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The Competencies Required by TVET Teachers in the Field of Multimedia Design: Combining Product-Oriented and Work-Process-Oriented Training

Abstract

Multimedia design is a popular profession across the world and involves the integration of multiple forms of media-related activities in various design fields, such as graphic print design, web design, and digital film production. Different countries implement different training models for preparing learners for a career in multimedia design, such as product-oriented training in Vietnam and work-process-oriented training in Germany. This paper argues that, while both of these training models have their advantages and limitations, combining their features into a new multimedia design vocational training model could prepare workers to become more resilient in an increasingly competitive future work environment. Using the method of theoretical analysis, which is a qualitative research approach, this paper outlines the essential competencies that TVET teaching staff need to be able to implement this new training model. In addition to the general competencies that all TVET teachers need, such as educating competence, communication and language competence, and the ability to engage in self-reflection and self-improvement, TVET teachers in the field of multimedia design must acquire specific knowledge and skills regarding to teaching competence, professional competencies and the competence of linking real work processes with professional learning processes. These competencies are an important prerequisite for implementing product-oriented and work-process-oriented training effectively. Based on an analysis of these specific competencies, the paper offers recommendations on measures for training multimedia design teachers to develop their product-oriented and work process-oriented teaching capacities.

Keywords: *pedagogical competencies, vocational teacher education (VTE)*

1 Introduction: Vocational Training in the field of Multimedia Design

1.1 About the Multimedia Design Profession

The multimedia design profession in Vietnam, as in many other countries, often comprises three subfields: graphic print design, web design and digital film production. A common feature of the profession is that all three of these subfields in their "external process structure" include the same work phases, consisting of getting a client’s order, producing a draft design that meets the client's goal, changing the design according to client requirements, and producing the final design using computer technology. This comparability creates the basis for a rough framework for describing these similar work processes. In order to create design

products, media designers use the overarchingly typical medium of information technology – in particular, computers in combination with peripheral devices (e.g., printing and editing technology or corresponding external services) and diverse software technologies (e.g., 3D Studio Max, Adobe Photoshop, Adobe Illustrator, Adobe Dreamweaver CS5, Adobe Flex 4, Adobe Premiere, etc.). However, the inputs and outputs for processing different orders or contracts are completely different across the three subfields. Likewise, the use of software differs across the three subfields, as it needs to be adapted to the external process structure for work activities as well as the work phases of the work processes.

1.2 Vocational Training in the Field of Multimedia Design in Vietnam

In Vietnam, vocational training for the multimedia design profession takes place at all levels – from basic level, to intermediate level, to college level. Basic training is available through information technology training centers and small training institutions, which provide specialized software courses lasting from one to six months to meet the requirements of the profession. Examples of the software taught in these courses include CorelDraw, Illustrator for drawing graphics, Photoshop for image processing, 3D software for 3D modelling, and specialized software for filmmaking and post-production film processing (Training Center Danang 2020; Training Center Nhatnghe 2020; Training Center Vitadu 2020; College FPT 2020; Training Center Zone Media 2020). In larger schools and training institutions, as well as in longer courses lasting from six to 18 months, learners are trained in a variety of interactive software in combination with basic theoretical training on designing multimedia products.

At intermediate-level schools and in some large private schools, learners can attend two-year training courses lasting four semesters. Private schools are free to design their own training programs, while state secondary vocational schools must offer training in line with the national qualifications framework, using intermediate-level curricula pertaining to specific occupations such as graphic design (job code 5480216), web design (job code 5480217), computer-aided drawing and design (job code 5480214), and film production (job code 5210230) (Arena-Multimedia 2020; Training Center IDC 2020; Admission Information 2020).

At colleges, learners can attend a two-and-a-half or three-year course (five or six semesters) in computer engineering and software application (Admission Information 2020).

1.3 The Future of Work and the Need for Transferable Skills

In modern life, especially in the Industry 4.0 era, the demand for multimedia products (such as print media products, digital films and websites) has grown, as has the demand for appropriately skilled workers in the multimedia design field. Furthermore, given rapid changes in technology and software, the context of a post-modern society and the economic situation of the world in light of the COVID-19 pandemic, the multimedia profession has become more competitive.

Workers in this sector need transferable competencies to remain flexible in the workplace, to be able to redirect their skills to take on a variety of work roles/tasks and to benefit from emerging career opportunities. Accordingly, workers in the multimedia design field must be trained in not only the use of specific software to produce a certain product, but also competencies that are unlikely to change over time, such as advising clients, creating design perspectives/concepts, creating project design plans, demonstrating products, providing customer care, etc. These transferable competencies will enable them to adapt their skills to remain competitive when the job situation changes.

1.4 Current Requirements for Multimedia Design Teachers in Vietnam

Currently, multimedia design teachers in Vietnam have to meet the following minimum standards (VNSkill Academy 2020; Training Center DPI 2020; FPT Education 2020):

- Bachelor's or Master's degree in Arts or Graphic Design
- Proficiency in using software such as CorelDraw, Adobe Photoshop, Adobe Illustrator, Adobe InDesign, Adobe Dreamweaver CS5, Adobe Flex 4, Adobe Premiere, 3ds Max and Maya
- Ability to read and conduct research in English
- Pedagogical knowledge and skills, as well as the ability to design and deliver training programs
- Professional experience and the ability to deliver practical training.
- Aesthetic taste and creativity.

1.5 Current Model for Training Multimedia Design Teachers in Vietnam

The current model for training TVET teachers in the multimedia design field in Vietnam is a consecutive training model. Most teachers gain professional skills at an Art University as pre-service training, after which they immediately become vocational teachers. Then, while working, they continue to be trained in pedagogical skills as in-service training.

However, to be able to deliver high-quality training in multimedia design, vocational teachers also require training with respect to real work processes in their profession. Therefore, the question to be addressed in this paper is: Which competencies do TVET teachers in the field of multimedia design need to fulfil the current and future requirements of their jobs? In answering this question, we distinguish between the generic competencies needed by all TVET teachers and the specific competencies required in the field of multimedia design, combining product-oriented and work-process-oriented training. In the final section, we offer recommendations on how teacher training in this field should be adapted to meet these requirements.

