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Web-supported pedagogies for self-directed learning and transferable skills in Vietnam

Abstract

In the last decade, various measures have been put in place to transform the Vietnamese technical and vocational education and training (TVET) system from a supply-driven into a demand-driven one. For that purpose, a legal framework and a quality assurance system have been established, the network of TVET institutions has been enlarged and the teacher training system has been adapted to strengthen the technical and pedagogical skill needs.

Against this background, this article gives an overview of the status quo as well as modernisation strategies regarding skills development in TVET in Vietnam. While curricula are supposed to include both technical competences and transferable skills such as team work, communication skills and the ability to learn throughout one's life (lifelong learning), the teaching process usually still has a narrower focus on developing technical knowledge and especially practical skills.

Using an example of the Construction Technical College Number 1 in Hanoi, a didactical approach based on the vocational action competence concept developed in Germany and the Vietnamese National Occupational Skills Standards is presented which shows how action-oriented online learning can be included in architectural drafter training. Supported by a virtual learning environment, students are guided by work assignments and information material in carrying out practical tasks. A preliminary evaluation of the learning outcome confirmed an improvement of the students' ability to create and update knowledge and transfer it to typical occupational situations.

1 Introduction

Since the 1990s, Vietnam has experienced significant economic growth which is decisively driven by a shift to a high-productivity, non-agricultural employment. It is anticipated that continued economic development will correlate with an increasing demand for more skill-intensive, non-manual and non-routine jobs (World Bank 2013, 7). Considering this, the Vietnamese strategy of socio-economic development for the period from 2011 to 2020 highlights the need for an improvement in human resources as one of three essential solutions for a sustainable economic development (GDVT 2012, 8). The provision of a high-quality technical and vocational education and training (TVET) system plays an indispensable part in this process in order to adequately prepare the work force for the demands of the labour market.

In Vietnam, a noticeable mismatch between skills supply and demand can be observed. The majority of employers surveyed for the World Bank Vietnam Development Report 2014 stated that "hiring new workers is difficult either because of the inadequate skills of job applicants (a "skills gap"), or because of a scarcity of workers in some occupations (a "skills shortage")" (World Bank 2013, 7). Therefore, there is a strong need for up-skilling of workers.

Nguyen (2009) establishes that skills development in Vietnam is commonly perceived as the development of practical skills, i.e. skills that "enable people to deliver a specific performance" (p.4). However, skills deficits are not only of a technical nature. Looking at other countries' experiences, there is a growing understanding that in an increasingly changing and globalized world of work, transferable skills will be a key to fostering people's employability (Trzmiel 2013). Although Vietnamese employers surveyed in the World Bank's Skills Toward Employment and Productivity (STEP) skills measurement project rated technical knowledge and practical skills as the most important ones, they have also realized that transferable skills are equally imperative to cope in the modern economy (World Bank, 15).

According to the EFA Global Monitoring Report 2012, transferable skills are defined as "the ability to solve problems, communicate ideas and information effectively, be creative, show leadership and conscientiousness, and demonstrate entrepreneurial capabilities". Such transferable skills are a prerequisite for young workers to adapt to different and changing work environments (UNESCO 2012, 172). In Vietnam, these skills are also referred to as cognitive, social and behavioural skills (World Bank 2013, 15). The ability to work in a team, to solve problems, to think critically, and to present work results in a professional way to both clients and co-workers are seen as essential by Vietnamese employers (ibid).

Therefore, curricula renovations fostering cognitive and behavioural skills as well building job-relevant technical skills through a more connected and dynamically adjusting system in vocational education are vital to labour force development (ibid, 8). Vietnam has increased investments in the infrastructure of vocational training institutions, has enlarged international cooperation and has implemented huge changes towards demand-orientation and international skills standards. Despite decisive achievements, however, there is still space for improvement in meeting the requirements of the modern economy for which transferable skills are a crucial prerequisite.

This article presents current modernization strategies in the Vietnamese TVET system and elaborates on its, arguably, biggest weak point: the so far inadequate implementation of curricula reforms related to transferable skills in the classroom. Against this background, the authors present an example of action-oriented learning supported through online resources in the architectural drafter training at the Construction Technical College Number 1 (CTC1) in Hanoi, thus demonstrating a potential learning approach to transferable skills training, with particular focus on self-directed learning, problem-solving and team work skills. Since the implementation of this project is still in progress, this article will only outline first results of an interim evaluation.

