Vocational Education & Training
– The World of Work and Teacher Education

# VOCATIONAL EDUCATION & TRAINING – THE WORLD OF WORK AND TEACHER EDUCATION

## EMERGING ISSUES IN RESEARCH ON VOCATIONAL EDUCATION & TRAINING VOL. 3

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premiss

Graphic design: Conny Lindström
Cover illustration: Sinna-Nyan
ISBN: 978-91-86743-88-8

www.premissforlag.se
Premiss förlag is a part of Arenagruppen, Stockholm

Contributions in this book has been submitted to review process prior acceptance for publication. Authors remain however the sole responsible for language usage in the different contributions.

# PREFACE

This book is the third volume of the series Emerging Issues in Research on Vocational Education & Training, an outcome of the international networking of the research group VETYL (*Vocational Education & Training/Yrkeskunnande och Lärande*), at the Department of Education, Stockholm University, Sweden. This research group was created in 2011 with twofold aims: contributing to the advance of knowledge in the intricate area of vocational education and training (VET) and strengthening the research bases of the teacher education program for VET that is offered at the Department of Education, Stockholm University. The Swedish term "yrkeskunnande och lärande" in the name of the research group translate as "vocational knowing" and indicates one of the major research concerns of the group.

In May 2012 the group organised the first Stockholm International Conference in VET, an academic event that until may 2018 has been organised yearly following the modality of invited papers. The conference has had two core aims: becoming a forum for sharing state of the art research in the VET field and a forum for networking and cooperation. The Stockholm International Conference in VET has now a well gained place within the major academic events organised in Europe as part of the European Network for Vocational Education and Training (VETNET). This volume is a product of the networking originated in the conference. The chapters are selected texts, after review process, that were first presented as papers in the sessions of the conference held in May 2018.

The texts presented in this volume are representative of the research in the field of Vocational Education & Training that is been carried out in the different institutions engaged in the above-mentioned network. The title of this volume *Comparative Issues and Research Concerns in the National Landscapes of Vocational Education & Training* serves as an umbrella where comparative analysis as well as other research outcomes of cross-national interest are presented.

In the first section of the book, articles cover research in relation to vocational education and training and work. Miguel A. Pereyra and Antonio Luzón present a case study from Spain, the study focuses on workshop schools for young people. The contribution from Maarit Virolainen and Hannu L.T. Heikkinen explores collaboration between vocational education and training institutions and work from the perspective of actor network theory and ecosystems of learning. The study of Heta Rintala, Petri Nokelainen and Laura Pylväs focuses on students' experiences in learning at the workplaces within different forms of VET and varying vocational fields in Finland. Specifically, the study examines workplace curriculum or pedagogic practices that relate to how learning through practice occurs and is supported. Ramlee Mustapha and Aruna Ismail examine in their chapter the effectiveness of TVET and the Malaysian skills qualification framework (MSQF) in producing knowledge workers from practitioners' perspectives. In the following chapter Mohd Firdaus Mustaffa Kamal and Haryanti Mohd Affandi highlight a methodology on how Construction Management program can integrate work-based learning in the curriculum in Malaysia. Fika Burton Mwakabungu, Shu-Nu Chang Rundgren and Marianne Teräs present a study on full-time and part-time

young fishers and school teachers' views on sustainable fishing in Tanzania. The contribution of Pekka Kämäräinen deals with the follow-up phase of the EU-funded Learning Layers project (2012–2016). It focuses on the use of the main result of the project, the Learning Toolbox, as a support for work-based and vocational learning, as well as on knowledge sharing in work organisations. Marianne Teräs and Reijo Miettinen examine challenges of development work in oral-health care in Finland. The contribution from Barbara E. Stalder and Fabienne Lüthi focuses on how learning environments and individual characteristics influence learning opportunities within and beyond the borders of the specific learning place.

The contributions in the second section of this volume pays particular attention on vocational teacher education and training. The first contribution by Seija Mahlamäki-Kultanen, Jaana Muttonen and Jari Lavonen explores the OPEKE project, aiming at developing vocational and professional teacher education, and especially how competences of vocational and professional teachers were developed in Finland. Mohd Redzwan Abdul Mutalib, Haryanti Mohd Affandi, Mohd Izwan Mahmud and Siti Kartina Abdul Karim examine in their text factors that impact on vocational teachers' career choices in Malaysia. The chapter by Hamid Asghari and Birgit Schaffar-Kronqvist focuses on two Swedish industrial teachers' stories about their education, professional life and teaching. Lewis Hughes in his text presents and discusses the intentions behind the establishment of the VET Practitioner Research Network in Australia. In the last article, Krista Loogma, considers the implications critical events and incidents, as narrated by vocational teachers, may have on their professional careers.

Summarising, this volume illustrates well the diversity of research in the field in a way that is not frequently available in the literature today. The contributors are scholars doing research within VET in contexts with contrasting cultural and socio-economic characteristics.

We hope that the book will fulfil the expectations of a diversity of readers including under–graduate students, in particular students in initial and in-service teacher training programs for VET, post-graduate students, and policy makers.

Finally, we would like to thank the reviewers for their useful suggestions that helped to improve the contributions presented in this book.

Our gratitude goes also to all the authors for enthusiastic support to our fruitful academic discussions, the strengthening of our institutional networking and the commitment to the advancement of knowledge in the field.

*Lázaro Moreno Herrera,*
*Marianne Teräs*
*& Petros Gougoulakis*
Stockholm, September 2018

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## SECTION II:
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# Section I:

# VET and the World of Work

# The Escuelas Taller (Workshop Schools) for Young People in Spain. A Case Study in Malaga (Andalusia)

Miguel A. Pereyra*, Antonio Luzón

**Abstract:** This paper analyzes a case study on the Workshop Schools (Escuelas Taller) program in the Malaga Functional Region as part of a broader research project "Policies supporting Young People in their life course. A comparative perspective of lifelong learning and inclusion in education and work in Europe "financed by the European Union within the Horizon 2020 strategy. This initiative is part of the broad action plan of LLL policies, specifically, those measures for the training of young people between the ages of 16 and 25 for employment. It is not exclusive to the municipal institutions but extends beyond these limits to take in the entire region of Andalusia. It combines training and employment initiatives. The Workshop Schools (Escuelas Taller) are a result of the policies of the European Strategy for Employment, financed by the European Social Fund, but with application throughout an Autonomous Community as they form part of the work-linked training policies (alternating periods of training at school and in the workplace). They represent the features most highly valued by the different actors involved. The aim of this case is to examine and analyses

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the integral intervention on training and employment, complemented by other activities carried out in coordination with the different agencies and actors involved.

The main aim is for them to become qualified by alternating training with work experience in developing services of public utility or social interest, and ultimately to assist in their finding employment. This paper analyses and criticizes the challenges and shortcomings of this policy.

**Keywords:** Workshop schools, Training for employment, Young adults, Policies of life long earning.

## 1. INTRODUCTION

The case study chosen is a programme carried out in the Municipal Institute of Training and Employment (MITE) of Malaga, located in its metropolitan area. The MITE stands out because is an organism for information and advice on the promotion of employment and self-employment in the municipality of Malaga, which acts as promoter and coordinator of all the resources available to boost the city's economic, entrepreneurial and training activities in order to achieve the ultimate foal of full employment[1]. In the framework of the broad plan of action for LLL policies, the *Escuelas Taller* or Workshop Schools stand out among other programmes of training and promotion of youth employment[2]. In this respect, it is also important to emphasize the work of Town Halls of great Malaga Metropolitan Area for

1 http://imfe.malaga.eu/

2 http://www.empleo.gob.es/es/estrategia-empleo-joven/logos/planes/Plan_Actuacion_IMFE.pdf

its trajectory in the training policies for employment, especially in young people through Workshop Schools and Employment Workshops.

This programme is not exclusive to the municipal organism or the functional region, but it is a program of regional scope so it exceeds the limits of the functional region itself. It is co-financed by the Department of Employment, Enterprise and Commerce of the Andalusian Regional Government, the Ministry of Employment and Social Security and by the European Social Fund, which combines training and employment initiatives[3] The Workshop Schools are a result of the policies of the European Strategy for Employment, financed by the European Social Fund, but with a strong regional or autonomous component, as they form part of the work-linked training policies, i.e., alternating periods of training in school and in work, which is one of the features most highly valued by the different actors involved.

The appointment of different entities for the development of the Workshop school program is carried out on a competitive basis. The different local organizations, the organisms that depend hem (MITE), the associations, foundations and other non-profit-making institutions participate in this competition. The Andalusian Autonomous Government establishes and decides which professional qualifications will be granted taking into account the criteria set by the *Estrategia de Innovación de Andalucía 2020* (*Andalusian Strategy for Innovation 2020*) and the *Estrategia Española de Activación para el Empleo 2014 – 2016* (Spanish Strategy for the Activation of Employ-

3 http://www.juntadeandalucia.es/organismos/empleoempresaycomercio/areas/empleo/formacion/paginas/escuelas-taller.html

ment 2014 – 2016), analyzing the jobs with the best future. In the Malaga metropolitan area as functional region, through a current resolution (november 2017)[4], the Regional Department for Employment, Business and Trade of the Andalusian Autonomous Government, has granted only seven Workshop Schools to local governments and organizations which depend them, such as the MITE and the OAL (Local Autonomous Institution) for Local Promotion and Development.

The strategy and initiatives for encouragement and promotion of employment of this body dependent on the Town Hall of Malaga have as their goal the improvement of the social and economic situation of the municipality's socio-geographic context. The programme seeks to make an integral intervention on training and employment, complemented by other activities carried out in coordination with different involved units and agents. The 2015 joint report[5] by the Council and the European Commission on the design of ET2020 establishes six priority areas for the 2016-2020 periods, determining specific questions to be dealt with in each area. All these areas are strongly focused on training and education in young people. Special reference is made to the Riga conclusions of June 22, 2015, where one of the

4 Publication of the new resolution for the Workshop Schools on 08/11/2017. In section "D.T. de Economía, Innovación, Ciencia y Empleo de Málaga" appears the schools corresponding to Málaga: http://www.juntadeandalucia.es/organismos/empleoempresaycomercio/areas/formacion-empleo/becas-fpe/paginas/resolucion-provisional-talleres.html

5 Joint Report (2015) of the Council and the Commission on the implementation of the strategic framework for European cooperation in education and training (ET 2020). New priorities for European cooperation in education and training. [http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52015XG1215(02)&from=EN].

main aims in the area of education and vocational training for the period 2015-2020 is. "To promote work-based learning in all its forms, with special attention to apprenticeships, by involving social partners, companies, chambers and VET providers, as well as by stimulating innovation and entrepreneurship." (p.C417/35).

The aims of the Workshop Schools, including the five dependents on the Malaga MITE, had a very specific particularity in the first stage, which was the development and promotion of activities related to the recovery of the artistic, historic, cultural or natural heritage. Rehabilitation of urban areas and the environment was also considered, as well as the recovery and conditioning of publicly owned infrastructures to serve as the basis for centers of entrepreneurial initiative, and any other public or social activity leading to insertion of the young participants though professionalization and acquiring experience (García Valverde and Serrano, 2009).

The Workshop Schools, as part of the policies for work training, aim to grant a remunerated and productive job to young people, over 16 and under 25, which are unemployed. However, although this was an exclusive aspect before, the new regulations of 2016 include a 60% fee for unemployed young adults who belong to priority groups. Besides, the selection proceedings have changed. They used to be selected by the institution which promoted the Workshop Schools before. Now, they are appointed by the Andalusian Employment Office.

These young people undergo a training plan which aims for the acquisition and improvement of their professional competences and qualifications, through the obtaining of professional certificates. Its objective is the combination of the qualification

and the working training, in order to develop useful public or social services which grant these young people the possibility to carry out an effective job, which, together with the professional training they undergo, help them to get professional qualification and a future job.

Young participants and responsible for the Workshop Schools in the Malaga functional region confirm the importance of this training programme for the employment of large numbers of young people, pointing out that these projects have been particularly successful in the labor insertion of young people who have completed compulsory education or no. Aside from the new regulation (April, 2011 and July, 2016), Workshop School training was transversal, also focusing on personal trajectories, taking into account personal development and the strengthening of social and personal abilities. Apart from specialized training aimed at employability, modules were available on the prevention of occupational risks, job placement, computer training, environmental awareness, and even gender equality. As a result of the new regulation of the year 2016, the reduction of the training period from 24 to 12 months, these modules of basic complementary training, will not be taught except for certain projects that justify it.

The latest announcement of these programmes by the Andalusian Regional Government in 2016[6] requires the collaborating bodies, including the MITE of Malaga, to fulfill the prescriptions of the training personnel and the minimum requirements

6 http://www.juntadeandalucia.es/boja/2016/107/1
http://www.juntadeandalucia.es/organismos/empleoempresaycomercio/areas/formacion-empleo/becas-fpe/paginas/subvenciones-escuelas-taller.html

of space, installations and equipment established for all the modules constituting the corresponding certificates of professionalism (levels 1 and 2) to be provided, as well as other specifications. The goal is the same as that described in the national Law of Qualifications and Vocational Training, consisting in providing an integral system of vocational training, qualifications and accreditation to respond openly and efficiently to social and economic demands by way of the various training modalities.

In Malaga, as in the entire Autonomous Community of Andalusia, as a result of administrative dependence, all training courses for employment including the Workshop Schools have been suspended since 2011, because of irregularities detected in their execution. Some of the court cases concerning Vocational Training for Employment (VTE) have been closed because the employment technicians were not involved in the supposed irregularities. In all these years, Andalusia, with a mean unemployment rate of 34.3%, has not had training for employment in accordance with the needs of the region. These anomalies in policies of training for employment have meant the loss of European Union grants, with the ensuing suspension of different programmes and projects for training for employment, including the Workshop Schools. For these reasons, new regulations have been passed for the Workshop Schools and other programmes and recently put into practice. We can, therefore, speak of a before and after in the policies of training for employment and the subsidies for their promotion and development. In this new stage, the province of Malaga receives 8.6 million euros out of a total of 49 million destined by the Andalusian Regional Government for Workshop School and Employment Workshop projects, taking into account the unemployment rate.

## 2. TELLING THE STORY OF WORKSHOP SCHOOL

The Workshop School programme has, in fact, been in operation for over thirty years, having first started in 1985, together with Trade Schools, under the motto "to learn working and to work learning", and later extended to Employment Workshops in 1999. It represents a response to the interrelation existing between training and work in a dynamic economy (Amor Bravo, 2008; García Valverde y Serrano, 2009; Muñoz, 2013; Pérez González, Blanco y Sánchez López, 2016). The programme was created in response to high rates of unemployment (47% in 1985) among young people with low educational standards and severe problems of job placement and social integration7. This young population has been also affected by the high percentage of school dropout in secondary education (accordingly once school dropout has materialized, this kind of actions focus on trying to alleviate the negative consequences for youth, and as such the actions could be understood as palliative measures with respect to these groups).

Since the 2001 the Workshop School projects in Spain (and other similar actions developed in other Spanish regions such as the Casas de Oficios y Talleres de Empleo – Houses of Trades and Workshops of Employment respectively) are intended to grant employment opportunities to young people having some serious difficulty in accessing work by combining training and

7 It is significant that one of the people involved in its creation was José María Pérez González (better known throughout Spain as Peridis, author of intelligent, satirical daily cartoons in the important newspaper El País), who also took part in another initiative to promote employment, known as the Lanzaderas de Empleo (Launchers of Employment).

work.8 In fact, they do not have a prominent role in the overall volume of employment, but they do have a positive impact on the social insertion of young people with low qualification developed in a framework of relative flexibility. Most of the promoters of these actions are the municipalities on the basis of prioritizing projects of interest to their towns or cities that may favor the employment needs of the recipients. However, according to the overall results of the past years the experience acquired by the unemployed youth does not offer, then, many guarantees of exits in the labor market (in general terms, in Spain for the case of these actions, the official regulations have not really tried to combine the interest of the public promoters with that of the students and with the needs of the productive areas and their localities; at the same time, the granting of the projects has been weakly connected with the possibility of a contract commitment at the end of the training process or with the existence of a tutorial to support the job search when the programmes end (Ferreirós Rey, 2017, p. 308-309 and 406).

In the case of the initiative of *Escuelas Taller* by the Ministry of Work, which promoted the programme with the assistance of

8 The last youth unemployment rate reported is 37% of youth, the second highest in EU-28 after Greece. In Spain, a worrisome feature of unemployment among young people is the long duration that characterizes this unemployment. The percentage of young people affected by long-term unemployment (12 months or more) went from 15% in 2007 to 50% in 2015. There are hardly any gender differences in the incidence of this social phenomenon among Spanish youth (see Montero González, 2017). Unfortunately this is in fact one of the features of the Southern European model (understood as historical and comparative political economy) whose socio-demographic model is characterized by a lengthening of young people's residential, work and family dependency, in a context characterized by weak family policies (Domínguez-Mujica and Pérez García, 2017, p. 18).

the European Social Fund, was mainly taken up by town councils in the modality of training and employment. We should, however, emphasize the fact that the Workshop School projects could initially only be promoted by autonomous entities and public bodies dependent on the State and Autonomous Communities, or their local agencies, consortiums, corporations, associations, foundations and other non-profit making organizations (García Valverde and Serrano, 2009, p. 861). According to the new regulation, there is not much difference from the stage prior to 2011, although the controls are much more demanding and strict.

At first the Workshop School programme (WS) had national scope with local organization by town halls and corporations. In 2003, central government transferred its powers in the fields of work, employment and training, until then managed by the National Institute of Employment (INEM)[9] to the Autonomous Community of Andalusia for the management and control at regional level of the national programmes of Workshop Schools and Trade Schools (WS/TS). Andalusia assumed the programming, organization and management of activities related to Vocational Training for Employment (VTE), as well as the homologation of the Workshop Schools and Trade Schools, and the issue of the corresponding professional certificates.

This model of work-linked training falls within the framework of what was formerly known as Occupational Vocational Training, which became Vocational

9 Royal Decree 467/2003, (25 April), on the transfer to the Autonomous Community of Andalusia of the management carried out by the National Institute of Employment, in the field of work, employment and training.

Training for Employment in 2007[10] and was again regulated in 2015.[11] In 2009 the Andalusian Department of Employment implemented the Worskhop Schools Programme, together with Employment Workshops and Trade Schools. Also in 2009, town halls, non-profit making bodies and public agencies presented 369 projects, of which 57 were for Workshop Schools, 20 for Trade Schools open to those seeking employment under the age of 25, and 285 were Employment Workshops for those over 25, while 7 projects were for promotion and development units. In 2006, General Directorate for Employment and Social Affairs of the European Commission classified the Workshop Schools Programme as one of Good Practice, as it was considered to be one of the best programmes aimed at disadvantaged young people (Caraballo, 2014), that as previously indicated, the group of young people passes from being a priority recipient and not exclusive.

In the province of Malaga between the years 2004 and 2011, have operated 69 Workshop Schools and Employment Workshops, attending to a total of 1920 young job seekers. Specifically, five Workshop Schools were in operation in the Malaga MITE[12], with an average of 40 young people per school, with ages ranging from 16 to 25 and very diverse activities.

Nowadays, with 2016 new regulations, which are stricter and centralizer, the number of Workshop School projects for young adults under 25 have been reduced by 75% (17 WS) and the Professional Workshop for people over 25 have been prioritized.

10 Royal Decree 395/2007 (23 March), regulating the subsystem of vocational training for employment (BOE, nº 87, 11/4/2007

11 Law 30/2015, (9th September, 2015), which regulates the Vocational Training System for Employment in the workplace.

12 http://imfe.malaga.eu/es/formacion/escuelas-taller/relacion-de-escuelas/index.html#.WfmKb2jWy7

This 17 new programs for Workshop Schools receive more than 6 million euros for their implementation in 2018 in the province of Malaga.

In the Malaga Metropolitan Area only seven new Project have been granted in this new appointment and one for the IMFE in Malaga.13 This case study refers to the Workshop School of the Local Government due to its long history in the promotion of training and employment in the town, especially among young population. The first experience in this town started in May 1989 with the Workshop School program "Jabalcuza". Since then, there have 16 programs in this town: 9 Workshop Schools and 3 Professional Workshops. These programs have trained up to 724 students. In august 2014, the last Workshop School, came to an end. Recently approved projects, include specialization courses from the Agrarian Professional Group (garden centers, gardens and Green areas maintenance), with qualification levels 1 and 2, as well as activities related to the Construction and Civil Works Professional Group (coating activities and construction techniques) from level 1 of qualification.

13 The new contracts can be consulted at: http://www.juntadeandalucia.es/export/drupaljda/AnexoI_Malaga_8_11_17.pdf

**Andalusian Regional Government**
Department of Employment, Business and Commerce

**Recipients of Workshop Schools**

- Unemployed young people between the ages of sixteen and twenty-five
- To be registered with the Andalusian Employment Service as an unoccupied job seeker.
- Priority collectives
- Unemployed under the age of 30 with training deficit, women, ethnic minorities, refugees and immigrants.
- Women victims of gender violence.
- Persons with recognised disability of 33% or more.
- Persons at risk of social exclusion.

**Entities beneficiaries of Workshop Schools**

- Local corporations of the Autonomous Community of Andalusia, independent organisms and entities with competences regarding promotion of employment whose ownership corresponds entirely to the said local Corporations.
- Consortiums and agencies located in the territorial area of the Autonomous Community of Andalusia.
- Associations, foundations and other non-profit making bodies located in the territorial area of the Autonomous Community of Andalusia.

## 2.1. PROMOTING ENTREPRENEURSHIP AND SELF-EMPLOYMENT AMONG YOUNG ADULTS IN A VULNERABLE SITUATION

It's interesting to analyze in this case study the profile of the young people to whom the Workshop School program is intended in the broad context of the Malaga Functional Region. It is linked in the framework of the active employment policies and Training for Employment in the functional region and goals established for the Workshop Schools Programme. During the first period, which covers from 2004 to 2014, the aims of the Workshop Schools, including the one that has been studied, have been adapted to a training specially aimed at young people under 25 years of age, unemployed with deficits in basic education or especially vulnerable collectives or at risk of exclusion.

Workshop Schools projects that have been developed in the entire Functional Region during this first period (until 2014) have been programs that combine professional training with the professional practice in activities related to the recovery of artistic, historic, cultural or natural heritage, the rehabilitation of urban areas or environment, the improvement of living conditions in cities, as well as any other useful public or social activity. These have been social initiatives with a high level of involvement from the professionals and the institutions which have provided a service to the community. This regional contextualization of the activities developed by the workshop schools in general, and the ones in Malaga in particular, have generated personal and social empowerment, with a sustainable and innovative potential.

For one of the teachers asked in the Workshop School, they are programs with a high social content, as they try to compensate, and, at the same time, a great impact and significance for the lives of those Young people:

> Workshop schools have been programs for training young people. Most of these people had had problems in the regular educational system, while others had finished their Compulsory Secondary Education studies, as they consider it necessary for their training. Mostly, I have worked with traditional jobs, such as construction working, plumbing, electricity, wood works, metal works and gardening. Those were the jobs for which we trained students in the Workshop School. That were our main plans (...). Those young people did not like to study in regular secondary schools and were attracted by a practical training. (E_SP_M_3).

Regarding the degree of social empowerment, the Workshop School program meant an important improvement in terms of promoting entrepreneurship and self-employment among young adults in a vulnerable situation.

> In fact, [in this town in Malaga], where we are, there are many young entrepreneurs who have studied in one of the Workshop Schools and today have their own business because they have acquired that knowledge and after that they have worked for a company, until finally setting their own. (E_SP_M_3).

For these young adults, these projects are also a great social, educational and confidence-boosting opportunity.

> Actually, I felt useless, I felt I was good for nothing. When I tried to find a job, they requested for the Secondary Education Certificate, and had nothing ... Now, I love my life. Maybe it has make it up to me for the bad times with this great moment (...) [Y_SP_M_6].

Under the new regulation approved in 2016, training can take the form of a specialty leading to level 1 and 2 professional certificates. Training itineraries are considered with the aim of guaranteeing that the young and people with learning deficits can eventually earn their professional certificate for job placement. However, since VTE only recommenced in 2016, we as yet have no evidence of the new regulation's adequacy.

From the point of view of governance, the conflict, for want of a better word, may be due to the change in regulation of the VTE policies affecting the Workshop Schools projects. For five years, many young people in Malaga who find themselves in situations of vulnerability and at risk of exclusion have not, as priority collectives, been able to enter this type of programmes because of the judicialization of VTE in the Andalusian Regional Government, with direct consequences for the Workshop Schools programmes.

> The Andalusian government is plays a major role in these projects, (...), and then, city councils [E_SP_M_4].

> Or the experienced I have lived, they are happy that their town offers a project like this, because it helps many young people to earn for a living. E_SP_M_4].

Despite the success of these programs with professional training and with young adults, the professionals insist that the main problem is their permanence. They wonder why these projects depend on the decisions of the city councils and the approval and funding of the Andalusian Government.

> The main problems are their permanence, not mine, but that of the project (Workshop School). [E_SP_M_4].

> ... and we have discovered that we had to fight for the permeance of the programs: demonstrate, meet with politicians, meet with politicians again ... (...) [E_SP_M_3].

We can also affirm that the new regulations reduce flexibility and the power of decision in local entities and non-profit making collaborating bodies, to concentrate it in the administration of regional government (Department of Employment, Business and Commerce). We do not yet know the consequences and implementation of this new regulation, as the new grants for operation of new programmes have not yet been made public. Another concern can be the uncertainty of local bodies faced with an unknown future, where rigidity and control of the process are clear, given the cases of judicialization already under way, although none of them are related to the Workshop Schools. Those responsible for Workshop School teams affirm that the new regulations aim to favour local corporations with larger budgets rather than projects judged by their merits, which is a question on which we cannot yet make a pronouncement.

> We have to qualify ourselves to teach new programs and we cannot do it now because, of course, besides from the fact that it means a lot of money for the City Council ... because ... there are a lot of equipment: disabled people facilities; the elevator, we built an elevator, but it was not possible; fireproof paints in the working rooms... So many things were changed. Then, it turned out that those jobs were not taught anymore. Before the crisis started, when it was just starting, we had to change the jobs, because there was a time in which construction working training was useless. [E_SP_M_3].

Concerning the *Life Course* focus, the MITE Workshop School projects together with those of other town halls in the Malaga functional region are directly related to specific initiatives aimed at promoting non-formal learning among young people. Indeed, one of the strengths of these programmes resides in the participation of vulnerable young people in activities linked to the workplace through sandwich courses.

> With the new regulation, as I said, there are no transversa subjects. Until last year, according to the regulations, it was necessary to offer an employability subject and an insertion subject, which lasted 10 hours. [E_SP_M_4].

> The students from the Workshop School are focused on training in order to get a job, because that is the only thing they have. They are not going to go to college, they are not going to study pre-university courses. Some students, we also try, right? One of the aims is professional integration, but also to help them to enroll official education again. Some of them, study

> official vocational courses again, but most of them are focused on learning a profession in order to get a job as soon as they finish and leave the workshop school. [E_SP_M_3].

Another of the Workshop School programmes is their relation with problems close to young people and their community, which encourages participation and the notion of enabling, in the sense of feeling useful by being of service to the community, but at the same time supplying both individual and social synergy.

Relating the perspective of *Life Course* and *Governance*, with the changes in new regulations, when basic training is reduced, young people are at risk for being prevented from studying previous programs, whether they be cross discipline or courses for the preparation of specific tests, and which aimed for the achievement of the Secondary Education certificate. Thus, the Workshop School may lose its integrating potential for this young people into the educational system. This reduction in the length of the program may also derive in a lack of time for the establishment of an affective bond among the young participants and the professionals, as well as between the firsts and the training itself, which is considered as a very relevant aspect by the interviewed people.

Besides, relating the perspectives of the *Cultural Political Economy* (CPE) and the *Governance,* (GOV), it is important to highlight the existence of a common discourse to all the experts, professionals and young students: the relevance of *soft skills* for the professional insertion of the young people. In this sense, some of the interviewed state it was necessary to train young people in several cross-skills before they were prepared to work. It is important to wonder if the changes in the regulations may

derive into a lack of time to train young people in the development of those skills and if this would have future consequences for their performance and their professional insertion. As it happened with the facts included in the previous paragraph, there is no data about the possible risks apart from the discourse of the actors, as they new programs established by 2016 regulations have not been implemented yet.

## 2.2 MIXED PROGRAMME OF EMPLOYMENT AND TRAINING

From the viewpoint of cultural political economy (CPE), the Workshop Schools fulfil a fundamental role. They are conceived as a mixed programme of employment and training to improve the employment capacity of unemployed young people up to the age of 25, with the goal of facilitating their job placement. They are part of the high youth unemployment rate in Andalusia (46.5%), with special emphasis on young people with educational deficits and in a situation of social risk. Most of the pupils have not successfully completed obligatory education or have not continued their s tudies.

One aspect which appears in the interviewed people's discourse, and which is outstanding, is the one of the "maturing process". At certain moments, they state that during training or after it, young-adult students mature and this helps them to make the best of the training they have undergone, extend it or continue with their studies. Besides, they emphasize the fact that they just ask them to be "good people" and behave. One of the conclusions that can be extracted from this statement is that these young people, who are vulnerable to social exclusion,

may fall (and some of them do) into risky behavior (for instance, abuse of toxic substances) or criminal actions.

Regarding its link with the perspective of Governance, the five-year suspension of these programmes throughout Andalusia has dealt a severe blow to the future of many excluded young people, who saw in the Workshop Schools a viable alternative through which to obtain job-linked training that would allow them to find a job. There was even some doubt about the future of the Workshop Schools, and the teachers themselves were active in ensuring their continuance. It is surprising that the local entities and collaborating organizations took a secondary role in this process of calling for the maintenance of the Workshop Schools and their social importance in local development.

> City councils should have fought, but the city council has their own problems, as their municipal problems kill you, starting a project, financing, which ... for this kind is great, but if it is not ... it is okay.
>
> There has been no change. One of the problems is related to the fact that in most of the cases, it is us, the professionals, the ones that work creating the project. I mean, in a city council, maybe in a very big one, there are workers appointed for the projects, but in my case, and in many others, before finishing a project in the Workshop School, we leave a project already created for future professionals ... [E_SP_M_4].

Furthermore, we must emphasize the high degree of involvement and participation of municipal corporations and collaborating entities until 2011. The Workshop School projects, together with others such as the Trade Schools and Employment

Workshops, represent an experience of local development and regional cohesion for local agents. The work done by the five Workshop Schools in Malaga, together with the other two in the functional region, is well known. Table 2 summarizes the specialties of these projects according to the goals of the call for these programmes, but with the decision of the respective benefitting entities and not the young people themselves.

After 2016 new regulation, the regional administration established several criteria for a competition in order to assess the projects created by their promoting entities (City Councils, regional organizations and depending institutions for the promotion of employment. Other bodies such as consortiums, associations, foundations and other non-profit making parties located in Andalusia can also take part. There is greater control and monitoring of expenses, as well as the type and character of the associations and non-profit making collaborating entities. Under the new regulations, priority is given to projects in harmony with the Spanish Strategy of Activation for Employment 2014-2016 (Andalusian Employment Service, AES).

> City Halls or non-profit organizations, present the project and ... And they establish ... And decide a series of courses to be approved. And then the regional government, who approve ... The final projects. They tell you which courses you may or may not have or if there are some necessary changes or requirements ... [E_SP_M_4].

Training needs are identified using the analysis of occupations with best prospects and information provided by experts of the regional administration, determining different areas and spe-

cialties relevant for regional development. Apart from the traditional specialties of the previous stage such as the catering industry and tourism (Table 2), we can also mention renewable energy, new technology and the agro-food industry, among others.

Nevertheless, some responsible people from the promoting institutions consider that new requirements for the standardization of the institutions for teaching some of the professional courses are leading them to request those certificates which mean lower expenses (for instance, those related to administrative works) instead of those that, maybe, are more adequate to the demands of the area but more expensive (for instance, courses for which they would need great machinery).

Besides, the interviewed actors criticize the changes that had been made in relation to the professional insertion of the Young adults who participated in those programs. Although there were two phases of assessment in the past, one after the first 6 months and the other after the first 12, for the last years only the first one was carried out. This fact is relevant for the promoting institutions, as the level of integration achieved will help them to obtain a higher punctuation in the abovementioned competition. They do not believe that a period of six months is enough to assess an effective integration of the users, especially due to the economic situation.

We also have to add that the discourses do not mention the institutions aimed for the efficient participation of young adults which may be important for the design and implementation of the program. However, if this happens in a more casual scenario, for instance, moments at which there is a direct and more intimate interaction between young people and professionals, like the individual assessments which consists of a dialogue in which

they reflect about the evolution and the development of the users of the program.

Concerning the *Life Course* focus, according to the testimony of the same young people who attend the Workshop Schools programs, it is confirmed that these programmes provide young people that do not manage to conclude obligatory education or drop out prematurely or are at risk of social exclusion with skills aimed at rapid job placement.

> I had problems with my studies, so I used to resist. (...) I came home and I did not feel like studying. (...) Yes, I was holding back the first year of Bachillerato twice and then I spent a year doing nothing and then I started in the Workshop School. [Y_SP_M_7]

The teaching professionals also confirm that the students who attend this type of programs have significant training gaps.

> The profile of the student of the Workshop School is not that one. They are boys and girls who feel that they are good for nothing and ... Well, that they are useless. And they are on the defensive, because when you are teaching them and you say something, they react on the defensive, until they relax and realize that you are there to help them. A lot of them do not have a job ... related to what they have studied, but they end up being great professionals, and that is the important thing. [E_SP_M_3]

One of the most important aspects is the association with the territory, providing a service to the community as local develop-

ment, as well as job placement, relevant in these cases. Despite the educational deficits of the young people attending the Workshop Schools, they appreciate the value of the training and are aware of its importance, so that their integration into the programmes represents a rethinking for the future training of these young people.

> I don't know. I wanted to study an official higher degree of vocational training, maybe. But now I prefer this because, well, I did not know a lot about the issue before but now I do after the course in the Workshop School. [Y_SP_M_7]

> They learn a job. [They learn how to be good professionals, good people, and that is why we insist in the Workshop School. 'It does not matter what you do ... but it matters that you are good people. But these young people come to the Workshop School without any self-esteem, because they have been told they are bad students at school. [E_SP_M_3]

The experts and teachers confirm what the pupils attending Workshop Schools have training deficiencies, come from broken homes or low socio-economic level, and some have even slight disabilities, so that these programmes also have a compensatory function. The interviewees stated that the training provided had to go beyond the optimization of their technical or professional skills to include other elements such as personal and social development, so that they would gain confidence and self-assurance.

> They acquired those skills in the Workshop School. The first six months, which consist of training in the Workshop School

> were more difficult [the students were unease] because they mainly consisted of theoretical lessons, they had practical hours but ... the next six months when they were hired. [E_SP_M_4].

Another aspect the interviewees emphasized in the dynamics of these programmes was the promotion of being team-players rather than individual enabling. Participation, collaboration, independence in decision making, and cooperation are values found in the training activities of the Workshop Schools in Malaga, all of Andalusia and even at a national level.

In this sense, the discourses include references to the *soft skills:*

> I-I-I... Progress (laughs). I would say there was progress, because I was not able to talk at first, and now I do not stop talking, but ... (laughs). Amazing team spirit and then the-e-e ... the teachers were really close. This is not like a secondary school. There were not a lot of people in the curses, because we were around ten, so they are closer to you, they help you more ... They reinforce you ... I don't know, it is like ... You learn more, okay? I believe. [Y_SP_M_7]

The degree of hob placement is the pending matter. The new regulation aims to help them become self-employed individuals on concluding their training in the Workshop Schools and the award of their professional certificate. However, the coordinators and director of the Schools are skeptical due to the reduction in the training period from two years to one. We should also mention the high number of women in these programmes, as well as young people from vulnerable collectives. The new regulation

gives priority to the integration of young people with important social deficits and in situations of special vulnerability.

> They have created a competition now, they take into account the amount of employment we have achieved, but ... in the last Workshop School they have requested just for the number of jobs of the first six months ... they haven't asked for it ... I have discussed about it with the specialist, because they are restricting it. Six months is little time, especially in this years of economic crisis. It is too little time. If we had send it after a year, there would probably be more people working. So, that is the reason we have less points for the competition. [E_SP_M_3].

For the responsible for the training of young people in these programs, it is intended that the work done in them, respond to the needs and interests of young people, something that exceeds the same structure and configuration of the same. As already noted, it is striking that there are no institutionalized spaces for the participation of young people in the design and implementation of the program.

### 2.3 ORIGINAL TRAINING TO IMPROVE THEIR JOB PLACEMENT POSSIBILITIES

In the new regulation is that all the young people in the scheme acquire a professional certification to improve their job placement possibilities.

It is a common feature for all the vocational training system for Employment in Spain, that allows to achieve the skills obtained through different non-official programs and, somehow, it helps these young people to join the official educational system.

This programme of Workshop Schools is ground-breaking as regards active employment policies (AEP), as it provides a job placement response to a socially underprivileged sector of the population such as young people with a high unemployment rate.

This way, through the corresponding contracts and remuneration, somehow, poses a solution that also focuses on the structural dimension of the employment and the employability (although it belongs to a specific action for a specific amount of time) and not only in what is related to the employability issues associated with the training of the person.

It is likewise especially suitable for young people with educational deficiencies and in a situation of social vulnerability.

The effects of the application of these programmes linked to training policies such as VTE are job placement on a local scale for many unemployed young people outside the educational system. Apart from providing a response to this young collective's educational needs, they also help the overall promotion of the individual, contributing to their wellbeing in the context of their community. Social rootlessness is eliminated as they seek to become integrated with their surroundings and contribute to local development, with positive results.

> In the town where I have worked, they have ... The local nursery school was created by the Workshop School; in the graveyard there is a chapel for the deceased, for the burials and everything, and it was also built by the Workshop School; an occupational center for disabled people was also built by the School; a sports hall ... [E_SP_M_3].

From the viewpoint of governance, the Workshop School programmes help integration as suggested by their very configuration of mixed training and work programmes. As well, we can estimate the structuring (although it has been present of the Workshop Schools with the development of the communities where they are set, as

activities developed by these programmes are based under the old regulations of 2004, as clear in the MITE Workshop Schools in Malaga. The Workshop Schools are temporary projects in which training and qualification alternate with productive work in activities related to the recovery of the artistic, historic, cultural or natural heritage, the rehabilitation of urban areas or the environment, the recovery or creation of public infrastructure, and any other activity of public usefulness or general social interest leading to social insertion of the young participants through professionalization and the acquisition of experience.

The new regulations extend the training content to activities more related to the activation of a wider range of employment, projects designed to obtain professional certification to improve the job placement of these young people. It is not yet possible to know the number of projects assigned to the MITE and the Malaga functional region, but there remains the intention to continue with some of those that were already successfully under way and fall within the new classification of activities. Examples of the effects on local development are the recovery of the heritage of Malaga Cathedral, and the maintenance and potentiality of *La Concepción* botanic gardens, officially declared an asset of cultural interest.

From the *Life Course* viewpoint, the MITE programme of Workshop Schools in Malaga functional region has fulfilled its

expectations, at least in the period up to 2011. As stated in this report, this training modality has fulfilled its compensatory character for those young adults with very particular personal characteristics. The transversal contents aimed at completing their basic training to allow them to take part in active employment or continue their studies in formal education have been especially important, above all given the difficulty of programming for such a wide diversity of young people in the groups and the specificity of the projects.

> I finished the year and ... I found ... Well, I found a job ... Sometimes they called me for ... For entertaining activities, I mean, it wasn't much, just some days; and, sometimes, I looked for it myself. [Y_SP_M_7]
>
> Now with the new regulations there are no subjects which are common for several courses, but until last year, in workshop school, apart from the specialized training of a subject you had to teach safety at workplace, professional integration, computer language, environmental awareness. All those common subjects were the ones I used to teach. And gender equality, yeah ... There was a gender equality subject. [E_SP_M_4]

This has led to the design of innovative contextualized projects with answers to the individual and collective needs of the groups.

## 3. ANALYSIS OF THE CASE ACCORDING TO THE DIFFERENT PERSPECTIVES: CULTURAL, POLITICAL ECONOMICS (CPE), GOVERNANCE (GOV) AND LIFE COURSE (LC)

### 3.1 WORKSHOP SCHOOLS, A PROGRAMME OF YOUTH WORK PROMOTION WITH EMPHASIS ON LOCAL DEVELOPMENT

These and other initiatives with strong local content are related to one of the main questions of the report, which is promotion by the EU countries of monitoring policies and creating reforms, promoting innovative ways of guaranteeing sustainable investment in education and training, as well as exploring the potential of the Investment Plan for Europe in the field of education and training.

After the recent state and regional regulation of the new Vocational Training Employment (VTE) policies of the Workshop Schools and Trade Schools that are approved will be able to receive financing from the Youth Employment Initiative via Strand 5 of the Operational Programme for Youth Employment of the European Social Fund, according to the decision adopted by the European Commission on 12 December 2014.

The budget provision of the Workshop Schools is mainly from the regional government, not forgetting that its origin is in the European Social Fund and the Ministry of Employment and Social Security, and it pertains to the promotion of the employment policies undertaken by the Department of Employment, Business and Commerce of the local government of Andalusia. Among others, the priority aim of the local government of Andalusia is the Law of Urgent Measures to encourage job cre-

ation (Emple@Joven programmes). Nonetheless, the MITE, like other entities, can provide its own financing depending on the projects.

Similarly, to other programmes promoting youth employability, the Workshop Schools are based on the training policy for the unemployed originating in the crisis of the salary society in the 1980s (Moral, 2007). These are territorial training programmes (Carvajal, 2015) within the framework of active employment policies, where the potentialities of a region are used to improve the quality of life of its population in the broad sense, either by restoring the historic and natural heritage, or by attending to the needs of the population. In fact, the policies that priorities the participation of non-profit making, public or private local agents and entities in the implementation of these training activities aimed at very heterogeneous collective of unemployed, have been promoted not only by the European Union, but also by the OECD, given that the decentralization of employment policies has been shown to be the most efficient organization in the implementation of actions to combat unemployment in many countries. These training policies, such as VTE, and is the case of the Workshop Schools, combine the relevance of job placement at a local level, promoted by these training programmes, together with the need for training to act as integral promotion of the individual, contributing to their wellbeing within the community (Carvajal, 2015). In fact, these and other similar programmes are also known as "social services programmes for employment" because of their high contingency depending on local job markets and the capacity of social agents and contact networks to offer satisfactory results.

Malaga is the province which, up until 2011, had presented more Workshop School projects in all of Andalusia, with 49% of the total, the majority being presented by local entities of the Malaga Functional Region. Of the 26 projects spread throughout the province, 9 belonged to the Functional Region, where the MITE of Malaga Town Hall had five Workshop School projects, with 190 pupils and a budget of 4,290,351 Euros.

Table 1.
Projects for Workshop Schools, Trade Schools and Employment Workshops approved in 2011

| **Type of project** | **Nº of projects** | **Pupils** | **Budget** |
|---|---|---|---|
| Workshop Schools | 26 | 884 | 42,696,532.30 |
| Trade Schools | 2 | 56 | |
| Employment Workshops | 40 | 1004 | |

Source: Activities memoir of the Andalusian Employment Service, 2011

The training activities range from maintenance and conservation, refurbishment of accesses and footpaths, park infrastructure, signposting, reforestation, irrigation installation, illumination, biodiversity and town planning, as well as new technologies and hardware maintenance, with the aim of acquiring the skills set out in the professional certificate of operations of assembly and maintenance of microcomputer systems, providing cover and service to the different programmes and services of the MITE.

Table 2.
Projects of Workshop Schools in the Malaga MITE approved in 2011 and 2017[14]

| Name | Specialty | Pupils | Budget |
|---|---|---|---|
| E.T. Eficiencia Energética Malaga | Renewable energy<br>Plumbing and electricity | 15<br>15 | 858,070.20 |
| ET Casco Antiguo Malacitano | Ironwork (12 pupils)<br>Painting (12)<br>Plumbing and Electr. (12)<br>Renewable energy (12) | 48 | 1,372,912.32 |
| ET La Concepción | Information and citizens' services<br>Gardening<br>Maintenance of nurseries and plants | 12<br>12<br>12 | 1,029,684.24 |
| ET Palma-Palmilla | Socio-educational assistant for underage children<br>Plumbing and electricity<br>Socio-occupational dynamization | 12<br>12<br>12 | 1,029,684.24 |
| ET Servicio de Hardware y TIC's | Maintenance of IT equipment | 40 | |
| Alhaurín de la Torre Town Hall | | | |
| ET Town Hall-1 | Carpentry<br>Plumbing and electricity<br>painting – soldier / tiling | 44 | 1,193.117.64 |

14 There have been no more calls until December 2016, and it has been resolved in November 2017.

| | | | |
|---|---|---|---|
| ET Town Hall-1 (2017) | Auxiliary Activities in forest nurseries, gardens and garden Centers<br>Installation maintenance of gardens and Green Areas<br>Coatings and construction | | 216,124.42 |

Source: Prepared by the authors on the basis of data from SAE, 2010 and 2017

Lastly, it is remarkable the turning point caused by the economic crisis in the discourse of some of the interviewed people about the business sector in the area. Before the crisis, they felt that the business used to try to recruit young adults who participated in their program, even before they finished it, as they need new workers. After the crisis, they believe they are recruited because they need cheaper workforce.