2 Product-Oriented and Work-Process-Oriented Training in the Field of Multimedia Design: A Comparison of Two Training Models

Different countries implement different training models to prepare learners for a career in multimedia design. Two typical models are product-oriented training, which is implemented in Vietnam, and work-process-oriented training, which is practiced in Germany.

2.1 Model 1: Product-oriented training (Vietnam)

Product-oriented training is well suited for the field of multimedia design, because one of the characteristics of this profession is that the practitioner needs to be able to produce specific, aesthetically pleasing products according to market requirements. Popular multimedia design products include websites, print graphics and film. In Vietnam, multimedia design students are usually trained using a product-oriented approach. Figure 1 illustrates the training model used to teach multimedia design in Vietnam. The goal of this model is to train graduates to be able to independently make products for customers relating to the subfield (e.g., graphic print design, web design and digital film production) in which they are trained.

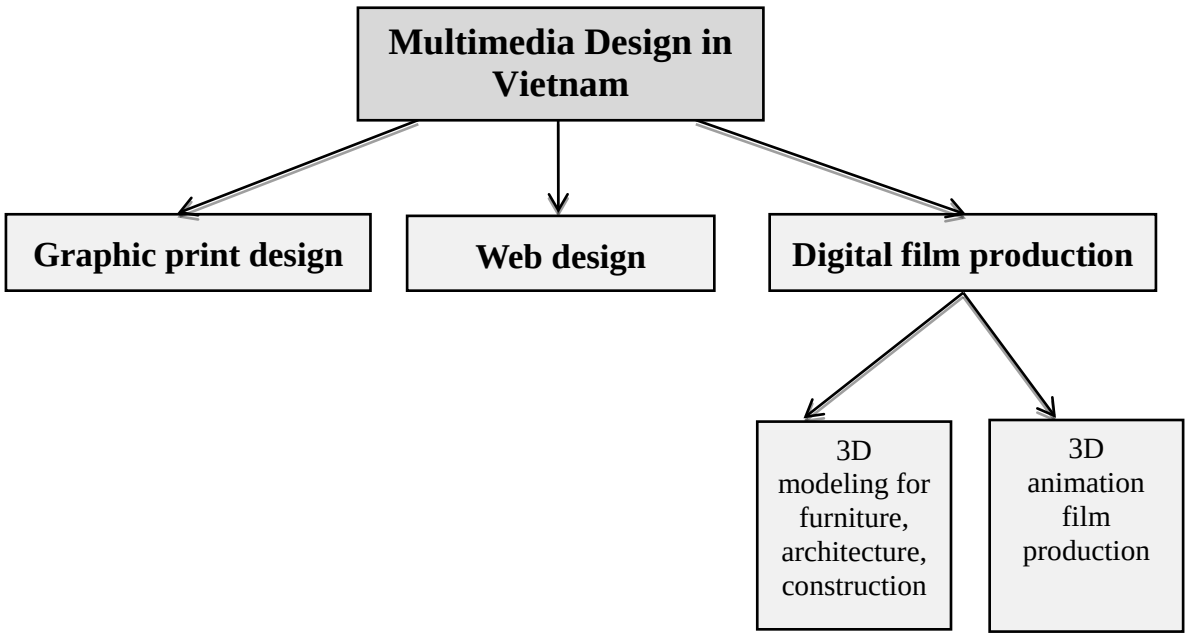

Figure 1: Main training areas in the multimedia design field in Vietnam (Nguyen 2019, 21)

The main output in the subfield of graphic print design is an “on surface” printed product – that is, a static product that is replicated through print cloning, whereby a design is printed in large quantities using modern printing technology. The process requires converting the graphic design product file in order to prepress for printing. Many graphic design companies in Vietnam do not have printers and therefore have to work with external printing services to produce the outputs that their clients want at the quality and price that their clients require.

This creates a three-way working relationship between the graphic designer, the client and the print service provider.

In the subfield of web design, the main product is a programmed website that can be displayed on computers, mobile phones, tablets, etc. and be viewed by the general public or interested members of the target audience. When designing websites, web designers must use digital technologies. Each web product is a programmed software product, which is uploaded by the designer to the Internet (www.) and then used by the customer after it has been handed over. Web designers are therefore responsible for training customers in the use and maintenance of the website.

The main products in the subfield of digital film production are varied representations with moving images for television or other media outlets (e.g., the internet for computers, mobile phones, tablets, etc.), which are processed using film projection software. The big difference in the working process of digital film production compared to the other two subfields is that the design ideas and concepts used in digital film production are presented in the form of a script/scenarios and a storyboard. On large film projects, digital film production requires media designers to collaborate with many partners, such as directors, camera operators, audio editors and actors. The film making process requires complex film editing techniques using specialized film editing software.

Combining product-oriented training with action-oriented teaching and learning is a concept that is particularly suitable for delivering vocational training in the field of multimedia design. Action-oriented teaching and learning is a popular didactical concept in German-speaking countries (Germany, Austria and Switzerland) as well as in other European countries. In her dissertation, Diep P.C. has considered the characteristics of action-oriented teaching and learning from the perspective of a number of German authors, such as Jank & Meyer (1991), Hortsch (1999), Gudjons (2008), Wöll (2011), Hartmann & Mayer (2012). She identified eight characteristics of action-oriented teaching and learning (Diep 2019):

- It is not a concrete teaching method but a concept for guiding teaching design;
- It is situation-oriented teaching and learning, and has practical and social meaning;
- It is product-oriented teaching and learning;
- It is holistic and action-oriented;
- It is flexible and open in terms of content, teaching methods, learning locations etc.;
- It entails learning with many senses;
- It fosters an interest in learning;
- It develops learners' professional action capacity (including their professional, social, personal and methodological competencies).

Through the creation of learning products (in general) and vocational products (in particular), learners acquire the knowledge, skills and attitudes that are necessary for professional activities.

2.2 Model 2: Work-process-oriented training (Germany)

The work-process-oriented training model is dominant in the field of TVET and is used in Germany as well as many other developed countries to train learners for careers in multimedia design (Spöttl & Loose 2018; Pirzada 2018). Work-process-oriented training is a common didactical concept that has been discussed by many German vocational theorists. For example, Becker (2008, 2) affirms that "a work-process-oriented didactic provides the connection between empirically identified challenges in work processes, the professional competencies identified in practical work, and their importance for the development of learners' professional competencies". Based on this definition, work-process-oriented training refers to teaching and learning in a professional context linked to real work processes. Conscious attention is paid to the fact that individuals (as well as apprentices) are closely related to the world of work, so vocational training should be closely linked with professional practice (Rauner & Bremer 2004; Berben 2008; Kutscha 2008). In this training concept, knowledge of the work-process relates to an understanding of the general process in which each individual participates in production, relevant techniques, work organization, social dimensions and the overall system (Kruse 1986, 189).