2 Modernization strategies and current limitations in TVET

One of the cornerstones of the recent developments in the Vietnamese TVET system builds on the launch of the Vocational Training Law in 2006 followed by several related acts. It has established a legal framework for increasing labour mobility, business involvement in training processes, as well as training of pedagogical staff.

However, as reforms always need time, there are still a lot of limitations that need to be solved in order to meet socio-economic requirements of Vietnam's modernization and industrialization process.

2.1 Increasing permeability through formalization and standardization

Firstly, three levels of formal vocational training – primary, secondary, and higher education vocational training – were established with the objective to increase the permeability between vocational training and higher education tracks. The new TVET structure allows graduates from vocational education institutions to attain higher educational degrees.

Since 2008, National Occupational Skills Standards, which meet the specific needs of employers, enterprises and industry, are being elaborated for each vocational occupation. Therefore, National Skill Standard Development Committees comprised of government agencies, departments and ministries, employers, employer associations, labour organizations and recognized technical experts have been formed to analyze job-related tasks and derive required skills including cognitive, social and behavioural skills. National Occupational Skills Standards comprise three basic components:

Table 1: **Components of National Occupational Skills Standards (GDVT 2012, 18)**

Occupation description	Description of scope, working position, working conditions and environment, context of task performance, necessary tools, machines, equipment, devices for task performance
List of tasks	Overview of all tasks to be performed arranged by levels of occupational skills
Standards on task performance	a) Task description b) Performance criteria c) Essential skills and knowledge d) Performance conditions e) Criteria and evaluation methods

The occupational skills standards serve as a basis for a) training institutions for planning demand-driven training programs, b) for authorities to implement standardized evaluations and issue transparent certifications for employees, c) for employees as an orientation for self-regulated skills development and promotions, and d) for employers to select new employees, arrange jobs and pay adequate salaries (GDVT 2012, 17). 'Skills Centers' have been established for assessment and certification, i.e. enterprises, training providers, stand-alone assessment service centers or other organizations which are approved by the General Department for Vocational Training (GDVT) to conduct examinations against national skills standards and issue national certificates. In this way, there has been put in place a good basis for a holistic quality assurance system. Currently, 173 sets of occupational standards have been developed and 123 of them have been issued (Lan 2012).

2.2 Expansion of the TVET network and investment in training infrastructure

The Vocational Training Law particularly promotes the training of the students' practical skills. Therefore, in recent years, individual partnerships with enterprises as well as production units at TVET institutes have been established (VP 2006, part V). To gain practical work experience, students increasingly get the opportunity to complete an internship of eight to ten weeks at a company. As a result, vocational education and training has experienced a rise in reputation proven by a significant increase in student enrolments (GDVT 2012, 8). Subsequently, the investment from the public sector to develop, improve and enlarge the network of TVET institutions increased from 4.8% in 2001 to 8% of total investment in education and training in 2010 (NIVT 2012, 64). Until the end of 2013, there were 162 vocational colleges, 302 secondary vocational schools, and 875 training centres registered (GDVT 2014). Moreover, investment from non-public funding in vocational training has been encouraged. From 2001 to 2011, the number of private vocational institutions had increased from 22.8% to 35.4% in total (NIVT 2012, 9).

Besides, close connections with Vietnam's ASEAN partners, "developed" countries such as Japan, Republic of Korea, Germany, and the United Kingdom have provided new equipment, facilities and buildings as a basis for high-quality TVET (GDVT 2012, 11f.).

2.3 Training of pedagogical staff

In addition, the need to improve training quality has been emphasized by giving stronger attention to further training of pedagogical staff and by investing in training facilities. In 2010, the Ministry of Labour, Invalids and Social Affairs (MOLISA) launched a framework for teachers' and trainers' standards in TVET institutions through the Circular No. 30/2010/TT-BLDTBXH. This framework stipulates competences vocational teachers and trainers should possess such as attitudes, technical competence, pedagogical and research competence. In 2010, 35000 teachers and trainers took part in technical and pedagogical training courses - four times more than in 2001 (GDVT 2012, 10). As shown in figure 1, around 50% of all the teachers and trainers at vocational centres had acquired some form of

pedagogical qualification, around 70% of those at vocational secondary schools, and approximately 80% at vocational colleges.