### 3.2 MORE CENTRALIZED AND LESS FLEXIBLE REGULATION

As explained in the introduction, the regulation of Workshop Schools has undergone a number of important structural changes. Beginning with a more centralized structure at their inception by the Ministry of Work and Social Affairs in the 1980s, with implementation at a more local level, in early years of the 21st century the respective Autonomous Communities – in our case Andalusia – have been made responsible for their administration, in connection with the Andalusia Employment Service as part of the active employment policies.

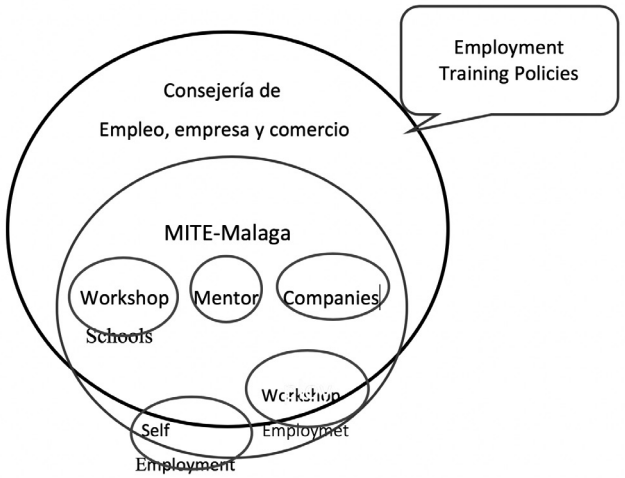
Following this idea, Workshop Schools are funded mainly by

the autonomous government, but also by the European Social Fund and the National Department of Employment of Social Security and it is included in the promotion of employment policies carried out by the Department of Employment, Business and Trade of the Autonomous Government of Andalusia. The main objective of the Autonomous Government of Andalusia, among others, is the Urgent Measures Act, in order to help to create employment (Emple@Joven programs). And also, IMFE, as well as others entities, may contribute to the budget, depending on the project.

Malaga is the province with the most Workshop Schools in all Andalusia. Until 2011 the MITE of Malaga managed five Workshop Schools, financed by the Andalusian Regional Government and the Ministry of Employment and Social Security, with the support of the European Social Fund (ESF). This initiative, extended by municipalities throughout the Functional Region, aims to providing assistance to young people, especially since 2010, as a result of the economic crisis and the significant increase in youth unemployment throughout the EU. Over 20 million people under the age of 25 have received support from the ESF, representing almost 30% of all its beneficiaries up to the end of 2012. In fact, over the period 2007-2013, ESF assistance was over 10,000 million Euros per year, with approximately 68% of the ESF budget destined to projects with the aim of training and employability of young people.

Therefore, the projects financed by the ESF, including the MITE and its Workshop Schools, are pragmatic in nature, given that they respond to the needs of the different authorized centres. In general, they are guided by the principle of enabling both the young people and the organizations to efficiently

achieve their proposed aims, as reflected in the VTE policies for individual qualification with commitment to the community (Caraballo, 2014; Carvajal, 2015).




The management assigned to local corporations and collaborating bodies with some flexibility since 2003, following the example of the central administration, has undergone a significant change as a result of the judicialization process of the grants and subsidies to VTE from the Department of Employment of the Andalusian Regional Government. This brought about a five-year suspension of all VTE and confusion as to which administration was responsible. The Department of Employment was temporarily relieved of these responsibilities in 2013, being replaced by the Department of Education, thus incorporating VTE into Initial or formal Vocational Training. Two years later, VTE was again passed to the Department of Employment, but not to the Andalusian Service of Employment, but the General

Directorate of VTE, with the aim of better coordinating responsibilities in the educational and professional fields for the issue of professional certificates.

> The policies for professional training courses are decided mainly by the Autonomous Government ... [E_SP_M_4]

Since 2015 when the Workshop School started working in the town until November 2017 when the resolution for the call of 11th April of the same year was made for the new projects of the Workshop School, Professional Houses and Employment Workshops, according to the new regulations for those programs in 2016 of the Professional Training for Employment system (FPE) in the employment area, we cannot know the opinion the local agents have about it. New regulations include comprehensive changes of the training system and establishes new legal reforms for the different offers from companies and public organisms to the working, employed and unemployed people. Every entity which participate in the new call do it on a competitive basis under a series of objective criteria for the assessment of the projects, which guarantees all of them have the same opportunities to access those funds and only one way of access. For the policy makers, the regulation introduced in the new system improves the process for selecting the students and teachers. On the other hand, there is more control over the funds received, as, in the case of local institutions, it is carried out through a certificate from the supervisor from that public administration.

In this respect, the new regulation is perceived as stricter, less flexible and more centralized, especially concerning justification of expenses and assignment of projects. It is now the Depart-

ment of Employment who decides which projects should be financed at the proposal of local bodies and other entities fulfilling the conditions of the announcement. Those responsible for Workshop Schools consider this to be a regressive measure inasmuch as it favours large municipalities and collaborating entities against small ones with less resources.

> Of that kind of programs. Not only the one that ... The one that is learning or that has obtained a professional certificate, but even also, the social impact that has for the town itself, as people can see works carried out by those young men and women who belong to that workshop school, and they feel proud about it, both the town and the students and their families. Well, you can ask whatever you want, but you don't get the points later. If you ask for the ones you are qualified, those are the ones you have possibilities to get. [E_SP_M_3]

> It is very ... very sad, because the regulations for the qualifications too ... We were qualified for teaching several specializations of professional training but know they have changed the regulations and we do not meet the requirements. [E_SP_M-4]

In addition, the training activities must be included in the list of specialties of Vocational Training for Employment (VTE), thus opening the possibility of obtaining a professional certificate valid throughout the European Union. This could lead to an imbalance between the bodies authorized to train and those required in the functional region, given that authorization is usually given to entities with lower administrative and other costs.

### 3.3. A NEW MECHANISM FOR INDIVIDUAL ENABLING OF YOUNG PEOPLE

Like other municipalities in the Malaga functional region, the Workshop School projects carried out by the MITE are directly related to specific initiatives aimed at young people to promote their non-formal learning (EU Youth Strategy[15]) and sandwich courses. The link between these projects and problems close to young people and their community promotes participation and the notion of enabling, in the sense of feeling oneself useful by offering a service to the community, but at the same time it provides both individual and social synergy. In the specific case of the Workshop Schools in the MITE of Malaga, they are related to activities of recovery or promotion of the artistic, historic, cultural or natural heritage, as well as the rehabilitation of urban areas or the environment, or the recovery or creation of public infrastructures.

The pupils of Workshop Schools and other similar programmes can be typified as young unemployed people, most of whom are at risk of social exclusion (Carvajal, 2015). According to the reports of Training for Employment (2009) and the Activities Memoir (2011), and the Argos Observatory provided by the Andalusian Employment Service, and WP4, 66% of the courses carried out in Andalusia were directed at the unemployed in general, with women making up 52.7% of the total. Only 2.5% of the courses were directed to disabled pupils, and 1.5% to ethnic minorities and disadvantaged collectives. These

15 http://ec.europa.eu/dgs/education_culture/more_info/evaluations/docs/youth/youth-strategy-2016_en.pdf

are reference data taken from other related research studies (Muñoz, 2013; Carvajal, 2015; Blanco, 2016), together with in-depth interviews conducted with young people and those responsible for Workshop Schools in the functional region. All agree that these territorial policies based on sandwich courses are of benefit to different collectives, including young unemployed, women, immigrants, ethnic minorities, and young disabled. In general, these are young people with biographies fractured because of family breakdown, or school failure or drop out, and frequent feelings of uselessness and frustration on confronting the commitments of life.

When such subjects are faced with a training responsibility linked to a job, even though this is only temporary, their universe changes and they think that they are being compensated (Young_SP_M_ 6). This is Marinetto's view (2003) regarding training policies, which involve a particular type of personal morality and a positive way of life for the community. In this case, young people, and in other cases, people in general, recognise that the training received favours the integral promotion of the person and contributes to their wellbeing in the community. In the case of the young people in the Workshop Schools this recognition exists regarding the opportunity they are offered by the training they receive. This gives them confidence for the future to take on new responsibilities both at work and to overcome situations of especial difficulty. Somehow, the program is established as a turning point as it helps those young people to get better stability in their lives.

It has been established (Muñoz, 2013, Carvajal, 2015, Y_SP_M_ 6, Y_SP_M_7) that the policies of training for employment, including Workshop Schools, combine the values of the

salaried society, focused on job placement, with the need for training for personal promotion. For many young people this experience has become an opportunity to get their first paid job, albeit for a short time, and the work is attractive, free and creative in some cases, which leads to the creation of future expectations in training and the acquisition of skills in a professional field.

> I was in the workshop school, and I have such a great time, because I loved it, in fact ... I took more courses after it... [Y_SP_M_6]

> Specially EXPERIENCE, also the training, but at least the basic ... The experience is what employers are asking for. I ... I send my CV to many places and I have been interviewed and as I did not have the experienced, they have not recruited me. [Y_SP_M_7]

Moreover, this type of training has a compensatory character for the young participants in a Workshop School, Trade School or Employment Workshop. Specific programmes can be organized with the aim of providing them with basic, professional training that allows them to find a job or to continue their studies in formal education under the present regulations. In the view of those responsible for the Workshop Schools, the heterogeneity of the young people in the groups and the specificity of the projects linked to the context in which they are carried out make up innovative, contextualized projects with answers to the individual and collective similar needs.

> And those young people come from having nothing to ... to obtain the Secondary School Certificate. That means a great change; their self-esteem was like: "but, how was I able to get the Certificate?" And then ... seeing that they were able to carry out a job, that they were good at it, because some of them were really good at what they were doing. Well, there was a change there .... In fact, they love us, most of the students do. [E_SP_M_3]

> The students who had failed in the official educational system, well ... they need another kind of training and they need individual practical training (...) In the Workshop Schools, we specially work the individual potential of each student, the ... The acquisition of values by the students, punctuality, cleanliness, order, fellowship, solidarity ...[E_SP_M_4]

The young people in the Workshop Schools of Malaga and its functional region show a high degree of satisfaction with the training received, but they also state their concern for the degree of job placement after conclusion of the training period. Indeed, studies such as those by Suárez (2004), Muñoz (2013) and Caraballo (2014) have recognized the same concern. Self-employment is one of the measures contemplated as a way out of this individual preoccupation.

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# Vocational Education and Training Institutions' Collaboration with the World of Work from the Perspective of Actor Networks and Ecosystems of Learning

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**Abstract:** Vocational and professional education institutions, as well as higher education institutions, are more and more expected to collaborate with the world of work and each other. At the same time, the boundaries of organisations have become somewhat blurred. Employers may be subcontractors for a larger firm or subdivisions of an enterprise (organisation) may serve their headquarters through digital connections on the other side of the globe. As a result, the forms and cultures of organisations that educational institutions are expected to collaborate with have become rather complex and difficult to figure out. In order to better understand the complexities of the collaborative practices that educational institutions are dealing with, this study explores, in particular, two approaches that theorise transformed organisations: actor–network theory (ANT) and discussions on ecosystems of learning (EL). The authors investigated what characteristics of the 'collaborative contract' in educational institutions' collaborations with the world of work these two approaches are able to address. The analysis is based on a selected literature overview of research incorporating the ANT or EL concepts. Empiric examples are drawn from a study

on two developmental collaborative networks of Finnish universities of applied sciences, eAMK and Toteemi.

**Keywords:** Collaboration, VET, work, organisation, ecosystem, actor–network

## 1. INTRODUCTION

This study is part of research conducted by members of the Work, Education and Learning team at the Finnish Institute for Educational Research (FIER) for the two large Finnish developmental networks of UAS (universities of applied sciences) named eAMK and Toteemi. Both of these developmental projects are funded by the Finnish Ministry of Education and Culture's special funding programme for the development of higher education. Despite some similarities, these two developmental projects have somewhat different foci and combinations of partners. While the eAMK project focuses on developing the shared digital education provision of Finnish UAS, the Toteemi project's emphasis is on developing work-based learning and its accreditation for studies at UAS. In both of the projects, the UAS' collaboration with the world of work is central and the increased utilisation of digital solutions both enables and demands the reformation of existing practices.

The eAMK project's aim is that the developed digital provision of education will enable students to choose studies across institutional boundaries within the UAS network. Also, work-based learning and conducting studies while at work should

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become easier through flexible educational provision all year round. The new, wider and more flexible provision of studies should enable shorter study times, more flexible specialisation, further education, individualised education routes, and enhanced employability. The eAMK project is coordinated by the JAMK University of Applied Sciences and involves a consortium of 23 UAS, The Rectors' Conference of Finnish Universities of Applied Sciences (ARENE) and FIER (eAMK, 2018).

The Toteemi project's primary goal is to improve UAS students' employability and to enhance structures that promote collaborations between UAS and the world of work. Eventually, these activities will enhance students' learning and renew both working life and education. In particular, assessment and accreditation of prior learning are targeted via, for example, alumni networks. The accreditation of prior and present work-based learning continues the developmental work conducted in earlier networks of UAS with partly similar goals, such as that of the preceding project, Verkkovirtaan (Kotila, Mäki, Vanhanen-Nuutinen, Moisio, Pettersson, & Aura, 2016). The Toteemi project is coordinated by the Haaga-Helia University of Applied Sciences and involves 15 other UAS (Toteemi, 2018).

In general, the Finnish Minstry of Education and Culture's funding for these projects reflects the increasing policy interest in promoting better networks between higher education (HE) institutions and the world of work. HE institutions are seen as part of the innovation system and as serving the development of the well-being of citizens and economic growth in the nation state (Schienstock & Hämäläinen, 2001; Hautamäki & Kuusi, 2005; Hautamäki, 2006). UAS are expected to serve innovation system's need for sharing the latest knowledge, enabling

its implementation and creating new innovations, and also to improve students' employability. The increased interest in HE graduates' employability is an outcome of the expansion of the HE system and reflects international trends in HE (Schomburg & Teichler, 2011). On the whole, there has been a shift toward a stronger emphasis on efficiency, output management and international reform initiatives in Nordic HE policies over the last few decades. This has involved the introduction of steering mechanisms and has increased the competitiveness of academics (Pinheiro et al., 2014; Berggren and Cliffordson, 2012). The shift in policies has, to some extent, replaced the earlier emphasis on social equality in educational policies (Telhaug et al., 2006; Ahonen, 2002).

While the societal interest in developing educational institutions' relations with the world of work has increased, there is also a demand to better understand what is going on in these relations. Accordingly, several approaches have been developed to deepen the understanding of particular aspects of these collaborative networks. For example, the model of integrative pedagogy (Tynjälä & Gijbels, 2012) has been developed to guide pedagogy toward combining theory and work-based learning, and to enhance learning within the collaborative constellations of educational institutions and enterprises. Second, the connective model (Guile & Griffiths, 2001) suggests how practices between educational institutions and the working world could be coordinated on the basis of particular underpinned theoretical starting points. Third, models of learning organisation portray how new knowledge and modes of action are ideally adopted in a learning organisation (e.g., Nonaka, Toyama, & Konno, 2000). Fourth, discussions on boundary crossing describe how the interaction

and understanding of agents evolves by crossing the boundaries of organisations and through the recognition of shared 'boundary objects' (Akkerman & Bakker, 2011). Fifth, research based on cultural-historical activity theory (CHAT) has analysed how boundary objects are defined and molded in collaborative work as 'knots', where a collection of partners work together to reform or create a new service or product (Engeström, 2000; cf., Bishop et al., 2009).

In contrast to the studies mentioned above, our present study explored two research perspectives that have focused on the networks that actors create within and across the boundaries of organisations, namely the actor–network theory (ANT) and discussions regarding ecosystems of learning (EL). In the actor–network approach, the relations between education and the world of work are understood in terms of network-building between human and non-human actors. This approach has produced a respectable body of research literature and has established itself as a scientific approach. The discussion on the term 'learning ecosystem' is relatively new, and ecosystem has been used in many ways within different contexts. A consensus on the meaning of the term is lacking. Therefore, one of the purposes of our research presented here is to contribute clarification to this discussion. Our method for achieving a clearer understanding was twofold. Firstly, we scanned the literature by using some strategic keywords and reviewed some of the best known theories involving the ecosystem concept. Secondly, we asked the participants of the eAMK and Toteemi projects about their understandings regarding the origin and meaning of the concept of 'ecosystems of learning'. The results of this latter data collection, we report later. In the following section, we first briefly

present the two approaches (ANT and EL) and thereafter discuss the findings from our overview of the literature.

## 2. ACTOR–NETWORK THEORY (ANT): FROM ANT TO POST-ANT, AND THEIR LESSONS FOR METHODOLOGY AND ONTOLOGY

The actor–network theory (ANT) was first developed as a response to developments in the sociology of science in the 1970s and 80s (Muniesa, 2015). This theoretical approach emerged at the Centre de Sociologie de l'Innovation (CSI), which studied the social determinants of innovation processes. Its emergence was part of the general post-structuralist movement and a reaction to the French tradition of the epistemology of science and the British tradition of scientific knowledge. The ANT school of thought criticised the French tradition, which presumed scientific facts to be constructed. That French tradition was seen to neglect the concrete operations that are needed for obtaining scientific facts; operations such as experimenting, measuring, calculating, writing and communicating. The British tradition's emphasis on social interests and collective representations as definers of scientific truths and falsehoods was also criticised from the ANT perspective, but from a different angle. From the ANT perspective, there was a need to study scientific controversies, empiric operations and the material conditions of scientific work. This standpoint of ANT was seen as a step back toward realism and positivism from the British tradition's perspective (Muniesa, 2015).

The central problems that have been addressed from the ANT perspective include agency, 'translation' and how collective real-

ities are constructed (Muniesa, 2015). In the following section, the ANT's approach to these three phenomena are characterised briefly. First, the view on agency from the ANT perspective demands paying attention to the conjunction of all kinds of agencies and avoiding simplistic divisions such as human versus non-human, intentional versus unintentional, or nature versus culture. The classic example for this is Louis Pasteur's microbiology laboratory (Latour, 1988). Also, from the ANT perspective, agency's sovereignty and interest-oriented as well as socially conditioned actions were questioned. The duality between agents and their social dependencies was questioned, for example, in studies on drug addiction and by shifting attention from 'moving' to 'being moved'. Studies utilising the ANT approach have described societies', nations' and states' compilation with the notion of 'generalised agency' (Muniesa, 2015).

Second, 'translation' refers to how problem statements as such transform the relations between issues at stake and one another. This is what defines the actor–network complex as non-dualistic: it consists of actors who act as a network, spring from that network and form a network of actions (Muniesa, 2015).

Third, concerning the constitution of collective worlds, the ANT perspective has underlined the importance of empiric studies on semiotic processes that constitute the collective worlds and that are aimed at understanding how collective realities are formed and reformed through material semiotic processes. The ANT approach has insisted on taking into account how metrics, methods, techniques and devices used constitute the entities they refer to in particular ways. The examples Muniesa (2015) gives for this include population and enterprises.

Before the mid-1990s, ANT studies' conceptions of societies

via the notion of 'generalised agency' was criticised, for example, for not providing apt tools for restricting the entities (actor–networks) that are studied, for presupposing a Machiavellist human actor while downplaying intentions in human actions, and for not being able to describe and analyse non-human actors and their role concerning certain activities in a satisfactory way (Miettinen, 1998). The ANT approach's neglect of the forces that underpin networks has been criticised for missing the meaning that human agency has for networks, while giving priority to 'actor–networks' in analyses. The ANT approach's focus on networks has thus, according to some critics, led to not recognising important forces which move agencies, such as: consciousness, directedness, concern, understanding, will, and decision making (Brown & Capdevila, 1999). The paradoxical ethos around the ANT approach is also prevalent in its relation to the study of culture: it has impacted studies on culture, but—from the ANT perspective—the notion of culture is neither explained nor explanatory or an object of study as such (Farías & Mützel, 2015).

However, the ANT approach has also yielded studies on culture, including on descriptive sociology more generally, and has made a methodological commitment to describe activities in detail and use descriptions as an analytical strategy. Such descriptions, as part of the analytic strategy, define how actors create contexts for their own actions and how some events lead to other events. Using descriptions as part of the analytical strategy makes it possible for contexts and causal explanations to be questioned. From this particular ANT perspective, cultural products, such as art or fashion, cannot be explained as a result of the culture of a certain social class or nation but make it possible to describe and analyse how cultures of a certain social class

or nation are constructed through such products, in practice (Entwistle & Slater, 2013; Farias & Mutzel, 2015).

More recently, the methodological approach originated from the ANT perspective, and it has been used to describe network-building between human and non-human actors, such as in a study on the project accountability of a renovation project analysed in stages including problematisation, interessement, enrolment and mobilisation (Burga & Rezania, 2017). These are stages described from this ANT perspective in the now classic study conducted by Callon (1984). Also, in the context of studying a brain-machine network, Ahn (2016) has suggested that it is important to consider what the dash is for in the term 'actor–network relation' and what ontological implications it has for defining an 'actor network' and what detectable influence the actor and network have on one another. On the basis of the study's findings, Ahn (2016) claims that an 'actor–network' comes into being when separate entitities exchange influence over one another for a long period of time while being jointly enrolled in one system (actor–network) of heterogenous but mutually sustaining elements (Ahn, 2016).

In contrast to the ANT approach and in relation to its criticism, it has been suggested from the perspective of the cultural-historical activity theory that the basic object to be analysed should be a local, compound, historical activity system that produces concrete objects (Miettinen, 1998) instead of being an unlimited actor–network. One such 'activity system' may include human beings and their subsystems (communities of practice), the organising of work, symbolic tools, objects of work, and the outcomes themselves. Activity systems may also coordinate and form other networks of activity systems (Miettinen, 1998).

In later studies based on the cultural-historical activity theory, collaborative (knowledge) work of contractors who solve problems through various stages in their activity system has been called 'knotworking'. These 'knots' were understood as temporary clusters of disparate partners, who would come together to focus on a common objective. The common objects that they would create together could be products or services depending on the field of production (e.g., Engeström, 2000). This conceptualisation of knotworking has been criticised for its failure to recognise both the history of individuals as goal-setting, biographic individuals and the history of systems as contexts in which the knotworking takes place (Bishop et al., 2009).

## 3. FROM ECOLOGIES OF PRACTICE TOWARD ECOSYSTEMS OF LEARNING

The conceptual models and frameworks describing 'ecosystems', such as ecosystems of learning and ecologies of learning, are of particular interest from the Finnish perspective. While it was first used in research to portray the new collaborative arrangements across educational institutions' and work organisations' boundaries (Neuvonen-Rauhala, 2011; Tynjälä, 2013; Niemi, 2016), the conceptual term 'ecosystem' has become a kind of fashionable word used by Finnish ministries during the last few years. The term has appeared in several policy papers and plans for the future across several ministries (see, e.g., Oksanen & Hautamäki, 2015). Recently, it has been used, for example, in a speech by the Finnish Minister of Education and Culture (Ms. Sanni Grahn-Laasonen) announcing the recipients of major funding for research from the Academy of Finland. She stated

that "high-quality research and development environments and competence ecosystems support research and learning as well as business and society, and tempt experts in Finland to serve both enterprises: HE institutions and research institutes" (Opetus- ja kulttuuriministeriö, 2018). Due to the policy whirl around the concept, there is, from a research perspective, an increased demand to understand where the concept comes from and what characteristics of its phenomenon related to encounters between education and work it helps to explain. Its usage refers to activity across traditional organisational and institutional boundaries, but from a research perspective it is also important to investigate specifically what characteristics it enables to be referred to and understood in regard to the organisation and reorganisation of tasks shared between institutional players in the worlds of education and work. However, a complete understanding of the term is lacking, and there do not appear to exist any unambigous definitions of the concept. Due to the lack of a common understanding regarding this key concept, one party might imagine the term 'ecosystem' to mean something completely different from what another party uses the term to represent.

One of the best-known applications of the concept of 'ecosystems of learning' is the one introduced by Urie Bronfenbrenner. He formulated the Ecological Systems Theory to explain how a child grows and develops through interacting with his or her environment. In his theory, Bronfenbrenner stressed the importance of multiple environments, also known as ecological systems, in the attempt to understand the human development. A child is simultaneously enmeshed in different ecosystems. The whole system is formed through nested systems, ranging from the most intimate systems, which Bronfenbrenner called

'microsystems' (such as family, the nearest nurses of the daycare, et cetera), and moving outward to larger systems that he referred to as 'mesosystems' (kindergarten, school, et cetera) and 'exosystems' (school district, et cetera), and further out to the most expansive system he called 'macrosystems' (society and culture). Later on, he added the concept of 'cronosystems', which refers to the transitions and shifts during one's life span, also involving the socio-historical contexts that influence the formation of a person. Each of these nested systems interacts with and influences the others in every aspect of the child's life (Bronfenbrenner, 1979; Härkönen, 2008).

Although Bronfenbrenner's Ecological Systems Theory is widely known among education scientists, in the contemporary discussion about ecosystems of learning, in Finland, there does not appear to be any mention of that theory. Instead, the most common interpretation is that the 'ecosystem' concept has been adopted in contemporary discussions in the field of education via research on economics and business. In economics, the concept of ecosystems has been used widely in regard to business-to-business networks. In research on business, there have been discussions about the similarities between biological evolution and economic development for more than a century (Hodgson, 1998). One of the milestones of this debate is considered to be James F. Moore's article written over two decades ago, Predators and Prey (1993), where he introduced the concept of 'business ecosystems'.

In his article, Moore (1993) suggests that companies should not be viewed as members of a single industry but rather as part of a business ecosystem that reaches across a variety of industries. In a business ecosystem, companies act like species in nature: sometimes they cooperate out of mutual interest, while at other

times they may be in fierce competition with each other. The business ecosystem can be understood as a realm of continuous competition and struggle for success as well as survival, as in nature's evolution. In order to succeed in this struggle, companies develop new products, satisfy customer needs, and, as another developmental step in their evolutionary process, eventually incorporate the next generation of innovations. As in nature, some species rise to the top of the pyramid. Moore uses the American company Apple Inc. (current name) as an example of a leader of an ecosystem, in this case crossing at least four major industries—personal computers, consumer electronics, information, and communications—and thus provides products and services to a large number of customers in various market segments (Moore 1993, 75–76).

When applied to education, the educational institutions, networks and actors are understood as a parallel system to the business ecosystem, or sometimes as a subsystem of it. These systems interact and communicate in many ways and there are different kinds of 'energy flows' between these systems. In economical terms, we would understand education as an economic investment, which, in turn, provides added value by producing a capable workforce for the ecosystem of production and economy, as well as adopting and spreading the latest scientific knowledge and methods. This way, there is an interchange of resources between these ecosystems, which are actually interdependent on one another if not in symbiosis. Ecosystems of education can also be studied within a framework of 'ecologies of practice' (Kemmis & Heikkinen, 2012).

This approach of ecologies of practice describes ecological relationships that social practices form with one another by applying ecological principles, introduced by Fritjof Capra

(2004, 2005; see also Kemmis, Wilkinson, Edwards-Groves, & Hardy, 2009; Kemmis, Edwards-Groves, Wilkinson, & Hardy, 2012). Capra has listed eight principles of ecology considered applicable for understanding the relations of social activities, namely: networks, nested systems, interdependence, diversity, cycles, flows, development, and dynamic balance. Kemmis and Heikkinen (2012) have added a further principle to these, which may organise social activities. This ninth principle is that of ecological niches. The characterisations of these organisational principles are presented in Table 1, as follows.

Table 1.
Ecological Principles (adopted from Kemmis & Heikkinen 2012, 164–165)

| **Ecological principles** | If practices are living things and ecologies of practice are living systems, then… |
|---|---|
| **Networks** | Practices derive their essential properties and their existence from their relationships with other practices. |
| **Nested systems** | Different levels and networks of practice are nested within one another. |
| **Niches** | In ecology, a niche is the relational position or function of an organism in an ecosystem of plants and animals. The ecological niche describes how an organism or population responds to the distribution of resources and competitors and how it in turn alters those same factors. Likewise, there are 'niches for practices' within other practices. |
| **Interdependence** | Practices are dependent on one another in an ecology of practices as are multiple ecologies of practice. |
| **Diversity** | An ecology of practices includes many different practices with overlapping ecological functions that can partially replace one another. |

| | |
|---|---|
| **Cycles** | Some (particular) kinds of matter (or in education – practice architectures, activities, orders or arrangements) cycle through practices or ecologies of practice – for example, as in a food chain. |
| **Flows** | Energy flows through an ecology of practice and the practices within it, being transformed from one kind of energy to another (in the way that solar energy is converted into chemical energy by photosynthesis) and eventually being dissipated. |
| **Development** | Practices and ecologies of practice develop through stages. |
| **Dynamic balance** | An ecology of practices regulates itself through processes of self-organisation, and (up to the breaking point) maintains its continuity in relation to internal and outside pressures. |

## 3. METHODS: LITERATURE OVERVIEW OF ANT AND EL

An initial literature search with the help of the University of Jyväskylä library's search engine was conducted (20 April 2018) regarding international e-materials published in relation to the terms 'actor–network theory' and 'ecosystems of learning'. It revealed some major differences between the two approaches (see Appendices, Tables 1 and 2). While the extent of the publications published in relation to each of these terms is overwhelming, the disciplines where these concepts have emerged differ substantially, as described earlier. Even though any one single university's access to e-materials is limited, having a look at these literature searches helps to get a picture of the general profile of the publications related to these themes.

The origins of the discussion on ANT lie in the field of social

sciences. The majority of articles published in relation to the 'actor–network theory' are related to disciplines such as social sciences, sociology, education, economics, business, sociology, and history (>5,000 publications). In contrast, 'ecosystems' have been studied firstly and mostly in relation to ecology, biology, general agriculture, environmental sciences, and climate change (>70,000 publications). These findings show how the usage of the 'ecosystem' concept as a metaphor has moved from these fields to other fields of study like education and business (see also Niemi, 2016). In Finland, the term 'ecosystem' has spread across ministries in particular since the former idea of 'innovation systems', where HE institutions were seen to be vital, has become redefined as 'innovation ecosystems' (Schienstock & Hämäläinen, 2001; Oksanen & Hautamäki, 2015).

At the same time, the amount of studies conducted using these approaches with respect to 'education and learning' or 'education, learning and teaching' is far more limited. In relation to the 'actor–network theory', the search engine found less than 2,000 articles in combination with 'education and learning', and less than 350 articles with respect to 'education, learning and teaching'. The findings related to 'ecosystems' were more frequent when 'education and learning' were considered (around 1,900), but quite rare when 'teaching' was added as a term (<40). When the terms 'work' or 'working life' were added to the subjects in the search, the number of studies became even more limited. Combining the terms 'ecosystems' with 'education' or 'learning' and 'work' resulted in 10 and 5 articles respectively, and combining them with the term 'actor–network theory' resulted in 5 and 7 articles respectively. As researchers know, the search engines and their algorithms do not necessarily work ideally from the perspective of specific research projects, due to cer-

tain algorithmic biases. This seems to also have been the case this time. Not all of the articles found were relevant to this study's interests. Consequently, the initial searches were reconsidered for the needs of the overview conducted for this paper (e.g., restricting the search to 'work' being mentioned in the abstracts instead of as subjects). This resulted in a few more studies coming up that had used cultural-historical activity theory (Engeström 2000) or were related to teacher education or elementary education. Still, the search provided only a limited number of results and we selected the most relevant examples as presented in the following tables (see Tables 2 and 3).

In the following section, we present an initial literature search of studies that utilised the ANT and EL approaches. It is a useful way to get a better view of and explore what characteristics of 'collaborative contracts' in educational institutions' more or less digitalised collaborations with the world of work and one another the two approaches enable or might enable to address. The limitations and bias resulting from access to published studies via the University of Jyväskylä's library and its search engine algorithms (yielding mostly results related to disciplinary fields not relevant to the needs of educational research) should be taken into account in related future studies. The following overview has to be considered as being quite basic, rather as a preliminary starting point for further and more detailed studies than a complete list.

## 4. RESULTS AND PRELIMINARY ANALYSIS

The selected overview of research that was found to be relevant to our study from the perspectives of ANT and EL on networks

organised for collaboration between UAS and with the working world to promote all-year-round education provision with the help of digitalisation and the accreditation of work-related and work-based learning is presented in Tables 2 and 3 below. The results show that while there is quite a lot of research related to ANT and ecosystems as such (see Appendices, Tables 1 and 2), the educational institutions' networking and collaboration with the world of work appears to still be an under-studied and under-theorised area. This is our experience also from earlier studies. A limitation of our study is that it utilised the narrow scope of two specific approaches, ANT and EL. Research on education–work collaborations from other perspectives is more numerous but not overwhelming, which is why we think that the multi-level nature of the collaborative arrangements between educational institutions and the world of work deserves more attention.

The comparison of the themes of research articles conducted from the two perspectives suggests two major outcomes with respect to what could be learned for future research trying to capture the key phenomena of teaching and learning in a networked context across boundaries of institutions. Studies conducted from the ANT perspective rely on a more unified school of epistemological and ontological thought (see Table 2) than do those related to EL. Also, they place emphasis on trials to see how actors, while acting in their networks, construct and create the context for their actions in a processual but not necessarily linear manner. The non-human actors are considered parts of the 'network' and have an influence on human actors and their network-building as well as their actions' outcomes when they exchange influence over a long period and eventually become enrolled as a system.

Table 2.
Studies addressing actor networks or practice theory and the formation of 'collaborative networks' between educational institutions and work

| **Author:** | Focus of the study and what is explored: |
|---|---|
| **Mlitwa (2007)** | The paper explores a possible "framework for the analysis of objective (goal)-directed applications of technology in a teaching and learning environment and implications thereof". |
| **Bagarukayo et al. (2016)** | "1) How Facebook affords students to transfer knowledge acquired in the lecture room to the workroom, and 2) the usefulness of Activity Theory (AT) as a lens to analyse how students interact on Facebook to develop knowledge application skills." |
| **Reich & Hager (2014)** | The article aims "to problematise and clarify the concept of practice to reconceptualise professional learning". |
| **Broad (2013)** | "How vocational teachers in English Further Education (FE) colleges maintain and develop their subject and occupational expertise." |
| **Fenwick & Edwards (2014)** | "How approaches to knowledge in HE might benefit from network sensibility to gain a better understanding of how social dynamics bring forth actions, subjectivities and ideas." |
| **Wilkinson & Kemmis (2015)1** | This "study examines how practices of leading relate to other educational practices." |
| **Wilkinson et al. (2010)*** | Investigated "educational leadership as a site of practice, utilising the notion of 'practice architectures'". |

* These studies relate to the 'ecologies of practice' approach and came up whilst searching for ANT studies – this search result being another peculiar example of this particular search engine's algorithmic logic

In the research where the notion of 'ecosystems' is used, the concept of the ecosystem is rather a descriptive marker of the cultural change, where the place of learning is not merely the school anymore but the whole question of organising learning environments has to deal with the notion of 'anyplace learning' (see Table 3). Anyplace learning refers here to how technological applications, such as smartphones and 4G mobile networks, allow information devices to be used in any place, including at school, home or work and even while travelling. Technological devices, such as digital platforms, reform the organisation of work and also create new forms of business, such as the 'platform economy'. It, the 'ecosystem' concept, has become the common denominator of studies that explore the more or less digitalised combining of learning environments. Internationally, studies referring to 'ecosystems' have tried to understand how teaching and learning practices are reformed in collaborative networks utilising digital tools and/or deriving experience from work-based learning. The theoretical approaches used in relation to 'ecosystems' do not form a unified school of thought, at least not yet. But the quest for understanding the complexities of the networked organisation of learning environments is common among the studies.

Table 3.
Examples of studies referring to 'ecosystems' in the context of 'collaborative networks' between educational institutions and work

| **Author:** | Themes or problems investigated in the study: |
|---|---|
| **Walsh & Powell (2018)** | This study examined "how students, full-time and part-time, may be supported in developing their 'intrapreneurial' skills and capabilities, as well as being introduced to more typical 'entrepreneurial' activities". |
| **Purg (2011)** | This study investigated whether assessment methods, such as open wiki (online text and media collaboration), and closed multiple-choice tests can assure addressing the learner both as an information processor and a social entity, when combined. |
| **Cerezo et al. (2016)** | This study examined students' interactions with Learning Management Systems (LMS), asking: "Can students adapt to the demands of the current learning environments? Does their ability to adapt have any effect on their achievement? Going further, can we adapt those online environments to the students' characteristics?" |
| **Folkstead, Smith, & Moritz (2009)** | Aimed "to understand the phenomenon of the multimedia fishbowl" (see p. 62). |
| **Ladyshewsky (2016)** | Explored the virtual university professor role and experience of an actual professor of a university's business faculty working remotely, in a foreign country. |
| **Gibson & Tavlaridis (2018)** | Investigated students' perceptions of individualised and social perspectives of work-based learning. |

## 5. DISCUSSION AND CONCLUSIONS

The major benefit of this overview of ANT and EL research is a deeper understanding of the complexities of the relationship between educational institutions and workplaces in post-modern times of digitalised 'anyplace learning'. A lack of knowledge in this regard due to the limited number of studies conducted with respect to the combining of education, work and digitalisation as well as their multi-level networked organisation from the perspective of ANT and EL is prevalent, although these concepts have been used to a greater extent to study other subjects.

Our conclusion with respect to studies conducted utilising the ANT approach is that this approach could be used to inform methodological strategies for studying collaborative networks between UAS and the working world by showing how collaboration is formed via various stages (e.g., problematisation, interessement, enrolment and mobilisation), such as by creating descriptions of how the collaboration evolves and asking participants to comment on them in order to see how the actors co-create the contexts for (students', work-life representatives' and their own) learning by adopting (digital) tools to help in the collaboration (see, e.g., Burga & Rezania, 2017). Yet, the stages suggested by the ANT approach are best also compared with the dialogical learning mechanisms suggested by Akkerman and Bakker (2011, 151) in their overview of mechanisms and processes characteristic of boundary crossing. This could be helpful because the boundaries of system-level and person-level networking should be made more clear. The need to be more specific in the study of networks in order to understand them and their actors better has been recognised from the perspec-

tive of the cultural-historical activity theory and even its critics (Engeström, 2000; Bishop et al., 2009).

When it comes to 'ecosystems of learning', it is particularly important to apply the concept critically and carefully in order to try to avoid that it is merely used as a fashionable all-purpose key, so to speak, suggesting that all digitalisation is good for learning. While the 'ecosystem' concept has become a marker for stepping through the chronological gate to a new age of 'anyplace learning', it should not be understood as a suggestion for downplaying the importance of traditional school-related activities (such as curriculum planning and the communities of action that partake in it for the purpose of choosing reliable, evidence-based knowledge and pedagogical methods for curricula). Rather, it should be taken as a suggestion for a thorough investigation of what is compounded in teaching and learning when digital tools and platforms are used across the boundaries of school and work.

In the following table (Table 4), we suggest another framework worth giving attention for the analysis of learning environments in which collaborative relationships of educational institutions and workplaces are embedded that utilise new technological media such as smartphones, distant learning tools, videos, and webinars. It is based on the framework presented by Akaka and Vargo (2015) to enable multi-level analyses of service contexts. Their framework moves the analysis of service encounters from that of seeing and understanding them as isolated encounters to that of viewing them as being nested in 'ecosystems'. Our framework is an analogical translation and adjustment of their framework made for the context of services, adapting it to our context of learning environments. Two of their table's columns have been adopted almost verbatim: the first one on the left and the last

one on the right. However, our adaptations to these columns are that: in the first column on the right, 'service' is replaced with 'learning', and to the last column on the right we have added "the application of knowledge and skills for the benefit of oneself and others" as a conceptualisation of learning. The columns Learning encounter and Learning space have been translated to fit our purposes and adjusted to contextualise learning.

We find this explanation by analogy particularly apt, because education is at times understood as a 'service' in present society. Also, in Finland, every now and then, it has been interpreted by the administration and parents that educational institutions provide 'educational services'. From a research point of view, this has been found to be problematic since education is not easily defined and is restricted as being like a deliverable package, formed rather through the interaction of experienced experts and the learners they supervise (see also Koris & Nokelainen, 2015). Furthermore, it is not merely a relationship between one expert teacher and a learner ('customer') but rather embedded in wider networks of expertise also involving the student's peers and requiring mutual confidence in order to certify learning that is valid for a wider audience, and it enables mutual recognition and the building of trust in society. Furthermore, it is a problematic consideration to think the 'client' of education could be or is only one person ('learner') at a time; in reality, the education 'clientele' includes the wider society, employers and teachers in further education institutions via, for example, the security and guarantees they gain through assessment, certificates, cohesion and safety in society. However, these educational institutional settings are constantly renogiated in society and are objects for policy discussions.

Table 4.
The extended context of learning in the collaborative ecosystems of education and work (cf., Akaka & Vargo, 2015, 458; adjusted from their 'extended context of service' to our 'extended context of learning')

| **Components of context** | **Learning encounter** | **Learning space** | **Learning ecosystems** |
|---|---|---|---|
| Conceptualisation of learning | Educational offerings that involve direct interaction between learner and expert (teacher, mentor, workplace supervisor) | Self-directed learning, expert-led and supervised learning, distant learning | Application of knowledge and skills for the benefit of oneself and others |
| Focal relationship(s) | Expert/Teacher–Learner dyad, Peer-Group–Learner relations | Context-Learner (educational context: school, workplace, virtual, combinatory); Learner–Learner | Networks of multiple actors |
| Parameters of learning | Peripheral and core educational interaction | Constructed physical space | Socio-historic structures; intersecting and overlapping institutions |
| Learning experience | Offerings for learning (knowledge, skills, methods), relationship, mutual recognition, assessment, opportunities for reflection | Expansive horizontal and vertical learning, social connection | Phenomenological value determination |

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## APPENDICES

Table 1.
Publications on the topic of actor–network theory (University of Jyväskylä Library, international e-materials)

| | **Actor–network theory (in any of all fields, i.e. title, author, subject, abstract)** | **Actor–network theory (all fields) AND subject: education, AND subject: learning** | **Actor–network theory (all fields) AND subject: education, AND subject: learning, AND subject: teaching** |
|---|---|---|---|
| **Format** | | | |
| E-article | 72,400 | 490 | 115 |
| Dissertation | 63,825 | 1,228 | 178 |
| Book | 18,442 | 123 | 28 |
| Conference proceeding | 4,710 | 37 | 5 |
| Review | 4,594 | 1 | 1 |
| **Subjects** | | | |
| Social sciences | 43,361 | 324 | |
| Sociology | 15,696 | | |
| Education | 14,625 | 1,658 | 280 |
| Economics | 11,144 | | |
| Business | 7,758 | | |
| Sociology and Social history | | | |
| engineering | 5,479 | | |
| Anthropology | 3,854 | | |
| Learning | 3,737 | 527 | |
| Higher education | | 362 | 138 |
| Educational Technology | | 292 | |
| | | 275 | |
| Adult education | | | |
| Teaching | | | 220 |
| Curricula | | | 108 |
| Higher education | | | 62 |
| Teaching methods | | | 53 |

Table 2.
Publications on the topic of ecosystems of learning (University of Jyväskylä Library, international e-materials)

| | **Ecosystems (in any of all fields, i.e. title, author, subject, abstract)** | **Ecosystems (in any of all fields) AND subject: education, AND subject: learning** | **Ecosystems (subject), AND subject: education, AND subject: learning, AND subject: teaching** |
|---|---|---|---|
| **Format** | | | |
| E-article | 819,470 | 948 | 29 |
| Dissertation | 91,286 | 713 | |
| Book | 44,043 | 92 | |
| Conference proceeding | 50,460 | 141 | 5 |
| Review article | 23,012 | 11 | |
| **Subjects** | | | |
| Ecosystems | 241,777 | | 61 |
| Ecology | 170,989 | | |
| Biology | 108,130 | | |
| General Agriculture | 87,765 | | |
| Environmental Sciences | 78,212 | | |
| Climate change | 73,956 | | |
| Ecosystem and Ecology studies | 70,516 | | |
| Education | 69,010 | 1,528 | 42 |
| Learning | | 952 | 49 |
| Science education | | 520 | 31 |
| Students | | 421 | |
| Environmental education | | 412 | |
| Ecosystems | | 375 | |
| Teaching | | 281 | 50 |
| Educational Technology | | 272 | 14 |
| *AND subject: Teaching methods | | | *6 |

# Students' Experiences of Workplaces as Learning Environments in Vocational Education and Training in Finland

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**Abstract:** The currently implemented reform of vocational upper secondary education aims to increase workplace learning in vocational education and training (VET) in Finland. Consequently, understanding workplaces as learning environments has become more and more important. This study focuses on students' experiences of learning in the workplace within different forms of VET and varying vocational fields. Specifically, the study examines workplace curriculum or pedagogic practices that relate to how learning through practice occurs and is supported. The student sample ($N = 23$) was collected in 2017 and included both apprentices ($n = 11$) and students in school-based VET ($n = 12$) in the social and health care and construction sectors. The thematic analysis was used to investigate the data from semi-structured interviews. In line with earlier research, the results suggest that workplaces vary considerably as learning environments. Participation in everyday work tasks is considered essential, whereas intentional learning strategies and planning receive less focus. The study identifies themes and key issues

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that are related to the structuring of practices and learning experiences in different VET fields and workplaces.
**Keywords:** Vocational education and training, Learning, Workplace, Pedagogy

## 1. INTRODUCTION

Apprenticeships and other forms of work-based learning and their effectiveness and quality have been promoted in the context of vocational education and training (VET) in recent years (e.g., European Commission, 2017). Similarly, the reform of VET in Finland aims to increase work-based learning. However, workplaces' various levels of readiness to offer learning opportunities has seen some concerns voiced in public discussion. Empirical research has shown that workplaces vary as learning environments, with some offering more opportunities for learning, while others restrict them (Fuller & Unwin, 2003). It is, for example, known that different vocational fields offer diverse learning opportunities. Virtanen and Tynjälä (2008) conducted a quantitative study that found that school-based and work-based learning were most connected in the social and health care sector, whereas technical education represented the other end. Additionally, different forms of guidance were used in social and health care, while guidance was rarely used in technical education. Our previous qualitative interview study (Rintala, Pylväs, & Nokelainen, 2017) also suggested that the social and health care sector provided better learning opportunities than the technology sector did. It seemed that the job characteristics, learning culture and practices were more favourable for learning in the social and health care sector. Furthermore, our previous study

(Pylväs, Nokelainen, & Rintala, 2017) suggested that apprentices are expected to be self-directed learners who can seek out help and guidance when necessary. It should be noted that the learning potential of the workplace always depends on both context and individual factors and the interrelationships between them (e.g., Billett, 2002). This paper seeks to further study and understand workplace learning as part of VET.