Figure 2 shows the dimensions of the work-process, according to Becker (2008). Becker (2013, 10-11) also raised **key questions** to consider when designing vocational training courses to ensure that they reflect real work-processes from the world of work:

(1) Tasks: Which professional tasks/problems should be assigned to the learner with respect to the learner's competency level? What are the implications of these tasks for the profession and learners? How often does this task appear in professional life, and how difficult is it to execute?

(2) Objects: What objects are handled during the work-process? [Objects can be physical (e.g., products) or abstract (e.g., simulations, program code, etc.), tools, people (e.g., customers) or processes (e.g., work plans, quality management, etc).] How are those work objects structured? Is it possible to design those objects differently? Is it possible to design a different work-process to get results?

(3) Tools: What tools are used? What is the function of those tools? Are there any alternative tools?

(4) Work organization: What kind of work organization is necessary and suitable for the work process? Who does which task? What are possible action options for implementing the process?

(5) Methods: What methods can be used to do the job?

(6) Requirements: What are the requirements of customers, society, law, company, colleagues, partners, etc. in the work process?

(7) Outcome: What are the work process outcomes? How are the results evaluated?

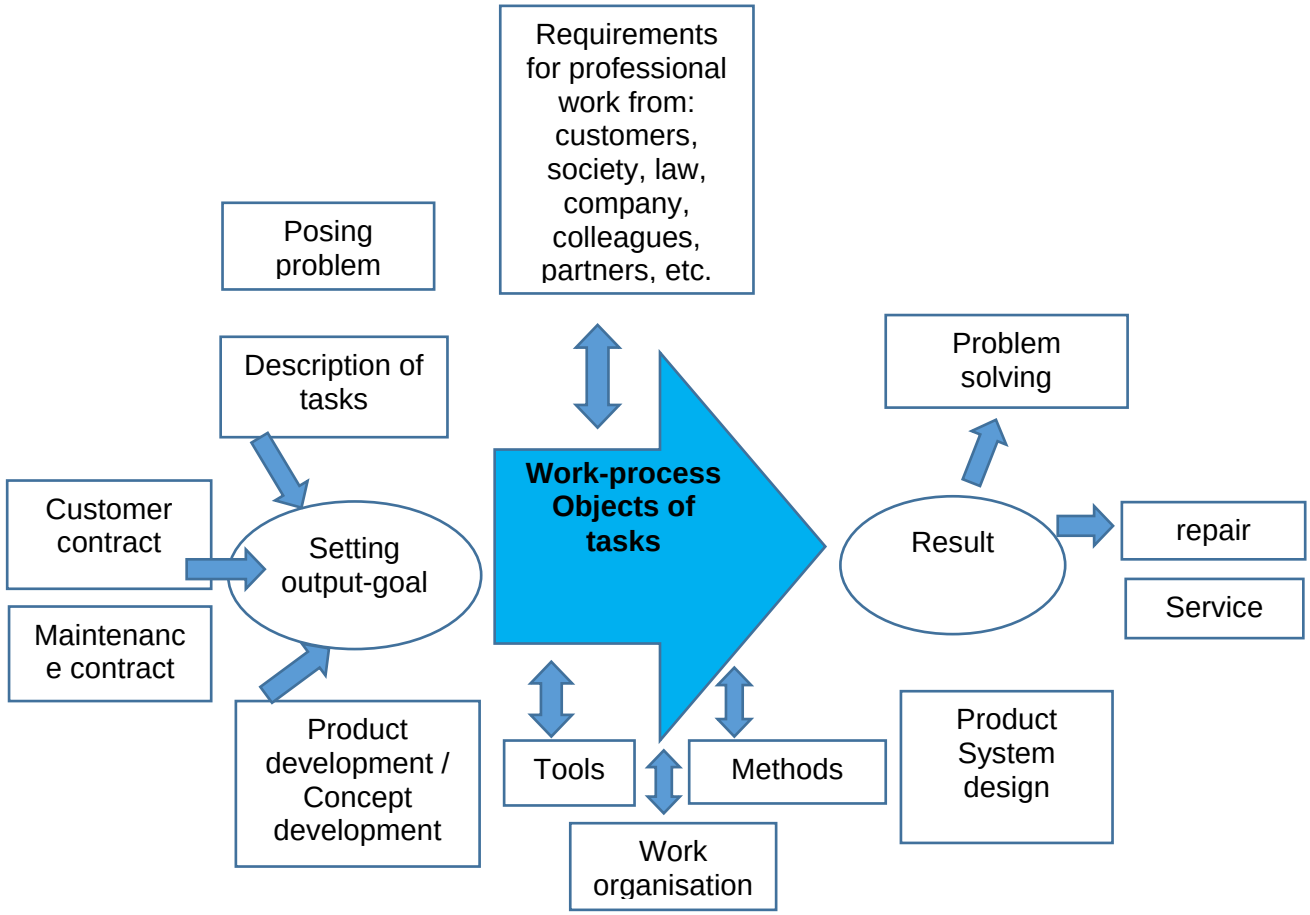

Figure 2: Professional work-process dimensions (Becker 2013, 9)

Figure 3 depicts the main focus areas of the multimedia design profession in Germany. During the first stage (2 years) of training, students taking the “Digital and Print Media Designer” program in Germany acquire general knowledge and professional skills and learn general aspects of the multimedia profession (KMK 2015, 7). In the next stage (1 year), they choose a work phase / field of the multimedia design profession, such as Consulting and Planning, Concept and Idea Development or Design, to study in depth. This means that, to create products for customers, learners from different fields of work or from different fields of action must work together on each project. The rationale behind this training model is that, after graduation, learners usually take on only a certain part of the job chain (such as consulting, developing concepts, or designing and technical assistance) and are not in charge during all stages, from communicating with clients to creating final products.