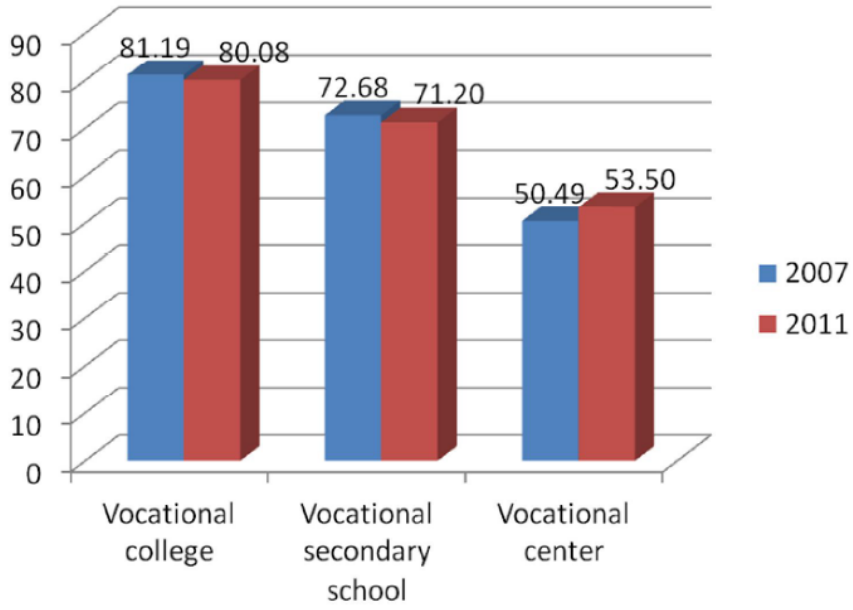

Figure 1: Number of teachers qualified in terms of pedagogical skills (Source: NIVT 2012, 39)

2.4 Limitations in the implementation of modernization strategies

After less than 10 years of reform, there are still some challenges to the implementation of the development strategies.

Firstly, recognition of prior learning and of students' existing competencies is still not widely practiced. There is only a small number of higher education institutions which recognize the achievements of a prior vocational training degree because there are not many institutions which can provide further training at vocational college level. Until 2013, there were only 16 vocational institutions which were allowed to upgrade their training levels from vocational high school or college to higher degrees (MOET 2012).

Furthermore, the link between companies and vocational schools is still weak. Most companies in Vietnam are small and medium-size enterprises and therefore do not necessarily have enough financial resources and staff to support practical training. Therefore, internship placements are hard to negotiate and, due to a missing institutionalization of the cooperation between TVET stakeholders, e.g. a lack of legal documents and regulations enforcing the role of the industry in TVET, the translation of the industry's demands into vocational training curricula is still mostly driven by training institutions (GDVT 2012, 12f., 19).

This reality needs to be cushioned by TVET institutions but despite reasonable investments from the Vietnamese government as well as through international cooperation, funds for technical equipment at vocational schools and training facilities still lag behind the latest

technology and equipment standards of companies (NIVT 2012, 59). Consequently, graduates of vocational institutions usually need to be retrained when they enter the labour market. Thus, both trainees and companies have to invest a considerable amount of time in the adjustment of skills.

However, the greatest challenge is related to teachers' interpretation of the National Occupational Skills Standards. The very general phrasing of task descriptions and performance criteria give teachers a lot of leeway in designing their learning units. Thus, effective implementation depends on their technical and pedagogical competence as well as their motivation as to how to transfer these general standards into learning arrangements. Despite the introduction of quality standards for vocational teachers and trainers the majority of pedagogical staff still have trouble complying with modern training demands - either because they are new to teaching and lack sufficient practical experience, or because they are inexperienced in modern teaching methods, or because they are unwilling to change traditional work patterns (Uyen 2013). Still around 20% of trainers in TVET colleges in Vietnam have no pedagogical training. In vocational secondary schools and training centres, the number of pedagogically unqualified teachers is even higher (see figure 1). Without pedagogical skills, however, teachers and trainers face difficulties in transferring learning objectives into adequate learning arrangements which puts training quality at risk.