Workplaces have often been described as informal learning environments; however, learning at work includes both informal and formal aspects (see e.g., Tynjälä, 2008). For example, as part of formal VET, on-the-job learning is expected to be goal-oriented and guided as stated in the previous Act on Vocational Education (630/1998), which was in force until the end of 2017. Although learning takes place in an informal setting, learning should be intentionally planned and assessed as part of education. Furthermore, it has been stated that a planned structure could also help in avoiding haphazard and productivity-driven learning, and thus increase opportunities to develop broad expertise (Chan, 2014). In this study, we take a pedagogical perspective on workplaces as learning environments. This multiple case study answers the following questions:

(1) How do vocational students experience their workplaces as learning environments?
(2) How and why do these experiences vary?

## 2. THEORY AND METHODS

### 2.1 THEORY

Workplaces as learning environments contribute to vocational learning, and they have pedagogical qualities in that they provide goal-oriented activities that aim to ensure the continuity of the practice (Billett, 2009). This means that workplace learning is always structured in one way or another. However, these pathways and learning opportunities vary in different workplaces. Fuller and Unwin (2003, 2004) described this variation by developing a conceptual framework for understanding approaches to apprenticeship and workforce development. Based on case studies, the expansive-restrictive continuum aimed to indicate the quality of learning opportunities afforded. Focusing on apprenticeships, Fuller and Unwin's (2004) expansive approach emphasised participation in several communities of practice (inside and outside the workplace) and a variety of tasks and locations, social support and access to documents, language and tools.

The organisation and sequencing of these learning opportunities can be described as a *workplace curriculum* (Billett, 2006, 2014) that explains the requirements, such as behaviour, context and goals, of the work and occupation in each workplace. This pathway of learning experiences comprises the identification and sequencing of work activities and is shaped by the workplace and the people who regulate access to participation and interaction. These learning opportunities relate to various factors, such as service and production factors, labour division and co-workers' beliefs and attitudes. Furthermore, the learner's own goals and experiences shape the participation.

From a pedagogical viewpoint, workplaces have different levels of practices and three main ways to support learning (Billett, 2001). Firstly, learning takes place in everyday work and through access to observation and listening, by participating in tasks of increasing accountability and understanding the goals of the performance. Secondly, co-workers can intentionally guide the learning process by using modelling, coaching and scaffolding and other strategies to support the development of values, procedures and understandings. Thirdly, co-workers can assist the learner to assess the scope and the limits of their knowledge by using questioning, problem-solving, dialogues and group discussions. These *pedagogic practices* (Billett, 2002, 2014) and intentional instructional strategies can augment learning in a workplace setting. In a literature review, Swager, Klarus, van Merriënboer, and Nieuwenhuis (2015) presented an integrated model of workplace guidance. In their model, guidance consisted of psychosocial support, structure-providing interventions and didactical interventions. According to their review, psychosocial support was achieved by building relationships with the trainee. In an ideal case, the relationship was based on a personal contact providing mutual trust, support and psychological safety. Structure-providing interventions encompassed multiple actions, such as the matching phase of trainees, training firms and mentors, providing introductions and information about organisations, organising workplace learning as a joint activity between trainees and more experienced employees and organising assessments. According to their division, didactical interventions related to purposeful actions to support educational goals. These included setting challenging yet feasible goals, selecting and sequencing tasks and providing task-enabling support.

It is acknowledged that workplace learning is highly context-dependent, but also person-dependent: each individual has a unique personal history and characteristics that affect utilizing learning conditions in the workplace (Billett, 2014; Ellström, Ekholm, & Ellström, 2008; Tynjälä, 2013). However, this study investigates students' experiences of workplaces as learning environments. Here the focus is on learning opportunities (expansive vs. restrictive environment) and on the structuring of the learning experiences through intentional instructional strategies, structure-providing interventions and planned actions, such as goal setting, support and assessments (structured vs. unstructured learning).

## 2.2 DATA AND ANALYSIS

The empirical data for this study were collected in the context of apprenticeship training and school-based VET in Finland in 2017. Apprenticeship training and school-based VET are parallel routes leading to the same qualifications, but apprenticeship training is based on a contractual employment relationship. Therefore, apprentices have a double status; they are students, but they are also employees who are entitled to a salary based on collective agreements. Students in school-based VET retain their student status but attend on-the-job learning periods. After the data collection, on-the-job learning was replaced by training agreements introduced in the reform of upper secondary VET in 2018.

This study employed purposeful and maximum variation sampling that aims to capture and describe central themes cutting

across a great deal of participant variation (Patton, 2002). This kind of sampling aimed to find common patterns that were of particular interest and valuable in capturing the experiences. The sample (see Table 1) of this study consisted of 23 participants of which 11 were apprentices and 12 were students in school-based VET. Vocational students represented two different qualifications and fields of VET: vocational upper secondary qualification in *social and health care* (various competence areas, such as care for the elderly, nursing and care, children's and youth care and education) and vocational upper secondary qualification in *construction* (competence area in infrastructure construction or in construction).

Students voluntarily participated in this study and they all signed consent forms. The data were collected through semi-structured interviews that included multiple themes, such as vocational expertise, internationalisation, digitalisation, learning in VET and future plans. Permission to record the interview was solicited. This study focused on the investigation of the theme of learning in VET. The apprentices' interviews lasted from 37 minutes to 100 minutes, whereas students' interviews lasted from 37 to 63 minutes. The interviews were transcribed verbatim.

A small sample of great diversity requires both detailed descriptions of each case to document uniqueness but also finding shared patterns that cut across cases (Patton, 2002). Therefore, all data were analysed in two phases: within-case analysis and cross-case analysis. Analysis followed thematic analysis (Braun & Clarke, 2006). In the analysis, the coding of the data was inductive in nature, but it was also directed by the research questions and previous research. Therefore, the focus was on job

characteristics, community of practice and social support, learning strategies and planning. The cross-case analysis focused on discovering similarities and differences, which were eventually gathered into themes representing the key issues.

Table 1.
The sample

| **Form of VET** | **Field of VET** | |
|---|---|---|
| | **Social and health care** | **Construction** |
| **Apprenticeship training** | 7 | 4 |
| Gender M/F | 3/4 | 3/1 |
| Age range | 22–49 | 17–27 |
| **School-based VET** | 6 | 6 |
| Gender M/F | 1/5 | 5/1 |
| Age range | 17–18 | 17–18 |
| **Students in total** | 13 | 10 |

## 3. RESULTS

### WITHIN-CASE ANALYSIS

Findings from the within-case analysis are represented as four individual cases that aim to communicate the salient features of each student's workplace as a learning environment (see Figure 1). The selection of these four cases was based on their variety; they provided the most varying examples.

*Case 1: The Undermined Professional* depicts a situation in the social and health care sector in a care home. The apprentice experienced a sense of having already learnt everything

and that work tasks were not adding anything to professional development; there was no granted access to the development of practices. The rejection of all new ideas led to demotivation and discouragement. Therefore, it was easiest to follow existing practices that favoured easy ways of doing the work. The community of practice had a poor climate and no cooperation, and guidance was only given on the learner's own initiative. However, clients and their behaviours were an important source of learning. Other students in the vocational school also provided social support, although theoretical studies otherwise did not add to learning. Learning in the workplace was only superficially structured. The work had a clear day structure, but it was not followed because everything was done with the minimum effort. The official workplace instructor was also nominated, but there was no relationship between the instructor and the learner. Similarly, the official documents were handled superficially as "ticking-the-box" exercises. The goals were set, but were not followed through on. The assessment forms were completed in a basic manner with only a few sentences.

*Case 2: The Supported Learner* describes a learning experience in the social and health care sector. The student participated in three on-the-job learning periods that took place in different workplaces (care homes and day care). The communities of practice were versatile and provided opportunities to practice skills and gain access to more demanding tasks with growing responsibility. The student felt that on-the-job learning provided strong basic skills. There were opportunities for observation, imitation and modelling because the student was closely supported by a nominated instructor. In some cases, other professionals, such as nurses, doctors and physiotherapists, also provided opportuni-

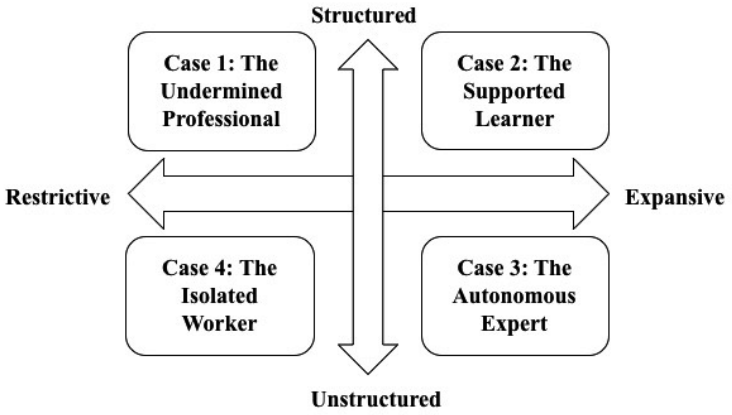
ties for learning and consultation. The learning was clearly structured. The school made initial contact with the workplace, but the student was expected to make subsequent contact with them to agree practicalities, such as work schedule and the nomination of an instructor. Before the on-the-job learning period, the student had set personal goals. In the early stages of the on-the-job learning, the teacher, the student and a workplace representative attended a meeting to compare the criteria in the curriculum with concrete tasks. Vocational skills demonstrations were simultaneously planned.

*Case 3: The Autonomous Expert* characterises learning infrastructure construction as part of school-based VET. The student had worked with machines from a young age and undertaken on-the-job learning periods in his family's small business and in another company. The student had the opportunity to work autonomously in the family business. Different construction sites provided opportunities to interact with clients and other construction workers and to observe alternative ways of working. Learning in the workplace was unstructured; learning opportunities arose when clients had new, specific and unforeseen needs. The student felt he could master the job, but the school was unable to support his personal and job-specific needs. The student expected school and vocational teachers to provide information on how to meet the business-specific needs. At times the student took an expert position in the school and provided the teacher and other students with the necessary knowledge needed in the actual work situation.

*Case 4: The Isolated Worker* describes learning task-specific skills in apprenticeship training. The apprentice worked in a large company with a clear labour division. The apprentice had

worked in various construction sites previously but was only given the task of setting tiles. The apprentice felt that this task was given because nobody else wanted it and the apprentice was in the most junior position in a strict hierarchy. The work was highly independent and there were rarely opportunities to observe colleagues. On one occasion, observing another colleague provided new ways of working and eventually changed the apprentice's way of working. Otherwise, learning was based on trial and error and practicing. The apprentice felt that the community of practice avoided openly discussing errors, which were often put aside and corrected by someone else. The apprenticeship training was highly unstructured. The school or teachers were not actively involved in the process and the task sequencing, guidance or skills demonstrations were not planned.

Figure 1.
Four individual cases representing the different features of workplaces as learning environments



## CROSS-CASE ANALYSIS

Findings from the cross-case analysis are presented as various broad themes and key issues that characterise students' experiences and their variance in relation to workplace learning in VET (see Table 2). They are intertwined in multiple ways but the aim is to highlight some central dimensions that should be noticed in the context of VET. These dimensions do not define learning; however, they may affect learning opportunities and structuring of learning in the workplaces.

Table 2.
Themes and key issues related to workplace learning and variance in experiences

| **Theme** | **Subtheme** | **Examples** |
|---|---|---|
| **Regulation** | Forms of learning, learner status | Regulations of law on VET, employee vs. student |
| | Field-specific regulation | Rules set by trade unions, occupational safety regulations |
| | Organisation-specific rules | Independent small organisation vs. rules set by HR (e.g., underaged workers not allowed to participate in specific tasks) |
| **Job characteristics** | Task variety and demands | Focus on task-specific skills vs. occupational skills |
| | Autonomy | Close supervision vs. independent work |
| | Tools and resources | Hard vs. easy access |

| Theme | Subtheme | Examples |
|---|---|---|
| **Social support** | Organisational structure | Hierarchical vs. flat communities or organisations |
| | Division of labour | Independent work vs. various networks and partnerships |
| **Structuring of learning** | Planning perspective | Short-term vs. long-term planning opportunities (e.g., small business vs. large business, apprenticeship vs. on-the-job learning period) |
| | Nomination of workplace instructor | Official vs. practical action |
| | Task participation | Steady tasks vs. sequencing tasks |
| | Goal setting | Adapting to an organisation's needs and goals vs. setting personal goals |
| | Feedback and assessment | Superficial vs. deep |

It is suggested that many of the field-specific and organisation-specific differences relate to these themes. However, as the cases show, there is plenty of variation in organising workplace learning. The analysis shows that school-based VET in social and health care offered a variety of learning opportunities, especially since students were encouraged to have personal goals and to participate in multiple communities. The student's role was also accepted in the community, and support was available from multiple occupational groups. Organisations in the social

and health care sector also often seemed to have a possibility to make long-term strategic planning and to cooperate with the vocational schools. The construction sector represented a more restrictive approach to workplace learning. The students could not participate in a variety of tasks due to safety or production reasons. In this data, safety was especially discussed in the context of school-based VET, and some of the tasks with evident safety hazards were off limits to underage workers. Students in the construction sector also felt that sometimes they were encouraged to break these rules. Due to production reasons, students did not have an opportunity to practice tasks, instead they were participating in easy tasks for which fewer tools and resources were needed and that were often reserved for workers in a junior position.

Overall, students in VET did not experience workplace learning as highly structured. The study showed that planning perspectives varied depending on the study paths and organisations. It seemed that the on-the-job learning periods lasting a few weeks were more carefully planned than apprenticeship training was. Apprentices particularly struggled with planning; for example, skills demonstrations were not always planned in advance. Apprentices focusing on task-specific skills also felt that they did not have any options to widely plan their studies. Instead, their studies were structured based on the workplace's needs and possibilities. Planning perspectives also varied in small and large businesses. Small businesses in the construction sector could not plan tasks in advance because they depended on clients' changing needs. Large businesses in the construction sector had longer projects but these had a more specific labour division that did not allow for much participation in multiple

tasks or processes. Even though a workplace instructor was nominated, most of the students did not consider this relationship as important. It seemed that the nomination was more an official than a practical matter. Some of the students did not work with their instructors at all, and this was problematic in relation to completing the official assessments, which were done superficially and without sufficient discussion. Receiving feedback was also highly occasional.

## 4. DISCUSSIONS

This study showed that vocational education and workplace learning is highly varied. Two students in the same field can achieve the same qualification but have very different experiences. The differences between the different modes of learning and various settings have gained recent attention. Grytnes et al. (2017) studied how different institutional models of VET translate into differences in students' sense of belonging, occupational identity and safety learning. The study in the context of the Danish and Swedish models showed that the Danish model included a faster transition from novice to expert than the Swedish model did. It also promoted a sense of belonging to the company and the development of occupational identity. However, safety learning was regarded as more disconnected and fragmented in the Danish model than it was in the Swedish model. In a similar manner, this study suggests that occupational safety regulations were especially evident during on-the-job learning periods and as part of school-based VET. Fjellström and Kristmansson (2016) studied two educational settings in apprenticeship training. They concluded that specific workplace

demands often override educational goals. This study also found that apprenticeship training was particularly steered by workplaces needs, whereas on-the-job learning allowed educational goals to be set by the students themselves.

It is acknowledged that both workplaces and schools are necessary to promote vocational learning (e.g., Aarkrog, 2005; Billett, 2009). This study is not suggesting that workplaces should directly adopt the characteristics of school-based learning; however, structuring workplace learning might be helpful when discussing the quality of learning opportunities in the workplace.

## 5. CONCLUSIONS AND SUGGESTIONS FOR FURTHER RESEARCH

To conclude, it is suggested that structuring learning might benefit the quality of workplace learning. Turning the school curriculum into a workplace curriculum with actual tasks could make the goals and the ways to reach those goals more transparent. This kind of pathway of learning experiences might especially benefit students who are not self-directed or autonomous learners, but this requires further investigation. Further research could also investigate structuring learning based on official documents. The personal competence development plan of each student should help to define the skills, qualification requirements and the tasks in the workplace. Secondly, the written apprenticeship contract or training agreement aims to ensure that students are provided with learning opportunities and that learning is planned, monitored, safe and accurately reported to the education provider.

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# The Effectiveness of TVET and the Malaysian Skills Qualification Framework (MSQF) in Producing K-Workers: Practitioners Perspective

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**Abstract:** The present Malaysian Skills Qualification Framework (MSQF) was formulated to classify skills qualification that indicates the level of capabilities on competency descriptors. MSQF currently enforces competence-based training approach in skills training which is in line with the National Occupational Skills Standard (NOSS). With the establishment of the National Dual Training System (NDTS) in 2005, the existing MSQF may need to be revamped due to new requirements resulting from new orientation towards work process. Thus, the purpose of the study was to analyse the effectiveness of the existing MSQF for automotive technicians to qualify as them as knowledge workers (K-workers). The study adopted the interpretive qualitative research design which was premised on the phenomenological method by using interview and observation. For the purpose of data collection, participants selected for this study were those who have more than five years of experience in automotive industry and understand the NOSS-based training and the NDTS. The qualitative data analysis forms the themes and the

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categories that are useful to develop a new framework to show the relationships that exist among the categories under study. This study found that NOSS standards qualify students with specialized skills but restrict them in carrying out other duties. Thus, a new framework should emphasise on work processes in fulfilling the rapid changing industrial needs due to technological and work organization changes. Moreover, the work process should build upon the business process orientation of the industry and should focus on whole work processes rather than specific or functional units only. Finally, based on the research data, two descriptors, i.e., professional competence (knowledge and skills) and personal competence (social skills and autonomy) are considered important for automotive technicians to be K-workers. Thus, it is recommended that the new MSQF should be put in place in order to produce quality K-workers for the automotive industry in Malaysia.

**Keywords:** Malaysian skills qualification framework, National occupational skills standard, National dual training system, Automotive technicians, Malaysia

## 1. INTRODUCTION

Malaysia's competitiveness depends on the quality of its workforce in the era of K-economy and globalization (Ramlee Mustapha, 2013). Malaysia still grapples with the task of building its economy to achieve a sustainable development to improve the quality of life of its people (Ramlee Mustapha *et al.*, 2008). Vision 2020 for Malaysia clearly states that education and training are to be geared toward creating human resources

and K-workers for industries that can compete in global market (Malaysia, 2006). The government policies to develop K-workers such as: (1) the Ninth Malaysia Plan (2006-2010) was launched to intensify the development of K-workers who are competitive, flexible, dynamic and performance-oriented (Malaysia, 2006) and (2) Third Outline Perspective Plan (OPP3: 2001-2010) was created to develop a dynamic labor force that is capable of meeting the challenges of a knowledge economy in order to enhance Malaysia's productivity and competitiveness (Malaysia, 2006).

Malaysia aspires to become an industrialized and knowledge-based economy where most basic jobs of semi-skilled workers are to be replaced by automation. Thus, knowledge economy requires a high number of K-workers to manage the advance work processes (Zanifa, 2007; Ramlee Mustapha, 2013). The knowledge-based economy is considered as a major strategic move to increase the value-added of the economic sector. Increasing the breadth of training opportunities are other ways in which companies (global) are creating more knowledge workers (Blanchard & Thacker, 2007). According to Drucker (1999), a knowledge economy requires people with diversed talent. Harbison (1973) emphasized the importance of human capital development in which the workers' knowledge and skills are applied to the production of goods and rendering of services. New kind of vocational programs are needed to prepare for highly skilled workers with flexibility, marketability and innovativeness.

The economic challenge of the post-capitalist society would therefore be the productivity of new knowledge and the knowledge workers (Drucker, 1993). Hence, the K-workers can be described as individuals who are highly skilled, intelligent, motivated, innovative, and thinks like entrepreneurs. His/her

knowledge and skills enabled him/her to direct his/her involvement in rapidly changing and increasingly complex work process that produces high quality work. In order to assist organizations to improve their knowledge productivity, Drucker (1999) prescribes six major features: task, autonomy, continuing innovation, continuous training, quality, and worker asset. Harrison and Kessels (2004) proposed that K-workers productivity relates to the way in which individuals, teams and units across an organization work together to generate knowledge-based improvements and innovations. Stam (2007) argued that knowledge productivity refers to the process of transforming knowledge into value. Thus, K-workers are those individuals who embrace life-long training, be able to work in a team and always anticipating the future needs of the workplace (Hoepfner & Koch, 2005). Drucker (1959) describes K-workers as those who work primarily with information or one who develops and uses knowledge in the workplace. Malaysia is currently lacking the critical elements to support the development of K-workers. The current workforce does not possess adequate knowledge and skills to qualify the K-worker status (Ramlee Mustapha & Abu Abdullah, 2004). According to Allais (2010), it was seen as a problem that technical vocational education and training (TVET), workplace-based or skills qualifications tend to have a lower status than school and university qualifications. However, Technical Education and Vocational Training (TEVT) system has an important role in developing K-workers to satisfy the needs of industry.

Ramlee Mustapha *et al.* (2008) highlighted the critical skills that include generic and transferable skills such as interpersonal, communication, thinking, problem-solving, and research skills

should be incorporated in technical curriculum. According to Mohd Yusop *et al.* (2009), who studied the K-workers' potentials among students in engineering education institutions in Malaysia, stated that cooperation is needed among skills training institutions and industry in an effort to determine the skills and knowledge for K-workers in order to fulfil the industry needs. Wan Najib *et al.* (2007) state that the expectation and trust from investors are influenced by the capacity and capability of the country to produce K-workers that can satisfy the industry needs.

In 2005, Malaysian Government decided to implement National Dual Training System (NDTS) to qualify K-workers under the comprehensive and latest training system, to meet the industries prevailing requirements (DSD, 2009). NDTS is Malaysia's new approach in the skills training and development to produce K-workers. The NDTS in Malaysia was designed in the context of work processes based on occupational competencies that are closely interlinked with actual work environment. The need for K-workers is critical in order to cope with the rapid technological changes as well as more complex work process in the future. The concept of work process has been characterized as a holistic knowledge encompassing all dimensions of work-related know-how and experiences (Hoepfner & Koch, 2004; Spottl, 2004). The new skills standard is needed to map the new knowledge, skills, innovativeness and the soft skills needed for the development of K-workers. The standard is also needed to bridge the gap between training system for the workforce and the industrial requirements. Thus, the purpose of this research was to develop a new skills standard to prepare skill workers to become K-workers.

## 2. METHODOLOGY AND RESULTS OF THE STUDY

The purpose of this study was to determine the appropriate standard for developing K-workers. It was designed to determine skills standard and the determinants that can potentially influence in reducing the current mismatch between supply and demand of K-workers. The main aim of this study was to explore the development of new skills standard to produce K-workers. A systematic research was needed to enable the researchers to capture the perspective of automotive industry with regard to its skilled workers' professional competency and qualification. In addition, the study took into account other factors such as rapid technological and work organization changes, and customers' requirements.

This study was conducted using phenomenology method since the researchers needs to understand the phenomenon in a greater depth. Qualitative research is well suited for the purpose of description, interpretation, and explanation (Lee *et al.,* 1999). The reason for choosing this methodology is due to the types of question or problem this study needs to explore. Phenomenology simply seeks to discover and understand a phenomenon, a process, or the perspectives and worldviews of the people involved (Merriam, 1998). According to Merriam (2001; 2002), phenomenology has a potential in giving a true description from individual experience on certain situations. The research design was selected because the researchers believed that the study was focused on discovery, insight and understanding from the workers' perspective. An appropriate standard to develop K-workers would offer greater potential for a significant contribution to the knowledge base of the area investigated (Merriam, 1988). Table 1 shows the case and the

focus of this study.

Table 1:
Case and Research Focus

| Case | Focus |
|---|---|
| Investigation of company work processes, company's organization, human resources development, need for qualification, and skills training issues. | Interview, observation and documents analysis of the situation of skilled workers, improvements, changes and problems, need for qualification. |
| **Key:**<br>Socio-economic structures, change of work and tasks, work processes and issues in training. | **Key:**<br>Dimensions of qualification for technicians. |
| **Field of investigation:**<br>Automotive industry in repair and maintenance sector. | **Field of investigation:**<br>Companies, human resources development, work processes for technicians. |

According to Spottl (2000), in-depth information is needed, such as pertaining to competencies, as well as qualification and training issues. In this study, the researchers have taken four different companies in automotive industry in repair and maintenance sector for data collection. The researchers had visited the companies, interviewed main persons, analyzed documents and made work observations for triangulation purpose. Through observation and field notes, researchers can determine the main factors based on the empirical data. The advantage of interview is that the participants provided in-depth description. The researchers also have conducted document review such as working papers, cabinet paper, plans, reports, workshop paper, and historical documents on the development of existing

skills standard in Malaysia.

The participants selected have worked as supervisors or executives in the training department of the companies. The study used three selection criteria for the participants: (1) knowledgeable in skills standard, (2) possess more than five years working experience in the field, and (3) involved in skills training course at their company. The study also identified the actual demand at the workplace for skills standard to produce K-workers.

The study found that workers need to build up their competency which helps them to carry out their job well. Participant D noted that:

> We need technicians who have skills to do their jobs because they must solve the customer's problem; especially for a new car. They need to tackle the customer's car problem as soon as possible. For example, he can explain to the customer, why the car brake is not functioning properly ... He must able to carry out his work with respect and responsibility.

In the development of skilled workers, other than technical know-how and know-what, they need to have the knowledge of know-why. Participant B believes that:

> Apprentices can explain why machine and technology were integrated in theory. Today, customers want to know everything. Customers want more information and explanation, if we can explain before the customer asks; that is good.

This study also shows that workers in a company are assessed not

only from technical aspect, but also their soft skills in order to obtain better promotion. Participant A noted that:

> "We had organized many soft skills programs such as team building. In reality, it is time for apprentices to promote themselves and show their talent. At this stage, for any apprentices who can show their talent and attract people will be first to be offered a job... soft skills include "value added" such as good communication, working under stress, full commitment and good attitudes".

In addition, apprentices need to have high self-resilience and can carry out duties when facing problem or criticism. Participant C asserted that:

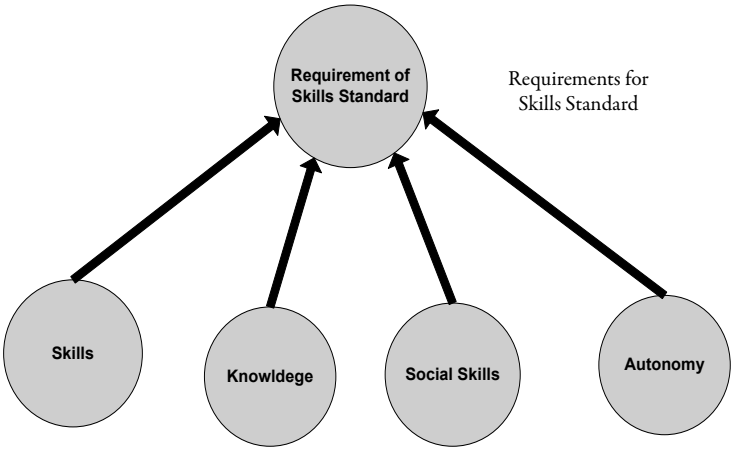
> "NDTS apprentices have a high confidence facing any situation; their confidence level is high... a new car comes with latest technology, they know how to solve the problem because they learn to absorb new information through their own effort... NDTS approach also develops the workers self-resilience and self-discipline. The company needs their new workers to be more innovative and creative in solving problem, and not to simply follow their seniors based on what they did".

## 3. FINDINGS AND DISCUSSION

Skills standard has to be set up based on industry needs and it has to reflect a wider scope and competitiveness due to work structure changes. Workers demanded by industry are highly skilled and are able to solve problems independently at their workplace. The results of this study also show that industry needs workers who are significantly committed and have the ability to carry out high quality services. Workers who possess high-end skills and very competitive are known as K-workers. They are in great demand. According to Gilgeous and Parveen (2001), skills standards should lay out the employee's competency requirements based on the current needs of the industry. According to Garavan et. al, (2001), with competent workers, the company is poised to deal with flexible business needs. In the era of the K-economy, industrial sector faces significant challenges in acquiring competent workers.

These findings also suggest that skills standard must emphasize what an apprentice must know and do relating to technical, personal and basic skills to qualify to become K-workers. Occupational qualification must be based on the abilities, skills, knowledge, attitudes that ultimately the apprentice has to possess (Spady, 1994; Komo, 2000; Maehler, 2005; Winterton *et al.*, 2005). Thus, the new skills standard should reflect the dynamics and flexibility of an apprentice in doing different jobs that fulfil the needs of the workplace. The standard also needs to specify definitive competency regarding the jobs that must be carried out to ensure quality workmanship. The K-workers must have the following four elements: (1) skills, (2) knowledge, (3) social skills, and (4) autonomy (as shown in Figure 1).

Figure 1:
Main elements of skills standard




### 3.1 SKILLS

Skills enable workers to build up their competency which helps them to carry out a job well. A person's know-how and know-what are the bases of competency. Skills are a combination of mental and physical abilities that require training. Skill is measured according to level of competence to ensure a worker can carry out his/her duty with accuracy and speed, and this is known as skill performance. Skills performance is a measure of competency of an individual in carrying out his/her duties which gives satisfaction to customers with regards to products and services offered. According to Spottl and Becker (2004), the application of work process model is important especially in highly technical industry like the automotive sector because the skilled workers need to be trained on know-what and know-

how. Skills and competence place new demand on know-how and know-why. Skilled workers are expected to be able to carry out tasks based on requirements of an occupational area. Skilled workers should also have the ability to use their technological and social know-how to complete their job tasks and solve clients' problems successfully and satisfactorily.

## 3.2 KNOWLEDGE

In the 21st century, knowledge and technology are the two key factors that can change work structure in an organization. K-worker is a competent individual who thinks innovatively and creatively using modern technology. We are living in the era of K-economy, so K-worker could provide a competitive edge for any company. According to Drucker (1999), lacking of knowledge workers is the biggest challenge of the 21st century. In the development of K-workers, other than technical know-what and know-how, they need to have the knowledge of know-why. An organization needs to understand that knowledge is an asset in the company, i.e., how to gain from it, way to maximize profit, and way to transfer knowledge especially tacit knowledge for workers that will carry out their duties and be responsible in their job.

According to Winterton *et al.* (2005), holistic knowledge of processes and contexts; knowledge know-how that underpinned the know-why, is critical for competitive companies. Knowledge is the link between information and experience that needs to be adopted by business organizations to compete locally and globally. Knowledge can be built and gathered by individuals through know-why. To reduce the knowledge gap, the company

needs to have not only competent skilled workers but they are able also to solve problem by using theoretical knowledge.

According to ILO report (1998), workers need cognitive ability and basic skills in all current and future jobs, and lacking these skills will reduce productivity, increase accident rate and serious mistake in output. Workers need to strengthen their cognitive ability and basic skills such as (1) writing, (2) reading, (3) numeracy and science, and (4) computer literacy. Efficiency in cognitive ability has been related to success in job requiring cognitive duties (Sarimah, 2005). Vocational students also need technical efficiency as compared with those in academic or professional fields which stress on oral efficiency (*ibid*). Oral ability is the ability to use language like speech fluency, comprehension and public speaking. This ability is measured by usage of words like using suitable words to form sentence and speaking clearly and with confidence.

There is a strong relationship between skilled workers and basic skills. A skilled worker should possess basic knowledge in reading, writing, mathematics, science and ICT to become a K-worker. A modern skilled worker is not only focused on "hands-on" or technical skills, but strong in basic skills to qualify as a K-worker with potential to adapt to technological and work changes.

### 3.1.3 SOCIAL SKILLS

Social skills reflect the desire and the ability of a worker by his/her attitude, character, personal values, interest and motivation in controlling emotion, and making good interaction with others. A worker with effective social skills is more likely to sell

goods and services to the customers. Social skills include the ability to work in a team, open-minded attitude, ability to work under pressure, ability to handle conflict and possess good personal value. Soft skills are reflected in worker's ability in providing high quality service. According to Paul (2002), right attitude and smart interpersonal skills have become a must for employee in an organization. Workers in a company are assessed not only from their technical expertise, but also their soft skills in order to obtain better promotion.

Competent workers with strong social skills are pertinent to achieve organization's goals. Workers who possess good social skills often have satisfactory relationship with colleagues and better external relationship with customers and in the long run could contribute to higher job quality and productivity. In addition to face constant change, workers need to be innovative and creative to prepare themselves to solve critical challenges. Creative and innovative ideas are essential to improve a process, a product or a service that could increase the productivity of an organization.

This study shows that workers who have critical thinking and problem-solving abilities are better off when they deal with challenging situations. In general, a worker's job satisfaction may affect the quality of his/her workmanship. This study confirms the importance of social skills in improving relationships with internal and external customers. An organization would succeed if their workers enjoy work in team and have good team spirit. Thus, NDTS has included the element of work enjoyment to raise worker's pride toward team and organization. Social skills can build up an individual through (1) having harmonious attitude and character and good spiritual values, (2) extending men-

tal ability with continuous education or life-long learning, and (3) having the capacity to make decision which is of quality and impactful. Thus, social skills are important added-values for workers to qualify them as K-workers.

### Autonomy

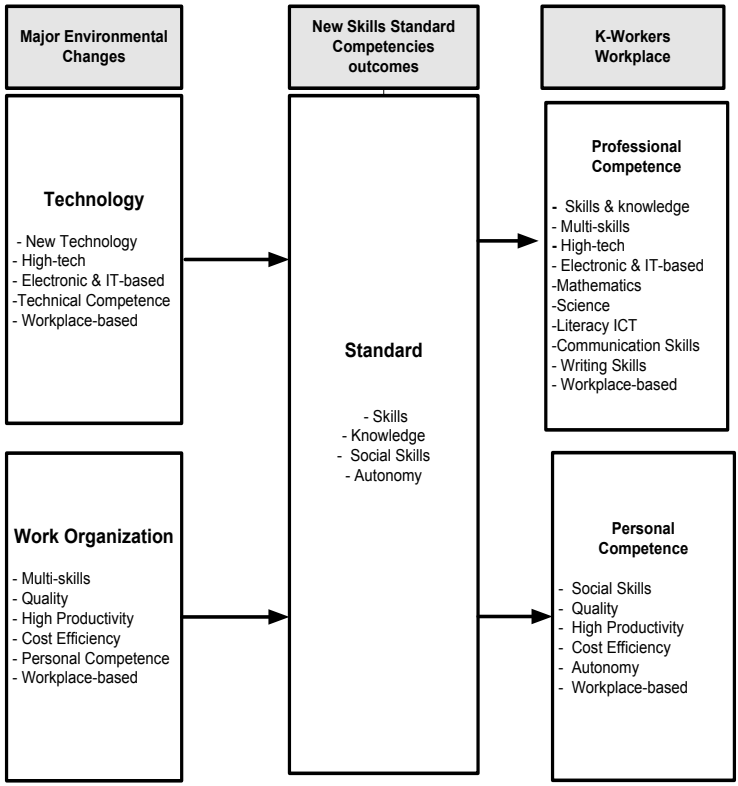
Work culture has changed as the result of the fast changes in technology and work organization. Autonomy refers to one's thinking independently in an uncertain and complex situations. Apprentices need to have high self-resilience and can carry out duties when facing problem or criticism. Thus, apprentices need to overcome problem when facing changes in work process with self-resilience and high self-discipline. Today's workers therefore need to be proactive, look for new knowledge, be independent in order to qualify as K-workers.

The new skills standard based on occupational profiles of work skills which follow the work process philosophy that embraces competency development and social attributes namely, knowledge and technological know-how, critical thinking, problem solving, mathematical, multi-skilling, team work, responsibility, autonomy, and continuous learning. In the new production and services scenario, skilled workers are expected to be more flexible, and work across boundaries to improve work quality such as reducing customer complaints, quality service delivery, faster turnaround time, robust marketing, high productivity, etc. In addition, the skills standard should be designed based on competencies.

The new skills standard contains core competencies and work-related activities as shown in Figure 2. At the workplace, apprentices are trained through problem-solving which focuses

on the work process for improving effectiveness and efficiency under the new circumstances. Training at workplace is critical to achieve competitive skills needed to develop K-workers that are self-directed, multi-skilled, creative, and possess goods social skills. The study also found that the new skills standard needs to be characterized in line with the two descriptors that are professional competence (knowledge and skills) and personal competence (social skills and autonomy).

Figure 2:
Major environmental changes to development of new skills standard in automotive industry



## 4. CONCLUSION

This study found that the occupational competence through work process is critical in the entire set up of skills training especially in the automotive sector. Therefore, the identification of work tasks for occupational profiles forms the basis for the curriculum or standard conception in skills training. Thus, this study proposes a new skills standard which is based on occupational profile with work process concept consisted of four elements, skills, knowledge, social skills and autonomy. The development of the underpinning basic skills are equally necessary in order to impart soft skills such as the ability to communicate orally, the ability to write, the ability to read texts, and to use ICT effectively. The new skills standard may serve as a major vehicle for the Malaysian skills training programs in terms of improving apprentices' competencies and providing guidelines for competency development in a multi-dimensional way as well as standardizing certification of competencies in the formal and informal training sectors. Thus, the new skills standard could be used to set the qualifications of multi-skilled and K-workers that are versatile, willing to learn continuously, possess the ability to acquire and apply knowledge, and independent.

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# A Methodology for Integrating Work Based Learning (WBL) in the Construction Management (CM) Curriculum

Mohd Firdaus Mustaffa Kamal*, Haryanti Mohd Affandi

**Abstract:** Work-based learning (WBL) is a learning strategy that develop the student employability skill through integrating the curriculum with the workplace which provide students with real-life working experience. The Malaysian ministry of higher education has put forth an initiative to empowered this type of learning approach. However, conventional approach in designing the curriculum is deemed to be insufficient to address the needs in this learning approach. This study proposed a methodology on how construction management (CM) program can moved forward in integrating the WBL in its curriculum. The proposed methodology consists of the identification of job task that is essential in real work environment with the assistant of the project management technical framework. Quantitative approach using survey has been carried out to identify the important area that need to be focused on. Through this finding, the important area has been identified and the approach to integrate the area in the CM curriculum can be strategized.

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**Keywords:** Construction management education, Project management framework, Work-based learning.

## 1. INTRODUCTION

This paper is a conceptual paper supported with statistical data which proposed a methodology for the construction management (CM) program on how to move forward in integrating the work based learning (WBL) in its curriculum development.

CM program has long been established. The purpose of CM education is to produce graduates that have both the engineering and management knowledge and skills in construction as a mean to bridge the engineering faction and the management practice. However, the skills acquired by the CM graduates especially in Malaysia is in question as being observed by the industrial practitioner. The lacking in the certain area has rendered the employee to manage the project poorly and has resulted in costly consequences and time delay.

The government is well aware of the shortage in knowledge and skills acquired by the graduates, not only in CM courses but other related courses. This lacking is believed to be contributed by the innate ability of the curriculum to adapt to the changing needs of the industry. To overcome this predicament, the Malaysian government has put forth an initiative to integrate the WBL strategy in the university curriculum in order to expose students with real-life working environment and thus enhancing the graduates' employability skills.

In September 2016, the Malaysian ministry of higher education has made it compulsory for each public university to implement the 2u2i, 2u1i or 3u1i program as stated in the national

Education Development Plan 2015-2025. It's an academic program to integrate WBL where the process of learning need to be carry out in both the university and workplace. 2u2i for instance is a combination of 2 years learning in university and 2 years in the workplace. Through this program, enrichment of the student learning experience can be increase with the exposure to real practice and experience and it is hope that it would improve the graduates employability skill. (MoE, 2016)

## 2. WORK BASED LEARNING (WBL)

WBL aims to provide the experiential learning to the graduates to prepare them for working life. In Malaysia, WBL application is still in it infancy stage and a structured way of doing things need to be plan so that the curriculum developer does the right thing in the right way. Although this strategy is relatively new, however this approached has been practiced years back. WBL is not a new learning strategy. It has a long history associated, for example, with various types of apprenticeships. It is also not new within higher education, in so far as areas such as medicine, education, and social work have included work-based learning as the central element in their programmes for many years. Higher education has always been associated with preparation for work, particularly in relation to entry to the professions.

In addition, employment patterns have undergone considerable upheaval over the last few years. Traditional career patterns are breaking down and full-time permanent employment is no longer the predominant pattern. Of particular relevance to the present context, is the rise in workers who must undertake the responsibility for managing their own careers and skills devel-

opment in order to become, or remain, employable. Upskilling and lifelong learning have become the new 'buzz' words associated with the move away from the 'job for life' and the need for individuals to develop new skills and to update existing skills throughout their working lives.

Interest in work-based learning has expanded since the beginning of the 1990s, and currently research in this area is wide-ranging and interdisciplinary. One of the reasons for this expansion is the unprecedented rapid change in society and working life that has taken place during the past few decades. The rapid development of information and communications technology, the growing production of knowledge in the economy, increasing internationalization and globalization, as well as changes in occupational structures and in the content and organization of work have all challenged not only education institutions but also work organizations to engage with new ways of ensuring that the workforce can successfully meet these challenges.

Malaysian Education Blueprint 2015-2025 (MoE, 2013) recognized that there is a mismatch in the supply and demand of graduates, with employers reporting that graduates lack the requisite knowledge, skills and attitudes. Thus, WBL hopes to enhance the student learning experience by expanding industry collaboration in the design and delivery of programmes; increasing the use of experiential and service learning to develop 21st century skills, and leveraging technology-enabled models to enable more personalized learning to meet the objectives of holistic, talented, and balanced graduates.