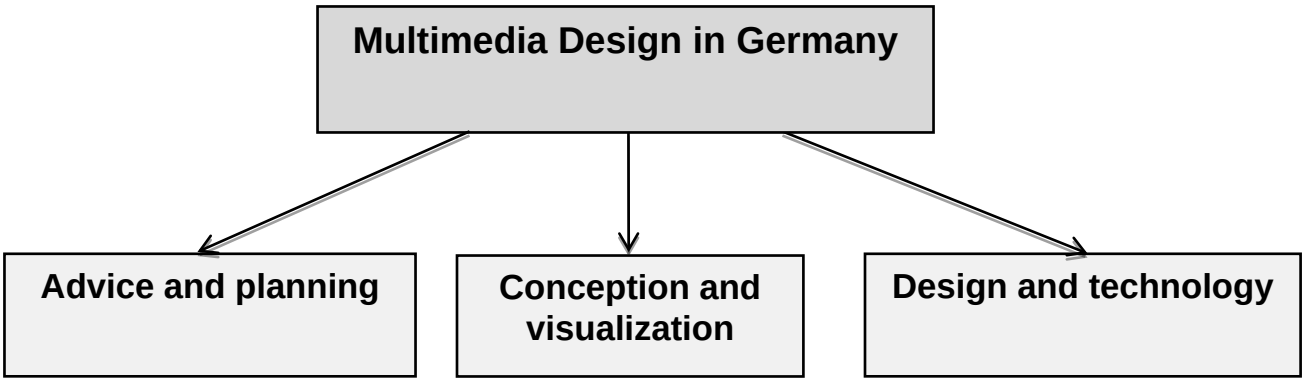

Figure 3: Categories of the main focus areas of the multimedia design profession in Germany (Nguyen 2019, 173)

2.3 Advantages and limitations of each training model:

The advantage of model 1 (product-oriented training) is that, by the end of their training, learners are able to independently create products relating to their profession, such as websites, print designs or films. However, the downside is that learners are not trained in the complex knowledge and skills required in real work processes, such as planning skills, client persuasion skills, consulting skills, and the skills needed to develop creative ideas. Therefore, although learners can take on all stages of the work process, from receiving contracts to creating final products, their professional competencies at each stage are not high-level.

However, if trained according to model 2 (work-process-oriented training) graduates can undertake certain tasks in the project (such as advising clients, developing concepts and ideas, and design and technical assurance) at a high level. However, the disadvantage of this model is that workers in different fields have to cooperate with each other to create finished products for clients. Each worker is dependent on others, instead of being in charge of the whole work process, from receiving contracts to creating final products.

Having considered the advantages and disadvantages of the two training models, the authors propose a new multimedia design vocational training model, which combines product-oriented training and work-process–oriented training in order to leverage the advantages and limit the disadvantages of each. This new training model could prepare workers to become more flexible and resilient in an increasingly competitive future work environment.

3 Combined Product-Oriented and Work-Process-Oriented Approach

In arriving at the design of the combined product-oriented and work-process-oriented training model, we first analyzed the typical work processes in each subfield (graphic print design, web design and digital film production) of the multimedia design profession to detect

commonalities and differences, and then focused on the commonalities as the basis for creating a common basic vocational training model for the multimedia design field.

3.1 Analysis of Typical Work Processes in the Multimedia Design Profession

The phases of a work process can be displayed as a process chain to depict an external process structure for work activities, which then offers analytical access for a more detailed description of work requirements along the process chain. Work phases differ by subfield of the multimedia design profession, but there are some commonalities across the three subfields.

Looking first at the subfield of **graphic print design**, the typical work process can be depicted as shown in Figure 4. The work phases are: client order, project definition, planning, analysis of customer specifications, development of the design concept, presentation to clients, production/print and evaluation of results (Pujagut, Garcia, & Oliver 2010; Hembree 2006; Ambrose & Harris 2009; Dabner, Stewart, & Zempol 2014).

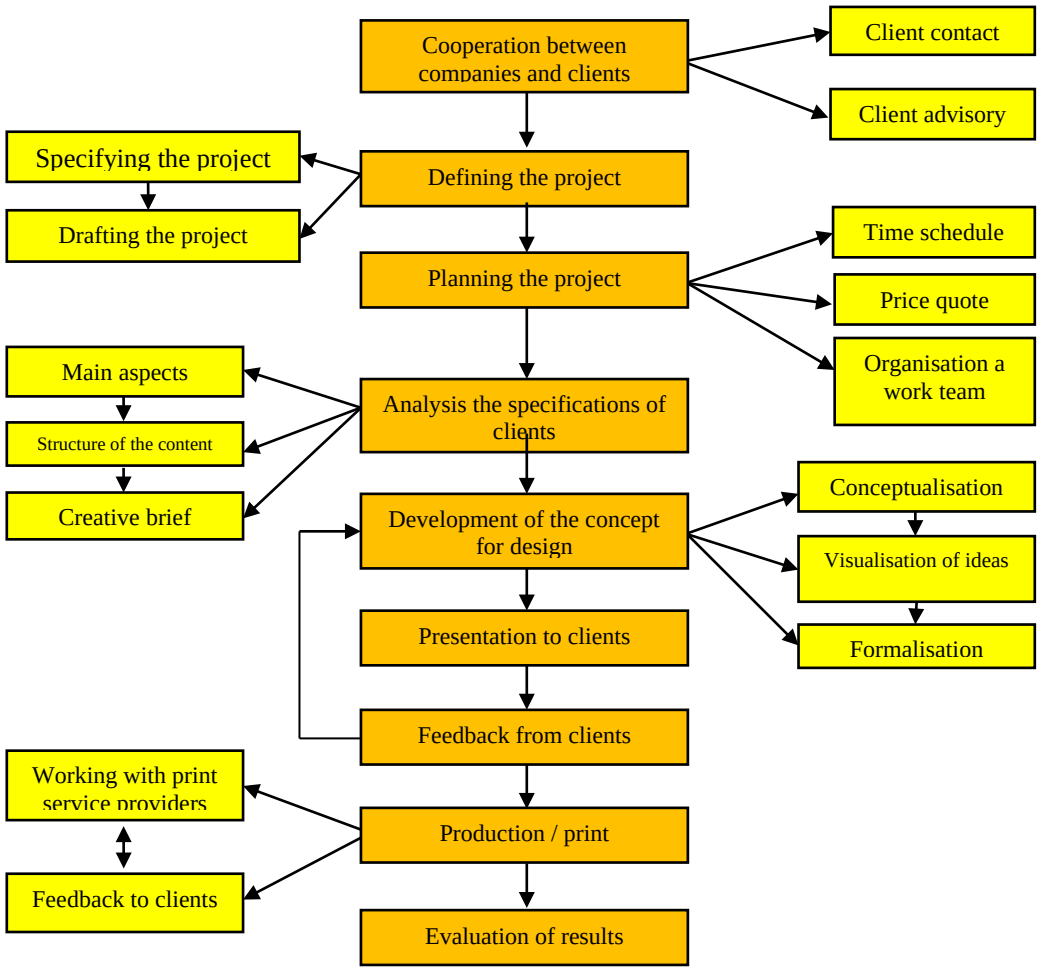

Figure 4: Process chain in the subfield of graphic print design (Nguyen 2019, 24)