Most of these limitations have their origin at the macro-level and require time and political strategies to be solved. Pedagogical changes, however, can be triggered from within the TVET institutions. Information and communication technologies can serve as effective tools for dissemination of information but also as a tool for the development of transferable skills.

3 Training in transferable skills

The crucial point in meeting skills standards focusing on outcomes and promoting transferable skills are adequate learning arrangements (World Bank 2013, 22) which promote self-exploration, problem-solving, team work and self-directed learning.

3.1 Vocational action competence in TVET

The goal of vocational education is to enable students to deliver a specific performance or specific actions required by a certain job, i.e. to make them employable. Graduates are regarded as employable if they have "a set of achievements – skills, understandings and personal attributes – that make [them] more likely to gain employment and be successful in their chosen occupations, which benefit themselves, the workforce and the economy" (Yorke 2006).

The German Standing Conference of the Ministers of Education and Cultural Affairs of the Länder (KMK) understands employability as a status of having attained 'action competence' which is the "the willingness and ability of an individual to cope in professional, social and private situations in a reflected, individual and socially responsible manner" (KMK 2011). Vocational action competence is further defined in terms of domain competence (German:

Fachkompetenz), social competence (German: Sozialkompetenz) and personal competence (German: Personalkompetenz).

Table 2: **Vocational action competence according to the KMK (2000, table modified according to Winterton, Delamare-Le Deist & Stringfellow 2005, 38f.):**

Domain competence (Fachkompetenz)	Willingness and ability to carry out tasks, solve problems and judge results on the basis of subject-specific knowledge and skills in a way that is goal-oriented, appropriate, methodological and independent.
Social competence (Sozialkompetenz)	Willingness and ability to experience and shape relationships, to identify and understand benefits and tensions, and to interact with others in a rational and conscientious way, including the development of social responsibility and solidarity.
Personal competence (Personalkompetenz)	Willingness and ability to understand, analyse and judge the development chances, requirements and limitations in the family, job and public life, to develop one's own skills as well as to decide on and develop life plans (independence, critical abilities, self-confidence, reliability, responsibility and awareness of duty, professional and ethical values).

All of these entail the method and learning competence. Method competence can be understood as the ability to implement "transversal strategies and processes of invention" and to make oneself understood in one's native or a foreign language (e.g. general problem solving skills, presentation skills, rhetorical skills). Learning competence, on the other hand, refers to the ability and willingness to learn new things, to identify knowledge gaps and to find ways to close these gaps (KMK 2000, cited in Winterton, Delamare-Le Deist, & Stringfellow 2005).

3.2 Recognition of action competence in Vietnam's National Occupational Skills Standards

The Vietnamese National Occupational Skills Standards tend to include action competence with a strong focus on subject or domain competence. Domain competence is phrased as technical learning outputs, such as "calculation of concrete temperature or pouring concrete foundations" found in the National Occupational Skills Standards for concrete workers (MOLISA 2008b). The standards also include aspects of social, personal, method and learning competence which are usually considered in two different forms:

- as autonomous work descriptions (e.g. in the case of the concrete workers) or
- as integrated in other work descriptions (e.g. in the case of the form workers and scaffolders).

Usually social competences are recognized as the ability to work and talk with colleagues (H02) and coordinate work tasks with other involved persons/departments (H04). Personal competences are considered as the ability to judge and assess one's own skills and knowledge gaps (H01). These are followed by method and learning competences which are included as the ability to understand new technologies (H03), learn new things and present the new knowledge to others (H05) as well as the ability to train beginners (H07) (work description numbers as indicated in the vocational occupation standards for concrete workers, MOLISA 2008b).

In practice, these work descriptions prove to be far too general resulting in an insufficient recognition of the holistic approach of vocational action competence in pedagogies. Teachers tend to focus their lessons on technical knowledge and skills because they are more familiar with teaching that rather than focusing on vocational action competence/transferable skills.