Work-based learning is playing an increasingly important part in the development of an individual's lifelong learning through improved academic qualification by obtaining credits for nego-

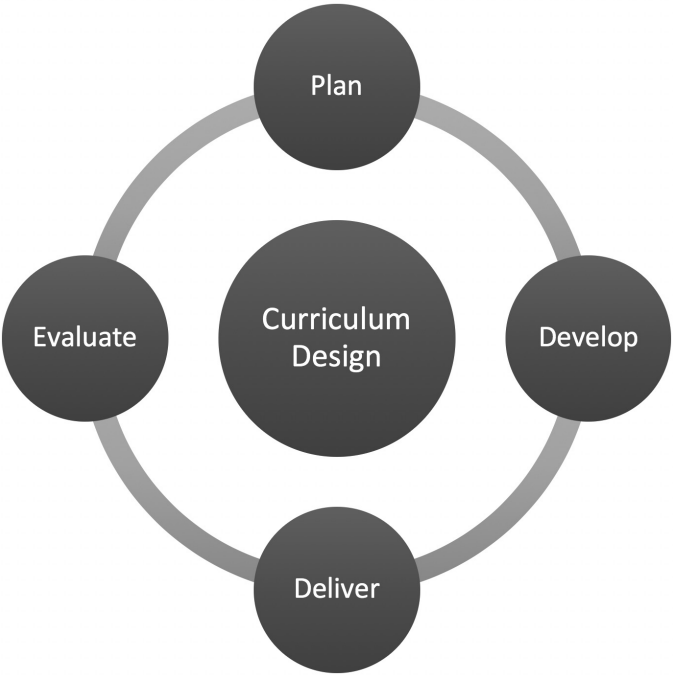
tiated learning in the workplace. It is also increasingly an important form of provision in which new relationships between higher education and the world of work can be established. WBL can be seen as part of a wider set of changes in the economy, society and the role of higher education. Work-based learning has also been identified as a means of responding to the needs of employers, particularly those in small to medium-sized enterprises (SMEs). This is in line with the MEB 2015-2025 (MoE, 2013) higher education objectives which stated that lifelong learning will enable Malaysians to meet the changing skill needs of a high-income economy and maximizes the potential of individuals who are currently outside the workforce through reskilling and upskilling opportunities by using WBL approaches.

## 2.1 WBL CURRICULUM DESIGN

Work-based programmes typically employ different structures, approaches and processes from those used in subject-based academic programmes (Helyer, 2015). However, the shared characteristics of WBL programmes usually include at least one or more of the following curriculum elements:

1. Accreditation of certificated or experiential learning;
2. Learning agreements including industry partner as well as learners;
3. Location of learning in the workplace or 'work' as the subject of learning; and
4. Workplace or professional practice related 'applied' projects.

Figure 1.
Curriculum Design Cycle




The 'curriculum,' although is largely structured around template and project modules, often involves a three-way negotiation between student, university and industry or employer. It will typically be grounded in and defined by a context rather than a subject-area or academic discipline (Costley & Dikerdem, 2011). The Guidelines to Good Practices: Curriculum Design and Deliver (MQA, 2015) states that a curriculum design cycle typically has four stages as illustrated in Figure 1.

## 3. CONSTRUCTION MANAGEMENT EDUCATION

The construction industry is known to be complex and fragmented, involving numerous players, skills and technologies. Construction practitioner are engaged not only in the task that requires pure technical expertise such as production and maintenance of constructed facilities but also in specialized tasks that require extensive management and administrative expertise (Ariditi, 1984). CM education is built upon the fundamentals of civil engineering and most program offers students a balance or research and coursework in construction technologies and management philosophy and practice, with an additional study from other disciplines to provide candidates with the skills and experiences needed to successfully manage a construction project (Russel, Hanna, Bank, & Shapira, 2007)

The apparent consensus on the needs for the management education for professional justifies the pursuit of a program that encompasses the knowledge required for the construction sectors (Victor, Eugenio, & Alenjandro, 2012). Some believe that managerial education can be acquired at the workplace or should be introduced and integrated as part of undergraduate programs (Russel, Hanna, Bank, & Shapira, 2007). From the curricular of existing programmes in the Malaysian public university, it is possible to synthesize a set of courses believed to meet the needs and the basic requirement of the industry. The CM curriculum is also a combination of engineering, technology, construction techniques and management (Massyn, Mosime, & Smallwood, 2009)

The development of the curriculum is still using the traditional approach. An established programme structure from established university always being referred and used as the basic

structure of the programme. To supplement, the use of the available international standard has provided guidance on what is the key knowledge area that needed to be focused. However, there is no clear guideline on how this key knowledge area is supposed to be mapped onto the curriculum structure and it is observed that because of the lacking in a commonly accepted reference framework, the structure of the programme considered for this study has been identified to be almost the same from other programme structure found within other universities in the world.

## 3.1 PROJECT MANAGEMENT REFERENCE FRAMEWORK

The project management reference framework as shown in Figure 2 has been developed to supplement the needs of the CM education and training in improving the current practice. It is basically a comprehensive framework outlining the generic activity found within a project lifecycle based on the conventional construction procurement system. It was initially develop as a tool to assessed the training needs for the Malaysian public officer whom is responsible in managing government projects. However, this framework can be applied in any construction related courses. It is imperative for the education and training programmes developer to understand the processes and know what is the critical activities before any programmes can be developed.

Figure 2.
Project Management Framework (Kamal, 2016)

See next spread

**Initiation**

Project Team Formation

Initial Meeting

Project Definition & Scope

Statement of Requirement

**Consultant Appointment**

Invitation/Advertisement to Bid

Selection of Qualified Consultants e.g.; Previous Contract Engagement, Questionnaire, Track Records etc.

Request for Proposals

Proposal Evaluation & Selections

Interview & Negotiation with Selected Consultant

Agreement by Both Contracting Parties

**Clients' Brief**

Development of Statement of Need (Project Brief) - Basic Objectives of the Client

Programme Development (Design Brief) - The Client Specific Requirement

Identification of Alternatives of Design Theme

Public/Stakeholder Input

Alignment with User Objectives and the Project

Establishment of Functional Brief

**Feasibility**

Impact Assessment (Nation, Economy, Society)

Market Demand e.g.; Economic Activity, People Needs etc.

Others Study e.g.; Aesthetic Value, Community Sentiment, Town Zoning Laws etc.

**Schematic Design**

Develop Overall Design e.g. Plan, Elevation, Specification, Cost Plan, Programme, Special Study & Report etc.

Design Are Based on Approved Conceptual Design

Design Are Based on Preliminary Estimate

Design Review Exercise

Client Approval on Scheme Design

**Authorities' Requirement**

Submission of Drawings

Authorities Approval Application e.g.; Building Regulation Application, Application to Discharge Planning

Statutory Building Approval of Drawings

**Detail Design and Specification**

Design are Based on Overall Budget

Design are Based on Audit Scheme Design

Detailing of Design, e.g.; Site Plan, Floor Plans etc

Work on Construction Specification e.g.; Materials, Electrical & Mechanical Fittings etc.

Integration of Authorities Requirement

Design Review Exercise

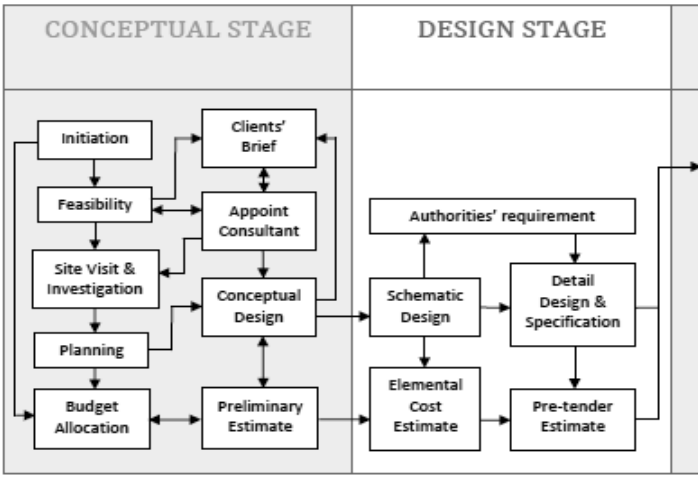
**Factor Estimate**

Estimation are Based on Scheme Design

Estimation are Based on Preliminary Estimate

Estimation are Based on Square Foot/Cubic Foot Estimate

Client Evaluation on Estimation




**Site Visit and Investigation**

Geotechnical Survey e.g.; Soil Conditions, Topography

Property Survey E.G.; Land Title, Cost, Corners and Boundaries

Site Visit e.g.; Consultant Report Conformance, Access, Utilities etc.

Environmental Impact Assessment (EIA) e.g.; Impact on Environment, Society, Community

On-site Surveying and Mapping e.g.; Setback, Photogrammetric.

**Planning**

Project Integration

Project Scope

Project Cost

Project Quality

Human Resource

Project Communication

Project Risk

Project Procurement

Project Information Technology

**Budget Allocation**

Budget Acquisition

Budgeting Process

Budgeting Consideration

Basis of Budgeting

Cost Planning

**Preliminary Estimate**

Estimation Method

Estimation Consideration

Basis of Estimation

Cost Incurred

Estimate Adjustment

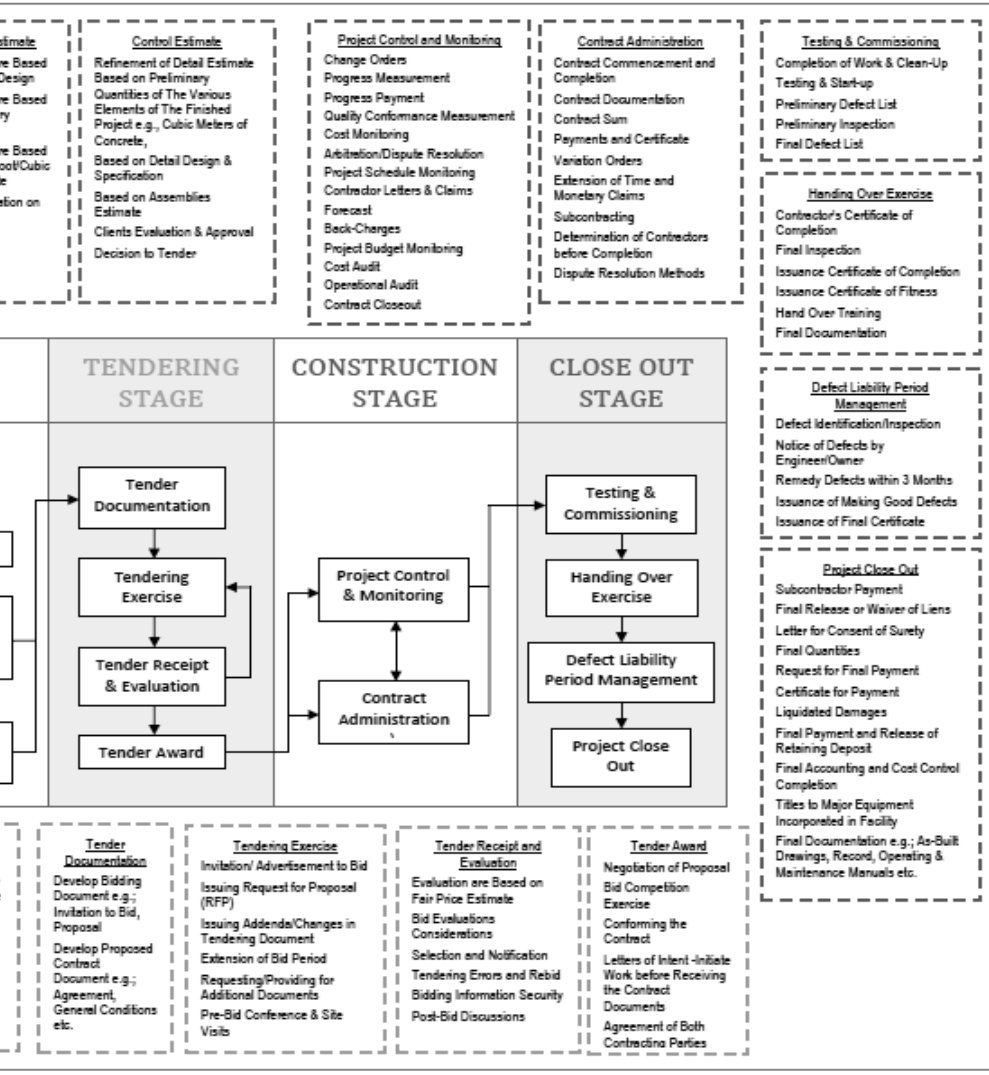
**Conceptual Design**

Developing a Design Concept That Meet the Space and Programme Requirements

Developing Narrative Descriptions of Design

Design Review Exercise

Client Approval of Design


Control Estimate
Refinement of Detail Estimate Based on Preliminary Quantities of The Various Elements of The Finished Project e.g., Cubic Meters of Concrete,
Based on Detail Design & Specification
Based on Assemblies Estimate
Clients Evaluation & Approval
Decision to Tender
Project Control and Monitoring
Change Orders
Progress Measurement
Progress Payment
Quality Conformance Measurement
Cost Monitoring
Arbitration/Dispute Resolution
Project Schedule Monitoring
Contractor Letters & Claims
Forecast
Back-Charges
Project Budget Monitoring
Cost Audit
Operational Audit
Contract Closeout
Contract Administration
Contract Commencement and Completion
Contract Documentation
Contract Sum
Payments and Certificate
Variation Orders
Extension of Time and Monetary Claims
Subcontracting
Determination of Contractors before Completion
Dispute Resolution Methods
Testing & Commissioning
Completion of Work & Clean-Up
Testing & Start-up
Preliminary Defect List
Preliminary Inspection
Final Defect List
Handing Over Exercise
Contractor's Certificate of Completion
Final Inspection
Issuance Certificate of Completion
Issuance Certificate of Fitness
Hand Over Training
Final Documentation
Defect Liability Period Management
Defect Identification/Inspection
Notice of Defects by Engineer/Owner
Remedy Defects within 3 Months
Issuance of Making Good Defects
Issuance of Final Certificate
Project Close Out
Subcontractor Payment
Final Release or Waiver of Liens
Letter for Consent of Surety
Final Quantities
Request for Final Payment
Certificate for Payment
Liquidated Damages
Final Payment and Release of Retaining Deposit
Final Accounting and Cost Control Completion
Titles to Major Equipment Incorporated in Facility
Final Documentation e.g.; As-Built Drawings, Record, Operating & Maintenance Manuals etc.
TENDERING STAGE
CONSTRUCTION STAGE
CLOSE OUT STAGE
Tender Documentation
Tendering Exercise
Tender Receipt & Evaluation
Tender Award
Project Control & Monitoring
Contract Administration
Testing & Commissioning
Handing Over Exercise
Defect Liability Period Management
Project Close Out
Tender Documentation
Develop Bidding Document e.g.; Invitation to Bid, Proposal
Develop Proposed Contract Document e.g.; Agreement, General Conditions etc.
Tendering Exercise
Invitation/ Advertisement to Bid
Issuing Request for Proposal (RFP)
Issuing Addenda/Changes in Tendering Document
Extension of Bid Period
Requesting/Providing for Additional Documents
Pre-Bid Conference & Site Visits
Tender Receipt and Evaluation
Evaluation are Based on Fair Price Estimate
Bid Evaluations Considerations
Selection and Notification
Tendering Errors and Rebid
Bidding Information Security
Post-Bid Discussions
Tender Award
Negotiation of Proposal
Bid Competition Exercise
Conforming the Contract
Letters of Intent -Initiate Work before Receiving the Contract Documents
Agreement of Both Contracting Parties

## 4. METHODS

This study uses the quantitative approach which employs the survey technique as the main method in obtaining the result. The questionnaire used has been structured from the activities identified within the framework and the sample for this study were primarily the professional construction practitioner. The result has been analysed using rasch to get the measure of importance for each activities. The result is as shown in Table 1.

## 5. ANALYSIS AND DISCUSSIONS

From the analysis, it has been identified what are the activities that is important based on the input from the practicing professionals. Table 1 shows the measure of importance for each activity found within the reference framework.

Table 1.
Industrial Perception on the Activity Importance (Kamal, 2016)

| **Item** | **Measure of Importance** |
|---|---|
| Project control & monitoring | -1.56 |
| Contract administration | -1.17 |
| Tender document | -1.17 |
| Tender receipt & evaluation | -1.00 |
| Tender award | -0.84 |
| Planning | -0.84 |
| Testing & commissioning | -0.69 |
| Budget allocation | -0.54 |

| Item | Measure of Importance |
|---|---|
| Tendering exercise | -0.41 |
| Detail design & specification | -0.41 |
| Clients brief | -0.41 |
| Conceptual design | -0.27 |
| Site visit & investigation | -0.14 |
| Control estimate | 0.10 |
| Factor estimate | 0.45 |
| Defect liability Period | 0.56 |
| Authority requirement | 0.56 |
| Preliminary estimate | 0.56 |
| Handing over | 0.78 |
| Initiation | 0.92 |
| Closeout | 1.00 |
| Feasibility study (macro) | 1.00 |
| Scheme design | 1.41 |
| Consultant appointment | 2.10 |

From the result, it has been highlighted that project control and monitoring and contract administration is the most crucial activities. Both activities are found within the construction phase in the project lifecycle. This phase is crucial in any construction projects because failure to monitor and managing this phase will cost the project greatly. Based on the Auditors General Report (National Audit Department, 2017), majority of government project fail due to lacking in monitoring and control of the projects. This is in-part contributed by the lack of knowledge and skills by the officer responsible and total reliance on the contractors in managing the projects.

Tendering documentation, tendering receipt & evaluation and also tendering award is also consider as important activities. These three activities are found within the tendering phase. In this phase the process of contractor selection will be carried out based on their qualification and their monetary ability to deliver the project.

These activities are found within the CM curriculum, however this activities are not specifically emphasize as to the needs of the industry. What we can do is to improved on the existing curriculum and highlight this activities as the element in the WBL assessment. Nonetheless, the planning should always aligned itself with the learning outcome planned for the CM course.

## 6. CONCLUSIONS AND SUGGESTIONS FOR FURTHER RESEARCH

The findings from this study suggest that in order to integrate WBL successfully in the CM curriculum, a structured strategy comprising the input from industry practitioner together with the flexible curriculum need to be put in place. With a rigid curriculum standard, the course will have difficulty in reacting to the changing needs of the industry and it is reckoned that above all, a proper reference framework need to be ready as a term of reference so that any changes and improvement made to the curriculum will still be focus towards the learning outcome of the course. Nevertheless, there are always challenges and barriers to implementing this type of education approach. Pilot study on this approach need to be carry out to really understand what are the fundamental issues that need to be tackle before the any actual curriculum structured can be develop.

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# Bridging Formal and Informal Learning – Investigating Full-time and Part-time Young Fishers and School Teachers' Viewpoints Concerning Sustainable Fishing

Fika Burton Mwakabungu, Shu-Nu Chang Rundgren*, Marianne Teräs

**Abstract:** Sustainable development is the educational and global challenge. To contribute to formal and informal learning, the study aims to explore what viewpoints are found in young fishers' and school teachers' viewpoints concerning sustainable fishing in Tanzania. Focus group interviews were conducted with 42 young fishers (including 25 part-time fishers and 17 full-time fishers, aged from 16 to 19) and nine school teachers during the spring of 2017 to collect viewpoints on their practices (fishing or teaching practices) concerning sustainable fishing. Besides qualitative content analyses, descriptive quantitative analyses were done to show the distributions of knowledge and values linking to different subject areas. It was revealed that both the part-time and full-time young fishers presented the knowledge aspect to a high degree than the school teachers. Among the different subject areas, knowledge from environmental science was found dominant in all the participating groups' responses, but knowledge from the subject area of ethics was less presented. Concern-

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ing the values aspect, it was interesting to find that the teachers' group presented values to a higher degree than the young fishers' groups, mainly linked to the subject areas of environmental science and economy. The implications for educational practice, curriculum and research are discussed.

**Key words**: Sustainable fishing, Socioscientific issues, Knowledge, Values, Young fishers, Teachers

## 1. INTRODUCTION

Sustainable development (SD) has drawn attention globally during the past decades (UNESCO & UNEP, 1978; United Nations, 2015). Today, SD continuously brings educational challenges based on the complex interrelationship of the environmental, societal and economical dimensions and lack of holistic view of SD identified from both stakeholder groups of teacher and student (e.g. Borg, Gericke, Höglund, & Bergman, 2014; Walshe, 2008). Meanwhile, SD also plays an important role in the goal of scientific literacy for responsible citizenship (SLRC) (Sjöstrom, Eilks & Zuin, 2016) which is highly related to the emerging research field of socioscientific issues (SSI) within the domain of educational sciences internationally (Chang Rundgren & Rundgren, 2010; Drumond Vieira, Florentino de Melo, Avraamidou, & Avelar Lobato, 2017; Feinstein & Kirchgasler, 2015; Rundgren, Eriksson, & Rundgren, 2016; Sjöstrom, Eilks & Zuin, 2016).

In line with the importance of SD globally, sustainable fishing has been also addressed in Tanzania locally. Most of the fishing communities in Tanzania in general and in Rufiji

are receiving information about good practices on natural resources for SD from different sources, which include stakeholders of environmentalists, local government leaders, politicians and researchers. The most common slogans that are used to advocate for SD are about: we need to practice sustainable fishing, we need to use proper fishing gears, we need to conserve our mangrove forests for sustainable fishing and we need to establish environmental security groups to protect our resources (Richmond, Wilson, Mgaya, & L., 2002). Despite these impressive actions and the importance of marine resources to community welfare, unsustainable fishing is still rampant in the country. For example, fishing using explosives is common in Tanzanian waters (Braulik et al., 2015; Melita. Samoilys & Kanyange, 2008). Reports from natural resources dependence and livelihoods and development in Tanzania state that fishing using explosives has been employed in the country since the 1960s ( Samoilys & Kanyange, 2008). According to Slade and Kalangahe (2015, p. 491), fishing using explosives 'is considered to be more widely practiced now than at any other point in history'. The fishing with dynamite is realised to be the most destructive method, which has been practiced in Tanzania since 1960 (Wagner, 2004) and hence, it is important to know how young fishers do today in their fishing practice.

## 1.1 THEORETICAL BACKGROUND

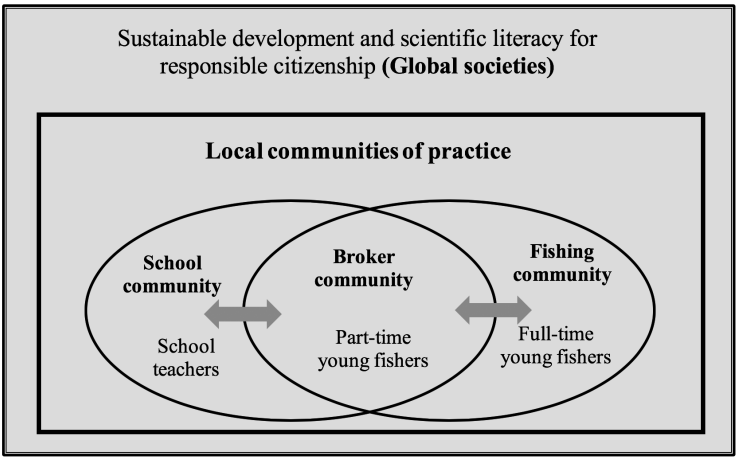
Community of practice (Wenger, 1998) was applied as the theoretical foundation supporting the study design and direction of data analyses with its main concepts of practice including participation and reification as well as the concept of boundary

(brokers and boundary object) and locality (local community and global society).

In order to contribute to formal and informal learning, there were two communities of practices involved in the study concerning sustainable fishing (Figure 1). One community was based on school, and school teachers were in focus based on their teaching practice concerning sustainable fishing topic. Another one was fishing community, in which the full-time young fishers were in focus. However, there is a group of participants, part-time young fishers, who took part in school education at the same time, so the group of part-time young fishers can be recognized as the brokering connection, *"connections provided by people who can introduce elements of one practice into another"*(Wenger, 1998, p. 105). Namely, part-time young fishers in the study are seen as brokers to connect different communities of practices with the same context of sustainable fishing.

Beside the concept of broker as one type of connections, boundary object is another type, which includes *"artifacts, documents, terms, concepts, and other forms of reification around which communities of practice can organize their interconnection"* (Wenger, 1998, p. 105). Here, sustainable fishing is viewed as the context covering different boundary objects, and knowledge and value are seen as the important boundary objects that connect school community and fishing community in the study. Further, concerning locality idea developed by Wenger (1998), wheb he points out that " the history of modern times involves a transition from local communities to global societies//...//we can develop new ways of participating in the global, but we do not engage with it" (1998, p.131). This also strongly support the local communities of practice concerning sustainable fishing to the global society concerning SD and SLRC.

Figure 1.
The local communities of practice and global societies concerning sustainable fishing focused in the study.



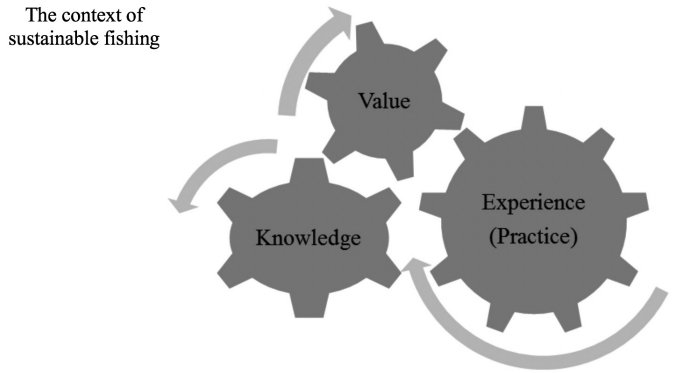

## 1.2 THE INTERRELATIONSHIP OF KNOWLEDGE, VALUE AND EXPERIENCE/PRACTICE CONCERNING SD

In the theory, communities of practice, developed by Wenger (1998, 2000), knowledge and learning are very much addressed in relation of practice. However, value aspect is not discussed at individual participants' level, especially with its inter-relationship of knowledge. As mentioned earlier, sustainable fishing can be seen as SSI, and in SSI research (also related to environmental education and issues), it has been revealed that individuals used the aspects of knowledge, value and experiences related to different subject areas in making SSI argumentation (e.g. Chang Rundgren & Rundgren, 2010; Christenson, Chang Rundgren,

& Höglund, 2012; Christenson, Chang Rundgren, & Zeidler, 2014; Holbrook & Rannikmae, 2009). A model termed, SEE-SEP, developed in 2010 by Chang Rundgren and Rundgren, aimed to reveal the holistic, but also complex, view of SSI and the argumentation made by individually. The SEE-SEP model include the aspects of knowledge, value and experience in connection to six subject areas of science, environment, economy, social culture, ethics and policy. The importance of applying the SEE-SEP model to enhance teaching practice and formal learning of SSI and SSI argumentation has been noticed to date by a number of researchers (e.g. Christenson et al., 2012, 2014; Morris, 2014; Rundgren, Eriksson, & Rundgren, 2016) The utilization of SSI as teaching and learning context is also seen significant to promote SLRC (e.g. Holbrook & Rannikmae, 2009; Chang Rundgren & Rundgren, 2015)

According to the inter-relationship of knowledge, value and experience discovered in SSI research, in the study, sustainable fishing is recognized as one of SSI contexts, value aspect is added to contribute to the theory, communities of practice, to see how knowledge and value can be identified in the participants' responses (from different communities and brokers) concerning sustainable fishing. However, the experience aspect is equal to the practices that young fishers and teachers did as the necessary requirement for the study aim, so only knowledge and value aspects were in focus of the study (Figure 2).

Figure 2.
The inter-relationship of knowledge and value identified in the communities of practice on sustainable fishing focused in the study.




## 1.3 THE PURPOSE AND RESEARCH QUESTIONS

The purpose of the study is to investigate what knowledge and value can be identified concerning sustainable fishing among the three communities of practices (full-time young fishers' fishing practice and school teachers' teaching practice) and the broker group (part-time young fishers' brokering connection). In order to contribute to formal learning to know what knowledge were taught and used regarding sustainable fishing in compulsory school, the knowledge conveyed by the participants was analysed based on the SEE-SEP model (Chang Rundgren & Rundgren, 2010) and the value orientation is further dissected accordingly to answer the specific questions of

- How knowledge is distributed in different subject areas among the different communities of practices and the broker group?

- How value is distributed in different subject areas among the different communities of practices and the broker group?

## 2. RESEARCH DESIGN

The purpose of the study is mainly to identify knowledge and values in the three communities (full-time young fishers' fishing practice and school teachers' teaching practice) and the broker group (part-time young fishers' brokering connection). A comparative design, which is seen using the same methods to compare two or more meaningfully contrasting cases or situations (e.g., communities) and allows both qualitative and quantitative methods (Bryman, 2016), was seen suitable as the research design for the study.

### 2.1 THE PARTICIPANTS

A total of 42 young fishers, including 25 part-time and 17 full-time fishers, and nine school teachers took part in the study voluntarily (Table 1). The age of the part-time younger fishers (PT) ranged from 16 to 17 in age. They were full time primary school pupils (grades 6 and 7), but they were involved in fishing activities after school time as well as during holidays. Most of their fishing took place in their villages and not solely dependent on fishing as their only source of living. On the other hand, the full-time young fishers (FT) were aged between 18 and 19 years. This group carried out the fishing as a full time activity. Most of them had never attended formal schooling. They fully depended on fishing as a source of income for their survival. Usually, most

of them fish offshore, which requires them to leave their homes for fishing quite far away in the islands where they spend a lot of time. The selection of young people was done purposively (via the first author's invitation) whereby the main criteria for involving them were their involvement in the fishing activity. The school teachers (ST), age from 25 to 57, were involved in the study based on education outcomes such assessing whether for example, part-time fishers' had any influence in relation to teachers' practices concerning sustainable fishing. All the nine teachers who were involved in this study held Certificate Level of their qualification and they had been teaching in a particular school in the study area since their first appointment. However, these teachers differed in their teaching experiences, in which they range between 3 and 23 years. Their teaching subjects were Vocational Skills, Kiswahili, English, Civics, Geography, Mathematics, and history.

Table 1.
The number and gender distribution of the participants.

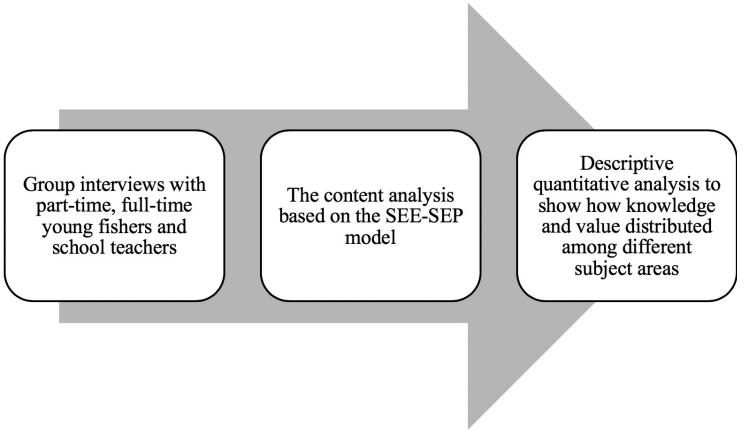
| **Gender** | **PT** | **FT** | **ST** |
|---|---|---|---|
| Female | 10 | 6 | 4 |
| Male | 15 | 11 | 5 |
| **Total** | **25** | **17** | **9** |

## 2.2 DATA COLLECTION AND ANALYSES

Over-all, the data collection was based on qualitative approach via group interview. However, mixed methods analysis was applied in the data analyses, since it has been addressed by

researchers that mixed methods analysis offers a more comprehensive analytical technique than either quantitative or qualitative data analysis alone (Onwuegbuzie, A. J. and Teddle, 2003; Tashakkori & Creswell, 2007; Östlund, Kidd, Wengström, & Rowa-Dewar, 2011). Therefore, after the group interview data were collected, both qualitative content analysis was applied firstly and then quantitative descriptive analysis was conducted to answer the research questions (Figure 3).

Figure 3.
The data collection and the process of data analyses.




## 2.3 DATA COLLECTION: THE INSTRUMENT AND PILOT STUDY

There were 11 questions developed for young fishers group interviews (Appendix 1, Part A), and the questions were tested and revised based on a pilot study conducted with 28 young fishers (16 part-time and 12 full-time young fishers) (Table 2). Matching

the 11 questions for young fishers, 10 questions were developed for teachers' group interviews, and there were 4 additional questions asked specifically to understand their teaching practices on teaching sustainable fishing (Appendix 1, Part B). The interview questions with teacher group were also piloted with two school teacher colleagues of the second author.

Table 2.
The number and gender distribution of the participants in the pilot study.

| **Gender** | **PT** | **FT** | **ST** | **Total** |
|---|---|---|---|---|
| Female | 4 | 3 | 1 | 8 |
| Male | 12 | 9 | 1 | 22 |
| **Total** | **16** | **12** | **2** | **30** |

## 2.4 DATA ANALYSES

Based on the research questions, the first author quantifed the data for comparison purpose among the groups of participants (i.e. part-time fishers, full-time fishers and 2017 teachers). As mentioned earlier, mixed methods approach was conducted in the data analyses of the study, in the first round of content analysis, the group interview data was analysed based on the SEE-SEP model (Chang Rundgren & Rundgren, 2010) to explore how knowledge and value relate to different subject areas could be identified in the partisans' responses on sustainable fishing. However, due to the practice of sustainable fishing was the focus of the study, which was recognized as the aspect of experience shown in the SEE-SEP model and environment and science were merged as environmental science (Figure 4), the codes are

narrow down to 10 codes (Table 2) instead of 18 codes developed in the SEE-SEP model. The definition of each code and the related examples from the participants' response are presented in Table 3.

After coding the participants' responses based on the codes revised from the SEE-SEP model (Table 2), the quantitative descriptive data analysis was performed by using excel program. The frequency/percentage of each code identified in the responses were calculated. The frequency (%) of showed the distribution of the young fishers' and teachers knowledge and value in different subject areas.

Figure 4.
The ten codes slightly modified from the SEE-SEP model (Change Rundgren & Rundgren, 2010) used in the study.

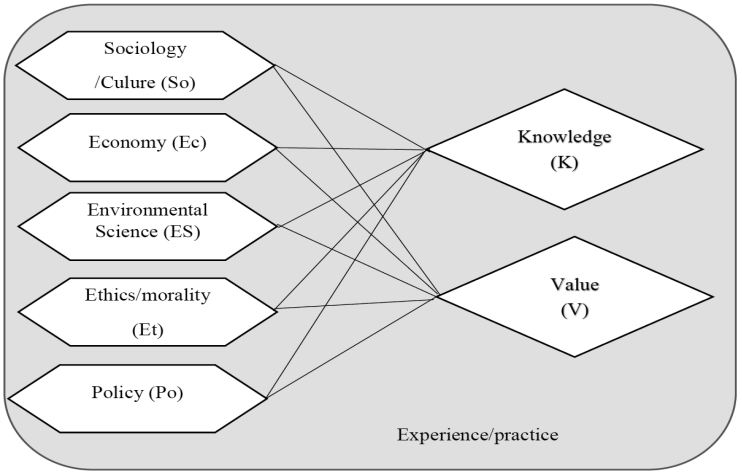


Table 3.
The codes generated from adapted the SEE-SEP model.

| **Aspects**<br><br>**Subject areas** | **Knowledge (K)** | **Value (V)** |
|---|---|---|
| Sociology/culture (So) | SoK | SoV |
| Economy (Ec) | EcK | EcV |
| Environmental science (ES) | ESK | ESV |
| Ethics/morality (Et) | EtK | EtK |
| Policy (Po) | PoK | PoK |

Table 4.
The definitions of the codes and the related examples from the participants' responses.

| Codes | Definitions | Examples | | |
|---|---|---|---|---|
| | | Part-time Young Fishers | Full-time Young Fishers | Teachers |
| SoK | Refers to statement that has concepts, evidence or theories relating to societies or social/cultural aspects of a phenomenon, such as human relation in a society or social identity. | *PT16:* Women go to fish 'uduvi' inshore shrimps in the shallow water, though they catch fish by chance.<br><br>*PT12*: The people from outside invaded our area and started to fish with big boats, which is bad. | *FT12*: There must be four or more people working together, the net needs to be dragged with two canoes because it is weighed down with heavy stones.<br><br>*FT12*: There must be cooperation among the people themselves in our community, who would realize the benefits of conserving the environment. | *ST06*: In the subject of history, when teaching about major sources of production fishing comes in as one of the activities.<br><br>*ST06*: I have been teaching in this school for more 20 years and students have a lot to discuss when proposing ways of minimizing effects of fishing practices. |
| SoV | The statements that express affection/ attitude or makes a value statement indicating that something is positive or negative in relation to a society or social identity. | | | |

| Codes | Definitions | Examples | | |
|---|---|---|---|---|
| | | Part-time Young Fishers | Full-time Young Fishers | Teachers |
| EcK | Refer to statements that have concepts, evidence, or theories that entail money and cost or economise the issue in some ways. | PT15: My father catches larger size of shrimps, which are known as jumbo and tiger. He thereafter sell them to the buyers who come with ice.<br><br>PT10:The only people who can reach the fishing ground are those with modern boats or big ships | *FT12*: The big problem will be the economic difficulty because when you sell small fish it means that in future there will be no more fish in the area.<br><br>FT06: The owners of the boats provide us with the fishing tools and means to reach the fishing ground. | *ST9*: Fishing appears in my subject (geography) under "economic activities" topic, so, here fishing is taught as one of the economic activities taking place in Tanzania and other countries.<br><br>*ST9*: I believe in this topic of "economic activities" students will learn what is fishing, how fishing is carried out as well as discussing the economic importance of fishing activity . |
| EcV | Express affection/ attitude or makes a value statement and indicating that something is positive or negative relating to economy, or money and price | | | |

| Codes | Definitions | Examples | | |
|---|---|---|---|---|
| | | Part-time Young Fishers | Full-time Young Fishers | Teachers |
| ESK | Refers to a statement that denotes concepts, evidence or theories related to environmental science such as interaction between organisms and their surrounding environment. | *PT03*: The use of destructive fishing gears and methods such as dragging the nets where the fish use to reproduce. This method destroys the fish habitats as well as their dwelling areas.<br><br>PT09: the use of dragging nets destructs the fish and its generation, because this method tends to catch baby fish, which are not consumable at all. | FT11: People should not fish using the small nets because they need to consider the environment for fish reproduction.<br><br>FT11: I think that people should not fish using the fish nets with small openigs, because they need to consider the fish environmet for reproduction. | *ST4:* One of the tasks which I provide to my students is to demand them to discuss the importance of forest in ecological and environmental balance.<br><br>*ST5*: I think teachers need knowledge and skills on how to implement the concept of sustainable development. |
| ESV | Refers to statement that denotes affection/ attitude or make a value statement indicating that something is positive or negative relating to ecology/ environment | | | |

| Codes | Definitions | Examples | | |
|---|---|---|---|---|
| | | Part-time Young Fishers | Full-time Young Fishers | Teachers |
| EtK | Refer to statement that has concepts, evidence and theories on ethical consideration or moral concern connecting to issue in some manner. | *PT09*: It is when people started cutting down the mangroves because fish tend to reproduce in the mangroves, shrimps reproduce there too, but people cut the trees.<br><br>*PT16*: Illegal fishing is widespread in the delta; people use prohibited methods that cause damage to fish environment. | *FT12*: We use legal fishnet of 1.5 inches to catch shrimps, but we report to the authority about those people who use illegal fishnets.<br><br>*FT07*: People should be advised to use modern equipment for fishing because we will catch the bigger fish and we will let the smaller fish grow to maturity. | *ST02*:When people fish by taking into consideration the rules that are governing fishing, then we will help our students to promote sustainable development.<br><br>*ST09*: In the Vocational studies, there topics in which students are suppose to learn about fishing, but not all teacher have the knowledge of how to teach this subject. |
| EtV | Refer to a statement that expresses affection/ attitude or make a value statement indicating that something is positive or negative connecting to issue in some manner. | | | |

| Codes | Definitions | Examples | | |
|---|---|---|---|---|
| | | Part-time Young Fishers | Full-time Young Fishers | Teachers |
| PoK | Refers to a statement that denotes concepts and evidence linking to law or political policies made by authoritative institutions. | *PT11*: The government should educate people on the importance of conserving the environment (PoV).<br><br>*PT06*: My suggestion is that village by-laws should continue, as they will force people to re-plant mangrove trees for benefits of fish and other organisms that live there. | *FT10*: We want to have our own laws within Beach management Unit (BMU) which will give us more freedom to protect our fish resources.<br><br>*FT05*: I encourage the authority to establish the environmental groups that will be responsible to monitor and control fishing gears and the fishing methods. | *ST06*: In order for sustainable fishing to be achieved in the Rufiji Delta, it needs a policy that is well oriented to the teachers and community.<br><br>*ST02*: There should be laws that govern different fisher groups in the fishing community and those who breaks the law should have to be punished promptly. |
| PoV | Refer to a statement that show affection/ attitude or make a value statement indicating that something is positive or negative relating to law or political policies made by authoritative institutions. | | | |

## 2.5 TRUSTWORTHINESS

Validity and reliability are key determinants of quality in quantitative studies (Davies, D & Dodd, 2002). Patton (2002) emphasizes also that qualitative researchers should always take into account issues of reliability and validity when designing a study, analysing data and judging the quality of a study. However, some qualitative researchers argue that the terms of validity and reliability are not applicable in qualitative research (Davies, D & Dodd, 2002) Instead, terms such as rigor and trustworthiness are used to address quality in qualitative study (Davies & Dodd, 2002; Stenbacka, 2001).

In the study, table 3 was used for validity with two senior researchers (the second and third author of this article) in educational research. One is professor in the field of SSI and another one is associate professor in education. After the two researchers' individual reading, the group discussion was arranged to validate the construction of the codes. A consensus was achieved after the meeting. In terms of inter-rater reliability while coding the data, a master student in educational research studied in Sweden and three teacher colleagues in Tanzania were involved in coding the data with ten selected participants' responses. A consensus was achieved after the individual discussions with the master student and the teacher colleagues.

## 2.6 ETHICAL CONSIDERATION

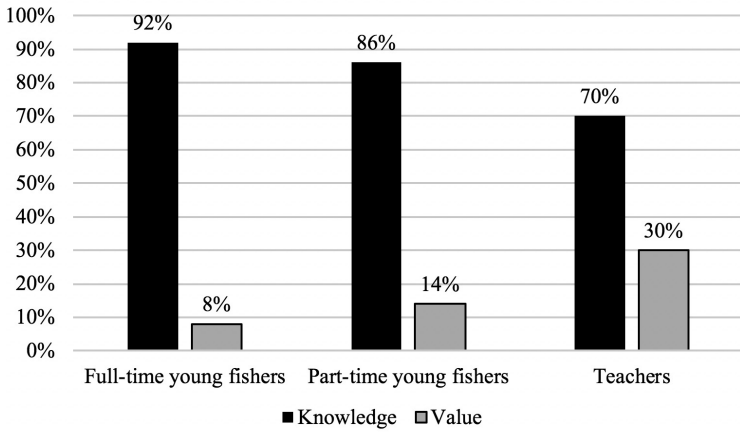
Since the study was conducted in Tanzania, but analysed in Sweden, the ethical guidelines from Swedish Research Council (Swedish Reserch Council (Vetenskapsrådet), 2011) and Tanza-

nia were followed. The participants were invited and joined the study voluntarily. All the data were kept anonymously by the first author. No information of the individual participants and their villages can be traced.

## 3. RESULTS

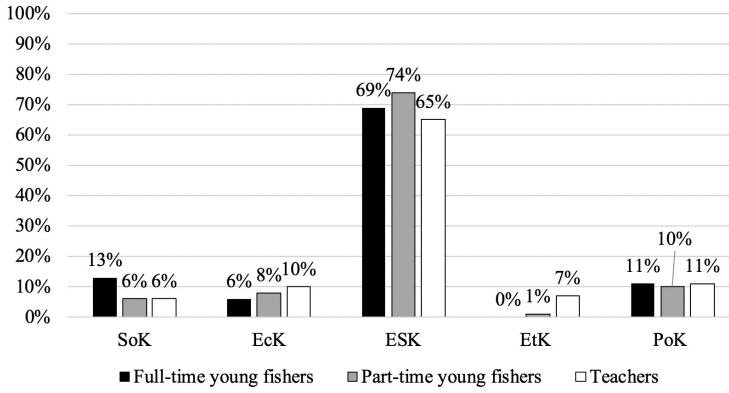
After the first round of content analysis, it was found that knowledge was applied to a large degree concerning the practices of sustainable fishing among the groups of participants from 70% to 92% (Figure 5). On the contrary, the aspect of value was found less presented in the participants' responses from 8% to 30%. It is interesting to notice that school teachers' responses on their teaching practice regarding sustainable fishing were found lower degree of addressing knowledge (70%), but high degree of value (30%), comparing to the full-time and part-time fisher groups.

Figure 5.
The knowledge and value distribution among the participating groups.