In the subfield of **web design** (see Figure 5)**,** individual phases in the process chain are: client order, project planning, design of the web structure, presentation, programming, trial/launch phase, and post-launch phase (Baumgardt 2000; Dabbs & Campbell 2004; Graver & Jura 2012; Dabner, Stewart, & Zempol 2014).

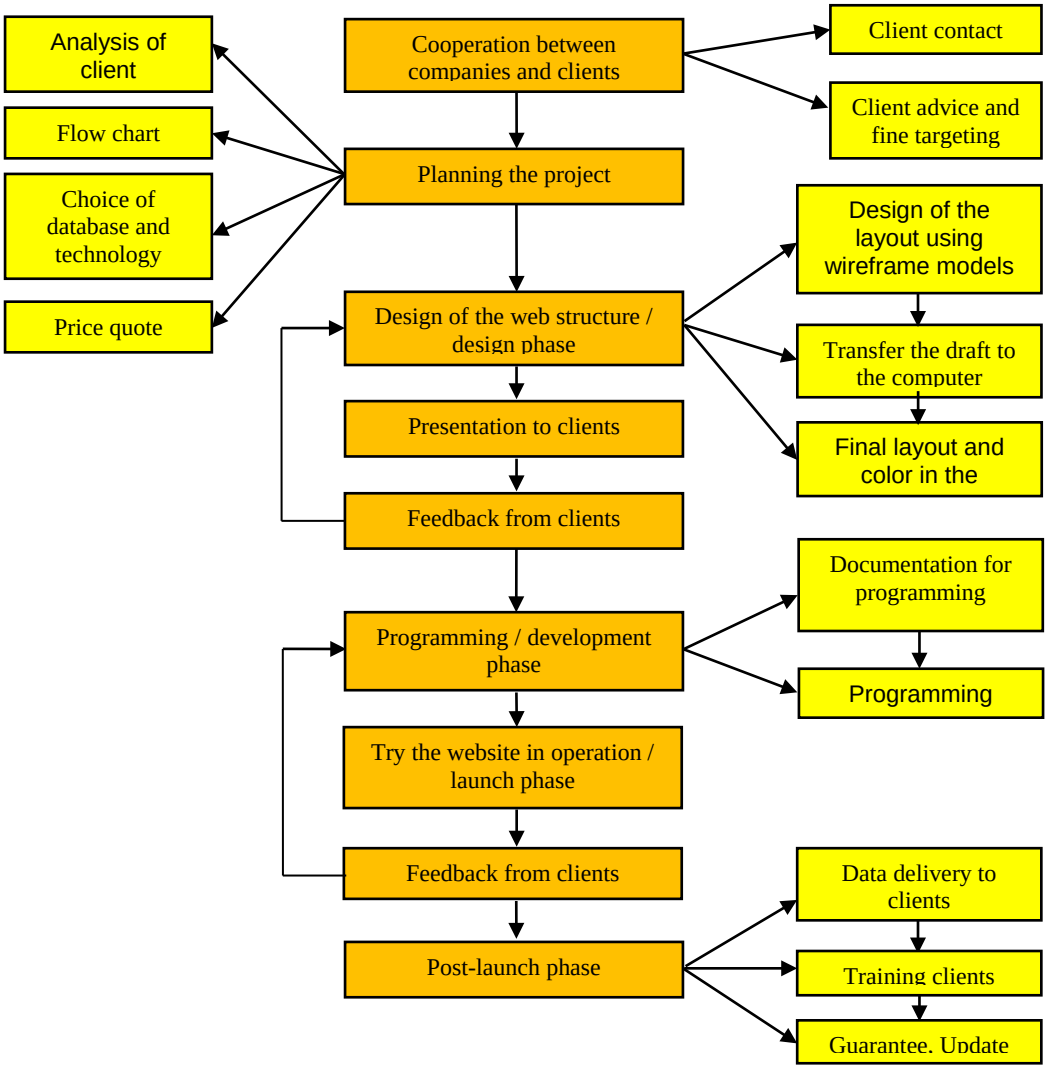

Figure 5: Process chain in the subfield of web design (Nguyen 2019, 38)

In the subfield of digital film production (see Figure 6), the phases of the production process of a cinema film, advertising film or television film are: client order, project development, pre-production, production/rough film making, post-production/film processing, and film exploitation (Blumenberg et al. 1996; Steiff 2005; Wulff & Bender 2003; Flückiger 2008; and websites for film production and film companies such as filmlexikon.uni-kiel.de and www.trilight-visions.de/leistungen/produktions-abschnitte.html).

