the student-to-student and student-to-teacher interactions via their participation in learning/tutoring/mentoring sessions and discussions; all learning contents from main and supplementary learning materials must be completely covered; exercises, practical assignments and assessment work must be undertaken; and the feedback to teachers on teaching and practical contents must be provided.

2. Management and organisation of online classes *(in accordance with the Official Letter No. 1301/LĐTBXH-TCGDNN dated 14/4/2020 issued by MOLISA)*

- The head of the TVET institute must work on e-learning regulations that clearly define all the tasks to be performed, such as class organisation, teaching delivery and testing/assessment, and takes his/her responsibilities for the quality assurance of the on-site e-learning activities;

- The organisation of online classes is similar to what is done for traditional (face-to-face) classes, and supported by software/e-learning applications developed by the TVET institute itself or other software/applications (Zalo, Viber, Facebook, etc.) as determined by the head of the TVET institute;

- In charge teachers shall manage their classes according to the e-learning regulations applied by the TVET institute and ensure the learners' inclusive participation. Teachers are also required to maintain book/record-keeping work and ensure the documentation of all training activities in accordance with the Circular No. 23/2018/TT-BLĐTBXH dated 06/12/2018 by the Minister of Labour, War Invalids and Social Affairs, stipulating the details on records and log books applicable to intermediate- and college-level training programmes.

V. Assessment; examinations and graduation certification

1. General provisions

- The assessment, examinations and graduation certification applicable to distance training/guided self-study programmes shall follow the provisions as outlined in the Circular No. 09/2017/TT- BLĐTBXH dated 13/3/2017 providing for the delivery of intermediate-/college-level training programmes of year-based or module/credit-based mode and the rules for testing, examinations and graduation certification;

- The assessment, examinations and graduation certification can be performed directly or indirectly, but must ensure the neutrality, transparency and proper judgement of learners' capacities, knowledge and skills accumulated in the learning process;

- Learners who have already completed e-learning subjects, modules and credits shall be certified. This certification is recognised in the TVET system and used as the basis for occupational skills assessment and prior learning recognition if learners have a desire to earn their intermediate or college degrees.

- Learners who have already completed the e-learning curriculum will be granted with a college degree as prescribed in the Circular No. 10/2017/TT- BLĐTBXH dated 13/3/2017 by the Minister of Labour, War Invalids and Social Affairs, regulating the intermediate- and college-level specimen graduation degrees.

2. Several specific provisions *(in accordance with the Official Letter No. 1301/LĐTBXH-TCGDNN dated 14/4/2020 issued by MOLISA)*

a) E-learning assessment methods

- An online regular test shall be administered as a multiple choice test or another format as determined by the in charge teacher;

- An online periodic test shall be conducted in accordance with what is outlined in the syllabus, and in the form of a multiple choice or written test or by grading essay work as determined by the responsible teacher;

- An end-of-online module/subject exam shall be undertaken as a campus-based exam, which is in the form of multiple choice, written, oral, assignment, essay work or a mix of these forms or in indirect online format. The application of the indirect online format shall be determined by the head of the TVET institute but must meet all the prescribed requirements.

b) Recognition of e-learning assessment outcomes

- A regular or periodic test and an end-of- module/subject exam of (direct or indirect) online mode shall be of comparable value as that of the traditional format.

- The e-learning assessment outcomes shall be recorded in the academic transcripts and recognised in the TVET system, and used as the basis for occupational skills assessment and prior learning recognition if learners have a desire to move up to other levels (permeability in training);

- Other provisions on the e-learning delivery, assessment and recognition of learning outcomes shall follow the regulations as prescribed in the Circular No. 33/2018/TT-BLĐTBXH dated 26/12/2018 by the Minister of Labour, War Invalids and Social Affairs on the college-, intermediate- and elementary-level programmes of distance training and guided self-study modes, and the Circular No. 09/2017/TT- BLĐTBXH dated 13/3/2017 providing for the delivery of intermediate-/college-level training programmes of year-based or module/credit-based mode and the rules for testing, examinations and graduation certification.