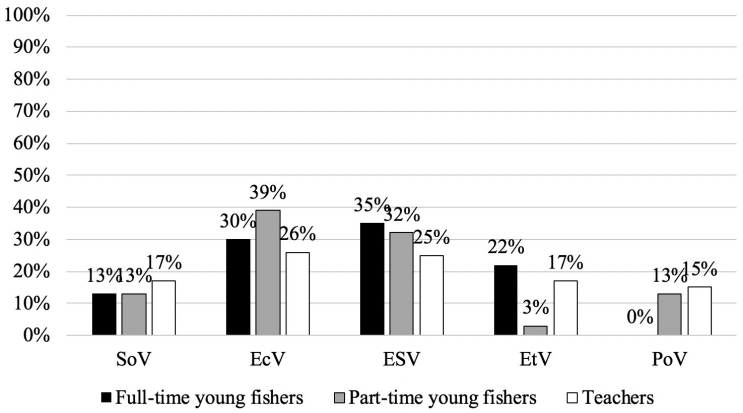
To disclose the knowledge aspect in relation to different subject areas (related to research question 1), the findings showed that knowledge from environmental science was applied most in all the three participating groups' responses, but knowledge from ethics was found less among the participants' responses (Figure 6). Meanwhile, it was found that full-time young fishers used knowledge from social culture area to a second high degree (13%) and then knowledge from policy came the third high degeree (11%). For part-fime fishers, followed by knowledge from environmental science, knowledge from policy (10%) and economy (8%) were found as second and third high degrees, which was in line with school teachers' use of knowledge restuls showing second high degree in policy (11%) and third in economy (10%). However, it is important to address that there was no knowledge from the subject area of ethics/morality showed in the group of full-time young fishers and only 1% was found in the part-time young fisher group. For school teachers, the less used knowledge was from sociology subject area (6%).

Figure 6.
The knowledge distribution among the five subject areas based on the three participating groups' responses.




Concerning how the value aspect was identified and distributed in the five subject areas (research question 2) (Figure 7), it was shown that the values in relation to environmental science (25% to 35%) and economy (26% to 39%) were highly represented among all the participating groups. In terms of the group of full-time fishers, they presented their value linked to environmental science most (35%) and followed with economy (30%), but none in the policy. However, the part-time young fisher group presented their value in relation to economy to a highest degree (39%) and followed with environmental science (32%). Ethics (3%) was used less. The teacher group addressed their value in environmental science (25%) and economy (26%) to a higher degree comparing to social culture, ethics and policy (17%, 17% and 15%).

Figure 7.
The value distribution among the five subject areas based on the three participating groups' responses.




## 4. CONCLUSION AND DISCUSSIONS

The purpose of this study was to investigate what knowledge and value can be identified concerning sustainable fishing among the three communities of practices involving the full-time young fishers, the school teachers, and the part-time young fishers as the broker group. The study revealed that the participants from three communities used knowledge and value aspects from nearly all the five subject areas revised based on the SEE-SP model (Chang Rundgren & Rundgren, 2010), only knowledge from ethics and value from policy was not found in full-time fishers' responses.

In general, knowledge was represented to a high degree compared to the value aspect in all the three participating groups, which are different from SSI argumentation research findings

disclosed by other studies (e.g. Chang Rundgren & Rundgren, 2010; Christenson, Chang Rundgren, & Höglund, 2012; Christenson, Chang Rundgren, & Zeidler, 2014). The reason might be about people's distance on the specific SSI topic. In our study, the fishing issue was something both full-time and part-time young fishers did in their everyday life, and also for school teachers to teach in their teaching practice. However, the SSI topics investigated in the studies done by Christenson and colleagues were such as genetically modified food and global warming issues, which are seen often in mass media, but not something the upper secondary students really work with or had direct experiences about. Therefore, the aspect of value was found most in arguing SSI by the upper secondary students in their studies.

To date, there is no specified model for teaching and learning for sustainable development and educating citizen for sustainable development, but it is recognized that there are various strategies and multi-disciplinary delivery of education. Research showed that educators face a general dilemma because they never know what young people need to know to meet a changing future (Ärlemalm-Hagsér & Sandberg, 2011). Ärlemalm-Hagsér and Sandberg (2011) have realized that sustainable development is looked at as an universal approach, an environmental issue or a democratic issue with the particular emphasis on 'fundamental topics' that do not concern ecological issues. Some teachers found that the most fundamental part of working with sustainable development are human rights, democracy, gender equality, morals and ethics' (Ärlemalm-Hagsér & Sandberg, 2011, p. 194). The above-mentioned studies are not in line with our findings, since knowledge from environmental science was demonstrated most in the group of school teachers as well as

full-time and part-time young fishers. Meanwhile, our study did not find that teacher used most knowledge and value related to ethics as well. We would say it is about what issues related to sustainable development discussed by the different group of people. Issues themselves did influence how people use knowledge and value from different subject areas (e.g., Christenson, 2015).

The study done by Turnbull, (1997)sites and skills. In order to ensure the continued existence of the diversity of knowledge traditions rather than have them absorbed into the great imperialist archive we need to enable disparate knowledge traditions to work together through the creation of a third space in which the social organization of trust can be negotiated. (C showed the fishers talked about how to manage natural resource for their own benefits. They used local dependent judgements and negotiations which include social, environment (ecology), moral, political and economic benefits in a way. Wenger (1998) also indicates that the value of people's knowledge is certainly socially and economically situated within the communities, in which it is found, as it is produced through practice. In our study, it was shown that the value aspect used by the different participating groups of full-time, part-time young fishers and school teachers were most from environmental science and economy. This finding can add some evidence on that people's values are linked to their needs from local community. Even though school teachers did not really involve in fishing practice, they did concern much about economy aspect for young fishers, and this economy aspect was linked to knowledge and value to a high degree for both groups of school teachers and part-time young fishers. One thing important, which also links to what has addressed by Wenger (1998), is that full-time young fishers demonstrated more knowledge from social

culture aspect and more value in ethics compare to part-time young fishers.

Based on the finding of the study, the use of knowledge and value aspects lining to different subject areas did show some similarity between the groups of school teachers and part-time young fishers, with environmental science, economy and policy subject areas. Full-time young fishers did use knowledge from social culture and value from ethics most comparing to the other groups of participants more while talking about fishing practices. There is a need to conduct further content analysis to reveal what content of knowledge and value were talked in different group of participants and whether there are samenesses and differences among the different subject areas among different groups of participants.

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APPENDIX 1

**Par A: Questions for Full-time and Part -time Young fishers**

1. How did you learn to fish?
2. Which fishing gears do you use in fishing process?
3. What type of fish do you catch?
4. Where do you go to fish?
5. What do fish eat?
6. How do fish reproduce?
7. How do you use the fish you catch?
8. What changes do you notice in fish catch?
9. What are the causes for the changes?
10. What should be done to ensure sustainable fishing?
11. Where did you learn all this?

**Part B: Interview for teachers**

1. Explain whether the following issues are taught in primary school curriculum:
    i. Fishing
    ii. Benefits of fish
    iii. Fishing gears
    iv. Sustainable fishing:
    v. Fish reproduction
    vi. Fish Habitat:
2. How do young people start fishing?
3. Where is their favourite fishing ground?
4. What type of fish do they catch?
5. How do they use the fish they catch?
6. Which type of fishing gears do they use?

7. What things do you think learners need to know about sustainable fishing?
8. How do you integrating sustainable development in relation to the fishing activity in your subject?
9. What changes do you notice in fishing activity?
10. What should be done to ensure sustainable fishing?

**Additional questions**

11. In what ways the teaching and learning of sustainable fishing in the schools can be improved?
12. What kind of the development that is happening in your community has an impact in fishing activity?
13. Apart from classroom teaching, how else do you involve your students in learning fishing activities?
14. How do you use student's background knowledge of fishing activity in your daily teaching?

# Reorientation of Innovation Researchers at the end of the Innovation Project – Case Study on Research Challenges in the Follow-up of Phase of the Learning Layers Project

Pekka Kämäräinen*

**Abstract:** This chapter discusses the transitional situation in innovation research when the funding period of a major innovation project is over. The chapter discusses as the exemplary case the completion of the EU-funded Learning Layers (LL) project (2012-2016) and the follow-up phase. The focus is on the use of the Learning Toolbox (the main result of the project) as support for work-based and vocational learning as well as on knowledge sharing in work organisations. Firstly the chapter recapitulates the initial expectations of the project consortium, the changes in the approach of the Construction pilot and the results that were schieved with the Learning Toolbox in the initial pilot context. Secondly, the chapter discusses the conceptual challenges in making explicit the legacy of the LL project in terms of *methodology* (the role of accompanying research), the *pedagogic approach* to vocational education and training (the shaping-oriented approach) and the *agenda for promoting innovations in working life* (building on the *work process knowledge*

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of skilled workers). Thirdly, the chapter discusses the options of innovation researchers to promote transfer of innovation and the specific paths taken in the follow-up projects of the LL project that introduce Learning Toolbox into working life in new application contexts.

**Keywords:** Innovation research, Digital media, Vocational education and training, Workplace-based learning, Transfer of innovations

## 1. INTRODUCTION

This chapter discusses the transitional situation for *innovation research* when the funding period of a major innovation project is over. The chapter discusses as the exemplary case the completion of the EU-funded Learning Layers (LL) project (2012-2016) and the follow-up phase. The focus is on the LL pilot in the construction sector in Germany and on the use of the Learning Toolbox (LTB). The development and pilot testing of the LTB was the main result of the LL construction pilot. The LTB was developed to support work-based and vocational learning in training for construction trades. In addition, the LTB was shaped to support real-time communication and knowledge sharing in work organisations.

In the LL project there were research partners, development partners and application partners with different functions in the whole project and in the two sectoral pilots – in the healthcare pilot and in the construction pilot. In the construction pilot the researchers from *Institut Technik & Bildung* (ITB) served as an accompanying research (*Begleitforschung*) team with different

documentation-related, conceptual, development-related and training-related support functions. At the end of the LL project it was apparent the LTB had been developed into a stage of a viable product that could be used in the training for construction trades *and* in the coordination of work processes on a construction site. Yet, during the funding period of the LL project it was not possible to take further steps to roll-out the use of the LTB to a wider range of user-organisations.

From this perspective the accompanying research team from ITB had to consider its obligations and commitments at the end of the funding period of the LL project:

1) To what extent should researchers engage themselves in new initiatives to support the development of the LTB for new kinds of user organisations in new contexts?
2) To what extent should researchers continue cooperation with application partners of the LL project to support them as multiplier-organisations in new initiatives?
3) To what extent should the researchers engage themselves with conceptual interpretation and methodological reflection on the work in the LL project.

In the light of the above this chapter examines, how the tension between the initial assumptions of the LL project (concerning the scalability of innovations) and the achieved results (first steps to digital transformation in training and in work processes with the support of the LTB) can be seen as a research challenge. In this respect the chapter examines *firstly*, what kind of conceptual and methodological lessons have been learned regarding the role of *accompanying research* as *innovation research* in such a project. *Secondly* the chapter examines, how further cooperation of researchers and practitioners can contribute to the *sustain-*

*ability and transferability of the innovations*. *Thirdly*, the chapter examines, what kind of *new follow-up initiatives* have emerged during the development and adaptation of the use of LTB in new contexts of working and learning.

Altogether, the chapter discusses the difference between a technology- or design-driven innovation approach vis-à-vis an approach based on *social shaping of work, technology and human engagement* in workplace learning and in work processes. Moreover, the chapter draws attention to the specific characteristics of *development of innovation* and *transfer of innovation* in such processes that are characterised by openness, social participation and multiple iterations. Finally, the chapter draws attention to the changing roles of research during developmental and transfer-oriented processes and to the respective possibilities to contribute to knowledge development on the basis of such participation.

## 2. LEARNING LAYERS – THE PLAN AND THE EXPECTATIONS VS. THE PROCESS AND RESULTS[16]

In this context it is appropriate to give a brief overview on the development of the Learning Layers project. The main point is to draw attention to the contrast *between* the initial expectations *and* the actual process that led to the achieved results. Here we need to distinguish between the *construction pilot* (the focus of the chapter) and the healthcare pilot.

16 This section is essentially based on the annual activity reports that have been made available on ResearchGate, see Kämäräinen et al. (2013, 2014, 2015) and Kämäräinen 2017.

## 2.1 THE PLAN AND THE INITIAL EXPECTATIONS FOR THE LEARNING LAYERS PROJECT

The idea of the Learning Layers was shaped in a multi-disciplinary project consortium that mainly consisted of researchers with a background in computer science, educational technology, business informatics and software development. In their earlier projects they had developed several software solutions and studied the use of such solutions in knowledge-intensive organisations. Now the challenge was to look at occupational work in sectors that had not been studied in such projects and appeared to be lagging behind.

In this respect the consortium was built upon the idea to work on different support layers that would then contribute to the *informal* learning of users in the pilot sectors (construction workers or their trainers *vs.* medical doctors and nurses in general practices). The expectation was that specific co-design processes with the users would enable them to start using mobile devices. Moreover, it was assumed that jointly shaped mobile apps and software solutions would *by default* make these useful in the work of the practitioners. In this respect the project proposal emphasised mainly *informal learning* and *integrated scaffolding models*.

Consequently, the two sectoral pilots, the healthcare pilot in England and the construction pilot in Germany were brought into the project as 'application partners' and the partners responsible for the sectoral pilots (University of Leeds and ITB, University of Bremen) were mainly seen as managers of the pilot activities without major research tasks. However, during the project this picture changed to a considerable degree.

## 2.2 THE REAL PROCESS AND THE THE EMERGENCE OF THE RESULTS IN THE CONSTRUCTION PILOT

In the light of the above it is essential to see that the actual work in the sectoral pilots took in many respects different courses. The common starting point for shaping design ideas was the 2013 Helsinki Design conference. However, the design ideas that emerged from the working groups mostly focused on the healthcare sector. Moreover the technical partners mainly focused on tools and apps that addressed the needs of healthcare partners. Concerning the construction pilot, one of the two design ideas ("*Captus*") was latterly implemented by one application partner with other resources (not as a part of the project work). Thus, only one of the initial design ideas ("*The Sharing Turbine*") was actually taken further in the construction pilot.

The key point of the last mentioned design idea was to start a comprehensive digitisation of the training materials and worksheets used in training centre Bau-ABC Rostrup. These materials – used by the construction sector apprentices in project-based learning were available as paper-based documents and worksheets. In the course of the training the apprentices collected then into the White Folder. In the digitisation initiative the lead was taken by an intermediate partner (Pontydysgu) and the work was to be supported by a software house (Tribal). However, at an early stage it appeared that the software house was not willing to contribute to such a process and left the project. This had major consequences for the work of the construction pilot.

After the Helsinki Design Conference the ITB team had started an intensive workshop phase at Bau-ABC involving

apprentices and trainers in separate sessions. This phase served as mapping of possible points of intervention from the perspective of supporting work processes and workplace learning. However, when working further with the initial digitisation agenda, it became apparent that the workload for comprehensive digitisation was not manageable. After a critical situation assessment the construction pilot partners agreed to give the co-design process a new direction. In the next phase the main thrust of the construction pilot was to co-design and co-develop a digital toolset that provides access to digital contents (selected training and learning materials), to web resources and to real-time communication channels. In this way the construction pilot got refocused into shaping of the Learning Toolbox (LTB) and into pilot testing with Bau-ABC and other interested partners.

Alongside this reorientation the construction pilot developed a pattern of *'research & development dialogue'* between the practitioners, intermediate technical partners and accompanying researchers. The *'co-design workshops'* provided insights into working and learning tasks, into episodes and into pedagogic aspects. At the same time the consortium ran a process to engage a new software house to lead the technical development of the LTB. Thus, the active co-design, co-development and pilot testing of the LTB only could take place during the latter half of the project work.

Altogether, during the construction pilot, the accompanying research team (from ITB, University of Bremen) took different tasks – such as, making preparatory interviews, documenting co-design workshops, co-tutoring in multimedia training and facilitating the pilot testing and evaluation activities. At the end of the LL project we could conclude that the LTB had been

developed into a viable product. It had been pilot tested in several training projects of the Bau-ABC Rostrup and it had been successfully presented to several craft trade companies. In these presentations we could rely on an actual use case that demonstrated its usability in coordination of a construction site. In particular this use case demonstrated, how the use of the LTB could help in the mutual adjustment of different construction trades represented by different contractors. But, since this all happened at a very late phase of the project, there was no possibility to arrange an immediate transition to direct follow-up activities. Thus, the ambitious goals for scaling up the innovation could not been reached. Instead, the challenges for sustaining and transferring the innovation turned out to be more complex than expected.

## 3. THE CHALLENGES, OPTIONS AND CHOICES FOR RESEARCHERS AFTER THE PROJECT[17]

Some of the work was completed just by the end of the funding period of the project or shortly afterwards. In this context the project consortium prepared the public pars of the final report a specific website "The Final Layer: Learning Layers Results". The different sections of this website informed of the *research methodologies* that had been used, on the *tools* that had been developed, on the *impact* that had been achieved and on *learning scenarios* or models for further work.

For the research team of ITB this format of reporting pro-

17 This section is essentially based on the contributions oft he construction pilot to the concluding website "The Final Layer. Learning Results", see http://results.learning-layers.eu/.

vided a chance to present its engagement and achievements in the project with emphasis on different aspects:

- The methodological reflection on *accompanying research* drew attention to the participative nature of the co-design process and pilot testing of LTB;
- The methodological reflection on the *support for training schemes* drew attention to the empowerment of Bau-ABC trainers as peer tutors in the training activities and as multipliers of innovation;
- The *impact cards* on the use of LTB in Bau-ABC and on the Multimedia training gave more detailed insights into these field activities and their impact;
- The *'learning scenarios'* provided an opportunity to highlight the pedagogic principles that guided the piloting of Learning Toolbox (LTB) in training contexts *or* the role of 'work process knowledge' in the use cases in construction work. In both cases the documents outlined perspectives for *follow-up activities*. In addition, this section included a comparative reflection on the developments in both sectoral pilots.

At the end of the project the consortium dissolved and the partners took course to different follow-up trajectories. Several technical partners had joined forces that were building on system solutions or software solutions that were present in the LL project but could be transferred to completely different types of research & development projects. These trajectories were not directly building on the sectoral pilots of the LL project.

For the partners that had been intensively involved in the

construction pilot the situation was quite different. The technical partners had developed a viable product that needed further development. The sectoral partners had only started using it and were in the process of finding further uses. The presentations for construction companies had brought new application partners that provided new use cases to be explored. The accompanying researchers had found new ways to support such follow-up processes.

In the light of the above there were two kinds of research challenges for the accompanying team of ITB:

a) There was a need to continue the support for the development of the LTB via feasibility studies, mini-pilots and transfer projects that focused on new contexts. As a contrast to the starting points of the LL project these follow-up trajectories opened rather limited scopes for piloting. Yet, they provided deeper insights into organisational change agendas and user-engagement in new innovation processes.
b) There was a need to bring into concept the lessons learned during the construction pilot to reflect their relative importance as *contributions to knowledge development in* (educational and social) *innovation research*.

## 4. REORIENTATION OF RESEARCHERS: ADJUSTING THE INNOVATION AGENDA TO NEW CHALLENGES[18]

During the Learning Layers project and its both sectoral pilots it became apparent that the introduction of digital media, web resources and mobile technologies was not just a matter of 'developing the right tools for the chosen use cases'. Instead, the embedding of new technologies for *organisational* learning, real-time communication and knowledge sharing required more efforts than expected. Therefore, at the end of the project the partners involved in the construction pilot were convinced that the Learning Toolbox (LTB) has a great potential, but more piloting and research was needed to ensure the sustainability and transferability of the innovation.

Here it is also worthwhile to note that at the end of the Learning Layers project there was a shift to next generation priorities in several European and national funding programmes. This brought into picture new thematic accents, new funding formats and new kinds of procedures. From this perspective it is understandable that the follow-up initiatives of the construction pilot had to adjust to the new frameworks and expectations.

Taking this into account, it was obvious the starting new pilot initiatives has to bring into picture new contexts and target groups. However, when exploring these prospects, it appeared that the needs and ideas of interested application partners were

18 This section is based on observation and documentation of a series of workshops, working meetings and field visits from September 2016 to present date, see the author's blog "Working & Learning" http://www.pontydysgu.org/blogs/workinglearning.

not necessary easy to accommodate under the given programme frameworks and funding priorities. This led to an interim phase of mini-pilots and search activities before new projects could be started. In the light of the above the following subsections will give insights into the transfer-promoting activities after the end of the main project.

## 4.1 SUSTAINING AND TRANSFERRING THE INNOVATION IN THE TRAINING CENTRE BAU-ABC

The most crucial test environments for sustainability and transferability of the innovation (the use of LTB to support vocational and workplace learning were obviously the training activities of the training centre Bau-ABC. Here it is necessary to have a differentiated look at the use of LTB as support for initial vocational training (as a part of the dual system of VET) and at the introduction of LTB (alongside other digital tools) to continuing vocational training schemes (that are implemented and managed in a different way).

Concerning the use of LTB in initial VET provisions, the challenge has been a twofold one. Firstly, it was necessary to improve the Internet capacity to enable a border use of mobile devices during the training time. Secondly, it was necessary to enhance the readiness of a wider range of trainers to start using the LTB in their training. The work with the technical infrastructure has taken some time but now Bau-ABC has made a decision to introduce the use of the LTB throughout the initial training. Parallel to this, Bau-ABC trainers have been working in thematic initiative groups that have looked for solutions, how to use LTB in cross-cutting learning areas (such as 'health

and safety' or 'improving language skills in the context of vocational learning').

Concerning the use of LTB in the continuing training schemes, the challenge has been clearly different. These schemes are provided independently of the initial VET as separate schemes or as contributions to upgrading the qualifications via a vocational progression route (Aufstiegsfortbildung). These schemes are implemented during the winter break in the construction work (from January to the end of March). In general, the schemes are packages of short courses that are given by subject specialists. In the upgrading schemes there are three levels that can be completed one after another (with periods of work in between). Due to a recent change in the regulations of these upgrading schemes, Bau-ABC initiated together with ITB and regional software houses the project DigiProB to support shaping of integrative learning projects (by the part-time trainers) and the preparation of final project reports (by the participants). Here, it is worthwhile to note that this project has given major emphasis on shaping a developmental platform for the part-time trainers and for introducing integrative projects – as common umbrellas for their courses. The LTB is to be used as the participants' tool for getting a digital access to the training contents and this part is still under construction.

Parallel to these activities, one of the Bau-ABC trainers – who was actively involved in the piloting with the LTB – has joined a national project "WorkCamp GreenHouse" to promote ecological construction materials and techniques. This project is developing specific modules in the regular VET curricula. In the current phase the project is planning to introduce the LTB as teachers', trainers' and learners' tool to access the contents.

Altogether, there have been several parallel activities and initiatives to take the use of the LTB further. However, there has not been a possibility to continue such an overarching support for sustaining the innovation as was the case with the accompanying research within the LL project. The role of the ITB researchers in the DigiProB project has been more limited than in the predecessor project.

Alongside these activities Bau-ABC has made a decision to introduce the use of the LTB through the initial training programs. Parallel to this, the start of a newer project – Tacle4-CPD[19] – makes it possible to monitor and accompany the new phase. In this context the focus is on *continuing professional development* of the Bau-ABC trainers (including peer learning, peer tutoring and eventual "Theme room" training campaigns). However, the main emphasis is now, how Bau-ABC can serve as a multiplier organisation to support the transfer of innovation to other learning venues and to continuing training.

## 4.2 SHAPING AN INNOVATION AGENDA FOR CRAFT TRADE COMPANIES AND CONSTRUCTION SITES

Another set of challenges was connected to the use case in which a construction site manager demonstrated, how to use LTB to coordinate parallel work processes with different con-

19 The EU-funded TACCLE projects continue the work of the first project "Teachers' Aids on Creating Content for Learning Environments". It produced a comprehensive E-learning Handbook for teachers. The successor projects have focused on different subject areas and teaching programming at schools. The newest project develops models and materials for Continuing Professional Development (CPD) for teachers and trainers. It also focuses on adult education and vocational education and training (VET).

tractors with the help of the LTB. Whilst he could easily enrich his own way of working by introducing the LTB, it was difficult to bring such transfer forward with the contractors and the working teams. This led to a search for solutions that would create a well-functioning 'digital coordination point' at the construction site – to which the use of LTB can be connected. In particular the gradually increasing use of Building Information Modelling (BIM) calls for such solutions. So far, the BIM solutions have developed for large companies with highly industrialised construction processes. However, in the future, similar solutions are needed for craft trade companies and for renovation and restauration.

Whilst the larger construction companies have developed 'BIM kiosks' as company-specific solutions, the LTB-developers started looking for light-weight solutions that could be available for smaller companies and smaller construction sites. This led to the idea of a portable "*BIM-Koffer*" (BIM-luggage). Paradoxically, it was difficult to find appropriate innovation funding to support the initial development. Therefore, the interested partners (the LTB developers and two application partner organisations from the LL project) decided to build a prototype themselves and then look for innovation funding to test the usability and transferability of the existing prototype.

Whist this follow-up initiative has not yet reached a phase of wider piloting, it has been a useful learning experience on the gaps between the terms of innovation funding and the need for innovation in the field. Here, bringing into picture a missing piece in the system architecture (and in the software ecology) of construction sites can promote further use of such digital toolsets like the LTB – and link them into a coherent system solution.

## 4.3 SUPPORTING LEARNING AND KNOWLEDGE SHARING IN A NETWORKED ORGANISATION

Another set of challenges became transparent when a construction company (specialised in installations) contacted LTB developers and ITB researchers after a demonstration event for construction companies. The new director of the medium-sized company had hired new staff for system management and training management and was looking for system architectures and software ecologies that would promote synergy, real-time communication and knowledge sharing in the networked organisation. The company had regional branch offices and the work was carried ot by mobile teams. From this perspective the functionality of the LTB was interesting but not the whole solution.

Based on the initial contacts the company commissioned the LTB developers to carry out a preliminary study to map problems, possible solutions and different options for implementing the solutions. After this preliminary study had been completed, new talks took place to explore the possibilities for innovation funding that focuses on training the trainers and apprentices. These talks led to a joint proposal of the company, the LTB developers and ITB researchers *and* the project will start in May 2018.

Here, it is worthwhile to note that this cooperation was based on a mutual interest to work with company-specific knowledge management, knowledge sharing between different actors and on learning in different work contexts. The cooperation was opened by a very technical preliminary study, but the wider perspective was not dropped out of the picture. Yet, as the project is only starting, it is premature to make comments on the role of research in this project.

### 4.4 REFLECTIVE COMMENTARY

The three subsections above give a clear picture of the challenges met at the end of the projects with efforts to promote the sustaining and transferring of the innovation. None of the cases could be seen as a simple 'roll-out' or 'scaling up' the innovation. Instead, all cases brought into picture the necessity to work with complementary solutions – technical improvements, new intermediate system elements or new software ecologies. And – what is even more important – in all cases there was the need to introduce processes of peer learning and peer tutoring. Only in this way has it been possible to facilitate such changes in the culture of work that enable the embedding of the use of digital toolsets as normal elements of ordinary work processes. However, this kind of involvement in the practical follow-up raises the question, how such activities can be claimed as 'innovation research' and how they can contribute to conceptual and methodological knowledge development.

## 5. RE-EXAMINING THE EXPERIENCE WITH THE LL PROJECT AND THE LESSONS LEARNED

In the beginning phase of the LL project it was not clear that the partners who were coordinating the sectoral pilots would have major research functions. However, concerning the research team from ITB had a clear role model in the German traditions of pilot projects (*Modellversuche*) funded by the federal government. In such projects accompanying research (*Begleitforschung*) was required as an integral element of the project design. In practice, the collaboration of accompanying researchers was

of vital importance for implementing the projects and for promoting transfer of innovation. Yet, these earlier experiences did not give a clear model, how the to define the role of accompanying research in the current project.

Here it is worthwhile to emphasise that the LL project was not designed primarily from the perspective of promoting innovations in the field of VET or socio-technical innovations in working life. The emphasis was on introducing digital media, web tools and mobile learning concepts into SMEs.

In the light of the above, it was not clear from the beginning, what kind of role the ITB team can give for its own conceptual traditions in the research in *vocational education and training* (VET). Gradually it became clear that the construction pilot was moving to reshaping of teaching-learning arrangements the field of VET. Also, both for pedagogic innovations in VET *and* for corresponding innovations in the knowledge processes of work organisations it was appropriate to revisit earlier ITB research.

Altogether, the project experiences of the ITB team in the LL project – and in particular in its construction pilot – can at best be understood as 'learning journeys'. During the process different aspects of earlier research-related know-how were combined to new processes of co-participation and co-shaping. From this perspective it is worthwhile to look back at the learning journeys and to explore, how they have contributed to growth of knowledge in *innovation research*. From this perspective it is essential to discuss the experiences of the recently completed project in a wider group picture – and to explore, how different research themes have been developed up to present date. In a similar way it is essential to consider, whether these approaches have maintained their actuality and how this can be stated in the light of newer challenges and debates.

## 5.1 ACCOMPANYING RESEARCH – LESSONS FROM THE PAST AND FOR THE FUTURE[20]

Looking back at the origins of accompanying research, there are two sets of innovation programmes in which social and educational researchers have been engaged in such a role. In the innovation programmes of working life (from the mid-1970s onward) the emphasis was on *'Humanisation of work'* or *'Socially agreeable shaping of work and technology'*.

In these programmes the role of accompanying research was to monitor the attainment of the programme goals and to provide a knowledge-basis for transfer-promoting measures. In the pilot projects in the dual system of VET (*Modellversuche*) the role of VET researchers was to provide a conceptual analysis on the functioning, sustainability and transferability of the innovation concepts. In both areas there were methodological controversies within the research communities as well as conceptual and methodological transitions in the research approaches.

For the accompanying researchers in the humanisation programme there were no role models or methodological guidelines that could be applied as general coordinates. Thus, the pioneering projects were developing very specific approaches and this gave rise to many controversies. Also, the mutual relations between researchers, developers, managers of the host organisation and the practitioners varied considerably. At the methodological level the key issue was, to what extent the researchers should co-participate in the shaping of work, technology and

20 This subsection is based on a more extensive research chapter that is available on ResearchGate, see Kämäräinen 2018a.

organisational settings. A corollary issue was, to what extent should such projects rely on workers' participation and social shaping according to their initiatives and interests. A further issue was, whether the work of accompanying research should lead mainly to research reports *or* to manuals and guidelines for development work *or* to training concepts for facilitators and change agents. In the initial phase the researchers were facing new challenges for which there were no clear methodological frameworks and the positions were very different, sometimes even polarised. This phase is documented lively in the articles by Fricke & Fricke (1977) and Weltz (1982).

Without going into details it is possible to notice a movement from distanced and observational research strategies to more dialogical, participative and shaping-oriented positions. On the one hand this was justified with the argument that only such research can interpret conceptual changes in work organisations and in the role of workforce. On the other hand this was argued with the need to study more thoroughly the innovation potentials at different stations of production cycles and value added chains. Further stages of these developments and debates have been reflected by Lutz (1986), Baitsch (1992), Böhle (2017) and Fricke (2017).

In pilot projects focusing on the dual system of VET the research field was not that heterogeneous. Most of the research approaches were affiliated to pedagogics of VET (*Berufspädagogik, Wirtschaftspädagogik*) or shared a general commitment to the field (*Berufsbildungsforschung*). Yet, in this field there was also a similar debate, to what extent researchers should co-participate in the developmental activities. Moreover, there was a specific discussion, whether the activities of the researchers

should contribute mainly to the success of the particular pilots or to more general knowledge development (including analyses of failures and shortcomings). Parallel to these research-oriented debates there were transitions in the formats in which these pilots were carried out. In the beginning the pilots were launched as single projects, later on as parts of overarching pilot programmes (with major coordination units) and latterly as networked pilot projects with relatively lean coordination units. The developments and key themes in the early phase have been described in the article of Holz (2004). The report of Deitmer et al. (2004) gives insights into overarching programmes and the book article of Jablonska et al. (2017) on networked projects and the theme-oriented coordination units.

In this context the discussion on researchers' co-participation and co-shaping role was less controversial among the accompanying researchers. In general, they tended to adopt a co-shaping position (although with different accents regarding conceptual work and practical support). Later on the emphasis shifted more towards questions on the maturing of pilot concepts, on their sustainability after the pilot phase and on the transferability of innovations beyond the pilot contexts. These developments have been reflected in the book articles of Dehnbostel (1995), Zimmer (1995) and Sloane (1995) from slightly different perspectives.

However, at the same time there has been strong critique against the funding of such pilot projects and accompanying research by representatives of academic VET research. Also the reviews of the research contribution of the Federal Institute for Vocational Education and Training (BIBB) have expressed critical remarks on these activities. This has been reflected in the book publication edited by Schemme and Novak (2017), in particular in the articles of Böhle (2017) and Fricke (2017).

In the light of the above-discussed developments it is clear that the methodological status of accompanying research has been ambiguous and required clarification from those who have been involved. In these debates there have been different positions and internal controversial in the related research communities. At the same time the researchers and their activities have met critique from more established researchers. From this perspective one of the main research challenges has been to link the project experience to the above outlined history of accompanying research. This is not merely a matter of historiography – to place this particular project into a continuity of related research approaches. Instead, there is a need to clarify – with the help of the LL project experience and other cases – how accompanying research at best can support innovations in the field of VET and in working life. This, however, cannot be judged only in the context of methodological disputes. Here it is necessary to take a look at the innovation agendas in the development of VET and in the renewal of working life.

## 5.2 VOCATIONAL LEARNING – INNOVATIVE PROSPECTS OR EROSIVE TENDENCIES?[21]

A central theme for researchers from ITB in the LL project was, how to *link* the shaping and introduction of *digital tools* for workplace learning *to the development of vocational learning culture*. Here, it is essential to note that the German dual system of VET has time and again been under pressure and its sustain-

21 This subsection is based on a more extensive research chapter that is available on ResearchGate, see Kämäräinen 2018b.

ability has been heavily debated. During such phases researchers have played a role in demonstrating the potential of VET provisions in developing new and future-oriented learning concepts.

In the 1980s there had been a tendency towards 'reschooling' the workplace-based training and to decouple vocational learning from real work processes. In the 1990s both basic research and pilot projects (with accompanying research) brought forward new possibilities to develop training alongside work processes and to enhance the quality and authenticity of work-based learning. The key themes in this context were the following:

- Action-oriented learning *(Handlungsorientiertes Lernen)* – organisation of work-based learning to enable the apprentices to master complete work process cycles;
- Self-organised learning *(Selbstorganisiertes Lernen)* – organisation of work-based learning with emphasis on the apprentices' own initiative and judgement in planning, preparing, implementing and assessing their working & learning tasks;
- Work process knowledge *(Arbeitsprozesswissen)* – organisation of work-based learning in such a way that the apprentices gain the necessary knowledge to contribute to whole work processes (and to encounter changes and disorders) in an organisational context. (On the mutual relations of these concepts as a part of an innovation agenda, see Rauner 2002.)

In accordance with these themes there was a major innovation programme to pave the way for reshaping the vocational school curricula on the basis of holistic *Lernfelder* (learning arenas)

instead of educational subjects. At the same time there were initiatives to reshape the training regulations for workplace-based training following similar ideas. However, these two reform processes never became integrated and there were problems in practical implementation. Yet, during that period considerable efforts were made to develop integrative pedagogic concepts based on current research on VET and working life, see in particular the contributions of Fischer & Rauner (2002) and Böhle (2004).

Shortly afterwards the role of the dual system of VET in the German educational policy was put under question by an expertise study led by Martin Baethge (see Baethge et alia (2007). In their expertise study they analysed the functioning of the dual system in the light of statistics and came to the conclusion that in many respects the dual system was failing. Here they referred the attractiveness of the dual system as an educational option for youth, as a recruitment channel for enterprises and as a learning pathway to higher education. In addition, they argued that the dual system is lagging behind with its focus on experience-based learning, whilst the future working life requires more knowledge workers for whom the higher education provides a better basis.

The above-mentioned study triggered a vivid debate in which several industrial sociologists and VET researchers put into question Baethge's and his co-authors' sceptical views on the renewability and sustainability of the dual system of VET. The key themes in this critique and in the counter-arguments were the following:

- Does the study rely on up-to-date research on the role experiential learning in the context of work and on the importance of experiential knowledge-bases for the coordination and management of modern industrial processes.
- Does the study rely on up-to-date research on the role of skilled workers' potential to contribute to industrial innovation processes?
- Does the study rely on up-to-date research on the options of developing advanced automation taking into account the potential of mixed teams (engineers & skilled workers) in coordinating such processes jointly?
- Does the study rely on up-to-date knowledge on the prospects of developing work process -oriented learning arrangements both in VET and in Higher Education based on the model of Dual Studies?

(Here it is not possible to go into a details, for a closer look see the contributions of Koch (2012), Pfeiffer (2012) and Spöttl (2012 and 2017).)

In the light of the above it is apparent that pilot projects and accompanying research have had to take into account also such critique and to consider, how they can contribute to the renewability and sustainability of VET. In this respect the reports and articles on the pilot projects accompanies by researchers from Paderborn University provide interesting insights into the empowerment of developmental teams in vocational schools. The pilot projects reported by Klieber and Sloane (2007) focused on developing a culture of self-organised learning in the context of curriculum reform. The pilot project reported by Kremer (2007) focused on introduction of digital tools in the

context of curriculum reform and with emphasis on promoting a culture of self-organised learning.

Looking back, the construction pilot followed in many respects a similar approach, although the pilot concept was only gradually shaped during the co-design process and not designed in the beginning. However, the pilot context in the construction pilot was an industry-supported intermediate training centre that was committed to a culture of *action-oriented learning* and *self-organised learning*. During the co-design process the shaping of digital tools was guided by these principles. Thus, there was a strong level of responsiveness between the practitioners and the pedagogic innovation agenda. Yet, there is a need to explore, whether such a pedagogic innovation agenda (for training highly skilled craftsmen for construction sector) is compatible with the newest industrial innovation agendas and the 'mainstream trends' in qualifying the industrial workforce.

## 5.3 WORK PROCESS KNOWLEDGE – OBSOLETE OR KEY ASSET IN FUTURE INNOVATIONS?[22]

In the previous subsection the emphasis was on innovation agendas for vocational learning and on issues concerning the sustainability and renewability of the dual system of VET. These issues are closely linked to the questions, *what kind of innovations can be expected in work organisations* and *what are the consequences for training skilled workers.* From these perspective it is necessary to have a closer look at the theme 'work process knowledge' from the perspective of industrial innovation agendas.

22 This subsection is based on a more extensive research chapter that is available on ResearchGate, see Kämäräinen 2018c.

Firstly, it is worthwhile to note that the theme 'work process knowledge' was taken up at the European level after a period of industrial innovations based on socio-technical design and workers' participation. The case studies of this period (in the 1990s) made the point that the (then) 'new' phase of automation and the respective organisational innovations were not implemented purely 'by the book'. Instead, the successful implementation required that the skilled workers were strongly and actively involved. They had to adjust their own contributions as well as their patterns of cooperation to the new circumstances. Altogether, they had to develop a common work process knowledge. (The main themes and the activities of the European Work Process Knowledge network were documented in the book edited by Fischer, Boreham and Nyhan (2004).)

Parallel to this, the German innovation programmes in working life had shifted from the 'humanisation' projects (compensating the eventually negative consequences of automation) and social regulation of work environment (based on different modes of negotiation and agreements) to increasingly 'liberal' measures to promote learning in organisations and 'learning organisations'. (Reflections on these transitions have been presented in the book article of Ahrens and Gessler (2018).)

From this perspective it is worthwhile to note the contribution of the German research & development project *'Smarte Innovation'* that was implemented in the transition phase between the above mentioned innovation policies and the current ones, see Pfeiffer et alia (2012). The project sought to trace and enhance innovation potentials throughout the product life cycle and supply chain in machine-building industry. Here it is worthwhile to note that the researchers took a shaping-ori-

ented and co-participative approach to their documentation and accompaniment activities. Moreover, they presented their interim results in dialogical workshops that challenged the management representatives, engineers and skilled workers to review their approaches to innovation and social participation in organisations. In this context it is also worthwhile to note that the project drew attention to a new training model that opened a vocational progression route to higher qualifications. Yet, altogether the project gave a rich picture of opportunities, tensions and contradictions in industrial innovation processes and in the organisations involved.

Shortly after the completion of the above-mentioned project the industrial policies in Germany and in other countries became dominated by the innovation agenda called "Industry 4.0". This phase extends the perspective from traditional automation and technological innovations in single organisations or branches to Internet-based networking of entire production and service processes beyond traditional boundaries. Whilst this phase of innovations is yet emerging and the empirical studies are at an early stage, there is a vivid debate on the consequences for human involvement and for the competences of workforce engaged. Without going into details it is worthwhile to emphasise that this debate tends to bring forward similar differences as were present during the early stage of automation: Some researchers explore primarily, how human workforce is being dismissed and made redundant by technological innovations. Other researchers, following a shaping-oriented approach, look for possibilities to enhance learning and human engagement when introducing the new technologies. Thirdly, some researchers tend to look for new opportunities to enhance

work-related learning even if this is not directly possible in the context of actual work processes. (See on these developments and on the positions Hirsch-Kreinsen et al. (2015), Spöttl (2017) and Ahrens & Gessler 2018.)

In this respect the construction sector has not been central for the discussion on the innovation agenda "Industry 4.0". Yet there is also an emerging discussion on the theme 'Building information modelling (BIM)' under the label "Bauen 4.0". In this context similarly polarised settings as mentioned above:

- *Either* BIM software is taken exclusively as a tool for engineers for taking over the control over construction processes (and to degrade the construction workers)
- *Or* BIM is being developed to develop toolsets for knowledge sharing in mixed teams that consist of engineers and skilled workers.

## 6. CONCLUSIONS AND REFLECTIONS FOR FURTHER RESEARCH

As has been indicated earlier, this chapter has discussed the work of research teams, technical partners and application partners in the Learning Layers project that was funded as an innovation project from the 7th Framework Programme for Research, Technology and Development of the European Commission. In general, such projects are expected to share knowledge and support transfer-promoting measures also after the end of the funding period. However – as has been indicated earlier – concerning the practical follow-up, the project partners tended to move on to new themes.

In this respect the partners involved in the construction pilot chose to work further with the achieved results and with each other. The main reason was the dialogical partnership culture and the trust in the innovation potential of the Learning Toolbox (LTB). Yet, the partners were aware that the development of the LTB had only reached the level of viable product and that its utilisation had been started only in limited contexts. Therefore, the partners had mutual interests in bringing the innovation further.

However, as we have seen it, the further development and the transfer to other contexts have not been simple actions of enhancing the LTB as such and spreading its use to other organisations. Instead, follow-up activities have encountered new challenges for knowledge sharing in networked organisations and for decentralised training and learning arrangements. This has required proposals for reshaping the system architectures and developing mutually complementing software ecologies.

Taking this into account, it is possible to discuss the contribution of accompanying researchers to conceptual and methodological issues in innovation research. I would summarise my reflections on the role of our activities (in the Learning Layers project and its construction pilot) as a part of a bigger picture in the following way:

1. *Concerning innovations in vocational education, training and learning*: Here it is worthwhile to note that the German pilot projects were initially focusing on piecemeal innovations and improvements. The accompanying research had mainly an evaluative function. However, later on the pilot concepts brought forward more complex systemic innovation agendas that were supported by overarching theoretical frameworks. This led to

the introduction of different layers of scientific accompaniment (project-level and programme-level). This development was confronted by a policy-oriented expertise study that put into question the functioning of the VET system as a whole. This triggered a debate that brought into picture several counter-arguments that emphasised the value of high quality vocational learning. In this context the newest pilot projects have served as test cases, whether teachers and trainers are capable to introduce new technologies *and* new learning arrangements as bottom-up innovations. And another question is, to what extent such innovations can contribute to the sustainability and renewability of VET.

2. *Concerning technical/organisational innovations in/across work organisations:* Here it is worthwhile to note that during different generations of innovations there has been a struggle between two contradictory approaches to the respective innovations. In a nutshell these contradictory approaches can be described as follows:

a) Approaches based on *technological determinism* discuss the potential of automation, informatisation and Industry 4.0 in terms of substituting human workforce and relying on technologies that manage themselves. As a consequence, the qualifications of skilled worker are expected to become redundant and workers are to be sidelined.

b) Approaches based on *socio-technical design* discuss the possibilities to combine human potentials with advanced technologies and related chances to enhance learning and upskilling in the context of work. As a consequence, these approaches are interested in capturing the importance of 'work process knowledge' and 'experiential knowledge development' in modern work processes.

In the course of the time the struggle between the two approaches has moved forward via moving frontiers. At an earlier stage the 'humanisation of work' approaches were sideline initiatives to compensate the negative consequences of early automation. Then there was a shift to 'learning organisations' and 'organisational learning' as an effort to find a balance. However, at this stage the project *'Smarte Innovation'* could find several gaps and mismatches in promoting innovation potentials throughout the product life cycle. Later on the discussion on 'Industry 4.0' triggered similar scenarios, initiatives and critical questions as had emerged in the earlier phases. From this perspective the development of and piloting with the LTB is part of an effort to enhance skilled workers capability to co-shape work processes and to participate in process improvement activities. And for current innovation research such 'laboratories' in construction sector are of interest – in particular in the light of the above mentioned moving frontiers.