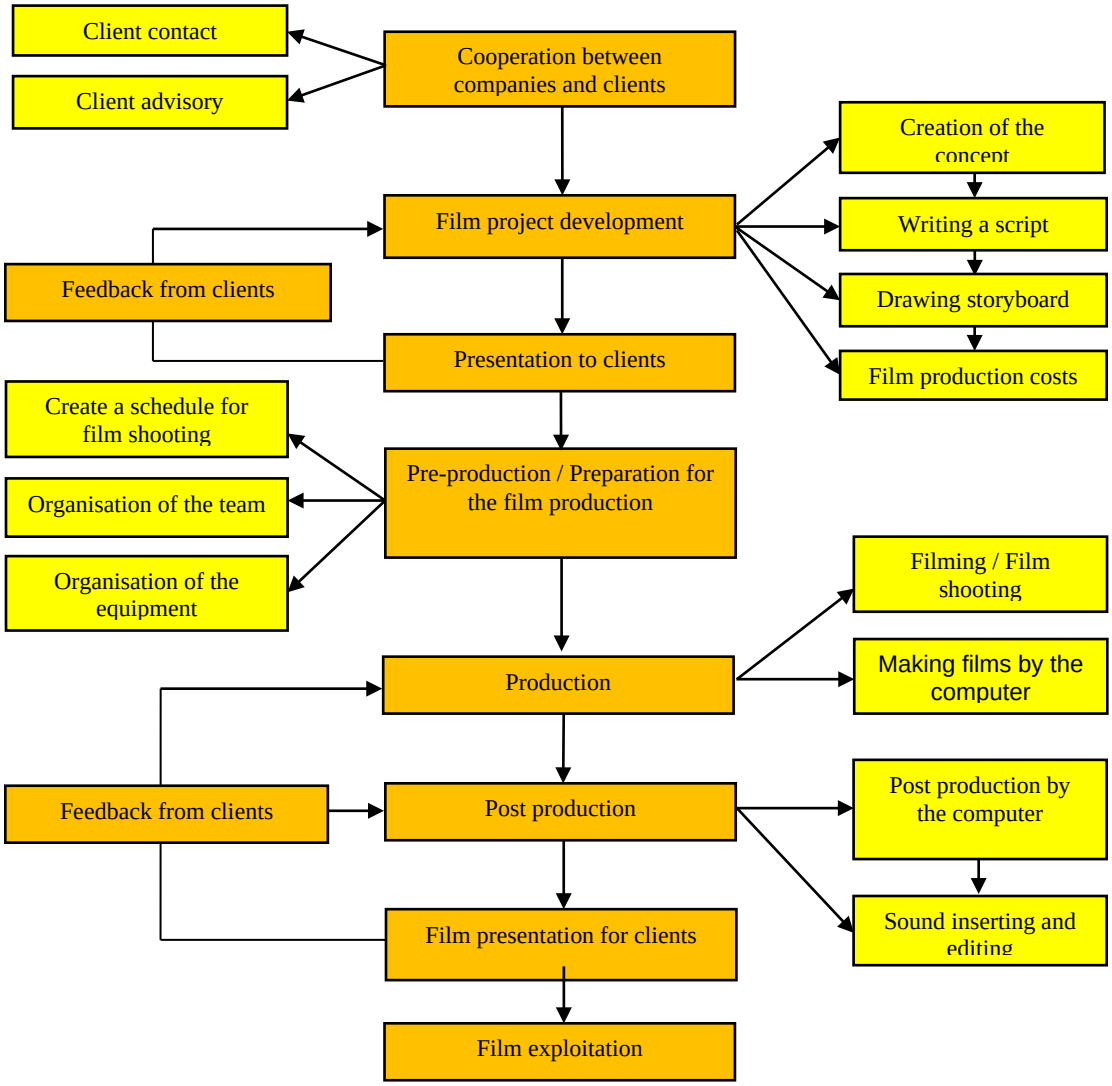

Figure 6: Process chain in the subfield of digital film production (Nguyen 2019, 52)

3.2 Common Basic Vocational Training Model for the Multimedia Design Profession

Comprehensive training, combining product-oriented and work-process-oriented training, can enable workers to take flexible working positions, thereby increasing their career opportunities in an increasingly competitive future social context. The common basic vocational training model for the multimedia design profession that we have created is based on commonalities noted in the work phases of the three multimedia design subfields. These include working with clients, capturing client goals, analyzing clients' specifications, determining the target group, presenting to clients, sketching the illustration on paper, and processing design elements such as typography, images, graphics and logos. The comprehensive multimedia design training model that we propose is conducted over a 3-year training period, as discussed below.

1st year of training

At the beginning of their training, learners should acquire basic specialist knowledge and skills, consisting of sketching illustrations and designing typography, graphics and images using computer software (see Table 1).

Table 1: **Arrangement of modules for the 1st year of training (Nguyen 2019, 192)**

Common basic vocational training				
Module 1. Design principles	Module 2. Illustration	Module 3. Use the computer network and the Internet	Module 4. Typography	Module 5. Design and edit images and graphics

2nd year of training

In their second year of training, learners can begin to learn how to work with clients (see Table 2). They should understand all of the work requirements mentioned in the client order and be able to determine target audiences for their outputs (module 6). They should also be able to plan and implement a media project (module 7) and to develop ideas for a design and present them to clients. However, this latter work requirement is a little different in graphic or web design from that of making a film. In graphic design and web design, ideas are presented within a design concept (module 8a + b), whereas in digital film production, they are integrated into the script and storyboard (module 8c). Likewise, learners in the subfields of graphic design and web design integrate all media elements into one layout, consisting of the files of typography, graphics, images and existing logos (module 9a + b), while learners in the field of digital film production make a film based on the storyboard and then convert it from analog to digital format (module 9c).

Table 2: **Arrangement of modules for the 2nd year of training (Nguyen 2019, 192)**

Graphic print design	**Web design**	**Digital film production**
Module 6. Capture client order and determine target group		
Module 7. Plan and implement media project		
Module 8a+b. Develop and present a design concept		Module 8c. Create and present a storyboard
Module 9a+b. Integrate media elements in a design-oriented manner		Module 9c. Record film and convert digital movie

3rd year of training

In the third year of training, learning content is divided by subfield, and learners take specialized modules that develop and deepen their professional skills in their subfields. In their first set of modules, learners in the subfield of graphic print design work on layout and composition to design a final print media product (module 10a); learners in the subfield of web design work on designing a website (module 10b); and learners in the subfield of digital film production create a rough digital film (module 10c). In their second set of modules, learners in the subfield of graphic print design gain specialist knowledge and initial experience in creating a logo that takes into account corporate design (module 11a); learners in the subfield of web design spend time creating the website that they designed in the previous module (module 11b); and learners in the subfield of digital film production carry out post-production work, consisting of film editing and adding effects to their film (module 11c). In their third set of modules, learners in the subfield of graphic print design use publishing technology and work together with skilled workers to print the final print media product (module 12a); learners in the subfield of web design put their programmed website into operation, test and publish it (module 12b); and learners in the subfield of digital film production add the sound to their film (learning field 12c).