3.3 Action-oriented learning as a key to enhancing transferable skills

Practical and transferable skills development requires holistic and student-centered pedagogies which are geared towards real-work problems. In action-oriented pedagogies, learning takes place through holistic actions (see figure 2). The objective of action-oriented learning is for students to gain domain competences by means of a systematic preparation, implementation and evaluation of the action. By self-regulated knowledge processing they develop methods and learning competences, and through the competent and responsible interaction with other students gain social and personal competences. In that context, the role of the teacher changes from an instructor to a learning facilitator, i.e. teaching methods have to change from teacher-based instruction to student-centred skills development. Thus, students get more opportunities to practice and solve complex tasks autonomously while being supported instead of instructed by trainers (e.g. Bünning 2007, 9; Jank & Meyer 1994).

In Vietnam, despite investments in training facilities, pedagogical training and instructional practices have not changed noticeably. Using teacher-centred, two-step methods (demonstration and imitation) teachers typically focus on the development of technical knowledge and skills rather than transferable skills. The reasons for that are manifold. First, the deep-seated notion that a teacher is an instructor, who presents predefined knowledge in comprehensible units to students, has shaped students' passive learning style as well as limited creativity and autonomy. This reality limits many teachers in trying out new learning and teaching methods (Cuong & Meneir 2011). Secondly, there is a lack of incentives to change existing pedagogies. For example, the preparation of lesson plans is only once fully remunerated. According to Circular number 09/2008/TT-BLĐTBXH by Ministry of Labour, Invalids and Social Affairs (MOLISA), every following class on the same subject will be paid at a reduced rate of 75% compared to the original remuneration. Therefore, most teachers are not willing to make an effort in preparing new learning material.

Since the introduction of incentives for teachers, e.g. a new remuneration and benefit system, would require changes to related legal documents and would take several years, it is essential to find alternative ways.

3.4 Potential of ICTs in TVET

The use of information and communication technologies (ICTs) in pedagogies offers numerous opportunities for teachers to make their lessons more interactive as well as flexible regarding the time, venue and content of learning. Web-based training, as one form of e-learning, uses the internet as a tool of instruction (Grob 2013). The internet can provide endless up-to-date resources on available technologies and work processes which teachers and students can implement in class. It also provides students with the possibility to interact with others via forums, chats and professional online communities. Therefore, ICTs have great potential for self-directed learning (Dahl et al. 2008).

4 The case of the Construction Technical College (CTC1): Action-oriented learning supported by online media

With more than 2000 graduates each year, CTC1 in Hanoi is one of the biggest vocational training institutions in the field of construction in Vietnam (CTC1 2014a). The architectural drafter training is the most recent training offered at the college with its first student cohort enrolled in 2012. Since 2013, the Vietnamese Ministry of Education (MoE) requires CTC1 to train a minimum of 150 students in this training course (CTC1 2014b). However, although the training framework was developed in cooperation with Vietnamese architects, heads of design companies and administration staff, the training program is still undergoing modifications to meet labour-market demands. In support of these efforts and at the same time answering to the need for new didactical approaches, CTC1 is currently implementing a model class for improving students' practical and transferable skills in the technical drawing module.

4.1 Background information of the model class

According to the curriculum, the learning objectives of the technical drawing module are:

- to understand building parts and construction materials;
- to draw building details based on a preliminary report;
- to learn autonomously.

Although these objectives express the intention to train students in self-directed learning, the typical instruction consists of teachers using technical drawings and imitative drawing assignments in their pedagogies. Students usually learn from images, drawings and the teacher's explanations without having a clear understanding of its relation to their later work life. As a consequence, students tend to learn through repetition and imitation rather than

being prepared to solve individual, job-specific problems on their own. In addition, classes are hardly ever interactive leaving students little opportunity to cooperate with each other and to exchange knowledge and experiences.

To change these teaching practices, CTC1 has introduced a model class based on a problem-solving and work-related approach that aims to foster students' technical and transferable skills. This model class is part of the follow-up phase of the International Leadership Training in TVET, Climate Change and Green Jobs which was implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and the Human Resources Development Services of the Republic of Korea (HRD Korea) in 2013.

4.2 Didactic approach in the model class

In order to guide students through the complete work process of producing technical drawings, the model class uses an action-oriented approach based on the 'complete action' by Hacker (1986) (see Figure 2).