3. *Concerning the role and the possibilities or limits of accompanying research:* Here it is worthwhile to note that the earliest pilot projects in VET were focusing on rather limited piecemeal improvements and in these settings the accompanying research (with evaluative function) had to maintain its independence from the actors in the field as well as from policy-makers. Gradually, when the pilot concepts became more complex and more theory-based revisions of the whole curricula, the accompanying researchers had to adopt a more co-participative, dialogical and co-shaping role. However, these changes were guided by methodological self-reflection on the relative independence of researchers and on the necessity to participate but within limits.

Also, the pilot projects in the programmes for 'humanisation

of work' and its successor programmes triggered a debate on the independent status vs. co-shaping and co-participating possibilities of researchers. In the beginning the debates were rather controversial. Yet, a major part of active researchers have latterly recognised some level of participation and co-shaping as a necessary precondition for identifying and conceptualising the innovative potentials of skilled workers.

From this perspective the approach to accompanying research that was adopted in the construction pilot of the learning Layers can be related to prior cases and to their conceptual and methodological foundations. However, in the transition phase and with the different follow-up activities the researchers are working on new terrains (in particular by spreading the innovation agenda to new contexts). From this perspective there is a need to interpret the newest experiences and to study different conceptual approaches to transfer of innovation in the field of VET and working life.

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# The problem of remediation in the development of work – the case of oral-health care

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**Abstract:** Gum diseases are a new and aggravating oral-health problem of the adult population in industrialized countries. Three Finnish health care organizations responded to this problem by visioning a new model for oral-health work, a model of health-centred teamwork. The paper analyses whether and how this new model was able to change treatment practices of periodontal patients. The main aims outlined in the new model were not embodied in the core mediational means of the work such as the care manuals and care plans. Neither did the new model manage to break the division of labour nor the rules-in-use embedded in the hierarchical professional relationships between dentist and oral hygienists. The results suggest that the formulation of a vision or a model of a new activity does not lead to the changes unless the key aims of the new model are included in the contents and use of other meditational means such as manuals and the rules of the activity.

**Keywords:** Change, mediation, instrumentality, rules, artifacts, activity theory

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## 1. INTRODUCTION

Oral-health care problems are changing. Dental cavities in adults have decreased, whereas periodontal and gum diseases have increased. Gum diseases are considered the biggest oral-health problem in adult population in Finland (Suominen-Taipale, 2004, pp. 55-163). In the national Health survey of 2011, two thirds of adult the population were diagnosed as having a gum disease. The survey showed a high prevalence of gum diseases already in the age group between 30-44 years (Suominen, Vehkalahti & Knuuttila, 2012, p. 107). Periodontitis is a serious gum infection that damages the soft tissue and destroys the bone that supports teeth. In treatment of periodontal and gum diseases, an active preventive self-care at home by patients is crucial.

Responding to the rise of gum diseases, professionals from three Finnish health organizations – a university dental clinic, an oral-hygiene clinic at a university of applied sciences, and a city dental-care clinic – developed a new model of care called the health-centred-teamwork model (=hereafter the HCTW-model). The model envisioned three kinds of transformations in the care work: First, it involved the transition from pathogenesis-based orientation to health and preventive orientation. Second, it envisioned the transition from individual care to teamwork and collaboration between dentist and oral hygienist. Third, it required the transition from expert-centred to patient-centred and activating care, which emphasized a role of the patient's oral-health care activities at home. The goals were expressed in the model in terms of "Preventive advancement of the health of the mouth" and "An environment that supports health behaviour" (Teräs & Nuutinen, 2010).

The formation of the HCTW-model was not only a reaction

to the rise of periodontal and gum diseases among population, it also tried to react to two anticipated developments in Finnish society: a shortage of health care personnel and economic pressures to cut down health care costs. In Finland, the health care system is funded on government-subsidized municipal health care services. Private and non-governmental sectors complement public services (Ministry of Social Affairs and Health, 2013, p. 10). In addition, the rapidly ageing population was anticipated to need more services. The baby boomers generation born in the 1940s started to retire from health care professions. This was assumed to lead to an increased demand of service provision and a shortage of health care personnel in 2010s. The Ministry of Social Affairs and Health urged different actors to examine the division of labour and responsibilities between various professional groups in order to respond to these needs (Sosiaali- ja terveysministeriö, 2002).

Thus, impetus for the HCTW-model came from a national project by the Ministry of Social Affairs and Health (Sosiaali- ja terveysministeriö, 2002). The aim of the project was to safeguard the future of health care services. Two elements of the national project were meaningful for the development of the model: emphasis on health promotion and co-operation and purposeful division of labour between various units of health care and professional groups. Sorakari-Mikkonen, Keto and Suomalainen (2006) referred to an increase in gum diseases and the new public health act of 2006, which emphasized health promotion in public health work. In the three organizations, two projects[23] were meaningful for the development of the new model.

23 The projects were called "Organization of work and division of labor in special areas of health care" and "Health-centered organizing model of work for oral-health care". They were implemented between 2004-2010.

The HCTW-model challenged the traditional professional and individual, task- and procedure-centred working model in oral-health care. Typically, a dentist and an oral hygienist worked individually, and the object of work was to treat patients' oral problems such as filling a tooth. The dentist examines and provides needed treatment to a patient. Then, he or she sends the patient to the oral hygienist for removing dental calculus. The patient's role is that of a passive recipient of the care and a follower of the professionals' guidance (Keto, Nuutinen & Teräs, 2010).

This article explores challenges of studying multi-organizational change efforts in responding to societal problems in oral-health care. The HCTW-model is regarded here as a "where to" artefact or future-oriented vision of work that is needed to induce organizational and institutional change (e.g. Engeström, 2007; Miettinen & Virkkunen, 2005). We analyse how the HCTW-model managed to change working practices based on the results of the study of treatment periods for two periodontal patients. Were steps towards the key ideas of the model taken? And if these aims were not achieved, why this was the case? We will show that the key ideas outlined in the HCTW-model – the transition to health-centred, integrated teamwork – were only partially included in the other mediational "how to" type of means, such as the care manuals and in the uses of the care plan and diagnostic means.

## 2. THEORETICAL FRAMEWORK

To make sense of the implementation of the HCTW-model, we draw on conceptual resources from two complementary theories: Eleanor Ostrom's (2007) theory of rules in the institutional

change of self-organizing resource governance systems, and cultural-historical activity theory's idea of remediation, types of mediational means that comprise of instrumentality in activity (Engeström, 2007).

Elinor Ostrom's (2007) has proposed a concept of "rules-in-use" in the analysis of institutional change in self-organizing resource governance systems. Ostrom underlines the configurational nature of rules: "One needs to know the basic contents of a *full* rule configuration, rather than a single rule, to infer both the structure of the resulting situation and the likely outcome of any particular rule change." (2007, p. 18, italics in original). For examination of the transformation of rules she has made a distinction between seven clusters of rules according to the element of action and the decision-making situation they directly affect (2007, p. 11). She further points out that rules are exogenous variables that interact in situations with biophysical and material conditions of community. From our point of view, rules-in-use and the constellation of rules guiding the care practices of periodontal patients interact with the human oral anatomy of a patient, as well as the instrumentality of periodontal care and the community, which consists three health care organizations. We will use Ostrom's ideas to make sense of whether the artefacts of different levels and the constellation of rules complemented each other in the attempt to change the care work towards the new model.

Cultural historical activity theory (CHAT) would focus on the meditational means used in care practices. Vygotsky (1978) made the distinction between two basic types of mediational means: externally oriented tools and internally oriented signs that are used to control the behaviour of an individual. Vygotsky

also referred to the importance of analysing the intertwining of tool use and mediation by signs (1978, p. 24): "Although practical intelligence and sign use can operate independently in young children, the dialectical unity of these systems in the human adult is the very essence of complex human behavior." It is, however, a challenge to analyse whether and in which ways the symbolic activity's organizing function "penetrates the process of tool use" (ibid).

In activity theory it has become customary to refer to both signs and tools by the terms mediational or cultural means, instruments (e.g. Engeström, 1987) or artefacts (Cole, 1996). Engeström (1987) adopted the concept of artefact from the historical epistemology of Marx Wartofsky (1979). Wartofsky draws a distinction between primary, secondary and tertiary artefacts. Tools and related bodily skills are primary artefacts. Secondary artefacts, typically models, are "distinctive artefacts created for the purpose of *preserving* and *transmitting* skills, in the production and use of 'primary' artefacts" (Wartofsky, 1979, p. 201). Tertiary artefacts are alternative imaginative perceptual models, "as a representation of possibilities which go beyond present actualities" (ibid. 209).[24] Engeström has characterized Wartofsky's "tertiary artefact" as a "where to" type of a cognitive artefact that is used to orient to the future and to imagine and define alternative ways of activity. He (2007, p. 34) has also made a distinction between epistemologically different levels of orienting models used in work and in teaching. For example, procedural models typically included in the guidelines and

24 It is also compatible with Leontjev's (1978) idea of levels of activity suggesting that a tool operates on the level of (automated) operations and that several types of 'higher' tools are needed in activity.

instruction books mainly express the order in which actions and operations are done.

Engeström further suggests (2007, p. 33) that these different levels of concepts, models and tools "form integrated toolkits, (...) tool constellations or instrumentalities." They "include multiple cognitive artefacts and semiotic means used for analysis and design, but also straightforward primary tools used in the daily practice (...)." (Engeström 2005, p. 188). The term instru-*mentality* reminds us that intellectual and practical, embodied functions are inseparably and in various ways interconnected in an instrumentality, and even in single artefacts within it. In CHAT terms, the HCTW-model is a future-oriented tertiary model, whereas manuals are secondary artefacts carrying and transmitting the care tradition. The contradictory relationship between them expresses the difficulty extending the rationale of the new models to secondary artefacts.

## 3. THE INSTRUMENTALITY USED IN THE CARE OF PERIODONTAL PATIENTS

In addition to the HCTW-model, several levels of artefacts were used in the care of periodontal patients. The constellation or the palette of instruments used in the care work comprises at least eight types of means:

1) The model of health-centred teamwork (HCTW-model)
2) Instructions and manuals defining a good practice to be learned, one for the dental students (Paro-manual) one for the oral-hygienist students (instruction for the care of adult patients) and a joint instruction for the treatment of

a periodontal patient.

3) Diagnostic means: 1) x-rays images, 2) digital pictures, 3) an instrument for measuring the depth of gingival pockets
4) A Care plan: a diagnosis of a patient (see figure 1) and a plan of care measures.
5) Means of evaluation such as registering student's actions into document called "Evaluation of managing patient care" in Paro-manual
6) The instruments for caring the teeth and gum (see figure 2)
7) The instruments used by the patients in self-care
8) The patient database system

In analysing the problem of change in care practice, a question arises to what extent the ideas included in the HCTW-model ("tertiary artefact") were able to influence the contents and use of the other artefacts of periodontal care. Particularly, this concerns whether they were taken into account in the manuals (number 2 on the list) and in the use the diagnostic images (3) and care plan (4) that seem to play a strategically important role in the care work.

Paro-manual (2008), an instruction manual concerning the care of periodontal patients written for dental students, was a document of 32 pages. It gave detailed instructions on how to examine, diagnose and treat periodontal patients and how to organize and divide tasks in care. It also involved information about the objectives of learning, study materials and criteria for the evaluation of students' work. Figure 1 (in Finnish) from the Paro-manual is a form for a dentist student to present the diagnosis of a patient's periodontal status. This was also included in

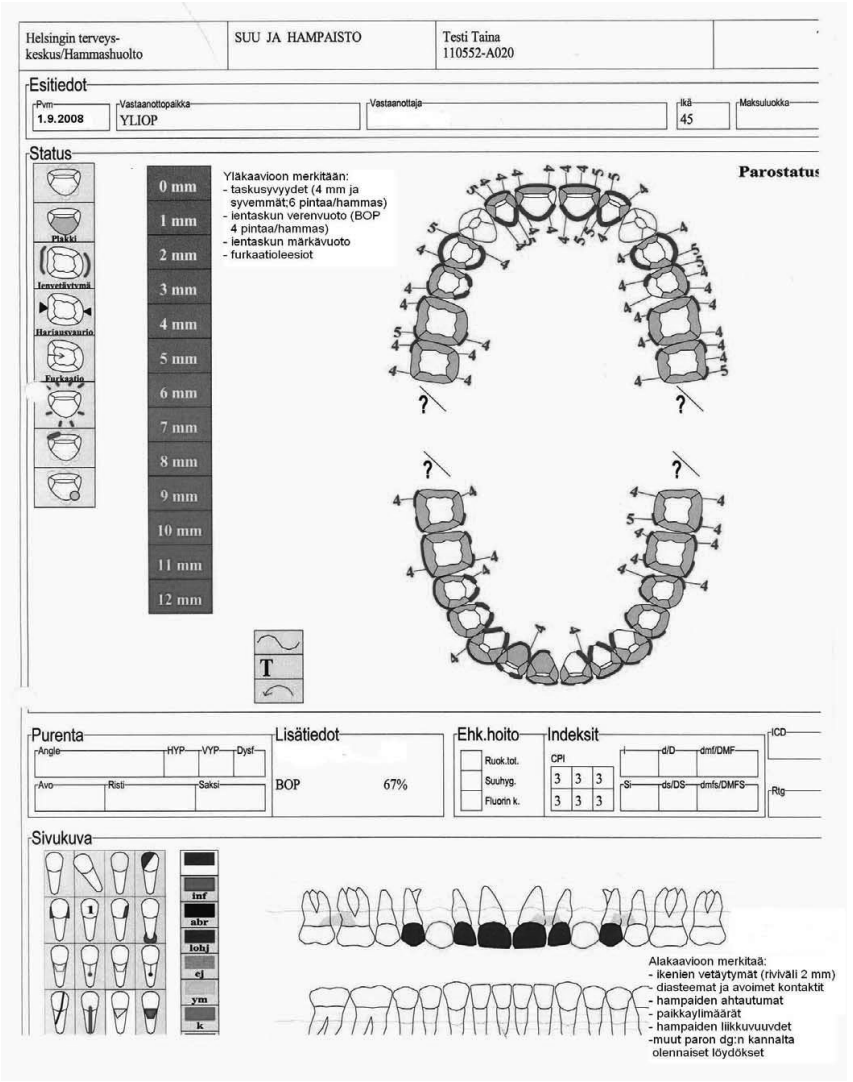
the care plan. Various diagnostic tools (3) were used to accomplish it, such as an instrument for measuring the depth of gingival pockets, with x-rays images and digital pictures, if needed. The diagnosis defined in the form was transferred as a constitutive part of a care plan and was archived in the patient database. From the perspective of key ideas of the new model, health education was mentioned under the heading "health education" and patients' involvement under the heading "interaction and professionalism" in the evaluation criteria of students' work (Paro-manual, 2008, pp.23-24). Interestingly, it was not further explained how health education practices or patient involvement were supposed to be executed. Teamwork practices were explained in two pages (Paro-manual, 2008, pp.21-22).

In CHAT terms, the manual was a secondary type of artefact: it transmitted instructions for the studies and skills needed in diagnosis and care. As a part of the instrumentality of oral-health care it was "how to artefact", which provided procedures for professional studies and care of periodontal patients. The manuals can also be regarded as a constellation of rules governing both learning the occupation and caring of periodontal care, because it included various rules that teachers and students needed to follow (Ostrom, 2007).

A decisive means in the instrumentality was the care plan. The results of the diagnosis were assembled into a definition of the status of a patient's disease (see Figure 1). The diagnosis provided a basis for the plan of care measures, most important of which were removing the dental calculus and cleaning the gingival pockets. The care plan combined an object hypotheses (analysis of the state of the disease) and an operational plan for care. It directed the succession of actions of care in which the various

tools were used. In addition, the patient's care plan was stored in the patient database (8) and became a part of the patient's care history. All information about the patient and her/his disease were in the database, including medical history, medication, results of laboratory and other tests as well as the care plan.

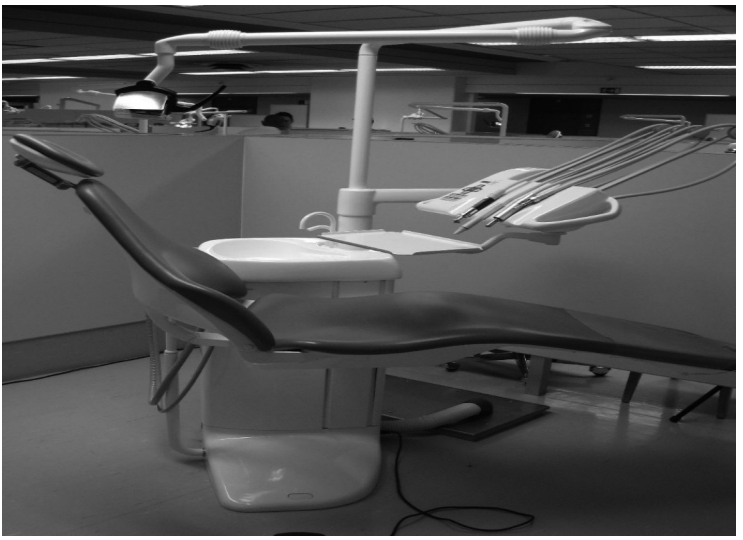
Figure 1
The means for defining status of a periodontal patient
(Paro-manual, 2008, p. 11)



## 4. DATA AND METHODS

The analysis of the problem regarding the implementation of the HCTW-model is based on the results of the study concerning the collaboration of dentist- and oral-hygienist students in the care of two periodontal patients (Teräs &Nuutinen, 2010; Keto et al., 2010; Tauriainen, 2010, Kervinen, 2011; Teräs, 2016). The data involved two periodontal patient trajectories collected during dentist and oral-hygienist students' clinical practice periods. The study took place in typical treatment cubicles as can be seen in Figure 2 or in separate treatment rooms. In the middle of the space there was a treatment chair with necessary instruments.

Figure 2 A treatment chair



A typical treatment period for a periodontal patient lasts for 3-6 sessions starting with an inspection session and ending to an evaluation session. The researcher and two research assistants collected the material between November 2008 and May 2009. It consisted of documents (e.g. written instructions, care manual, care plan), interviews (participants of treatment sessions were interviewed after each session) and videotaped sessions with two male patients. The first patient had nine treatment sessions and the second one eight. The total length of the treatment period was 11 hours and 53 minutes for the first patient, and 13 hours and 29 minutes for the second one. There were between two and five people at each session: the patient and one student at the minimum and the patient, both oral hygienist and dentist students and both instructors at the maximum.

The ELAN software program was used in coding the video data into sequences, themes and topics. Sequences were different phases during a treatment session understood as interaction patterns (Mehan, 1979). Three types of sequences were identified: sequences of mere talk, sequences of care without any talk, and sequences of talk in action, in which the participants both cared and talked at the same time. By analysing the contents of the sequences (Braun & Clark, 2006) four themes were identified (see Table 1): 1) Health and home care, in which the participants talked about oral-health education and care practices at home; 2) Team work, in which the participants talked about team work; 3) Instruction, in which the instructor came and checked what the student had done and gave further instructions; and 4) Treatment, in which the students cared the patients. Finally, 63 more specific topics within the themes were identified based on the contents of talk within a theme. They varied from home

care advice and health promotion (theme 1) and the division of labour between the students (theme2) to giving instructions to them (theme 3). Table 1 shows the overview of the themes in two treatment periods. Numbers refer to how many times the participants talked about the theme in question.

Table 1.
The number of the occurrence of the themes in two patients' trajectories (Tauriainen, 2010, annex 7)

| **Theme** | **1st patient, Number of occurrence** | **(% of the total)** | **2nd patient Number of occurrence** | **(% of the total)** |
|---|---|---|---|---|
| 1. Health and home care | 69 | 7 | 57 | 7 |
| 2. Teamwork | 89 | 9 | 42 | 5 |
| 3. Instruction | 204 | 19 | 218 | 26 |
| 4. Treatment | 641 | 61 | 466 | 57 |
| Other | 42 | 4 | 39 | 5 |
| **Total** | **1045** | **100%** | **822** | **100%** |

The table shows that the most frequently occurred theme was "Treatment" involving caring of periodontal patients: 61% during the first treatment period and 57% of the second treatment period. Instruction of students involved 19% during the first and 26% during the second treatment period, that is, the instructor controlled and advised students' work. Teamwork was discussed in 9% of the first, and 5% of the second, treatment periods. The health and home care theme comprised 7% of the themes recognized in both treatment periods.

## 5. THE KEY IDEAS OF HCTW-MODEL IN THE DOCUMENTS, MANUALS AND INTERVIEWS

Different types of project reports acknowledged the key ideas of the HTCV model such as a development report by the head dentist working in the city dental clinic, project reports by the university of applied sciences, two master's theses by the oral-hygienist teachers and a bachelor's thesis by oral-hygienist students. Several articles (12) in professional journals discussing the aspects of the model were also published. One of the teachers presented the model's key ideas in a graphical figure in her master's thesis (Nuutinen, 2009).

A progress report of a project called " Health-centred organizing model of work for oral-health care" outlined the new model as follows:

> The aim of the project is to develop a health-centred organizing model of work for oral-health care, and based on the model a new course of action, a teamwork model, for co-operation of dentist and oral-hygienist students, and describe and disseminate it to oral-health care (Project report 28.5.2007)

Another document called "Care instructions for adult patients" mentioned health education but did not elaborate further on what would be the content or how to proceed. One of the documents that takes health education and patient involvement more into focus was a master's thesis (Nuutinen, 2009) by an oral-hygienist teacher. In the thesis she developed further the HCTW-model and focused on how oral-hygienist students can motivate periodontal patients into self-care using health discus-

sions. In her conclusion she writes "even though [health] discussions between oral-hygienist students and patients have been active and diverse, within teamwork process there seems to be no left room for such discussions (Nuutinen, 2009, p. 57).

The idea of health-centeredness was mentioned in the Paro-manual (2008) for dentist students. However, the manual did not provide instructions about what it means or in which way health education was to be delivered as a part of the patient's care process. One of the objectives of the periodontal course was to "give sufficient basics skills of health education" (p. 7). Patient involvement or participation in care was not mentioned. Teamwork was introduced in two pages. "The dentist candidate acts as a member in-charge ... The role of an oral-hygienist student was "to act as a member of the care-team" (p. 21). Later, the Paro-manual specifies the implementation of teamwork: "The dentist candidate evaluates the degree of difficulty in patient's treatment, and agrees with the oral-hygienist student about suggestion for division of labour" (p. 21). The manual (p.22) also defines the division of responsibilities as follows "The dentist candidate's team responsibility is to learn how to manage the team and the oral-hygienist's student how to manage nursing." In the characterization of teamwork nothing was written about the patient's role and involvement. Of the basic ideas of the HCTW-model only teamwork was included in the Paro-manual. Health-centeredness was only mentioned and patients' involvement was missing.

The Paro-manual defined some "rules of action." For example, the dentist student had responsibility to act as a manager of teamwork. This is something Ostrom (2007) called a "position rule", as it creates as certain status for action:

> After showing that a dentist candidate has needed knowledge and skills (...) s/he can implement, starting from H42 course, periodontal care together with an oral-hygienist student. The oral-hygienist student's task is not to clean gingival pockets that are over 5 millimetres deep (CPI 4). Every student must care at least three co-operation patients during her/his studies. (Paro-manual, 2008, p. 21)

The rule of teamwork is here specified using the deepness of gingival pockets as a criteria. The rule and this specification affected division of labour between the students. The key ideas included in the HCTW-model were also present in interviews with the participants.

The oral-hygienist teacher stated division of labour and the challenges periodontitis had caused both in working life and in education.

> Oral-hygienist teacher: And it [periodontitis] changes the division of labour in oral-health care. So, the division of labour between a dentist and an oral hygienist. And this change of division of labour challenges education, also challenges of subject contents.

The teacher indicated that changes in the division of labour had broad consequences to, for example, the curriculum of oral-hygienist students as well as other oral-health diseases. A dentist teacher contemplated the content of health education on the topic of smoking and teamwork as follows:

> Dentist teacher: (...) Then there is this kind of wholeness that one learns extremely well, I think. I don't know, what the situation is at the moment, but it has been implemented. We've talked about smoking and quitting it and how to talk to patients about it. And that it is a good multi-professional wholeness, and especially well-suited for teamwork.
>
> Interviewer: And what do you mean who can give it in practice?
>
> Dentist teacher: So that quitting smoking can be taught together, and can be told about those possibilities that are available. And can be pondered those practical means, how on a dentist's practice or on an oral hygienist's practice can be intervened. How to promote quitting smoking?

Also, the dentist teacher underlines the importance of teamwork:

> It [co-operation with an oral hygienist] is extremely good, because co-operation with an oral hygienist is very close in working life. So, I think it is good to learn already during one's studies. (...)

In the interviews it was repeated that teamwork was important and also that health education could be done together with professionals or with patients, on a general level. However, it was not further elaborated how it was expected to be done in practice. As a tertiary level artefact or a "Where to" instrument, the HCTW-model was only partly included in the Paro-manual. Other documents, such as project reports, remained distant from the actual caring practices of periodontal patients since

they were produced for the purpose of projects rather than purpose of periodontal care.

## 6. RULES-IN-USE IN THE TREATMENT PERIODS

In order to find out how the HCTW-model was realized in practice, we followed how the participants interacted with each other, the patients, and to what extent they followed the instructions recorded in manuals. Inspired by the concept of rules-in-use introduced by Ostrom (2007), we found that professionals and students navigated daily through various constellations of rules, and even rule systems. Dentist students had their rules, one example being how many patients that a student needed to care for before taking on a co-operation patient. Oral-hygienist students' rules included, for example, at which stage of their training they could start to co-operate with dentist students. City dental clinic had their rules system that governed, for example, at which stage of illness patients were directed to the university clinic. We identified five types of rules-in-use that regulated teamwork and the division of labour in the care trajectories. They were as follows: 1) previously-used rule, 2) anatomy rule, 3) state-of-illness rule, 4) scheduling rule and 5) procedure rule.

In two care trajectories of periodontal patients, the dentist student typically carried out actual treatment of the patient, and the oral hygienist's role was in assisting, writing down findings and being supportive. This is a traditional way of working practice between the two professional groups (Keto et al., 2010). An exception was the situation when the dentist student left the treatment room and the oral hygienist started to discuss the division of labour and teamwork.

Dentist student: Well, surely some treatment sessions with you [the oral-hygienist student] and then with me and then we do together the second evaluation when we have cleaned. (...) Last time we did so that you did the lower jaw and I did the upper jaw.

Oral-hygienist student: Yeah, and I cleaned with ultrasound for the whole mouth.

Dentist student: Maybe we can follow the same kind of division of labour, if that is ok for you.

Oral-Hygienist student: Yes, whatever, it's the same for me.

Dentist student: Yeah, let's do so that you do first a basic cleaning with an ultrasound, and then you'll do the lower jaw and I'll do the upper one.

Ostrom (2007) points out that in order to understand actions in a specific situation, rules-in-use need to be followed. In the extract, the students planned their division of labour based on their previous experience and the anatomy of the mouth. The students decided to act as they had done previously. This we call a *previously-used* rule. It is not farfetched for organizations to do as has been done before; in this case the common experience of the two students affected how they took care of the patient.

Furthermore, the anatomy of the jaw affected their actions and division of labour, which we call an *anatomical* rule. Instead of using the measured gingival pockets as the Paro manual (espoused rule) instructed, they decided to divide their tasks according to anatomy of jaw. If they had followed the espoused rule, it could have resulted in the dentist student taking care of some of the teeth in the upper and lower jaw with the oral-hygienist student doing the rest. It seemed more practical to divide

tasks according to the anatomy: upper and lower jaw. In the extract, the espoused rule and the rules-in-use were in contest with each other. In the next extract, the dentist instructor asked the students about their teamwork.

> Dentist teacher: How was your collaboration? How did you divide your work between the two of you?
>
> Oral-Hygienist student: Well, first we thought that I'd do cleaning with the ultrasound, but then, since he [the patient] had this medication, some changes were made in plans ... you [talking to dentist student] did the ultrasound, and then I took care of the lower jaw and the dentist student the upper one. And then of course the dentist student took care of this tooth extraction.
>
> Dentist student: Yeah, and then I did the first evaluation and took care of what needed to do still, I mean remove of dental calculus.

In this extract, a new rule in use was introduced, a *stage-of-illness* rule. The patient had an anticoagulant medication, which could cause extra bleeding. In such case, the dentist student needed to take care of the patient. Second, again the anatomical rule was used. Third, *a procedure* rule depicted an oral hygienist as not allowed to extract teeth. This rule interacted with a position rule, that is, the dentist student was responsible for care: she had evaluated and taken care of the remaining dental calculus. The position rule, according to Ostrom (2007, p. 6) creates a certain status in a given situation.

One rule-in-use seemed to be timetables for all participants: the patients, the students and the instructors. In the next extract, the students are pondering the timetable.

Dentist student: Yeah, it would be good if we could do this before Christmas.

Oral-hygienist student: Yeah, I can take three times.

Dentist student: And then I could take the fourth time, and then one gets the whole cleaning done, do you think?

This rule-in-use we call *a scheduling rule*, because the students needed to navigate between different timetables. A scheduling rule can be understood as an aggregation rule, as suggested by Ostrom (2007). It interacts with different rules and needs to be agreed on by all involved before taking any actions. For example, in the present case the calendars of everyone involved needed to be considered, as well as which procedures only dentist students could perform and the timetables of students' internships and consulting teachers. This navigation may be seen as a coordination of co-operation. It seemed that coordination work was a basic form of collaboration and essential to the division of labour. One cannot collaborate, if there is no mutual time for it or if there is no agreement of tasks.

Rules described above formed an intertwined constellation of rules-in-use. Some of them were in contest with each other such as the espoused rule "deepness of gingival pockets" and the "anatomical" rule and some in congruence such as the "procedure" rule and the "position" rule. Furthermore, according to Ostrom (2007) rules systems evolve, and when the users have an opportunity to tinker rules, the outcomes are better than following outside imposed rules. Interestingly, we did not identify rules-in-use contesting health education, so it seemed that both parties considered it important.

Previously we discussed the HCTW-model's relation to the instrumentality of periodontal care and how the key ideas of the model were embedded in other instruments, as in the Paro-manual, which also involved espoused rules concerning teamwork. Video analysis suggested that interaction between the formal rules and the rules-in-use was contested. The relationship between instruments, the HCTW-model as a tertiary artefact, and rules in the activity of care work, was complicated and suggests that the constellation of rules systems need to be considered in organizational change efforts.

## 7. HEALTH-CARE ACTIVITIES OF PATIENTS IN THE CARE PROCESS

The HCTW-model emphasized the role of the patient and self-care activities at home. At the minimum that meant that the patients brushed their teeth twice a day and used dental floss.

Discussions focusing on health and self-care activities were not many in the care trajectories of two patients. The health and home care theme **was** identified 69 times with the first patient and 57 with the second patient (see earlier Table 1). The analysis showed that the patients' treatment took most of the time and the coordination of actual care dominated the discussions. Only 7% of the themes reflected health education and home care (see Table 1). Within this theme four main topics were identified: the use of oral-hygienic products, guidance concerning self-care activities, smoking and patient's oral situation (Table 2).

Table 2.
Topics of conversation in two care trajectories under the theme health and home care (Tauriainen, 2010, 71 and 74). Numbers in the table refer to how many times the topic in question was identified in videos.

| **Topic of conversation** | **1. Patient Number of topic** | **2. patient Number of topic** | **Total** |
|---|---|---|---|
| Oral-hygiene products | 38 | 25 | 63 |
| Oral-health self-care | 23 | 23 | 46 |
| Patient's oral situation | 4 | 7 | 11 |
| Individual topics | 7 | 10 | 17 |
| Smoking | 15 | - | 15 |
| Total | 87 | 65 | 152 |

Closer analysis of the health and home care theme showed that it consisted mainly of professionally-centred talk an educational approach toward the patients. The content mostly focused on oral-health products: 44% of the topics in the first treatment period and 39% in the second. The topics involved mapping the use of oral-health products, guiding their use, recommending them and discussing them. In the next extract, the oral-hygienist student told to the patient that he needed to use an electric toothbrush properly.

> Oral-hygienist student: And just that electric toothbrush, which you employ, now you need to take proper, a proper use of that.
>
> Patient: Yeah.

The student was on the one hand trying to ensure that the patient used an electric toothbrush and that he used it in the right way. The patient gave minimum feedback.

The topics in oral-health self-care activities (topic 2 in Table 2) involved: mapping patients' self-care activities, emphasizing the importance of self-care and discussing the implementation of self-care. A paternalistic attitude toward adult patients was also visible when the students mapped the patients' self-care practices:

> Oral-hygienist student: How it is, so have you remembered to brush your teeth also evenings?
>
> Patient: Yes I have, yeah.
>
> Dentist-student: And how it is, have you now cleaned, have you used interdental brushes?
>
> Patient: Yes.

The topic concerning the patient's oral situation (topic 3 in the Table 2) constituted only 7% of the topics found. They involved questions about oral health on a general level, as exemplified by the next extract.

> Oral-hygienist student: What do you think about your oral-health situation at the moment?
>
> Patient: Well, I really don't know, it has always been like this.

The patient gave a general answer to a general question. In the next extract, the oral-hygienist student is talking about smoking.

Oral-hygienist student: (...) as I said that this has been said to you surely many times

Patient: Ym-mm

Oral-hygienist student: When you have been previously treated here

Patients: Yes it has been said!

Oral-hygienist student: Those papers that you received has been guided, that it would be good to avoid smoking

Patient: Yeah.

In the first extract, the student was ensuring that the patient knew of the dangers of smoking. Even though the guidance was in a good atmosphere, it was professional-centred. The patient's role was to admit what he had already heard before the instructions. The patients did not ask for advice about how to quit smoking .The HCTW-model encouraged oral-health self-care. However, it seemed that the traditional professional-centred way of working was mainly followed (Keto et al., 2010)

To make visible the patient's activeness, who the initiator of the interaction was during the treatment periods under the theme "health and home care" was analysed (Table 3) as well as in what ways the patients participated in interaction.

Table 3.
The initiator of interaction in two-care trajectories during the health and home care theme (modified from Tauriainen 2010, 76, 77)

| **Initiation of interaction** | **Patient (N=2)** | **Oral-hygienist student (N=2)** | **Dentist student (N=2)** | **Instructor (N=11)** |
|---|---|---|---|---|
| First patient | 8 (9%) | 45 (52%) | 16 (18%) | 18 (21%) |
| Second patient | 19 (26%) | 28 (38%) | 20 (27%) | 7 (9%) |

The Table 3 shows that the oral-hygienist students usually took the initiative in the counselling conversations in health and home care theme: 52% during the first treatment period and 38% during the second. The first patient was less active during the treatment period, initiating only 9% of the interaction, compared to the second patient, who initiated 26% of the interaction. The second patient also initiated a topic that regarding his oral self-care. Furthermore, the dentist student was less active than the oral-hygienist student.

The patient's role here was to agree with the professionals. Patients mainly reacted by saying "Yeah" or gave information when the professionals asked questions, exemplified by the following extract.

> Oral-hygienist student: Well, maybe after that I could ask some questions, so how do you brush your teeth in general?
> Patient: Well, I usually brush my teeth only once a day (...)
> Oral-hygienist student: Yeah.

Patient: In the morning I brush. Sometimes also in the evening, but not regularly, I must admit it.

In sum, in both patient cases the interaction stayed professionally centred. Patients did not participate in the planning of their treatment, not even with regard to the definition of goals for their oral self-care. Moreover, the patients could not see their care plans. This was deeply paradoxical since, in the care of the periodontitis, preventive self-care is of outmost importance.

## 8. DISCUSSION AND CONCLUSIONS

In oral-health care, professionals tackle gum diseases, which are regarded an urgent oral problem of our time. In this article, we have analysed how professionals from three organizations faced this problem and in response developed a health-centred teamwork model (HCTW). The results of the analyses suggested that this complex change-effort was not fully successful. The traditional division of labour persisted and the gap between professionals and patients remained open.

Although the aims of the HCTW-model as were widely accepted, the manuals mainly followed the traditional division of labour. Teamwork was included in the Paro-manual as an aim or principle, but the division of labour in care followed the hierarchical division of labour between dentists and oral hygienists. The health centeredness was only marginally taken into account in the manuals, mainly in the introductory interview of the patient in the first session that preceded the diagnosis. It seemed that professional-centred practice focused on treatment instead of focusing on supporting the self-care practices

of patients at home. The care plan remained a means of the professionals. The short discussions with the adult patient focused on very elementary measures of caring for teeth. The three main repeated questions were the following: Do you smoke? Do you use an electronic tooth brush? Do you use dental floss?

The elimination of tensions between the model and manuals would have required that health education should have been included as phases in the care process and as clear instructions and means provided for patient involvement. In addition, since the patients were adults tool-centred 'education' should have been developed towards the participation of the patients in the care planning.

The constellation of rules and rules systems (Ostrom, 2007) that affected caring for the periodontal patient was not discussed or documented during change efforts, which resulted in the participants, mainly the students, navigating through the different rules and rules systems expressed in the manuals during their daily practice. The rules strongly reflected the power status, or position rule according to Ostrom (2007) of different professional groups. We identified five types of rules-in-use: a previously-used rule, an anatomy rule, a state-of-illness rule, a scheduling rule and a procedure rule. Furthermore, rules-in-use concerning the division of labour between the professionals differed from the espoused rules.

In activity theoretical terms, the HCTW-model can be regarded as a tertiary level artefact or "where to" artefact that motivates professionals toward a new object. Even within the HCTW model, the relationship between the aims of teamwork and health-centeredness were not well articulated, nor were their relations to the change of the "given object": the rapid

increase of gum diseases in adult population. In the care of these diseases, preventive self-care by the patients was meant to play a crucial role.

Our study suggests that the care and its planning remained professional-centred. The care plan was not shown to the patients nor discussed. The "health education" focused on the use of elementary self-care tools. It can be presumed that the shared discussion of the "diagnostic status" defined in the care plan (Figure 1) would also constitute a natural starting point for the planning of the self-care. It could also be presumed that the diagnostic pictures (x-ray) would motivate the patients and help them to focus their self-care measures in order to meet the specific needs of their disease. There were no stages for collaborative care planning in the manuals. The patient participation in the care planning remained a peripheral element during the care process.

Our conclusion is that a change in a multi-professional work environment, the creation of a new model or vision of future work is alone not enough. Instruments of all levels and rules of activities need to be changed in order to gain support for the implementation of the aims included in the new model (Miettinen & Virkkunen, 2005). Ostrom (2007) suggests that it is important that practitioners can tinker with rules or even make new rules in new, changing situations. Otherwise the difference between espoused rules and rules-in-use can become too large and can cause contradictions. The activity theoretical idea of instrumentality would suggest that in order to change an activity it is important to analyse the relationship of a new model and vision to the existing key instruments that are in use in the activity. In our case they were the manuals and the care plan that

had been created largely before and independently of the developmental work that resulted in the HCTW model. Through such a comparison the contradictions of the historically evolved instruments and rule systems can be made visible and eliminated, although such attempts can collide with the professional power structures of health care.

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# Learning Within and Beyond the Borders of Schools and Workplaces

Barbara E. Stalder*, Fabienne Lüthi

**Abstract:** The development of vocational competences depends on learning opportunities at the workplace and vocational schools, and on how learning at both learning locations is intertwined. Learning opportunities are linked to job- and school-related resources. They are shaped by teachers and trainers and depend on learners' capacities to make use of given opportunities. This paper addresses the question, how learning environments and individual characteristics influence learning opportunities within and beyond the borders of the specific learning place. Two models are tested which propose that learning opportunities are influenced by a) learning resources provided at the workplace and at school, b) work and school demands, c) learners' core self-evaluations, and d) school-work alignment. To test the models, we rely on data from a sample of apprentices (N=1272) in Switzerland. Results show that learners, trainers and teachers contribute to favourable learning environments and learning opportunities within the contextual boundaries. At the same time, schools and workplaces seem to remain rather unrelated contexts, which highlight the importance to strengthen school-work alignment.

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**Keywords:** Apprenticeship, Learning environments, Resources, Demands, School-work alignment, Core self-evaluations

## 1. INTRODUCTION

Vocational programmes which combine workplace learning with learning at school are seen as an optimal way to prepare young people for qualified work and to ensure successful school-work-transitions (Akkerman, 2012). In particular, apprenticeships are recognised as effective learning pathways fostering the development of vocational expertise and securing stable employment. Apprenticeships are structured programmes that understand organisations and educational institutions as valid contexts for learning (Messmann & Mulder, 2015). The combination of on-the-job training and off-the-job education is seen as an asset and strength of apprenticeships (Akkerman, 2012; Tangaard, 2007). At the workplace, learners are involved in meaningful real tasks, participate in communities of practice and are guided by tutors, trainers and more experienced co-workers. At school, they are members of a community of other students and are instructed by trained teachers (Fillietaz, 2012). Taking part actively in both communities enables novice learners to acquire occupation-specific knowledge, skills and attitudes, to form a vocational identity and to become a valuable member of a group of professionals (Klotz, Billett, & Winther, 2014).

In the ideal case, apprentices are provided with optimal learning environments at all learning locations. They self-regulate their learning and use what they have learned at school for their workplace learning and vice-versa. Training and learning in the workplace and school are aligned, and apprentices develop holistic vocational competencies across school and work.

Using the Swiss case of apprenticeships, this paper examines the ideal conception of learning in apprenticeships. Switzerland might be an interesting case to study because its apprenticeship system is praised both within the country and abroad for its high quality and the established cooperation between public and private partners (Dubs, 2006; Stalder & Nägele, 2011). The Federal Act on Vocational and Professional Education and Training, occupation-specific ordinances and training plans address crucial conditions of successful competence development, such as expansive learning environments (Fuller & Unwin, 2003), quality training (Velten & Schnitzler, 2012), affordance and engagement (Billett, 2001), guidance and support (Fillietaz, 2011), and identity formation through boundary crossing (Akkerman, 2012). Learning paths are highly structured, and occupational qualifications are standardised at the national level. The legal regulations stipulate, for instance, that employers must ensure that apprentices engage in tasks related to the practice of the occupation. Training must be provided by a specialist, who has the necessary professional skills and personal qualities. The learner, in return, must do his or her utmost to engage in the learning and working process. The training plans specify in which sequence and at which learning location the occupational and transferable competencies are to be developed. This should also ensure the transfer of learning between school and work.

Despite its highly regulated system, learning environments in Switzerland vary considerably from one organisation to another, between occupations, and between workplaces and educational institutions – and so do learning opportunities at the different learning locations (Fillietaz, 2012; Stalder, 2003). How the legal regulations are put into practice is up to the companies, schools,

trainers, and teachers. This leaves room for substantial qualitative variations between environments (Fillietaz, 2012). Learning opportunities and learning outcomes differ depending on organisational, institutional and task-related resources and demands, such as the learning culture, the composition of work teams and school classes, the productive tasks apprentices engage in, or the availability and willingness of trainers, co-workers and teachers to provide feedback and support (Billett, 2001; Fuller & Unwin, 2003; Nikolova, Van Ruysseveldt, De Witte, & Syroit, 2014). Productive constraints, time pressure or lack of expertise at the workplace, a dense timetable at school, or limited possibilities to discuss learning processes with experienced workers or teachers might lower the opportunities for learning.

Learning and learning outcomes also depend on individual characteristics and resources of the learner. Successful learning at the workplace and at school requires that apprentices are capable and motivated in engaging actively in the work and learning process. Negative experiences during career preparation (e.g., choosing an apprenticeship that does not correspond to what one has wanted), low self-efficacy expectations, problematic selection procedures (e.g., employing learners who might have difficulties to meet the demands of the vocational school), or poor learning opportunities at the workplace might hamper learners' motivation and interest to engage in learning (Nägele & Stalder, 2017; Stalder & Lüthi, 2016). Furthermore, apprentices find it often difficult to connect what they learn at school with what they learn at the workplace. Vocational schools and companies are different contexts and confront learners with unique learning cultures, support systems, and expectations regarding their behaviour (Akkerman, 2012; Tangaard, 2007).

At school, leaners are in the role of a student, at the workplace, they are learners and workers.

Drawing from the Job Demands-Resources (JD-R) model (Bakker & Demerouti, 2007) and research on learning transfer and boundary crossing (Akkerman, 2012), we explore, how organisational and school environments (i.e. learning resources and demands) and individual resources (i.e. core-self evaluations) are related to learning opportunities at work and school. According to the JD-R model, every job can be characterised by specific resources and demands. High and enduring job demands exhaust employees' mental and physical resources and may result in a depletion of energy. Job resources fulfil basic human needs (Ryan & Deci, 2000) and have a motivational potential, which may lead to high work engagement, increased learning effort and excellent performance. The JD-R model is an overarching model, which can be applied to various occupational settings. Although it has been mainly used to explore jobs and work environments of adult employees, we consider the core ideas of resources and demands as fruitful to describe apprentices' learning environments (i.e. work and school). We explore two potential ways, which contribute to school-work alignment and enhance learning within and across different learning locations. The first is apprentices' engagement in school-related tasks at the workplace; the second is the perceived relevance of school-related learning for workplace learning. The underlying idea is that learning across different contexts depends on learners' capacity to combine and use knowledge from different settings, and that host companies and schools, trainers and teachers contribute to learners' holistic competence development.