Table 3: **Arrangement of modules by subfield for the 3rd year of training (Nguyen 2019, 194)**

Graphic design for print	**Web design**	**Digital film production**
Module 10a. Design print media product	Module 10b. Design website	Module 10c. Create digital film using computer technology
Module 11a. Design logos and implement corporate design	Module 11b. Programming the website	Module 11c. Edit digital film
Module 12a. Use publishing technology	Module 12b. Finish and hand over the website	Module 12c. Add sound

4 Competence Profile of TVET Teachers in the Multimedia Design Field

In considering the applicability of the combined product-oriented and work process-oriented training model to the field of multimedia design, we analyze the competencies required by TVET teachers in this field using the competency framework developed by Diep and Hartmann (2016). Diep and Hartmann's vocational teacher competency model focuses on six key competence areas (see Figure 7). To be able to implement the new training model

effectively, TVET teachers in the field of multimedia design need to have mastered these six competencies through pre-service and/or in-service training.

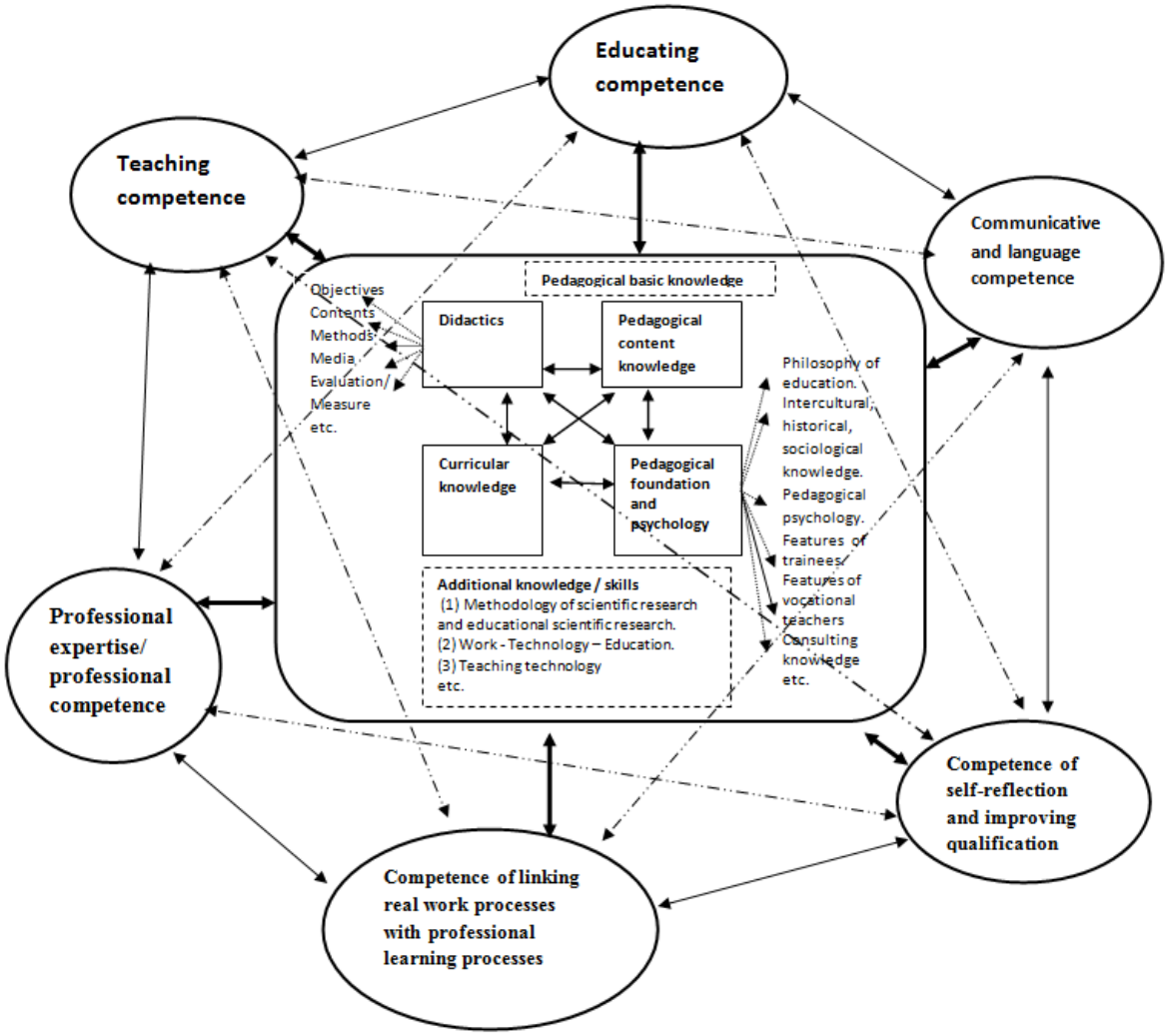

Figure 7: Model of pedagogical competence for vocational teachers (Diep & Hartmann 2016, 7).

The ideal training model consists of concurrent training during the pre-service training phase, wherein teachers are taught both professional and pedagogical competencies at the same time. But, in fact, in many countries it is not easy to implement this form of training. Thus, we can instead accept a consecutive training model, which combines pre-service training (occurring at university and developing teachers' professional expertise) and in-service training (which takes place at an educational center/facility and develops teachers' pedagogical and general competencies).

Regardless of how training is structured, it needs to equip multimedia design teachers with the following six competencies to enable them to effectively implement the proposed common basic vocational training model:

(1) **Professional competencies** relate to the fact that teachers in the multimedia design field must have knowledge and skills in using design software (such as Illustrator, Photoshop, 3D Studio Max, web design software, film processing software, etc.) and related machines/devices, as well as knowledge of design principles, aesthetics and concept formulation. Furthermore, in order to create products required by modern markets, multimedia design teachers must have expertise in new technologies relating to their subfield in accordance with real work processes (e.g., new design software, new film processing software, etc). These competencies help teachers to implement work-process-oriented training to teach learners how to create media products. Multimedia design teachers also need non-technical knowledge, such as cultural, social and historical knowledge, to be able to design media products which meet the needs of the society and are culturally valuable. These capacities help teachers train learners to develop design concepts, capture client orders and determine the target audience for their products. These skills involve not only a product, but also a working process relating to that product.