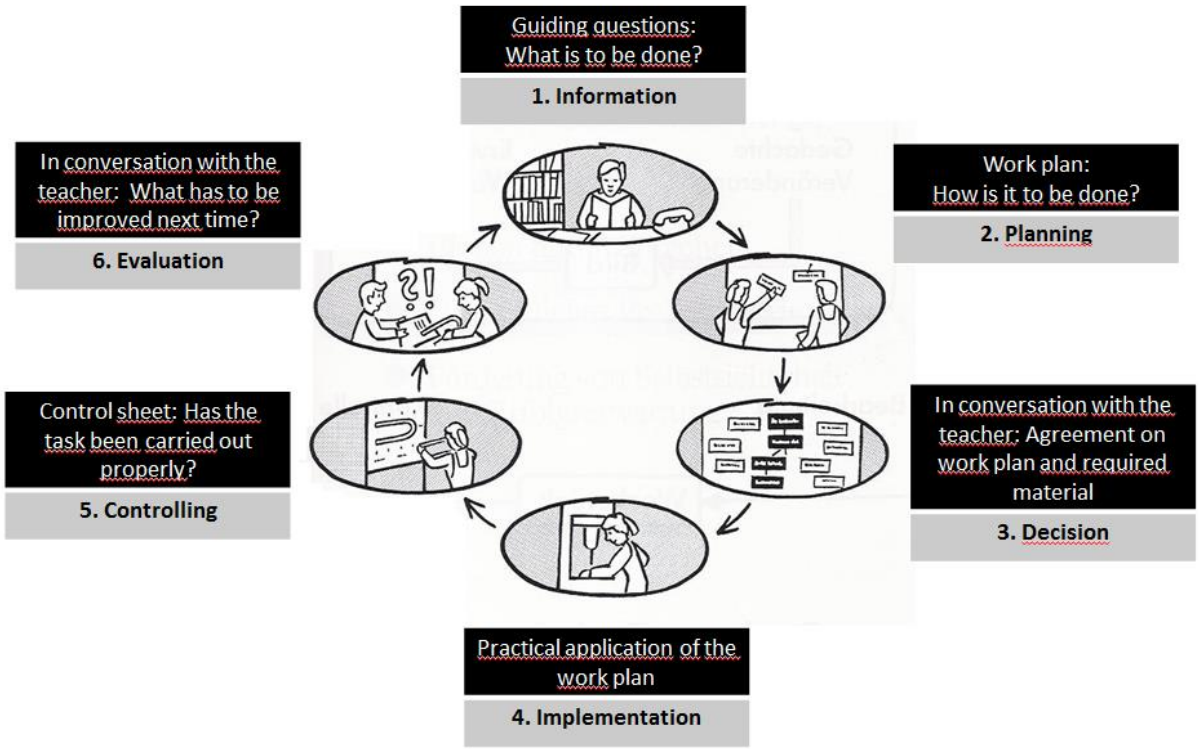

Figure 2: Six phases of the guiding text method (image modified according to Koch & Selka 1991, 69 and Arnold, Lipsmeier & Ott 1998, 40)

For the model class, the guiding text method was selected as an action-oriented teaching method for achieving the required learning objectives. The guiding text method (German: Leittextmethode) is a pedagogical approach which is closely related to complete action

(Hacker 1987). The method was first developed by German trade and industry bodies to support trainees' self-regulated information processing, task execution and evaluation (Bünning 2007: 47f.). It can gear vocational school training to respond to labour market needs related to practical and transferable skills. A core characteristic of the guiding text method is to present students with a complex problem which is typical in the related occupation. Students are guided through the complete process of solving the problem through written questions and work assignments developed by the teacher. A collection of texts, videos, pictures and references (e.g. guiding material) provided by the teacher, serve as information source for students. The teacher takes on a less dominant role and acts as a learning facilitator only stepping in during the decision-making and evaluation phases.

The implementation of this method in the model class is supported by the use of simple online media (a WordPress blog with a basic upload feature and a forum) which students can access from school, home or even their mobile phone.