## 2. LEARNING ENVIRONMENTS, INDIVIDUAL RESOURCES AND SCHOOL-WORK ALIGNMENT

### 2.1 RESOURCES AT THE WORKPLACE AND SCHOOL

Job resources refer to physical, mental, social or organisational aspects of work that are functional in achieving work goals and meeting job demands, and/or stimulate learning and personal growth (Bakker & Demerouti, 2007). Job resources may be located at the level of the organisation (e.g., career opportunities), the social relations (e.g., supervisor support, team climate), the organisation of work (e.g., role clarity), or the task (e.g., task significance, autonomy). Studies have provided evidence regarding the positive effect of job resources on job-related learning (De Witte, Verhofstadt, & Omey, 2007; Parker & Sprigg, 1999), job satisfaction (Keller & Semmer, 2013) and work engagement (Schaufeli, Bakker, & Van Rhenen, 2009), and it has been shown that resources help reduce adverse effects of job demands (Bakker & Demerouti, 2007).

Most important for learning are the cooperation with and learning from other members of the community, motivating tasks and a learning-conducive organisational culture (Billett, 2004; Hackman & Oldham, 1980; Nikolova et al., 2014; Velten & Schnitzler, 2012). Supervisors, trainers and experienced co-workers can serve as role models, who share information and provide feedback, guidance and support (Coetzer, 2007). Teachers and trainers can encourage learners to engage in exploration and experimentation in order to learn, and stimulate them to reflect on tasks, processes and performance (Nikolova et al., 2014; Collins, 2006). Task characteristics such as skill variety, task significance, and autonomy enhance individuals'

experienced meaningfulness of the work and responsibility for work outcomes and positively affect their motivation, satisfaction, and job performance (Hackman & Oldham, 1980). Having autonomy at the workplace (and at school) enables individuals to create their own learning pathway following their interests, needs and capabilities (Hackman & Oldham, 1980; Taris & Feij, 2004). It fosters their intention to engage in formal and non-formal learning (Kyndt & Baert, 2013). A learning-conducive organisational culture supports learning practices, allows learning from mistakes and offers manifold opportunities for learning (Billett, 2002; Maurer, Weiss, & Barbeite, 2003; Nikolova, Van Ruysseveldt, Van Dam, & De Witte, 2016).
Studies with apprentices have highly supported that resources at the workplace and at school positively affect learners' motivation, participation in learning activities and learning outcomes (Messmann & Mulder, 2015; Nägele & Neuenschwander, 2016; Nore, 2015; Stalder & Schmid, 2016).

We thus propose:

H1: Higher resources at the workplace (H1a) and at school (H1b) are linked to higher levels of learning opportunities.

## 2.2 DEMANDS AT THE WORKPLACE AND AT SCHOOL

Job demands refer to "physical, psychological, social, or organisational aspects of the work that require sustained physical and/or psychological (cognitive and emotional) effort or skills and are therefore associated with certain physiological and/or psychological costs" (Bakker & Demerouti, 2007, p. 312). Examples are high time pressure or complex tasks, which need certain types of skills or high effort to be completed (Veldhoven, 2014).

Tasks and jobs with high demands can be stressful and may cause problems, especially if the individual has low control over the job (De Witte et al., 2007; Taris & Feij, 2004), but they are not necessarily negative. Demanding tasks require the development and use of higher-level skills and might be seen as challenging and motivating (De Witte et al., 2007). Research emphasises that a certain amount of job demands is necessary to encourage workers to learn and to keep them free of boredom (Bakker, van Veldhoven, & Xanthopoulou, 2010; Loukidou, Loan-Clarke, & Daniels, 2009; Raemdonck, Gijbels, & van Groen, 2014).

Apprentices, and particularly new learners, are confronted with many different demands. At the workplace, they must become familiar with the occupational domain and the organisational culture. They need to develop new skills, attitudes and behaviours, find their place and role as learners and workers, and become accepted by the team (Bauer, Bodner, Erdogan, Truxillo, & Tucker, 2007; Nägele & Neuenschwander, 2014). At school, they have to cope with new subjects and get along with new classmates and teachers. Studies with apprentices have found that levels of demands vary considerably between occupational domains (Kälin, Keller, Tschan, Elfering, & Semmer, 2014). With respect to task-related demands, it seems that apprentices are more often under-challenged than over-challenged, and it is assumed that higher demands in terms of task complexity, workload and time pressure are linked to higher learning opportunities and engagement in learning (Nägele, 2013; Raemdonck et al., 2014; Stalder, 2003).

We assume:

H2: Demands at the workplace are positively related to learning opportunities in the workplace (H2a); demands at school are positively related to learning opportunities at school (H2b).

## 2.3 CORE SELF-EVALUATIONS

Core self-evaluations (CSE) represent a "basic, fundamental appraisal of one's worthiness, effectiveness, and capability as a person" (Judge, Erez, Bono, & Thoresen, 2003, p. 304). They are defined as higher-order construct consisting of self-efficacy, self-esteem, neuroticism, and locus of control (Judge, Erez, Bono, & Thoresen, 2002). Numerous studies have shown that CSE is a decisive individual resource for learning. High CSE are related to positive attitudes towards work and training, and it is assumed that CSE play an important role in gaining and maintaining job- and training-related resources (Chang, Ferris, Johnson, Rosen, & Tan, 2012; Elfering, 2016; Judge & Hurst, 2007). CSE are positively associated with learning motivation (Kim, Oh, Chiaburu, & Brown, 2012), goal orientation (Chang et al., 2012), and the intention to participate in informal, non-formal and formal learning activities (Kyndt & Baert, 2013; Tews, Michel, & Noe, 2017). Due to their positive self-perception, people with high CSE are expected to be more confident, more flexible, more persistent and proactive at the workplace and at school (Dormann, Fay, Zapf, & Frese, 2006; Hirschi, Herrmann, & Keller, 2015; Judge & Hurst, 2007). Because they trust in their capabilities, they tend to see their work more positively, anticipate to be able to cope effectively with demanding tasks, and seek and receive more support (Chang et al., 2012; McNall & Michel, 2017). In summary, CSE may not only determine the way people perceive their environment but also enable people to change their school or learning environment in terms of gaining resources and handling effectively with demands.

We propose:

H3: CSE is related to resources and demands at the workplace and at school, such that apprentices with higher levels of CSE would have higher resources at the workplace (H3a) and at school (H3b) and lower demands at both learning locations (H3c and H3d).

### 2.4 SCHOOL-WORK ALIGNMENT

Alignment refers to the "coherence of the contents, didactical methods, assessment techniques and forms of guidance which are characteristic of the learning processes and outcomes within and between different learning contexts" (Messmann & Mulder, 2015, p. 581). School-work alignment focuses on the coherence between the two learning environments and means that apprentices make consistent experiences regarding their learning and their learning outcomes in the two environments.

VET research highlights the importance to integrate education at vocational schools and learning at the workplace (Fillietaz, 2012; Fuller & Unwin, 2003; Messmann & Mulder, 2015; Tangaard, 2007). To develop vocational expertise and establish a professional identity, students and apprentices are asked to combine and to reconcile theoretical knowledge, practical skills and the demands of different contexts. They must learn, how to navigate the boundaries between different learning locations (Akkerman, 2012; Pylväs & Nokelainen, 2017). It has been argued that learning in different contexts favours holistic competence development because existing knowledge and practices are challenged and can be discussed with various experts (Fuller & Unwin, 2004). Studies show, however, that apprentices perceive schools and workplaces as rather unrelated contexts (Akkerman, 2012; Nore, 2015; Tangaard, 2007). Knowledge

acquired at school seems to be too abstract and of little use in the work context, and practical learning seems more valuable and meaningful.

Teachers, trainers, supervisors, co-workers and peers at school may stimulate and support learning transfer and boundary crossing between school and work, e.g., by helping apprentices reflect experiences made at the workplace and at school and integrating perspectives of school-based and work-based learning (Messmann & Mulder, 2015; Tangaard, 2007). School-work alignment can be supported by the collaborative interaction between authorities of educational institutions and companies (Euler, 2004), by technological systems (e.g., e-learning, Nore, 2015), or student's self-evaluation and regular training assessments (Kaiser, 2005). While school-work alignment might be facilitated by institutional arrangements and actors, the learner remains in the centre of the process: Learning across boundaries relies on the individual's cognitive capacity and motivation to reflect knowledge, skills and attitudes acquired in one setting, to integrate them, and apply them in other settings (Billett, 2001, 2009; Zimmerman & Kitsantas, 2005).

Considering that learners must actively create and experience alignment between school and work (Messmann & Mulder, 2015), and respecting the supportive role of employers, we focus here on two possible ways to strengthen school-work alignment: the possibility to do something for school during working hours at the workplace (e.g., homework), and the awareness of apprentices that school knowledge is important for work.

We assume:

H4: Apprentices can do schoolwork in the company more often (H4a) if they are trained in companies with higher

resources; but less often (H4b), when demands at the workplace are increasing. We further expect that apprentices reporting higher levels of demands at school are more likely do schoolwork during working hours in the company (H4c). Finally, we propose that doing schoolwork at the workplace positively affects learning opportunities at both learning locations (H4d and H4e).

Regarding the relevance of school-based learning for work, we expect:

H5: Increased resources at the workplace (H5a) and at school (H5b) promote apprentices' awareness that knowledge acquired at school is relevant for their work. Increased relevance, in turn, positively affects learning opportunities in the workplace (H5c) and at school (H5d).

## 3. METHOD

### 3.1 PARTICIPANTS

To test our hypotheses, we used data from the Swiss youth panel study TREE (Transition from Education to Employment)[25]. The panel focuses on the post-compulsory educational and labour market pathways of a school leavers' cohort in Switzerland. It includes approximately 6000 young people who left compulsory school in 2000. Stalder, Meyer, and Hupka-Brunner (2011) provide a detailed overview of the study design and the sample.

For our analyses, we selected a subsample of young people, who participated in the second and third panel wave in 2002

25 The Swiss panel study TREE (Transitions from Education to Employment) is a social science data infrastructure mainly funded by the Swiss National Science Foundation (SNF) and located at the University of Berne.

and 2003 and were enrolled in an apprenticeship programme at that time. Data were gathered with a standardised paper-pencil questionnaire. The final sample consists of 1299 apprentices (43% female) from the German (63%), the French (25%) and the Italian (12%) part of Switzerland. In 2002 most apprentices (94%) were in their second year of training, the rest was in the first year. Mean age was 17.6 (SD = .60). Apprentices were employed in more than 110 different occupations from all economic sectors.

## 3.2 MEASURES

*Resources at the workplace* were measured in 2002 by three, resources *at school* by two indicators (Stalder et al., 2011). The first indicator is the instruction quality of training/teaching, the second is the organisational/class climate, and the third is autonomy (work environment only). The instruction quality of trainers and teachers was assessed with six items on a 4-point Likert scale (e.g., My trainer/my main teacher can explain things well), the organisational/class climate with three items (e.g., I like the way we treat each other in my class, 4-point scale, 1 not at all true to 4 completely true). Autonomy was measured with three items (e.g., At the workplace, I can organize my work myself, 5-point scale, 1 very rarely to 5 very often). Scale means were used as indicators for work and school resources in the analyses.

*Demands at the workplace and at school* (2002) included five items each related to qualitative (e.g., I have to do difficult things that I have not yet learned) and quantitative (e.g., I have too much to do) workload at the two learning locations (Stalder et al., 2011). Responses were measured on a 5-point scale (1 very rarely to 5 very often).

*Learning opportunities at the workplace* were measured in 2003 by four items, *learning opportunities at school* by three items based on Prümper, Hartmannsgruber, and Frese (1995). Sample items are, e.g., At work /at school I can learn a lot; Lessons at school are varied (5-point scale, 1 very rarely to 5 very often).

To build *Core Self-Evaluations,* we used the means of three scales which measure self-efficacy, self-esteem, and negative affectivity. Self-efficacy was measured with four items (Schwarzer & Jerusalem, 2002, e.g., I can usually handle whatever comes my way), s*elf-esteem* with eight items (Rosenberg, 1979, e.g., I feel that I have a number of good qualities), and *negative affectivity* with five items (Krohne, Egloff, Kohlmann, & Tausch, 1996, e.g., feeling anxious, annoyed, reverse coded). A 5-point scale was used (1 not at all true to 5 completely true).

*School-work alignment* was assessed with two single items, which asked apprentices to indicate, how often they can use what they learn at school for their work at the company (relevance of school-based learning for work), and how often they can do something for school (e.g., homework, exam preparation) during working hours. The answer scale ranged from 1 (never/very rarely) to 5 (very often).

Table 1 shows the means, standard deviations, and bivariate correlations of the applied measures. Correlations ranged from below .001 to .51, with highest correlations between concepts within the learning locations. It is interesting to note that resources and learning opportunities at the workplace and at school did only weekly correlate.

Table 1:
Summary of bivariate correlations, means, and standard deviations among the assessed constructs

| **Measures** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **Mean** | **SD** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 CSE | | | | | | | | | | | | 3.81 | .50 |
| *Resources at the workplace* | | | | | | | | | | | | | |
| 2 Instruction quality | .25 | | | | | | | | | | | 3.24 | .62 |
| 3 Climate | .32 | .51 | | | | | | | | | | 3.34 | .56 |
| 4 Autonomy | .22 | .32 | .35 | | | | | | | | | 3.40 | .79 |
| 5 Work demands | -.18 | -.20 | -.21 | -.07 | | | | | | | | 2.50 | .58 |
| 6 Learning opportunities at the workplace | .25 | .29 | .33 | .05 | | | | | | | | 3.91 | .76 |
| *Resources at school* | | | | | | | | | | | | | |
| 7 Instruction quality | .17 | .05 | .09 | -.05 | .01 | .16 | | | | | | 2.89 | .65 |
| 8 Climate | .21 | .02 | .10 | -.01 | -.01 | .09 | .34 | | | | | 3.08 | .60 |
| 9 School demands | -.36 | -.08 | -.12 | -.02 | .20 | -.14 | -.22 | -.17 | | | | 2.28 | .75 |
| 10 Learning opportunities at school | .14 | .06 | .05 | -.07 | -.00 | .24 | .43 | .27 | -.09 | | | 3.41 | .70 |
| 11 Do schoolwork at the workplace | .01 | .23 | .16 | .25 | -.19 | .03 | -.07 | -.07 | .01 | -.04 | | 2.28 | 1.27 |
| 12 Relevance of school-based learning for work | .16 | .20 | .21 | .11 | -.01 | .29 | .31 | .23 | -.18 | .37 | .05 | 3.23 | 1.07 |

Note: Correlations above .06 or below -.06 are significant with $p < .05$, correlations above .08 or below -.08 with $p < .01$

## 4. RESULTS

Before hypotheses testing, we explored the distinctness of work and school resources with confirmatory factor analysis. Apart from work and school resources, which were modelled as latent variables, all other constructs were introduced as manifest variables. Also, we explored separate structural equation models for learning at the workplace and learning at school. We then tested a model including *the possibility to do schoolwork at the workplace* and the *relevance of school-based learning for work*. This model showed acceptable fit ($\chi^2$ = 133.06; RMSEA = .04; SRMR = .03; CFI = .95). To reduce complexity, and because *doing schoolwork at the workplace* and the *relevance of school-based learning for work* were uncorrelated, we run two separate models. Both models included CSE, work and school resources, work and school demands, and opportunities for learning at the workplace and at school. In model 1, the possibility to *do schoolwork at the workplace* was added, in model 2 the *relevance of school-based learning for work* was included. In model 1, after examination of modification indices, we introduced an additional path from CSE to *doing schoolwork at the workplace*. For the final models, all fit indices were acceptable (Model 1: $\chi^2$ = 109.87; RMSEA = .05; SRMR = .03; CFI = .97; Model 2: $\chi^2$ = 83.42; RMSEA = .04; SRMR = .04; CFI = .95). The final models are presented in Figure 1 and 2.

In hypotheses 1 and 2 we assumed that resources and demands at the workplace and at school are related to learning opportunities at the corresponding learning locations. Figure 1 and Figure 2 show that work resources and work demands predicted learning opportunities at the workplace one year later, sup-

porting H1a and H2a. Similarly, school resources and school demands had a positive influence on learning opportunities at VET schools one year later, supporting H1b and H2b.

Hypothesis 3 stated that CSE is positively linked to learning environments at the workplace and at school, such that apprentices with higher levels of CSE would have higher resources at the workplace (H3a) and at school (H3b) and lower demands at both learning locations (H3c and H3d). Results support the four hypotheses. Interestingly, the effects of CSE on resources were stronger for the workplace than for school, but lower on demands at the workplace than on demands at the workplace.

Figure 1.
Standardized path coefficients and correlations for the tested mediation model including the possibility to do schoolwork at the workplace. Solid lines represent significant ($p < .001$), dashed lines nonsignificant effects ($p > .05$).

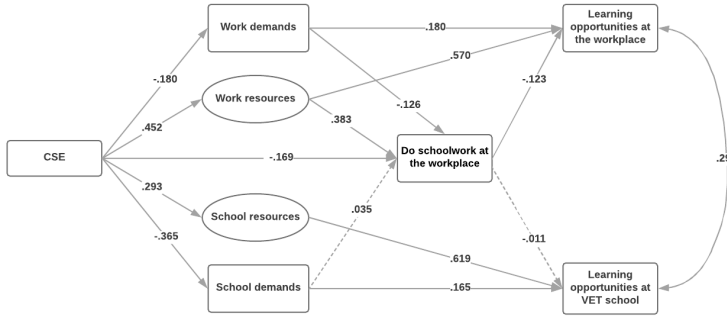
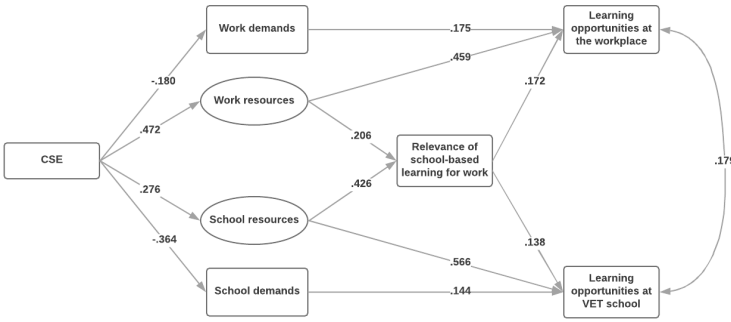


Figure 2.
Standardized path coefficients and correlations for the tested mediation model including the relevance of school-based learning for work. Solid lines represent significant effects (p < .001), except for relevance→learning opportunities at school (p < .05)




According to hypothesis 4 we expected that apprentices were more often allowed to do schoolwork at the workplace if they are trained in a more resourceful work environment (H4a) (Figure 1). We assumed, in contrast, that higher demands at the workplace would reduce the chance to do something for school when being in the company (H4b). We further expected that apprentices reporting higher levels of demands at school would be more likely to do something for school in the company (H4c). Finally, we proposed that doing something for school at the workplace would positively affect learning opportunities at both learning locations (H4d and H4e). Figure 1 shows that the results support H4a and H4b, but none of the other hypotheses. School demands were not related to the possibility to do something for school at the workplace (H4c rejected), neither

did doing schoolwork at the workplace increase learning opportunities at school (H4d rejected). Against what we expected, engaging in schoolwork in the company did not improve, but lowered learning opportunities at the workplace (H4e rejected).

Finally, in line with what we hypothesized, higher resources at the workplace (H5a) and at school (H5b) increased apprentices' awareness that knowledge acquired at school is relevant for their work in the company. The increased awareness, in turn, positively affected learning opportunities at the workplace (H5c) and at school (H5d) (Figure 2).

## 5. DISCUSSION

The present study explored the relationships between CSE as an individual resource, learning resources and demands the workplace and school, two modes of school-work alignment and learning opportunities. We found that the design of learning environments is closely linked to learning opportunities within the specific learning location. This supports previous research, which states that expansive learning environments include rich learning opportunities, while restrictive environments offer only limited occasions for learning (Fuller & Unwin, 2003, 2004). The association between learning environments and perceived learning opportunities was high (correlations between .46 and .62), which further strengthens the assumption that learning opportunities might be a constituent of resourceful learning environments, rather than a consequence.

As expected and in line with previous research CSE was linked to higher resources and lower demands, which suggests that apprentices with high CSE might perceive their school and

work environment more positively, and are more confident and active in shaping social interactions, gaining higher autonomy and coping with demands (Chang et al., 2012; Hirschi et al., 2015; Judge & Hurst, 2007).

The results from two models suggest that schools and workplaces contribute differently to school-work alliance. First, both increase apprentices' awareness that theoretical knowledge acquired at school is relevant for work, which in turn increases apprentices' positive appraisal of the learning opportunities at the two learning locations. This supports the assumption that learning environments with a high instruction quality, a positive climate and high autonomy foster apprentices' experience of school-work alignment (Messmann & Mulder, 2015). Perceived relevance of school knowledge may stimulate the integration and application of learning experiences from school in the work context and may motivate apprentices to profit more from learning opportunities at school (Akkerman, 2012; Nore, 2015; Tangaard, 2007).

Second, our results show that doing schoolwork in the workplace is not linked to the school-related environment and learning. We had assumed that apprentices who are over-challenged at school might be more likely to be afforded time in the workplace to do something for school. Research has shown that many employers support their apprentices also in school matters, in particular, if apprentices who have difficulties meeting school requirements are well motivated and integrated into the company (Stalder & Schmid, 2016). This assumption was not supported in the present study and might point to different practices regarding the integration of school tasks in the work environment.

Interestingly, doing schoolwork during working hours reduced learning opportunities at the company. One interpretation could be that working on school tasks in the company limits the time available for workplace learning. Another explanation would include a reverse effect, i.e. doing something for school might be a sign of restricted learning at the workplace (Fuller & Unwin, 2003, 2004). Apprentices with little opportunities for learning at the workplace might have more "free" time to do other things because their workplace cannot provide sufficient or complex tasks, or opportunities to participate in the community of practice. Further research could test this reverse effect.

One limitation of our study is that we relied on a sample of apprentices from Switzerland. While this sample is adequate to investigate learning in apprenticeships in Switzerland and other countries with a strong dual system, our results cannot be generalised and directly applied to countries with more school-based VET systems. Future research should attempt to replicate our findings with different samples, e.g., to provide more generalizable knowledge of how different forms of integrating school-based and work-based learning affect learning across the boundaries of school and workplaces. Second, we applied self-report measures, which can induce a shared method bias that might affect the observed relationships between the applied measures (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). A third limitation is that we measured modes of school-work alignment with single items. Future research is needed, which explores school-work alignment with more elaborate instruments.

## 6. IMPLICATIONS AND CONCLUSIONS

In sum, our results enhance our understanding of how learning resources and demands at the workplace and at school are related to learning opportunities and provide new insights on how occupational regulations and curricula are put into practice. In general, our research shows that the JD-R model (Bakker & Demerouti, 2007) is useful to explore patterns and relations of resources and demands and their motivational potential for learning at the workplace and at school. Resources and demands proved to be distinct concepts, with distinct influences on school-work alignment and learning opportunities. On a general level, our results indicate that learning environments and learning opportunities at school and at the workplace seem to be only weakly related. In the view of apprentices work and school are two worlds apart. This is noteworthy, because school-work alignment is an important element of the Swiss dual system, and it is widely acknowledged that separation of theory and practice inhibits the learning progress and identity formation (Fillietaz, 2012; Klotz et al., 2014; Messmann & Mulder, 2015). The Vocational Training Act 2004 stipulates that host companies, VET schools, and branch training centers (the third training location) must coordinate their activities. More recent research shows that this goal has not been reached yet. The cooperation and communication between actors of different learning contexts are still largely left to chance and depend on single individuals (Frey, 2010; Grassi, Rhiner, Kammermann, & Balzer, 2014). Effort should be made to increase alignment and boundary crossing between different learning contexts. This could be reached by establishing more coordinated and regular

exchanges between teachers and trainers, which should allow them to learn about the objectives and contents of all learning locations (Akkerman, 2012). Moreover, learners, trainers and teachers should be made more aware that the development of vocational competencies and professional expertise requires the combination and integration of practical and theoretical forms of knowledge and experiences. Teachers and trainers should sensitise apprentices that learning at school and at the workplace is interdependent and equally important and that school-based learning facilitates learning at the workplace, and vice-versa. This might foster learners' reflection on their learning process and their performance and supports their positive career development.

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# Section II

# VET Teacher Education

# The Teacher Education Forum and the OPEKE project: Developing Vocational and Professional Teacher Education in Finland

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**Abstract:** In Finland, a new educational policy and steering mechanism was introduced by Sipilä's government programme. It is based on broad strategic objectives and key projects. Lots of autonomy is allowed at the actors' level. One of the strategic objectives was "a new elementary school", later operationalized to also cover vocational and professional teacher education. A Teacher Education Forum was established by the Ministry of Education and Culture and a national teacher development programme was drawn up. Based on its six development targets, a development project call was launched.

This study analyses OPEKE, one of the projects developing vocational and professional teacher education. The five development sub-projects cover the whole career of a teacher. The work of the vocational teacher is under great restructuring and the OPEKE project seeks long-term solutions to the development of their professional competence. The project involves all vocational teacher training organizations and key stakeholders.

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The first results from the start-up phase will be presented, based on the self-assessment model implemented in the national project. Self-evaluation demonstrates that the project is proceeding in the expected direction. Strategic steering that respects operators' autonomy seems to be working in the intended way.

**Keywords:** Vocational and professional teacher education, National educational policy, Strategic development, Steering mechanisms

## 1. INTRODUCTION

In all countries the core aim of teacher education is to educate high-quality teachers through a high-quality post-secondary programme and then support teachers in their professional development. However, there is no consensus about what are the core characteristics of a quality teacher. Several other terms – including a professional, effective, competent, expert, or ideal teacher – are used in a similar way to a *quality teacher* (Stronge & Hindman, 2003). Neither is there a common way for professional teachers to be educated or for policy to be designed and implemented at a national level. For example, Darling, Hammond and Lieberman (2012) analysed teacher education policies and the implementation of the policies in five countries. They recognised that in some countries policy is designed in a very top-down manner and in other countries it is designed and implemented collaboratively.

Teacher quality is typically approached by analysing the knowledge base of a quality teacher (the input approach), the process or the interaction that occurs in the classroom between

the teacher and students (the process approach) or the outcomes of the teaching and learning process, such as students' learning outcomes measured by national tests or graduation rates (the output approach) (Goe, Bell & Little, 2008). In the first case, teachers reaching high levels of quality are typically called *professional teachers* and in the third case, they are referred to as *effective teachers*. In the context of Finland, unlike in some other countries, teachers working in vocational institutions and universities of applied sciences are typically regarded as professionals, which is also reflected in the names of vocational teacher education providers like HAMK School of Professional Teacher Education. Regarding vocational education teachers (VET) as professionals is very well in line with the results of a content analysis of all the teacher education providers' curricula. The curricula targets and implementation reflect a dynamic teacher profession, of which research and development are an inevitable part (Mahlamäki-Kultanen & Nokelainen, 2014, 23–35). The curricula were not only about training them to train skills but to become a reflective professional.

National-level collaborative planning is a tradition in the design of national-level strategy in Finland. Reforms are always planned in heterogeneous groups in which experts from different fields – like teachers, teacher educators and people representing different stakeholders (like industry interest groups, teachers' unions and employment organisations) – are in open dialogue, interaction and collaboration. During the process it becomes clear for all where to go (it sets clear aims) and how to go there. Moreover, a draft reform plan is discussed and feedback is collected and analysed, and resources for piloting are offered. The approach is typically in line with the OECD pub-

lication "*Principles of modern governance: Governing education in a complex world*" (Burns & Köster, 2016). This kind of an approach has many benefits and makes it possible for reforms to be accepted and to have a sound evidence base. In a long-term policy analysis from Sweden, Beach, Bagley, Eriksson and Player-Koro (2014, 167) conclude the opposite to be the case if reforms are too strongly led by governments alone. They have "come to the unfortunate conclusion that governments all too often become tempted to allow their ideological interests to predominate over scientific knowledge".

The aim of this paper is to analyse the preparation of a Finnish teacher education reform programme in general and then to analyse the implementation of this strategy through one example: the OPEKE project, which aims to develop vocational teacher education in Finland. The authors are the chair of teacher education forum, Jari Lavonen, the vice chair, Seija Mahlamäki-Kultanen, and the project manager of OPEKE, Jaana Muttonen.

The research questions are as follow:

1. How have the sub-projects of the OPEKE vocational teacher education development project proceeded, half a year from the project launch?
2. How has OPEKE project proceeded according to the participants self-evaluation, conducted 9 months from the projects' launch?

Based on the results we conclude on the success of the development strategy of the national Teacher Education Forum espe-

cially from the viewpoint of VET teacher education. Structure of the article follows partly the sub-projects of OPEKE project.

## 2. THEORY AND POLITICAL CONTEXT OF VOCATIONAL EDUCATION AND VOCATIONAL TEACHER EDUCATION IN FINLAND

This paper describes an ongoing collaboratively designed teacher education development especially in the context of vocational education. A new policy and steering mechanism was introduced by Sipilä's government programme. It is based on broad strategic objectives and key projects. Lots of autonomy is allowed at the actors' level.

One of the strategic objectives was "a new elementary school", later operationalized to cover early childhood education, and vocational and professional teacher education. Thus a comprehensive policy for all types of teacher education was made possible.

At the beginning of 2016 the Minister of Education nominated altogether 75 experts from universities, the ministry, the teachers' union, student unions and a municipal union to form a Finnish Teacher Education Forum. The nominations were based on organisations' suggestions that they be nominated. She asked the forum to analyse research outcomes related to teacher education, to identify best practices based on teacher education strategies and policy documents in other countries, to organise a national brainstorming process related to the renewal of teacher education and, finally, to prepare a development programme for teachers' pre- and in-service education (life-long professional development) in Finland (MEC, 2016). Furthermore, the forum

was asked to identify key actions that need to be undertaken in order to improve teacher education and support the implementation of the development programme. It was also asked to create the conditions (through financing pilot projects and organising meetings) for the renewal of Finnish teacher education through professional development projects.

An international literature review (Husu & Toom, 2016) of research on teachers and teacher education identified several perspectives which were discussed in the forum meetings and taken into account in the planning of the development programme. In particular, these perspectives included research outcomes related to the role of education in society; the teaching, learning, engagement and individual differences of learners; and the design and use of educational innovations, like education technology, in teaching and learning. Moreover, the research on teachers and teacher education had an impact on the work of the forum. One important topic discussed in the meetings was the link between teachers' pre- and in-service training. According to the literature review, during the pre-service training student teachers should develop the willingness and competence to learn new competences continuously in their work as teachers.

Teacher education programmes and strategies were benchmarked in neighbouring countries and discussed in the forum meetings. For example, the Norwegian 2016 elementary teacher education strategy (a framework) aims to raise the Norwegian teacher education credentials to master's level and to augment expectations of teachers, in addition to traditional pedagogical competences, such as being able to "take responsibility for developing and leading inclusive, creative, safe and healthy learning environments (skill)" in the classroom, as well as teach-

ers needing to have the competences to contribute to the professional community of teachers by being able to "contribute to both colleagues and the school's professional and organizational development". Compared to previous national strategies, the new Norwegian strategy emphasises a research orientation in teacher education – emphasizing "academic knowledge and knowledge on scientific thinking and research methods" – along with improved competences in teacher collaboration, and both personal development and the development of the whole school environment.

As one of its activities, the Finnish Teacher Education Forum organised a national web-based brainstorming process related to the renewal of teacher education, following the concept of the "wisdom of crowds" (Surowiecki, 2005). According to this principle, a large group of people is collectively smarter than a few experts and is more likely to come to wise decisions. In practice, a call to participate was sent to teacher educators in all Finnish universities, as well as to all teachers and administrative employees working in the field of education at both national and local levels. The goal of this invitation was to solicit diverse opinions related to the development of teacher education, encouraging decentralisation of idea generation and independent thinking. The participants were first guided to generate ideas about what will be important in the future of teacher education and to evaluate or rank about 10 ideas contributed by others. The web-based brainstorming tool combined similar ideas and reduced the number of ideas offered for ranking. According to the participants, learning-to-learn skills were the most important priority for students in teacher education, along with interaction and collaboration skills. The same skills were also

emphasised in the recent Norwegian teacher education strategy papers and emerged from the teacher education literature review. The competences involved in generating ideas, readiness for change, research-based action and collaboration in partnerships and networks are all needed so that teachers can participate collaboratively to develop classroom practices and culture in particular school contexts. Most of the top-ranked skills and competences identified are needed outside the classroom. This means that, in teacher education, participants believe that more attention should be paid to the skills and competences needed for effective teacher collaboration. Meanwhile, interaction and collaboration skills, student centeredness, the competence to meet variation, the integration of school subjects, digitalisation and the use of various learning environments are all skills, competences and attitudes needed by effective, professional teachers in a classroom environment.

Altogether, during 2016 and 2017 the forum organised the eight full-day meetings that the entire forum consisted of, along with several meetings of smaller thematic groups. The steering committee of eight people met every month, discussing the outcomes of the literature review, best practices based on teacher education strategies and policy documents in other countries, and conducting the brainstorming process and designing of the development programme for teachers' pre- and in-service education (Teacher Education Forum, 2016). This development programme set out holistic competence goals for teachers' pre- and in-service education and continuous life-long professional development. According to this document, a professional teacher should have:

1. A broad and solid knowledge base, including, for example
   - Subject matter knowledge, pedagogical and pedagogical content knowledge, contextual knowledge;
   - Interaction skills and skills for collaboration;
   - The competence to act as an autonomous professional who can plan, implement and assess his or her own practices and students' learning;
   - The competence to act in various digital and physical learning environments, including having digital skills and teaching in settings outside the classroom;
   - Research skills (the skills required to consume research-based knowledge);
2. Expertise in generating novel ideas and educational innovations, including, for example
   - A positive attitude towards continuous change, which requires tolerance of uncertainty and new and innovative ways of thinking;
   - Willingness to create a positive atmosphere supportive of creative processes and curiosity, risk-taking related to classroom teaching and learning, the creation of educational innovations and, moreover, awareness of the importance of this attitude for creative outcomes;
   - The competences necessary for the implementation of creative processes, the generation and evaluation of ideas related to classroom teaching and learning, and the creation and adoption of educational innovations;
   - The competences required to design a school-level curriculum, to implement it and to continuously evaluate and improve it;

3. The competences required for the development of their own and their schools' expertise, including, for example
    - Self-regulation skills and the skills to control their work (self-assessment skills);
    - The competences required to work in networks and teams, such as networking with health care experts at the school site;
    - The competence to reflect on their own personal pedagogical views (the competence to reflect for, in and on action);
    - The competence to conduct quality work, the competence to use assessment outcomes for school development and the ability to develop school culture through networks and partnerships with students, parents, other experts and stakeholders.

Caena (2014, 318) sees the added value of teacher competence frameworks in shared understanding – as well as seeing it in awareness and dialogue among all stakeholders – just like it was the case in the national Teacher Education Forum. They see great potential for teacher competence frameworks to support professionalism if the purpose and intended use of competence frameworks are clearly defined. In the Finnish context, however, universities have the autonomy to define their teacher education curricula and education providers can decide on the competence profiles of their employees, so we can only enhance the use of the competence framework by participatory actions and steering by information.

During the years 2017 and 2018, the forum supported (and will continue to support) teacher education institutes in organ-

ising pilot projects according to the main development areas recognised in the development programme. In order to support the pilot projects, in the spring 2017 the forum allocated altogether 15 million euros and will allocate again altogether 12 million euros in spring 2018, according to the proposals submitted by the Finnish universities (MEC, 2018). The development projects were to address the following target areas of the Teacher Education Development Programme: a holistic view of teacher education, selection and anticipation of the future, supporting the development of the competences needed in generating novel ideas, collaboration culture and networks, supportive leadership and research-based teacher education. The expert nominated for the Teacher Education Forum was responsible for supporting the writing of proposals and supporting the starting of the development projects. Only the proposals which were written according to the strategic aims were funded.

Altogether 32 development projects were funded and started. According to the content analysis conducted by the author of this chapter, the development projects were designed in a collaboration between the universities and the providers of education (the working life connection) and, moreover, they were research-oriented projects. The projects emphasised the following topics: the competence model for teacher education programmes, formed according to the strategic aims (21 projects); models for teaching and supervision in teacher education (14 projects); teacher leadership and leadership at school level (13 projects); digital environments in teacher education (12 projects); the supervision of teaching practice (8 projects); multi-professional teamwork (7 projects); equity in education (7 projects); multicultural education and language education (6

projects); selection and anticipation of the future (4 projects); and special needs education (2 projects) (MEC, 2018).

The influence of the new development programme for teachers' pre- and in-service education (Teacher Education Forum, 2016) and implementation of the development projects is too early to evaluate. The development projects have only been working about nine months at the time of writing this report. However, based on the meetings of the forum and directors of the development projects, Finnish teacher educators are eager to make progress in teacher education. All 32 development projects have started well and they are have nationwide connections and meetings.

## 2.1 VOCATIONAL EDUCATION AND TRAINING IN FINLAND

After compulsory basic education, most of the school-leavers opt for general or vocational upper-secondary education. Both forms of education usually take three years to complete and give eligibility for higher education. Vocational education and training (VET) is popular in Finland; almost 50% of the relevant age group starts vocational upper-secondary studies immediately after basic education. The biggest fields of study are technology, communications, transport, social services, and health and sports. Upper-secondary education and training have a dual structure.

VET is designed for both young people without upper-secondary qualifications and for adults already in working life. Vocational qualifications can be completed in school-based VET or as competence-based qualifications. VET is mainly

organised in institutions (with on-the-job learning included) or as apprenticeship training. VET provides skills for both life and work. A vocational qualification gives general eligibility for universities of applied science and other university studies. VET is publicly funded and mainly free of charge for the students (students only need to pay for the textbooks, and personal study equipment and materials).[26]

Persons with a completed vocational upper-secondary qualification have the basic vocational skills in a particular field and the professional competence required in practical working life. The scope of the qualification is 120 credits and it takes three years of full-time studies to complete it. After completing a vocational upper-secondary qualification, it is possible to complete further and specialist vocational qualifications. Further and specialist vocational qualifications may be completed as competence-based qualifications, and preparatory training for these is provided.

Instruction in vocational institutions is very practical and designed to satisfy the needs of the labour market. On-the-job training at workplaces is an essential part of the studies. After completing a vocational qualification, a person may continue his or her studies in higher education.

The Ministry of Education and Culture prepares VET legislation and steers and supervises the sector. The ministry also grants education providers with permits to provide VET. VET is developed, delivered and assessed in close cooperation with the world of work.

26 Vocational training is introduced on the ministry's web page: http://minedu.fi/en/education-system

The reform of vocational upper-secondary education is one of the government's key projects. The reform will update all VET by 2018.[27] This reform is justified by the competencies modern working life will require. Therefore, VET has to respond more swiftly to changes in working life and operating environments, and to adapt to individual competence needs.

VET for young people and adults will be consolidated, forming a single entity with its own steering and regulation system and financing model. The current supply-oriented approach will be refocused to create a demand-driven approach. Education will be competence based and customer oriented: each student will be offered the possibility to design an individually appropriate path for finishing an entire qualification or a supplementary skill set. The primary importance lies in what the student learns and is able to do. Digital learning environments and new approaches to pedagogy (e.g. modern simulators) will have a larger role in the future of learning. Learning at the workplace will be increased.

The implementation plan for the key projects and reforms of the government's strategic programme has been updated with the measures, funding and a timetable for the reform of vocational upper-secondary education.

Higher vocational education in Finland is organized in universities of applied sciences and they employ thousands of professionals like principal lecturers and senior lecturers.

27 The reform of vocational upper-secondary education is introduced on the ministry's web page: http://minedu.fi/en/policies-and-development_vet

## 2.2 THE DEVELOPMENT NEEDS OF VOCATIONAL TEACHER EDUCATION AND OPEKE PROJECT

Luopajärvi (2017) has analysed the recent history, current situation and future development needs of professional teacher education. Professional teacher education has been carried out since 1996 as part of vocational higher education. This came from a desire to ensure the education's multidisciplinarity and research-based approach. The teacher education programme comprises 60 credit points and it is generally undertaken alongside work. There are quite a lot of applicants every year, and the applicants' average age is around 40. In recent years, however, the number of applicants has declined, particularly for the fields of technology and transport education. At the same time, the competence requirements for teaching have grown and become more diverse. There are therefore many development needs. (Luopajärvi 2017, 175-212.)

The OPEKE project reforms vocational education in order to support Finland's competitiveness. The development of Finnish education and expertise is one of the key projects for Juha Sipilä's government, and this project is aimed at developing Finland's international competitiveness. As part of this key project, teacher education has been developed as a whole (Teacher Education Forum). This OPEKE project, which is being presented here, brings necessary changes to professional teacher education and to the work of vocational teachers. The project is funded by Finland's Ministry of Education and Culture.

At the start of 2017, the vocational education reform was implemented in Finland. The reform reduces the gap between education and working life, transfers the learning process more

into the workplace, and enables more individualised study paths. In the same way as for vocational education, the vision for higher education also sets as important objectives a student-orientated approach and development of the best learning environment. The required changes focus on the content, working methods and work environments of vocational teacher's work, as well as their prediction and forecasting methods.

The reform work to be carried out in the OPEKE project covers the whole span of vocational teaching, from the selection of teacher trainees to their eventual work as professional teachers. A vocational teacher may work in a vocational college, a university of applied science, or a university.

The goal of the project is to strengthen the active, exploratory and developmental role of teacher education in relation to educational institutions, the business world and teacher trainees. At the same time, there is a desire to improve the capacity of educational institutions and teacher education units to support teachers' competence throughout their career. Participating in the project are the University of the Arts Helsinki and all the professional teacher education units in Finland (HAAGA-HELIA, HAMK, JAMK, OAMK and TAMK), in cooperation with education organisers, educational institutions, businesses and other stakeholder groups.

The development work of the OPEKE project is monitored, supported and assessed by a steering group which represents a wide range of expertise. The overall responsibility for administration and coordination is held by the Häme Professional Teacher Education Unit (HAMK). The teacher education reforms are divided in the project into five areas for develop-

ment, with a particular teacher education unit taking responsibility for each one.

The research-based approach is implemented in the OPEKE project in the content and operating practices of all the areas for development. The results are used and disseminated throughout the project's three-year period of operation based on the principle of continual development. As well as being used for carrying out teacher education, the results and products obtained will also be used in continuing education and RDI operations.

## 3. MATERIAL AND METHODS

The OPEKE project implements self-assessment in accordance with national assessment guidelines. The projects' progress is assessed both as part of the Teacher Education Forum's operations and also as a result of the Finnish Education Evaluation Centre's (FINEEC) assessment. The data collection for the assessment is currently under way and will reach completion in 2019. At this stage, the progress of the OPEKE project is therefore presented based on digital communications and the self-assessments of those implementing the sub-projects. Digital work environments have been set up for the project (yammer and onedrive), as well as a public webpage at www.hamk.fi/opeke, a Facebook page (OPEKE-Ammatillisen opettajankoulutuksen uudistaminen), a Twitter account (@opekehanke) and hashtag (#opeke). The following analysis is based on the self-assessment of OPEKE project according to the five sub-projects. At first we present each sub-project and then the analysis of the progress so far.

## 4. RESULTS OF DEVELOPING VOCATIONAL TEACHER EDUCATION IN THE OPEKE SUBPROJECTS

This chapter answers the first research question, how have the sub-projects of the OPEKE vocational teacher education development project proceeded, half a year from the project launch. Each subproject is first described in detail and then the achievements so far are presented based on the documented data from each subproject.

***Incisive student selection and career guidance*** develops and models forecasting of teacher education needs and student selection processes. The key questions are: what kind of teachers are needed in the future, how to select the most appropriate students, and what kind of supervision students need in the first stage of their studies.

The OPEKE project has set out to form an understanding of the teaching of the future using surveys, data analysis and guided work. This also serves as a basis for other areas of development, such as student selection. For a long time already, student applications for professional teacher education have been handled in Finland once a year through a joint application process. In the application process in January this year, applicants were asked why they were applying for teacher education. Their answers did not, however, influence the outcome of their application. In recent years, an increasing proportion of students of professional teaching have entered their studies from employment backgrounds other than teaching or other work in educational institutions. This has raised the question within teacher edu-

cation units of how many people apply because they want to develop their pedagogical competence in general and how many intend to actually work as teachers in the future. No information about this has previously been gathered at the national level.