(2) **The competence of linking real work processes with professional learning processes** refers to the fact that a teacher in the field of multimedia design should have industry experience and continuously update their knowledge and skills in line with changes in workplace practices. Following on from that, the teacher should have the skills to develop training programs/syllabi and design lessons in accordance with current work processes and professional practices. After all, the multimedia design field relates to a work process with many phases in the development of a media product. Products trends change quickly, and the technologies needed to make media products also change rapidly. Thus, multimedia design teachers need to grasp these changes and adjust their teaching accordingly.

(3) **Teaching competence** concerns the fact that teachers in the multimedia design field need to have pedagogical knowledge and skills, such as didactics, pedagogical content knowledge in multimedia design, educational psychology, knowledge of curriculum development, and knowledge and skills in teaching technologies. If teachers only have professional skills (such as a mastery of design software) but lack the pedagogical skills needed to design lessons, convey knowledge, organize learning activities, assess learning outcomes and give instructions, then they will be not able to deliver training that helps learners to acquire the necessary professional knowledge and skills. Multimedia design teachers should also be equipped with modern didactics and understand how to implement *action-oriented teaching*, *product-oriented training* and *work-process-oriented training*. These competences are prerequisites for determining appropriate learning objectives, designing appropriate teaching content, and using suitable teaching methods and facilities for the implementation of product-oriented and work-process-oriented training.

(4) **Educating competence** indicates that teachers in the multimedia design field have the capabilities to teach learners appropriate working attitudes such as care, patience, creativity, respect for the law, collaboration/teamwork, planning, time management, and other soft skills. In the multimedia design profession, a company may encounter legal issues if an employee violates copyright laws. Likewise, in professional practice, workers have to fulfil

the many requirements of customers and are often under time pressure due to a high workload. Soft skills help them to execute appropriate strategies to handle work pressures, such as cooperating with each other to fulfil an order or engaging in project planning. TVET teachers need to use appropriate teaching methods to support and develop learners' complex work-relevant skills, such as conflict resolution and persuasion.

(5) **The competence of self-reflection and self-improvement** refers to the ability of teachers to regularly reflect on their training needs and continuously update their knowledge and skills in response to changes occurring in the world of work. Lifelong learning is a necessity in the field of multimedia design, because technological change happens quickly and design software is constantly updated, renewed or newly created. Teachers also need to keep up to date on new aesthetic trends, consumer tastes and popular design styles. For this reason, the competence of self-reflection and self-improvement is very important for TVET teachers in the multimedia design field.

(6) **Communication and language competence** refers to teachers' ability to present and use language to organize teaching (e.g., transfer specialized knowledge to learners and organize learning activities) and educate learners. Teachers also need good communication skills to develop learners' soft skills, including communication skills. Recent research shows that there is a significant positive relationship between soft skills and TVET graduate employability (Wan Hanim et al. 2020).

5 Conclusion and Recommendations

This paper has introduced a new model for vocational training in the multimedia design field and analyzed the skills requirements and professional competence profile of TVET teachers in this field. These results can contribute to the generation of recommendations for improving the training of teachers in the multimedia design profession. The proposed 3-year common basic training model, which combines product-oriented and work process-oriented training, exploits the advantages and reduces the disadvantages of both the product-oriented training model implemented in Vietnam and the work process-oriented training model practiced in Germany. If this model were to be widely applied, it could open up an avenue for comprehensive training in the multimedia design profession.

Based on an analysis of the competencies required by multimedia design vocational teachers to be able to implement the proposed training model, we will now make some recommendations for the training and retraining of TVET teachers in this field.

5.1 Recommendations for developing teachers' professional and pedagogical competence

- TVET teachers in the multimedia design field should receive pre-service training according to the concurrent model – i.e., training in both professional and pedagogical competencies at the same time. In-service multimedia design teachers who lack

pedagogical and general competencies should be provided with in-service training according to the consecutive model. In both cases, attention should be paid to building teachers' knowledge, skills and attitudes in all of the six competency groups outlined by Diep and Hartmann (2016).

5.2 Recommendations for in-service teachers and TVET institutions

- Multimedia design teachers should have the opportunity to participate in continuing training and professional development courses organized by their training institutions to regularly update their knowledge and skills in emerging multimedia technologies, such as new versions of design software or image/film processing software or new innovations in design technology. One of the characteristics of the multimedia design profession is that technology is subject to continuous improvement and upgrading. Thus, multimedia design teachers who do not master new technologies will not meet professional requirements.
- Teachers should have the opportunity to participate directly or indirectly in seminars on socio-cultural topics relevant to the multimedia design field to discuss issues and share practices related to aesthetics, emerging design trends and contemporary social perspectives in multimedia design.
- Teachers should receive training and support to build their pedagogical knowledge and skills relating to vocational curriculum development, job analysis, didactics in modern teaching concepts (action-oriented teaching, competency-based teaching, product-oriented training, work-process-oriented training) and active teaching methods. This is an important prerequisite for effective teaching: helping learners to develop their professional action capabilities, to create products according to the work-process and industry standards, and to develop soft skills such as teamwork, conflict resolution, communication, planning and time management.
- Teachers should be "retrained" periodically through professional improvement courses or seminars held at industrial companies in order to grasp and update their knowledge of real work processes in professional practice and to keep up to date with new technologies used in the multimedia design profession. Training institutions should strengthen linkages with businesses/companies and lobby for companies/ industry to participate in apprenticeship training and professional mentoring of "in-school teachers".

5.3 Recommendations for policy

- Policies and laws should encourage businesses/companies to participate in multimedia design vocational training as well as in the training/re-training of multimedia design teachers. In developing countries in Southeast Asia, as well as in many other regions of the world, the participation of businesses/industry in the vocational training process is still very limited.

- There should be regulations regarding the pedagogical training requirements of multimedia design teachers, because in many training institutions offering multimedia design courses, vocational teachers only have a bachelor's or master's degree in Arts or Graphic Design and do not have any pedagogical knowledge and skills.

5.4 Recommendations for further research

- Further research on curriculum development in the multimedia design profession may be beneficial to promote training in this field. Vocational learning materials and training resources should be continuously reviewed and updated. How the specified pedagogical training courses for multimedia design teachers should be organized and how pre-service teachers in this field should be comprehensively trained are also questions for further research.

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