This online-based guided text method has the following advantages:

- It covers all steps of the work process from the collection of information necessary to execute a task to the evaluation of the work result.
- Guiding questions and texts serve as orientation and information sources for students while leaving them the responsibility for correct implementation.
- ICTs are an important part of students' lives nowadays and, as a result, increase their interest in learning.
- Virtual learning environments provide a variety of digital tools (such as text, pictures, videos and simulations) which students can use autonomously and which teachers can reuse and update on a regular basis.
- Computer literacy is an essential part of the curriculum and can be improved by using online media.
- Online learning environments provide a learning community independent of the class-room. Students can learn from a distance and increase their learning time.

However, one of the greatest disadvantages of online-based training is the lack of real face-to-face communication. There is a risk of misunderstanding because users cannot see their peers' emotions, and a risk of feeling isolated which can have a negative impact on students' motivation to engage online (Salmon 2002, 5).

Against this background, the model class combines online and classroom learning to benefit from the flexibility of online learning while increasing social interaction in the classroom.

4.3 Implementation of the model class

As a first step, the students are presented with a job-related learning situation:

You work as an architectural drafter at a design firm called *ArchiTex*. Your company has just won a competition to design a three-story building with a total surface of 300 square metres in Hanoi. The client has approved the preliminary project proposal and wants the construction to start right away. As an architectural drafter you are responsible to convert the architectural sketch provided in the proposal into detailed technical drawings. You have 4 weeks for this task.

The guiding text, the attached questions and work assignments support students in reflecting on the essential steps necessary to convert basic architectural sketches into technical drawings (including planning and defining appropriate building structures as well as choosing the right construction material), and in implementing technical drawings based on assessment of accuracy, composition, energy efficiency and implementation time.

For the task implementation, students are divided into six groups of five students. As a first step, the teacher introduces the guiding text method to the students as a new approach to learning and shows them the guiding materials (e.g. drawings, documents, assignments and checklists) that are already uploaded on the related website.

The training is structured according to the six phases of Hacker's (1986) complete action concept:

1. Collecting information (introduction in class, afterwards online):

   Students familiarize themselves with the learning situation and the guiding questions. The teacher is available for questions (first in class, then online) and supervises the first access to the online platform where students find the preliminary report, specialized texts and sample drawings of the building's details. Based on the work assignments, students select the right documents. To comply with the design given in the preliminary report, students need to go to a construction site to survey building structures and materials. In addition, they acquaint themselves with building codes which are frequently applied in technical drawings by conducting online research on national standards for construction drawings.

2. Planning (half in class, half online):

   Each group identifies costs estimates for different construction processes and construction materials depending on building structures, decoration and finishing. Based on these estimates, they prepare ideas for technical designs, distribute required tasks amongst the group members and devise a work plan. During the planning phase, students present interim solutions to the teacher to reduce mistakes and uncertainties.

3. Deciding (in class):

   In front of their peers, each group presents their solutions including their advantages, consequences, cost and the required time for drawing and construction. Solutions are compared based on a grading system which is divided into three criteria: sustainability

of the material, cost and implementation time. The solution with the highest mark is selected and discussed with the teacher who provides further feedback. Based on the teacher's and classmates' comments, students modify their drafts if needed.

4. Implementing (two interim presentations in class, otherwise online):

   Students draw the technical drafts based on the selected solution, as well as national building codes and defined criteria. In addition to the drawings, each group has to prepare a short documentation and explanation of the drawing process and the details of the draft. The online forum serves as a platform for students to share experiences and support each other by providing feedback. Moreover, each group presents their progress in front of the whole class at two different occasions to control the work process and schedule. During this phase, the trainer is available for advice and encourages group members to finish their tasks as planned.

5. Reviewing (self-control, online):

   Based on an online checklist provided by the teacher, students first review their work autonomously. The items on the checklist are divided into two components: technical requirements (building codes, notes, text styles, drawing marks, time requirements, estimated price, environmental sustainability of the used materials) and behavioural requirements (team work, coordination, autonomy).

6. Evaluation (in class):

   Students upload their results and reports on the website. After that, each group presents their solution in class and receives feedback from the other groups as well as a final assessment by the teacher. If required, the teacher clarifies some of the learning content which the students found difficult.