VI. E-learning responsibilities of a TVET institute

- Develop and promulgate the regulations on e-learning, and incorporate all the related information on the training curriculum/programmes into its admission notice(s) and publish/post it on the website;

- Advocate for the good aspects of e-learning, which should come together with traditional learning experiences for practical and internship components;

- Mobilise the investments in the development of professional e-learning system, LMS and LCMS, which are supported by open source technology solutions such as Blackboard, Moodle, Canvas, etc.;

- For the adoption and implementation of e-learning programmes and applications, a TVET institute is required to:

+ Set up an e-learning front end team, comprising its key members from training and IT departments;

+ Develop an e-learning plan, which clearly defines all the tasks to be done such as:

+ Determine which theoretical components/subjects (e.g. general subjects, basic theory subjects/modules, specialisation theory, etc.) should be delivered online;

+ Prepare a detailed implementation plan and related e-learning schedules;

+ Assign in charge teachers who will be responsible for preparing learning contents, prerequisites and communication with learners.

+ Develop user manuals for teachers and students; and provide teachers with training on how to use the system(s)/application(s) and how to undertake online teaching;

+ Have physical facilities and equipment (online classroom, computers with cameras and microphones; photo/video cameras, etc.) in place for relevant faculties and classroom teachers (if needed);

+ Have periodic checks on e-learning delivery for any possible and timely quality improvements.

- Report on the e-learning according to the provisions as prescribed in the Circular No. 33/2018/TT-BLĐTBXH and Circular No. 09/2017/TT-BLĐTBXH.



E-LEARNING

INTRODUCTION

THE E-LEARNING SOFTWARE AND DEVELOPMENT OF OPEN SOURCE LMS SYSTEMS



APPS FOR VIDEO CALLS

- Zoom Cloud Meeting
- Google Hangouts Meet
- Skype Meet Now



APPS FOR ONLINE LEARNING

- Microsoft Teams
- Google Classroom
- Skype Meet Now



DEVELOPMENT OF OPEN SOURCE LMS SYSTEMS

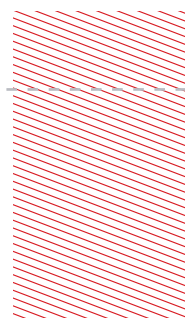
- Moodle LMS
- Blackboard LMS
- Canvas LMS

I. Apps for video calls

1. Zoom Cloud Meeting



Zoom Meeting is a cloud-based tool that offers videoconferencing services. It enables businesses, schools and teachers to easily schedule their online meetings or classes. Currently, this app is available for computer devices, tablets, smartphones for all operating systems, including Windows, IOS and Android.



The Zoom Meeting-enabled meeting/class function allows trendy alternatives for traditional platforms. With this service, businesses/schools will be able to effectively plan for their remote working options. This is actually a cost-effective and simple internet-based solution.

Host an online class of multiple participants with good quality face-to-face images, screen sharing of best quality full screen videos, and quick instant messaging.

Be compatible with most (PC, Table, Mobile) devices and operating systems (Window, IOS, Android)

Support the screen sharing, either full screen or only a window.

Remote support (Give mouse/keyboard control) to another participant that is in the meeting.

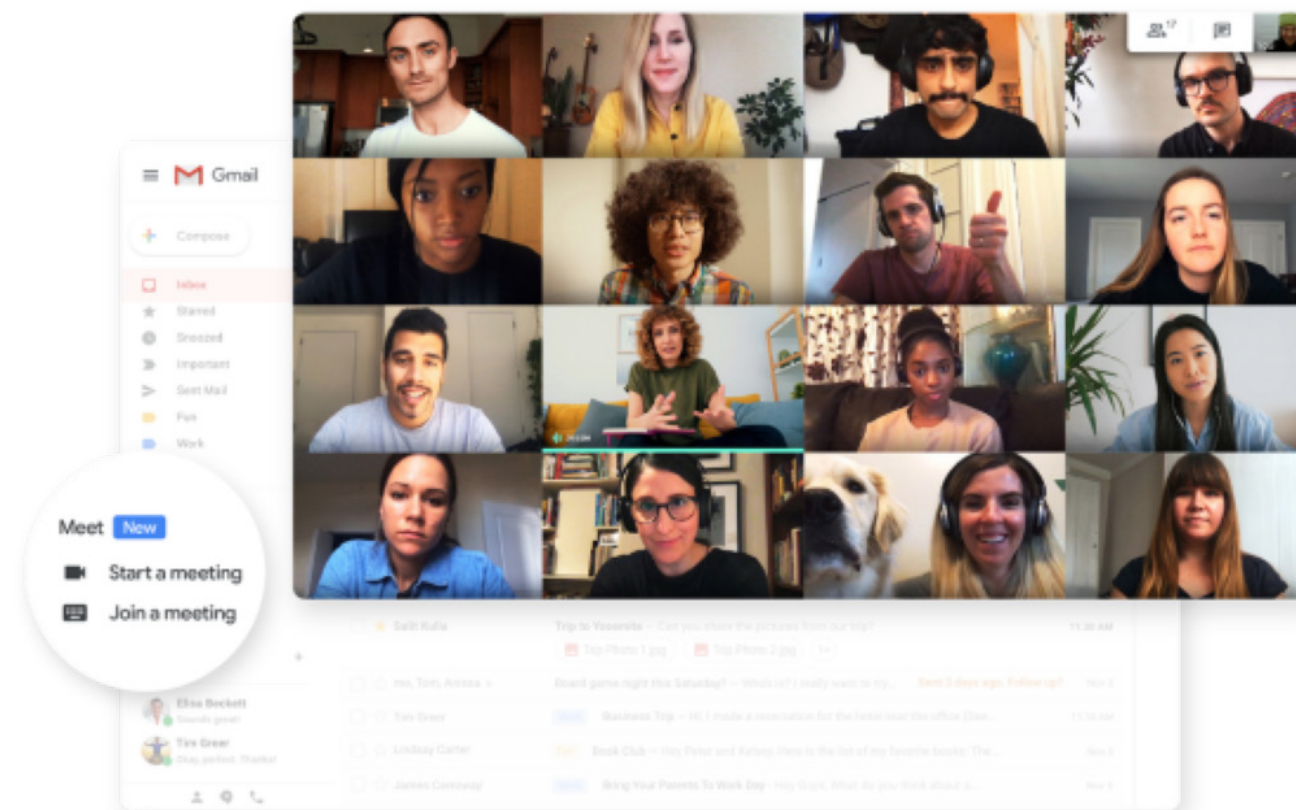
Zoom Cloud Meeting User Guide:

Details can be found/downloaded at: <https://daotaocq.gdnn.gov.vn/cam-nangdttt/huong-dan-su-dung-zoom-cloud-meeting>



2. Google Hangouts Meet

Google Meet is a web-based learning/meeting system, which is integrated in G-Suite. Google Meet can be used by school staff/students to organise online lessons/meetings with up to 250 participants to join simultaneously.



- All users of .edu.vn domain reserve the right to initiate and host an online meeting or learning session.

- Maximum participants: up to 250 persons.

- On a computer, Google Meet works best on the Google Chrome browser.

- Google Meet offers its support to iOS and Android smartphone users via Hangouts Meet mobile app.

- Recordings of lessons/meetings and Google Drive storage.

- Being user-friendly with free option(s).

- Integrations with other G-Suite tools such as Calendar and Classroom.

* Google Hangouts Meet User Guide:

Details can be found/downloaded at: <https://daotaocq.gdnn.gov.vn/cam-nangdttt/huong-dan-su-dung-google-hangout-meet>



3. Skype Meet Now

Skype has recently added Meet Now feature, which is available on the Skype desktop, web and phone apps for users to conduct online meetings and remote group video chats. In essence, the Skype video chat tool has, together with other online learning and videoconferencing platforms like Zoom and Microsoft Teams, been becoming popular among Vietnamese users.