4.4 Preliminary evaluation of the model class

Comparing students' technical drawing drafts based on criteria of accuracy, composition, energy efficiency and time management, the following improvements related to action-oriented, web-supported instruction, as opposed to previous teaching approaches, could be observed.

- Domain competence:

Through the learning activity, which was following the Hacker's six steps of 'complete action', students could understand the work they were being trained for. Students' presentations showed that their understanding of the work process has improved. They could identify and explain the right dimensions of building structures (lintels, walls, columns, and beams) and could justify their choices for materials and structure types. In previous classes, students used to follow teacher's instructions without having the opportunity to propose more accurate, cheaper or more energy-efficient alternatives. The criteria given in the checklist enabled students to review their drawings autonomously instead of waiting for the teacher's

feedback. The availability of online resources broadened students' access to information on new construction techniques and materials adding to the information available in existing school books and documents.

- Social competence:

In groups, Students distributed tasks among team members and collaborated to finish the task successfully. This way, they could learn from each other's behaviors and work attitudes, needed to discuss interim steps and provide feedback to each other.

- Method and learning competence:

Since each group had to present their results in front of the class, students had the chance to improve their presentation skills, unlike before when most of the training was limited to listening and writing.

- Personal competence:

The guiding texts and criteria for good technical drawings encouraged students to think about alternative construction designs which save costs and increase the building's energy efficiency. The students' documentations show that the use of online resources and discussions increased their creativity and self-confidence in devising solutions. Once accustomed to a degree of freedom in design and their acceptance of mistakes, they become motivated to learn new things and improve their designs to achieve better results.

4.5 Limitations in the implementation of the model class

Since students were not used to responsibility and freedom in the learning process, they were rather passive and insecure at first. The teacher had to become less and less dominant and support the students by giving them very specific work assignments. After a few lessons in which the teacher familiarized and encouraged students, they became more willing and confident to implement the work tasks autonomously. Motivation, in general, differed among the groups. Group work made some students lose their focus. In that case, extrinsic motivators, such as formative assessments and individual activity, instead of a group one, might be a solution. In addition, students underestimated the time they needed for discussions and the implementation of the task because of their lacking experience in action-oriented learning. One group could not finish the draft of their technical drawing. Therefore, teachers are advised to engage students in group discussions if students' group work is apparently leading in the wrong direction. Students also showed inexperience in working with presentation software which created additional time constraints. Practice can lead to improvement in presentation skills. Finally, teachers can provide support to increase the presentation quality and reduce preparation time by providing presentation templates.

5 Conclusion and possible further research

Preliminary findings show that the guiding text method applied in a web-supported learning environment could increase students' understanding of the work process and increase their underlying technical knowledge, team-working skills and learning abilities. In addition, the access to online resources had a positive influence on students' creativity. It became apparent that it is necessary to introduce students, as well as trainers, step by step to action-oriented, student-centred learning to avoid resistance and insecurities. Mechanisms and incentives that enable and motivate students' to work autonomously, while at the same time not over-burdening them, are crucial in this process.

So far, transferable skills have been imparted rather as an exception than the norm in Vietnam. The reason for it might be the rather general form in which they are defined in curricula and their secondary role in training examinations. National Occupational Skills Standards (NOSS) stipulate the development of training of job-related communication, presentation and team skills as well as competences for lifelong learning. Nevertheless, traditional classroom settings are not conducive to translating these guidelines into effective pedagogies that foster these skills. It is clear that current teaching practices will have to change to become more learner-centred to foster students' autonomy in generating, presenting and updating their knowledge and skills.

Sustainable curricular reform towards a student-centred, action-oriented learning, however, will require adequate teacher and trainer preparation, research of ways in which transferable skills can be translated from paper into practice, the development of adequate assessment, as well as deployment of incentives for teachers. Without additional pedagogical preparation for teaching staff, as well as a reasonable financial reward system that incentivises teachers, practitioners will have to rely on their own pedagogical competence and commitment, as well as student motivation, to impart transferable skills effectively.

Furthermore, if pedagogies conducive to fostering transferable skills are to be implemented at a large scale in TVET, the financial implications of their implementation will have to be kept as low as possible. For that purpose, action-oriented learning in a web-supported learning environment can efficiently complement traditional learning and work-based training.

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