The Skype Meet Now interface also offers full options for group calls/messaging, call recordings and video call storage/archive as needed



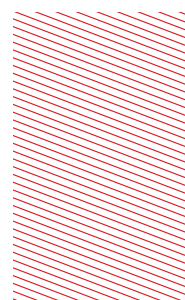
Two steps are needed to start Skype Meet Now:

- + Download Skype to your computer/phone
- + Create a Skype account if you do not have one

Meet Now can support having up to 50 persons in a call, all at once.

* Skype Meet Now User Guide:

Details can be found/downloaded at: <https://daotaocq.gdnn.gov.vn/camnangdttt/huong-dan-su-dung-skype-meet-now>



Microsoft Teams



II. Apps for online learning

1. Microsoft Teams

Microsoft Teams is a part of the Office 365 suite of services. It is the app for teamwork purposes. Teams is integrated with all features for chats, team meeting and screen sharing, and basic and advanced office tools in the Office 365 ecosystem. In other words, Teams is an all-in-one app with versatile display features so that users will be able to enjoy persistent threaded conversations, which help them constantly stay connected with the activities of other team members.

Apart from being a teamwork tool, Microsoft Teams is also, in education, considered an effective means of online teaching support with a number of outstanding features. Teams demonstrates its fulfillment of all requirements for organising a virtual classroom, such as: chat and call, screen sharing, call recordings, student assignments and feedback, etc.

Here are some of the Microsoft Teams basic features:

- Rich chat with text, audio, video, and file sharing.
- Have a private chat to develop an idea, then share it with the entire organisation.
- Store all your files, docs, and more in one place.
- Microsoft Teams is available for web, desktop (PC and Mac) and mobile devices. However, the fully-featured and most convenient version is the desktop one.

* Microsoft Teams User Guide:

Details can be found/downloaded at: <https://daotaocq.gdnn.gov.vn/cam-nangdttt/huong-dan-su-dung-microsoft-teams>



2. Google Classroom

Google Classroom is an easy and convenient service for teachers to organise and manage their classes, with all documents, assignments, and grades brought together in a single cohesive platform. Apart from the web version, Google Classroom is also available for Android and iOS devices that allow students and teachers to monitor and update their class developments anywhere. Google Classroom integrates Google Docs, Google Drive and Gmail to simplify their teaching and learning activities. Here are some its strong points:

- One of the Google Classroom's noteworthy benefits is that it keeps the classroom paperless with no docs/assignment printing needed.
- It helps teachers organise and manage their classes in an easy and convenient manner; all documents, assignments and grades are stored in a single platform (in Google Drive).
- Apart from the web version, Google Classroom is also available for Android and iOS devices, enabling learners to access the Classroom faster and update all class information anytime, anywhere.
- Google offers schools with unlimited storage accounts, which support a lot for the use of Google Classroom. Teachers can store all their teaching materials, reference videos, class photos, student grades, etc. on the Drive, and share with their students with no worries on the storage space.
- Teachers and students can monitor and update the class developments anywhere (all what they need is an internet-enabled laptop, tablet or phone).
- Google Classroom offers instant notifications and convenient forum exchanges.

* Google Classroom User Guide:

Details can be found/downloaded at: <https://daotaocq.gdnn.gov.vn/cam-nangdttt/huong-dan-su-dung-google-classroom>



III. Development of Open Source LMS systems

1. Moodle LMS



Moodle is a Learning Management System (LMS) or Course Management System (CMS) or Virtual Learning Environment (VLE). This is an open (editable) source (code) platform that allows the creation of Internet-based courses or e-learning websites.

Currently, Moodle is the most widely used system with the following stupendous features:

- Moodle is education-oriented and for those who work in the education field.
- Moodle has intuitive interface with drag-and-drop features to help teachers/instructors to learn, use and adapt in minutes.
- It allows users to easily customise ready-made Moodle themes or simply design their own themes.
- Moodle delivers a huge and appropriate set of documentation, which is missing in many other open source projects.
- Moodle is highly suitable for different levels of education and training environments: general schools and universities/colleges, formal/informal courses or workplace training activities conducted by organisations and enterprises.

* Moodle User Guide:

Details can be found/downloaded at: <https://daotaocq.gdnn.gov.vn/cam-nangdttt/huong-dan-su-dung-moodle>



2. Blackboard LMS

The Blackboard product platform is designed for and trusted by general, higher and graduate education clients, businesses, government projects and multinational corporations, which are applying different models of digital training, e-learning, blended learning, flipped classrooms, virtual classes, etc. Besides, Blackboard is integrated with the standardised scientific research/teaching database contents with thousands of open tools to support management and improve training efficiency.

Blackboard provides an educational system with different tools for student learning outcome assessment in order to assist educational institutions in the accreditation of their training programmes.

Blackboard offers fully-featured learning technology solutions and optimises resources to break down barriers to learning at a completely reasonable cost.

The Blackboard-assisted Education 4.0 meets the requirements of teaching & learning and technology solutions, including:

- Blackboard works on diverse types of electronic devices and smart phones.
- Blackboard syncs online & offline classes.
- Blackboard is integrated with leading digital content sources.
- Blackboard evaluates the progress of learners/teachers across each management level.
- Blackboard analyses and reports on learning outcomes.
- Blackboard transfers Education 4.0 technologies for the purpose of ensuring specialised professional activities of teachers/managers and better teaching/learning efficiency.

* Blackboard User Guide:

Details can be found/downloaded at: <https://daotaocq.gdnn.gov.vn/camnangdttt/huong-dan-su-dung-blackboard>



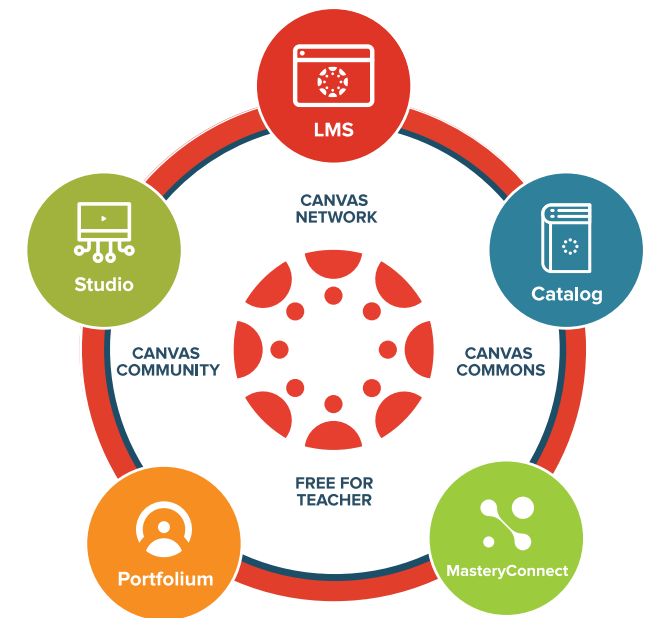
3. Canvas LMS

Canvas is an online LMS provided by Instructure Inc. Canvas is based on the web and Canvas Network - a massive open online course platform

More special, this system can also be used for the visually impaired.

Canvas is built in Ruby on Rails as a web-based app and supported by PostgreSQL database server. It combines JQuery, HTML5 and CSS3 to provide a modern user interface. OAuth is used to authenticate limited access to the user's information on certain social media apps like Facebook and Twitter to enhance collaboration. Canvas operates as a software or a service that runs in the Amazon Web Services cloud.

Therefore, it can be said that Canvas is a new open source software, which is used to manage the learning system in an evolving education. It is very easy to learn and use.



* Canvas User Guide:

Details can be found/downloaded at: <https://daotaocq.gdnn.gov.vn/camnangdttt/huong-dan-su-dung-canvas>