According to the answers from this motivation survey question, it is clear that the larger part of teacher education applicants are seeking a teaching qualification so that they can work in teaching. Professional student counsellor education is a further qualification which is available to teacher education graduates and which also qualifies the person to work as a teacher at the basic education and college level. According to the survey, those applying for this qualification also continue to be primarily those that want to work as student counsellors. On the other hand, those applying for professional special needs teacher education – the other further qualification on offer – were mostly doing so because within their work as a professional teacher they were encountering an increasing number of students that needed special support during their studies. They were therefore applying for the studies in order to attain increased competence for handling their current teaching tasks. The results indicate that despite the large changes in the education field, and especially within professional teacher education, the option of a future career as a teacher is still an attractive one. In order to make the results more generalisable, the intention is to include the motivation survey in the 2019 application process as well. In addition, data will be collected about selected students during the project in order to form a clear enough picture of the current situation and future developments.

***Reform of curriculum processes*** creates national, strategic policies and competence-based quality standards for profes-

sional teacher education, special needs teacher education and study counsellor education. At the same time, efforts are made to form practices for the continual development of study processes so that the education provided is able to respond to the changing needs of the internationalising workplace. The work begins by producing a synthesis of existing teacher education research and an analysis of curricula within the field. Emphasis is placed particularly on learning outcomes and assessment criteria. Based on these, a strategy process will be initiated which aims at competence-based curricula that are interlinked with workplace realities, clear models for identifying and acknowledging expertise, and an ability to react quickly when needed to changing customer needs.

The curricula of vocational teacher education in different UASs use slightly different wording, but the analysis has shown that 5 common factors can be identified:

1. The foundational purpose of professional teacher education: the professional teacher's basic task is to support the growth and education of the country's citizens and to promote equality and non-discrimination. Interaction and communication are part of a professional teacher's basic competence.
2. Professional teacher education is founded on a broad understanding of the competencies required: a professional teacher's competence is defined as a combination of knowledge, skills and attitudes which are applied in their professional teaching work. The set learning outcomes of all professional teacher education units highlight the basic teaching skills required: assessment, planning, guidance

and teaching, cooperation and networking, development skills and the support and maintenance of community well-being.

3. Teaching processes are based on professional pedagogical research. These processes take multiple forms, including contact lessons, online teaching, use of digital tools and many kinds of learning environments. Central to all of these are participation, communality, student-centeredness and active working methods.
4. Individualisation: in professional teacher education, individualisation means that all professional teacher education units both make use of processes for identifying and acknowledging competence and also provide guidance for the student's personal learning process and development. Peer groups and peer students are an active part of these guidance processes.
5. Investigative and developmental work approach: the foundation of a professional teacher's competence is an investigative and developmental work approach, which means the continual development and adaptation of working methods with new clients and new operational environments.

Strategic level curriculum policy will be worked out in OPEKE using methods such as surveys and joint work. Stakeholder groups will also be taken into account. The work has begun with an analysis of the competence requirements in the curriculum of professional teacher education units.

***Competence development for teacher educators*** is based on forecasts of future competence requirements. To support con-

tinual competence development, a model for a teacher educator development programme will be developed which aims to ensure up-to-date and workplace-orientated competence. The model will also aim to strengthen the teacher's workplace competence pedagogy. A pilot model will be created in the programme, with the following questions directing its development: What are the competence needs for teacher educators now and in the future? How can we make preparations for coming changes? What are the workplace expectations and the direction of change that we can expect to see? After piloting the model, the competence requirements for teacher educators will be drawn up as well as an operating model for forecasting and updating competence needs.

The long-term development of teacher educator competence is an important part of OPEKE's development work and also part of its implementation of the teacher education development programme.

Reliable forecasts of the nature of future professions are hard to make. Factors strongly influencing working life can of course be observed, and these include artificial intelligence, learning analysis, globalisation and sustainable development. OPEKE has formed an outlook on the workplace and professions of the future using tools such as data analysis and benchmarking activities. Professional teacher education units have carried out workshops for their staff through which joint work has produced a broad overview of the competence requirements for teacher educators in the future. In addition to a teacher educator's basic tasks, this overview has also included other expert roles in areas such as research and development, continuing education and skills export. Based on these materials, competence descriptions

and criteria for teacher educators will be drawn up, educational measures will be implemented for developing teacher educator competence and models will be created for forecasting and updating competence needs.

***Development of teacher education and placements and support of graduating teachers.*** This area for development will be implemented as a pilot project which aims at reforming practices for teacher education and placements. Teacher placements and supervision will be developed through this pilot project towards communal and renewed learning methods together with teacher educators, education organisers and students.

Those participating in the pilot project will do their teaching placement in a workplace environment. The pilot project will develop competence- and workplace-based teaching placement practices and supervision methods. At the same time, efforts will be made to find new, flexible models for vocational education and workplace cooperation and to make clearer the workplace's role in the planning and assessment of learning.

Through OPEKE's pilot programmes, practical measures are being implemented for developing teacher education. A central and critical requirement for success in this project is cooperation between student teachers, professional teachers and education providers.

Teacher education units are equipped by the project to implement four new kinds of training units for teacher education. Information is gathered from the pilot programs and then used to generate broad research-based knowledge for supporting educational development in the future. All of the pilots on offer are implemented in an individualised and competence-based manner through cooperation with the student's teaching prac-

tice locations and other employers. Teacher training pilots to be implemented during the 2018-2019 academic year:

- Applications for the OPEKE 'individualised study for those working in teaching' pilot were made during the January student application process. Pilot is aimed for those, who are as a teacher in a vocational education institute or a university of applied science, but who lack a pedagogical qualification. Total of 70 students from 30 educational institutions began their studies within this programme. The individualised learning process is tailored for each student, taking into account the student teacher's development goals and the development needs of their educational institution.
- In the 'teaching placement in the workplace' pilot, working methods are created, together with student teachers and companies, which promote the student's learning, the company's operations and the cooperation between the school and the employer. The teaching placement is carried out in the work environment rather than in an educational institution. The teacher and workplace representative work together on the plan for attaining the required competence. Those students who are interested are selected for this group during the individualised study stage.
- The 'teacher trainee as a resource' pilot is intended for those students who do not work as a teacher when starting their studies. During the pilot, teaching placement practices will be designed and implemented together with the student and the educational institution where the teaching placement is located. These practices will enable stu-

dent teachers working in business and industry to serve, alongside their teacher training studies, as a resource for the development within the educational institution where they have been placed. Students are selected for the group during the stage of individualised studies.

- In the 'HOPE team' operating model, student teachers prepare themselves for practical teacher training by serving as a teacher in their own teacher education study group. In this team-teaching based implementation model for pedagogical studies, the student teachers plan and carry out teaching sessions and also give peer feedback to other teams. At the same time, the student teachers develop other competences required for work as a professional teacher. Working closely with learning outcomes and assessment criteria makes clear what competence should be developed and demonstrated in the actual placement locations. Students are selected for the group during the stage of individualised studies.

***Career-long competence development*** will also be implemented as a pilot project: through a network approach, the current competence and practices of vocational teachers will be predicted and analysed in relation to probable future scenarios. The goal is to firstly ensure that teachers continue to develop their competence and keep it up-to-date during their working life and, secondly, to offer methods for supporting competence management and leadership.

The large changes in the field of professional education and higher education, including the professional education reform, significantly alter the competence requirements for working as a

teacher. Professional teaching is experiencing significant change, which cannot be responded to simply by training new teachers for new operating cultures and methods. Developing the competence of teachers throughout their career and building new kinds of models for this is of great importance for being able to respond to the needs of the education field and the objectives set for the teacher educator development programme.

OPEKE responds to this through broad-based cooperation with teachers working in the field and with their employers. These needs are approached from two angles: firstly, from the perspective of the career path of someone working as a teacher and the development of their professional competence, and secondly, from the perspective of education providers, taking into account their need to develop and manage staff competence.

The overall picture of the central competence development factors for the individual is generated by making observations from different perspectives. The critical and significant turning points on the career path of a professional teacher are investigated through research that uses theme-based interviews. The results will be available in autumn 2018. The interviewees represent different sectors and different types of educational institutions.

Career-long competence development for teachers in the arts sector is made particularly challenging by the individual-centred operating environment prevailing in the arts sector. The particular challenges of the arts sector will be investigated in workshops, and the results of these will be available for use during the project as pilots.

To support competence management and leadership, new types of partnership networks will be constructed within OPEKE between professional teacher education units and

regional educational institutions. Development partnerships will be implemented by applying practical action research. This development work will generate a broad understanding that can support the processes of competence needs specification, competence management and leadership, and customer-centred developmental partnerships. Through pursuing this general goal, the project will form an overall picture of models that can support career-long competence development and management for the professional teachers of the future.

## 5. RESULTS FROM THE NATIONAL SELF-EVALUATION

This chapter answers the research question how has OPEKE project proceeded according to the participants self-evaluation, conducted 9 months from the projects' launch.

The Teacher Education Forum regularly assesses projects and, in addition, the Finnish Education Evaluation Council will implement the whole of the Teacher Education Forum's assessment up to the end of 2018. The Teacher Education Forum's self-assessment covers both the self-assessment of the working committee that organizes the activities and the nationwide data collection for the projects, which is based on the projects' self-assessment.

Table 1 presents a summary of the results of the OPEKE project participants ′ self-assessments in May 2018. The projects had been initiated in autumn 2017, so not every participant has been operating more than for less than half a year. It According to their own assessments, the project had got under way in a research-orientated, goal-orientated and purposeful manner,

although it was as yet unrealistic to assess the achievement of the goals. Interaction, open dialogue and collaboration between the network and stakeholders are central operational principles in OPEKE. According the self-assessments OPEKE team has succeeded quite well in that during the first year of operation and it provides a good ground for achievement of the goals during the second and third year. The operational level items score lower due to the fact that the OPEKE project´s operations are not on that phase yet.

Table 1.
Self-assessment of the OPEKE projects´ success according to the participants, N =71. Scale: 1 Not at all – 4 Very well

| | **1** | **2** | **3** | **4** | **Doesn't concern me** | **Total** | **Mean** |
|---|---|---|---|---|---|---|---|
| I am familiar with the policies set out in the Teacher Education Development Programme | 2 | 3 | 27 | 40 | 0 | 72 | 3,46 |
| I am aware of the objectives of the development project | 2 | 6 | 21 | 43 | 0 | 72 | 3,46 |
| I have participated in the determination of the objectives of the project | 21 | 14 | 9 | 15 | 13 | 72 | 2,31 |
| I have participated in the assessment of the progress of the project | 20 | 13 | 12 | 12 | 15 | 72 | 2,28 |

| | 1 | 2 | 3 | 4 | Doesn't concern me | Total | Mean |
|---|---|---|---|---|---|---|---|
| I have actively participated in the implementation of the project | 3 | 24 | 12 | 31 | 2 | 72 | 3,01 |
| We have worked in authentic situations | 0 | 11 | 20 | 31 | 9 | 71 | 3,32 |
| The initial situation of the party/role that I represent has been taken into consideration | 1 | 8 | 22 | 36 | 3 | 70 | 3,39 |
| Collaborative working methods have been used in the project | 0 | 3 | 27 | 42 | 0 | 72 | 3,54 |
| Interactive working methods have been used in the project | 0 | 2 | 27 | 42 | 1 | 72 | 3,56 |
| Research-based approach has been applied in the project | 4 | 10 | 23 | 27 | 8 | 72 | 3,14 |
| I have been guided to assess (reflect upon) my own learning process and activities | 9 | 14 | 17 | 17 | 14 | 71 | 2,74 |
| Meetings and other work have been paced appropriately | 2 | 13 | 22 | 28 | 6 | 71 | 3,17 |
| I have networked with actors within the Department of Teacher Education | 2 | 2 | 18 | 46 | 3 | 71 | 3,59 |

| | 1 | 2 | 3 | 4 | Doesn't concern me | Total | Mean |
|---|---|---|---|---|---|---|---|
| I have networked with experts/teachers outside the Department | 8 | 6 | 22 | 31 | 4 | 71 | 3,13 |
| Teaching materials drawn up for teacher education within the project support me in learning the skills being pursued | 6 | 14 | 19 | 11 | 20 | 70 | 2,7 |
| I have learned assessment methods | 9 | 20 | 16 | 9 | 17 | 71 | 2,46 |
| I have learned methods that I can use to motivate students to study | 7 | 18 | 16 | 8 | 22 | 71 | 2,51 |
| I have learned methods that I can use to support students in their learning process | 8 | 15 | 17 | 10 | 21 | 71 | 2,58 |
| I have learned educational use of ICT | 9 | 20 | 17 | 5 | 19 | 70 | 2,35 |
| I have participated in the creation of new operating models for teacher education and in experiments | 5 | 11 | 17 | 28 | 10 | 71 | 3,11 |
| I have participated in the creation of new models for the development of teacher educators' professional competence | 5 | 15 | 13 | 27 | 11 | 71 | 3,03 |

| | 1 | 2 | 3 | 4 | Doesn't concern me | Total | Mean |
|---|---|---|---|---|---|---|---|
| I have taken into use operating models developed within the project | 9 | 15 | 18 | 16 | 13 | 71 | 2,71 |
| I have disseminated operating models developed within the project | 10 | 13 | 20 | 19 | 9 | 71 | 2,77 |
| **Total** | **142** | **270** | **432** | **574** | **220** | **1638** | **2,97** |

## 6. DISCUSSION

Finnish vocational teachers have more professional autonomy than in many other countries and Finnish vocational schools are appreciated and trusted. However, it is important continuously improve vocational teacher education and reflect development needs in cooperation among all types of teacher education. This is why Minister of Education nominated in the beginning of year 2016 altogether 100 experts from universities, the ministry, the teachers' union, student unions and municipal union to a *Finnish Teacher Education Forum* and asked them to analyse research outcomes related to teacher education, to identify best practices based on teacher education strategies and policy documents in other countries, organise a national brainstorming process related to the renewal of teacher education and, finally, prepare a *Development Programme for Teachers' Pre- and In-service Education* (life-long professional development) in Finland. Furthermore, the forum was asked to identify key actions to

undertake to improve teacher education and support the implementation of the development programme, and also to create the conditions through financing pilot projects and organising meetings for the renewal of Finnish teacher education through professional development projects. This type of continuous and collaborative development is common in Finnish education. Strategic steering that respects operators' autonomy seems to be working in the intended way although not at all the project actors in OPEKE were involved in the original phases of OPEKE or in the Teacher Education Forumn but only the leaders in of their organisations.

## 7. CONCLUSIONS AND SUGGESTIONS FOR FURTHER RESEARCH

Education reforms in Finland are always planned in heterogeneous groups where are experts from different fields, like teachers, teacher educators and people representing different stakeholders, like industry interest group, teacher union and employ organisations, are in open dialogue, interaction and collaboration. During the process it comes clear for all where to go (aims) and how to go there. Moreover, a draft reform plan is discussed and feedback collected and analysed. Moreover, resources for piloting are offered. Consequently, the *Developmental plan for the basic school* and other reforms considering basic education have been in line with the OECD publication "*Principles of modern governance: Governing education in a complex world*" (Burns and Köster 2016). They have proven meaningful for the context of Finnish vocational teacher education, too.

OPEKE project has proceeded well into the nationally set

strategic directions. The nationally set development targets have been accepted by the actors and implemented in innovative and professional ways, just like Burns and Köster (2016) suggest. The real impact of this kind of national teacher education development policy needs more careful evidence-based analysis than was possible in this phase of development. We are continuing data collection and self-evaluation and wish the readers welcome to connect with project actors.

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# Exploring the Influencing Factors towards Malaysian Vocational College Teachers' Career Choice

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**Abstract:** Quality of education depends on the teacher's quality and ongoing effort in producing creative and skilled educators. However, teaching is often regarded as an alternative when the first career choice is unavailable. The same situation happens in TVET academic world when there are Vocational College teachers who choose teaching career as a field of the second option after failing to find jobs in their preferred field. Therefore, the purpose of this study is to explore the factors that influenced Malaysian teachers to become a vocational teacher. The data was analyzed using metadata analysis, and thematic synthesis using a completed review of career choice coded. Thematic synthesis has three stages: the coding of text line-by-line, the development of descriptive themes, and the generation of analytical themes. This paper identifies six factors that influenced vocational Malaysians teachers in choosing to teach as their career. These six factors were determined from a systematic review analysis based on two category articles, which are factors influencing teachers' career

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choice and factors influencing vocational interest. The six factors are family influence, socio-cultural influence, individual, situational and spiritual factor. This pre model is suggested to be tested in order to develop a holistic model of influencing factors towards Malaysian Vocational College teachers' career choice.

**Keywords:** Vocational teachers, Career choice, Malaysian Vocational College.

## 1. INTRODUCTION

In Malaysia, teaching career is considered as a mid-level profession below other professional professions such as doctors, engineers, lawyers, and others (Azman, 2013). If teachers career choice was not achieve through self-realization through passion, personality, attitude and other influences, the frequency of career change may increase and create dissatisfaction from the teaching profession (Cross & Ndofirepi, 2017; Subhan, Salleh Amat, & Abu Yazid Abu Bakar, 2015). In addition, teachers will show their negative attitudes such as lack of motivation, revealed high-stress levels, teaching perfunctory, poor utilizing of T&L apparatuses, and incompetence in their teaching (Husin, 2014; Normarina, 2015).

Nevertheless, some Vocational College (VC) teachers choose a teaching career as a secure fallback career, after failing in their other preferred occupation (Nadzri, Rosli, Bakar, & Baharudin, 2015). Fallback career teachers are identified inadequately trained to develop suitable T&L skills, unable to portrait an excellent teachers personality and failure to teach effectively in class (Bakar 2018; Sharif et al. 2014; Tay, 2013). Teachers with

inadequate training will not only have a long-lasting negative impact on the student's development and learning progress but will also create a negative image and lack of satisfaction in teaching career (Mohd Khairuddin, Khalid, Ag Yusof& Halimah, 2014).

These negative images and lack of satisfaction that is not in parallel with the teachers' self-concept will project their self as incompetence as a vocational teacher. Therefore, this study aims to explore the influencing factors among Malaysian Vocational College teachers' career choice in ensuring higher career satisfaction towards vocational students' teacher development.

## 2. FACTORS INFLUENCING VOCATIONAL COLLEGE TEACHERS CAREER CHOICE

This research analyzed 114 research articles using metadata analysis, and thematic synthesis consuming a completed review of career choice coded. The thematic synthesis consists three stages: the coding of text line-by-line, the development of descriptive themes, and the generation of analytical themes. The use of Atlas.ti software in this research help in facilitating the method of synthesis. This section reports on the results from the literature search which were focusing on factors influencing teachers to choose teaching career and factors influencing people to choose vocational field as career. The number of articles is shown in table 1.

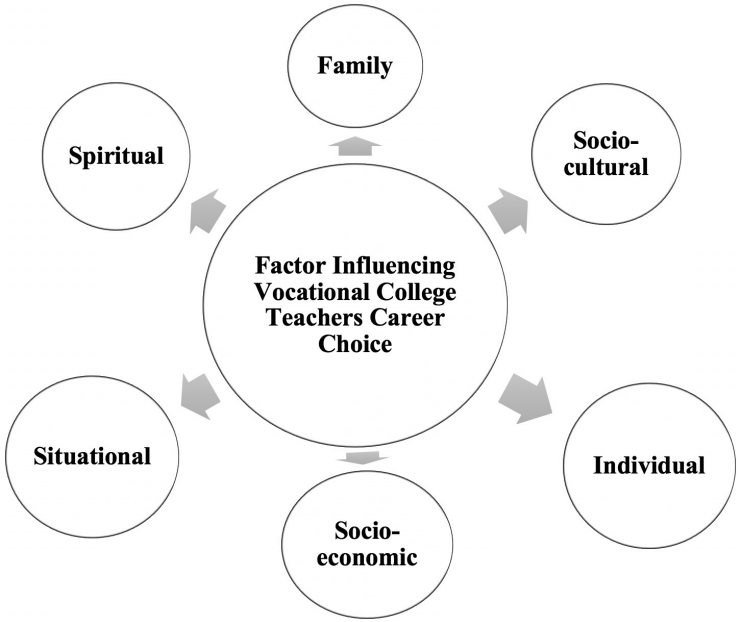
Table 1:
Number of articles factors influencing people to choose a career

| No | Studies | Researcher |
|---|---|---|
| 1 | Number of articles with the factors influencing **teachers career** choice | 87 |
| 2 | Number of articles with the factors influencing **vocational career** choice | 27 |
| | **TOTAL** | **114** |

This finding is based on two category articles, which are factors influencing teachers' career choice and factors influencing vocational career choice. These articles are chosen because vocational teachers are teachers who teach mainly in the subjects of the vocational subject. This research merges these two categories of articles because both are relevant in contributing to the formation of model influencing factors towards Malaysian Vocational College teachers' career choice.

From the analysis, this study highlights and explores six major critical factors including family influence, socio-cultural influence, individual, situational and spiritual factors are influencing vocational college teachers' career choice. The finding from systematic review shown as in figure one below:

Figure 1:
Overview of the factors influencing vocational college teachers' career choice




## 3. FAMILY INFLUENCE

Family plays a vital role in shaping career choices among children. Families with a high level of education are more dominant towards their children's career choices than parents with lower levels of education. Parents will influence their children's career choice based on their interest, understanding or experience (Suhaila Nadzri et al. 2015). The analysis below showed three elements of family influence factor.

Table 2:
Metadata analysis on the family influence factors towards Malaysian Vocational College teachers' career choice

| No | Element | Researcher |
|---|---|---|
| 1 | Encouragement from family | Beltman&Wosnitza, 2008; Bick Har, 2012; Chung & Yi-Cheng, 2012; Chinyamurindi (2016); Cross &Ndofirepi, 2015; Curtis, 2012; Ejieh, 2005; GocerSahin&Gelbal (2017); Lai et al, 2005; Lovett, 2007; Macalister (2017); McKenzie et al, 2014; Moses et al (2017); Olan & Bell (2016); Saks et al (2016); Topkaya&Uztosun, 2012; Watt et al (2017); Wyatt-Smith et al (2017); |
| 2 | Family pressure | Beltman&Wosnitza (2008); Cross &Ndofirepi (2015); Klassen et al. (2011); Lai et al. (2005); Manuel & Hughes (2006); Santoro (2010); Yüce et al. (2013) |
| 3 | Family environment | AsnulDahar&Zulkifli (2010); Ayub (2015); Baker (2004); Banedict (2015); Carnasciali (2013); Evans (1997); Kentli (2013); Koch et al (2009); Nokelainen&Stasz (2016); Pylväs&Nokelainen (2017); Shallcross (2003); Tsakanika (1994); Wang (1995); Zira (2017) |

*Encouragement from family* – Family experience is an excellent exposure to children in choosing a teaching career. Many children grow up idealizing their parents who are knowledgeable and well respected. If children always looked up their parents who taught them tirelessly, that may influence their children to pursue a career to be an educator.

*Family pressure* – Family pressure is a significant influence to push someone in choosing to teach as a career. This leads to the sacrifice of childhood dreams to fulfill parents' desires and can be a personal challenge after the change in career.

*Family environment* – Family educational level, occupational and income encourage their children career choice towards vocational teachers career. A teacher may bring home their teaching materials or work to their home environment and might indirectly expose to them a career in teaching.

## 4. SOCIO-CULTURAL INFLUENCE

Socio-cultural factors in career choice are values, attitudes, and practices from the community environment being observed include education experience, peers, mass media and encouragement from teachers. Social-cultural influences are essential indicated other people who had helped or hindered them in their journey to become teachers. The findings below expose the critical role played by the immediate family and the significance of personal and emotional support to become vocational teachers.

Table 3:
Metadata analysis on the social-cultural influence factors towards Malaysian Vocational College teachers' career choice

| No | Element | Researcher |
|---|---|---|
| 1 | Inspired by a role model(Teachers, peers, and families) | Baker (2004); Bick Har, 2012; Chang-Kredl& Kingsley, 2014; Chinyamurindi (2016); Cross &Ndofirepi, 2015; Curtis, 2012; Cushman, 2005; Evans (1997); Flores &Niklasson, 2014; Howes &Googman-Delahunty (2015); James & Holmes (2012); Koch et al (2009); Lai et al, 2005; Liu, 2010; Lovett, 2007; Macalister (2017); Manuel & Brindley, 2005; Manuel & Hughes, 2006; McKenzie et al, 2014; Moses et al (2017); Müller et al (2009); Nokelainen&Stasz (2016); Olan & Bell (2016); Pylväs&Nokelainen (2017); Saks et al (2016); Smith & Rahimi (2011); Topkaya&Uztosun, 2012; Wyatt-Smith et al (2017); Yüce et al, 2012; Zira (2017) |

| No | Element | Researcher |
|---|---|---|
| 2 | Career Guidance | Baker (2004); James & Holmes (2012); Kentli (2013); Koch et al (2009); Nokelainen&Stasz (2016); Shallcross (2003); Wyatt-Smith, 2017; |
| 3 | Positive experience in school | Baker (2004); Carnasciali (2013); Cross &Ndofirepi, 2015; Cushman, 2005; Hanlon, 2006; Howes, & Goodman-Delahunty, 2015; Macalister (2017); Moses et al (2017); Müller et al (2009); Olan & Bell (2016); Pylväs&Nokelainen (2017); Saks et al (2016); Shallcross (2003); Tee Ying et al, (2016); Woo (2007); Wyatt-Smith et al (2017); |
| 4 | Mass media | Banedict (2015); Cross &Ndofirepi (2015); Evans (1997); Lai et al. (2005); Wyatt-Smith et al (2017); Saks et al (2016); |

*Inspired by a role model* – A family member or a teacher or a peer who acts as a role model in influencing their decision in the teaching career. School teachers who positively inspired teaching with a range of intrinsic and extrinsic motivational characteristics also could be a role model. Incidentally, role model by peers who have an excellent academic track record was seen to have a significant impact on an ordinary student in choosing to teach as their career.

*Career Guidance* – Counselling play by career guidance an vital role to guide students towards their career development. A student with career guidance will know their personality suitable for teacher career and will motivate them to be a teacher.

*Positive school environment* – The positive atmosphere within the classroom and an equal relationship between teachers and students is a part of a supportive learning environment influence in decision making to teachers career choice.

*Mass media* – Mass media delivered information and job

vacancy advertising on televisions, newspapers, university material promotions, websites, social media, and radios especially provide references for teachers' career information. Besides that, mass media send positive values, behavior and decision-making abilities such as teachers movies to influence teachers to choose a teaching career.

## 5. INDIVIDUAL FACTOR

Individual Factors are set of internal beliefs of what individual expect of themselves, as well as their self-expectancies, abilities, interests, attitudes, and needs to achieve. Teachers choose teaching career based on their expectations would be able to see the fruits of their work as vocational teachers (Evans 1997; Baker 2010). Findings in metadata analysis below shown eight elements on individual factors.

Table 4:
Metadata analysis of the individual factors towards Malaysian Vocational College teachers' career choice

| No | Element | Researcher |
|---|---|---|
| 1 | A desire to teach | Bauer et al (2017); Berger &D'Ascoli (2012); Butt et al. (2010); Chong & Goh (2004); Cross &Ndofirepi (2015); Curtis (2012); Flores &Niklasson (2014); Manuel & Brindley (2005); Manuel & Hughes (2006); Krečič&Grmek (2005); Ji et al (2015); Lai et al. (2005); Lovett (2007); Manuel & Hughes (2006); McKenzie et al. (2005); Mckenzie (2013); Mtika& Gates (2011); Mwamwenda (2010); Moses et al (2017); Olan & Bell (2016); Scales et al (2017); Sharif et al, (2014); Yüce et al. (2013); Watt et al (2017); Wyatt-Smith et al (2017); |

| No | Element | Researcher |
|---|---|---|
| 2 | Excitement teaching on vocational field | Bastien (2014);Bick Har (2012); Brown et al (2016); Carnasciali (2013); Curtis (2012); Evans (1997);Goldfarb (2017); Hellsten&Prytula (2011); Ji et al (2015); Koch et al (2009); Lovett (2007); Low et al. (2011); Manuel & Hughes (2006); Meeus et al (2015); Menzies &Parameshwaran (2015); Moses et al (2017); Müller et al (2009); Nokelainen et al (2011); Nokelainen&Stasz (2016); Olan & Bell (2016); Roness& Smith (2010); Smith & Rahimi (2011);Tsakanika (1994);Yüce et al. (2013); Wyatt-Smith et al (2017) |
| 3 | Love/like and enjoying the company of children | Bick Har (2012); Brown et al (2016); Butt et al. (2010); Chong & Low (2009); Chong & Goh (2004); Cushman (2005); Curtis (2012); Faiz, (2016); GocerSahin&Gelbal (2017); Hellsten&Prytula (2011); Lai et al. (2005); Low et al. (2011); Manuel & Brindley, (2005); Manuel & Hughes (2006); Olsen (2008); Roness& Smith (2010); Chong & Low (2009); Sinclair et al. (2006) Flores &Niklasson, 2014; Keck Frei et al (2017); Lai et al. (2005); Manuel & Hughes (2006); Mckenzie (2013); McKenzie et al., 2014; Menzies &Parameshwaran (2015); Moses et al (2017); Müller et al (2009); Mwamwenda (2010); Sharif et al, (2014); Saks et al (2016); Struyven et al. (2013) Watt et al (2017); Wyatt-Smith et al (2017); Yüce et al. (2013) |
| 4 | Participation in something that is interesting or intellectually stimulating | Chong & Low (2009); Goldfarb (2017); Jungert et al. (2014); Meeus et al (2015); Mogra (2013); Moses et al (2017); Mtika& Gates (2011); Saks et al (2016); Sinclair et al. (2006); Sinclair (2008); Straubhaar & Gottfried (2016); Struyven et al. (2013); Williamson et al (2016); |
| 5 | A quest to self-realisation | Berger &D'Ascoli (2012); Butt et al. (2010); Chinyamurindi (2016); Flores &Niklasson (2014); Ji et al (2015); Lovett (2007); Manuel & Hughes (2006); Yüce et al. (2013); Watt et al (2017); Wyatt-Smith et al (2017); |

| No | Element | Researcher |
|---|---|---|
| 6 | Being suited to vocational teaching | Baker (2004); Berger &D'Ascoli (2012); Bowles &Arnup (2016); Brown et al (2016); Chinyamurindi (2016); Chong & Low (2009); Chong & Goh (2004);GocerSahin&Gelbal (2017); Goldfarb (2017); Hellsten&Prytula (2011); Howes &Googman-Delahunty (2015); James & Holmes (2012); Ji et al (2015); Koch et al (2009); Mckenzie (2013); Menzies &Parameshwaran (2015); Meeus et al (2015); Moses et al (2017); Müller et al (2009); Olsen (2008); Olan & Bell (2016); Pylväs&Nokelainen (2017); Saks et al (2016); Scales et al (2017); Struyven et al. (2013); Thomson et al. (2012); Watt et al (2017); Williamson et al (2016); Wyatt-Smith et al (2017); |
| 7 | Desire to help, improve and contribute something in different to student, community and country | Azman (2012); Barnett &Sinisi, (1990); Bauer et al (2017); Brown et al (2016); Butt et al. (2010); Chong & Low (2009); Chung & Yi-Cheng (2012); Cross &Ndofirepi (2015); Cushman (2005); De Cooman et al. (2007); Fokkens-Bruinsma&Canrinus (2012); Gao & Trent (2009); Gu & Lai (2012); Hellsten&Prytula (2011); Howes &Googman-Delahunty (2015); Jungert et al. (2014); Lai et al. (2005); Liu (2010); Lovett (2007); Manuel & Brindley, (2005); Manuel & Hughes (2006); McKenzie et al. (2005); Mckenzie (2013); McKenzie et al. (2014); Meeus et al (2015); Menzies &Parameshwaran (2015); Mogra (2013); Moses et al (2017); Müller et al (2009); Mwamwenda (2010); Olsen (2008); Osborne & Jones (2011); Osguthorpe& Sanger (2013); Saks et al (2016); Sharif et al, (2014); Smethem (2007); Struyven et al. (2013); Thomson et al. (2012); Yüce et al. (2013); Watt et al (2017); Williamson et al (2016); Wyatt-Smith et al (2017);<br>&Stasz (2016); Pylväs&Nokelainen (2017); Smith & Rahimi (2011); |

| No | Element | Researcher |
|---|---|---|
| 8 | Meaningful increase vocational skills and teaching knowledge | Bauer et al (2017); Berger &D'Ascoli (2012); Butt et al. (2010); Chong & Low (2009); Curtis (2012); GocerSahin&Gelbal (2017); Hellsten&Prytula (2011); Howes &Googman-Delahunty (2015); Jungert et al. (2014); Keck Frei et al (2017); Krečič&Grmek (2005); Lai et al. (2005); Macalister (2017); Manuel & Brindley, (2005); Manuel & Hughes (2006); Meeus et al (2015); Menzies &Parameshwaran (2015); Moses et al (2017); Mtika& Gates (2011); Müller et al (2009); Olan & Bell (2016); Olsen (2008); Saks et al (2016); Sharif et al, (2014); Straubhaar & Gottfried (2016); Struyven et al. (2013); Wyatt-Smith et al (2017); Watt et al (2017); |

*A desire to teach* – The process of becoming a teacher develops from the student teachers understanding and construction of personal knowledge, personality, and character. The experience as a student in school inculcates their interest and ambition to teach other people.

*Excitement teaching in the vocational field* – Interest plays a vital role in an individual's work performance and motivation to achieve their wishes. Becoming a vocational teacher is related to subject interest, which indicates that some people choose from industrial workers to teaching because of a job opportunity and the interest for the field.

*Love/like and enjoying the company of children* – Love or like and enjoying the company of children is intrinsic motivation teachers choose a teaching career. The enjoyment of being with young kids give subjective satisfaction and the viewpoint of seeing teaching as a haven from company career threats.

*Participation in something that is interesting or intellectually stimulating* – The beauty of a teaching career is an intellectually stimulating career because teaching gives a chance for teachers to continuous explore their knowledge in their respective field. By exploring further in their field, teachers find a substantial body of knowledge for teaching it well and in addition to continually enhance their self.

*A quest to self-realization* – Self-realisation is a process where a person improves himself in doing something to achieve a personal goal. Self-realization creates personal contentment for a teacher through the achievement after becoming a teacher.

*Being suited to vocational teaching* – Perceptions, and reasons in choosing to teach as career act as an aspiration of a teacher in his professional career and become a track in his career development. Besides, choosing vocational teaching as a career is also influenced by their personalities like accessible, confident, good listener and vocational talent such as creative skills and technically competent.

*The desire to help, improve and contribute something indifferent to student, community, and country* – Those that intend to be teachers have strong desire to help student and community to gain knowledge or skills and will serve their country. Besides, the desire to improve or contribute to the society can be explained as a desire to have a positive impact on other people's lives.

*Meaningful increase vocational skills and teaching knowledge*– In teaching career, teachers have an opportunity to build knowledge and strengthen their skills through continuous experience while teaching and receiving further training in their field. Thus, being able to maintain themselves with subject areas of choice gives its meaning which is one of the elements of intrinsic motive or individual factors for a teacher to choose a career.

## 6. SOCIOECONOMIC INFLUENCE

Socioeconomic influence relates to social economic condition and social, racial, and ethnic group membership that affect career choices. Socioeconomic influence relates to extrinsic motivation factor on teacher career choice by Watt, Richardson, & Richardson (2017). There are seven elements found that relate on this factor:

Table 5:
Metadata analysis on the socioeconomic influence factors towards Malaysian Vocational College teachers' career choice

| No | Element | Researcher |
|---|---|---|
| 1 | Job benefits | Aksu et al. (2010); Bauer et al (2017); Berger &D'Ascoli (2012); Bick Har (2012); Brok& Want (2017); GocerSahin&Gelbal (2017); Goldfarb (2017); Gu & Lai (2012); Hellsten&Prytula (2011); Ji et al (2015); Jungert et al. (2014); Lai et al. (2005); McKenzie et al. (2005); Mckenzie (2013); Meeus et al (2015); Menzies &Parameshwaran (2015); Moses et al (2017); Mwamwenda (2010); Neugebauer (2014); Müller et al (2009); Moses et al (2017); Olan & Bell (2016); Ona (2014); Saks et al (2016); Thomson et al. (2012); Watt et al (2017); Yüce et al. (2013); Wyatt-Smith et al (2017) |
| 2 | Perceived life fit (Working conditions including holidays and work hours) | Aksu et al. (2010); Bauer et al (2017); Bick Har (2012); Butt et al. (2010); Chung & Yi-Cheng (2012); Gu & Lai (2012); Jungert et al. (2014); ), Ji et al (2015); Keck Frei et al (2017); Lai et al. (2005); Lovett (2007); Manuel & Brindley (2005); Manuel & Hughes (2006); Mckenzie (2013); McKenzie et al. (2014); Meeus et al (2015); Menzies &Parameshwaran (2015); Moses et al (2017); Mtika& Gates (2011); Müller et al (2009); Mwamwenda (2010); Saks et al (2016); Sharif et al, (2014); Sinclair (2008); Struyven et al. (2013); Yüce et al. (2013); Wyatt-Smith et al (2017); |

| No | Element | Researcher |
|---|---|---|
| 3 | Job opportunities | AsnulDahar&Zulkifli (2010); Ayub (2015); Banedict (2015); Bick Har (2012); Bruinsma& Jansen (2010); Carnasciali (2013); Chong & Low (2009); Chung & Yi-Cheng (2012); Flores &Niklasson (2014); Hellsten&Prytula (2011); Gunderson (2004); James & Holmes (2012); Koch et al (2009); Keck Frei et al (2017); Lai et al. (2005); Meeus et al (2015); Menzies &Parameshwaran (2015); Mogra (2013); Moses et al (2017); Mtika& Gates (2011); Müller et al (2009); Mwamwenda (2010); Nokelainen et al (2011); Nokelainen&Stasz (2016); Ona (2014); Pylväs et al (2015); Pylväs&Nokelainen (2017); Shallcross (2003); Sharif et al, (2014); Thomson et al. (2012); Tsakanika (1994); Yüce et al. (2013); Watt et al (2017); Wyatt-Smith et al (2017). |
| 4 | Economic conditions | Ayub (2015); Baker (2004); Bastien (2014); Banedict (2015); Bick Har (2012); Chinyamurindi (2016); Chong & Low (2009); Chung & Yi-Cheng (2012); Gu & Lai (2012); Gunderson (2004); Jungert et al. (2014); Kentli (2013); Koch et al (2009); Krečič&Grmek (2005); Lai et al. (2005); Lovett (2007); Low et al. (2011); Manuel & Hughes (2006); Mwamwenda (2010); Neugebauer (2014); Neugebauer (2015), Wong et al. (2014); Yüce et al. (2013); Zira (2017) |
| 5 | The status of teachers | Akar (2012); Berger &D'Ascoli (2012); Butt et al. (2010); Fokkens-Bruinsma&Canrinus (2012a); Gao & Trent (2009); Goldfarb (2017); Klassen et al. (2011); Liu (2010); Mckenzie (2013); Moses et al (2017);Mwamwenda (2010); Olan & Bell (2016); Sahin&Gelbal (2016); Saks et al (2016); Sharif et al, (2014); Watt et al (2017); Wyatt-Smith et al (2017); Yüce et al. (2013) |
| 6 | Gender roles | Akar (2012); Hellsten&Prytula (2011); Kalokerinos et al (2016); Neugebauer (2014); Salı (2013). |

| No | Element | Researcher |
|---|---|---|
| 7 | Fallback career | Akar (2012); Bauer et al (2017); Berger &D'Ascoli (2012); Brown et al (2016); Chong & Goh (2004); Dastidar&Sikdar (2015); Fokkens-Bruinsma&Canrinus (2012a); Gore et al. (2016); Gu & Lai (2012); Hellsten&Prytula (2011); Howes &Googman-Delahunty (2015); Kalokerinos et al (2016); Klassen et al. (2011), Krečič&Grmek (2005); Mckenzie (2013); Menzies et al. (2015); Olan & Bell (2016); Topkaya&Uztosun (2012); Moses et al (2017); Mtika& Gates (2011); Müller et al (2009); Saks et al (2016); Watt et al (2017); Wong et al. (2014); Wyatt-Smith et al (2017). |

*Job benefits* – Job benefits such as salaries and allowances are an essential element in teachers' career choice. Job benefit is vital to fulfill their needs regarding financial commitment and to continue the survival of life and to their family.

*Perceived life fit (Working conditions including holidays and work hours)* – The characteristics of the family are in line with the family lifestyle gives satisfaction with their work. A reaching career lifestyle has the perks of flexible working arrangements, shorter working hours and more extended holidays than other works which are more suited for work-life balance and well-being. These help to attract and retain teachers, particularly those with caring responsibilities and those who like to increases their knowledge in teaching productivity.

*Job opportunity* – People with vocational knowledge will enhance their skills to become a vocational teacher whenever the opportunity was offered. Besides that, teaching career came with a promotion package as well as increased power, status and salary.

*Economic conditions* – Career choices are influenced not only just the features of the occupational tasks but also by external conditions of the occupation, such as earnings and employment prospects. In addition, teaching on vocational subjects is directly reflected on the economic needs of the labor market structures and conditions. This further instills the patriotism to serve the country via education. A vocational teaching workforce that offers a balance of teaching skills and up-to-date industry knowledge and experience to prepare students for careers.

*The status of teachers* – The status of teachers is indicated by prestige, knowledge, working conditions and self-esteem. Teachers are regarded as a high professional status in society which corresponds to their professional responsibilities, qualifications, skills, and the contributions to the development of the society. Furthermore, teachers' positive association of their status is closely linked to other aspects of quality education, including continuous professional progress, engagement in research, collaboration and conversation with other teachers, and participation in decision-making.

*Gender roles* – Female teachers, get more job satisfaction and have more positive attitudes such as friendly, caring, patient and maternal nature than male teachers'. On the other hand, male teachers are potential on technical and vocational-based teaching. Besides that, males dominate roles related to management, discipline and physical activity and avoid the more nurturing behaviors associated with teaching.

*Fallback career* – Fallback career were identified by teaching as an alternative job option and teaching as a provisional job option. Teaching as an alternative job option because not accepted into the first-choice career and unsure of what career

they wanted because of lack of career guidance or lack of knowledge for career opportunities. On the other hand, teaching is considered a last resort career due to socio-economic conditions where a job is needed to survive in this world.

## 7. SITUATIONAL INFLUENCE

Situational influences is events or circumstances that are unplanned or unexpected that lead to a career decision, or the choice of a career path, that serves as a course of least resistance (Evans 1997). There are three situational influencing factors found in this research:

Table 6:
Metadata analysis on the situational influence factors towards Malaysian Vocational College teachers' career choice

| No | Element | Researcher |
|---|---|---|
| 1 | University pathway | Akar (2012); Cross &Ndofirepi (2015); Ejieh (2005); Manuel & Hughes (2006); Meeus et al (2015); Müller et al (2009); Moses et al (2017); Mtika& Gates (2011);Olan & Bell (2016); Sharif et al, (2014); Pylväs&Nokelainen (2017); Zira (2017); |
| 2 | Scholarship or Lower fees | Bruinsma& Jansen (2010); Chung & Yi-Cheng (2012); Gao & Trent (2009); Liu (2010); Yüce et al. (2013) |

*University pathway* – Although studies are showing that students have excellent results in favor of both the medical and engineering fields (Tajul Ariffin, 2013). However, the teaching career is an essential factor that many students who are unable

to gain a place at university to do a first degree in the subject of interest to them see a degree-based teacher training course as offering alternative access to higher education.

*Scholarship or Lower fees* – Teachers profession is selected from university field because obtaining free University fees (scholarship) or obtaining lower tuition fees. In Malaysia, teachers who receive scholarships will continue to be absorbed as teachers in school to fulfill agreed contracts.

## 8. SPIRITUAL FACTOR

The spiritual factor is a higher power encouraging teachers to become vocational teachers and serving as protection from negative occurrences in teaching(Evans, 1997; Goldfarb, 2017). There are two elements in this factor were found:

Table 7:
Metadata analysis the influencing spiritual factors towards Malaysian Vocational College teachers' career choice

| No | Element | Researcher |
|---|---|---|
| 1 | Religion encouragement | Klassen et al. (2011); Salı (2013); Nokelainen et al (2012); Zira (2017); |
| 2 | Answering a calling | Bullough & Hall-Kenyon (2011); Chong & Low (2009); James & Holmes (2012); Low et al. (2011); Osguthorpe& Sanger (2013) Moses et al (2017); Shallcross (2003); Wang (1995); Wyatt-Smith et al (2017); |

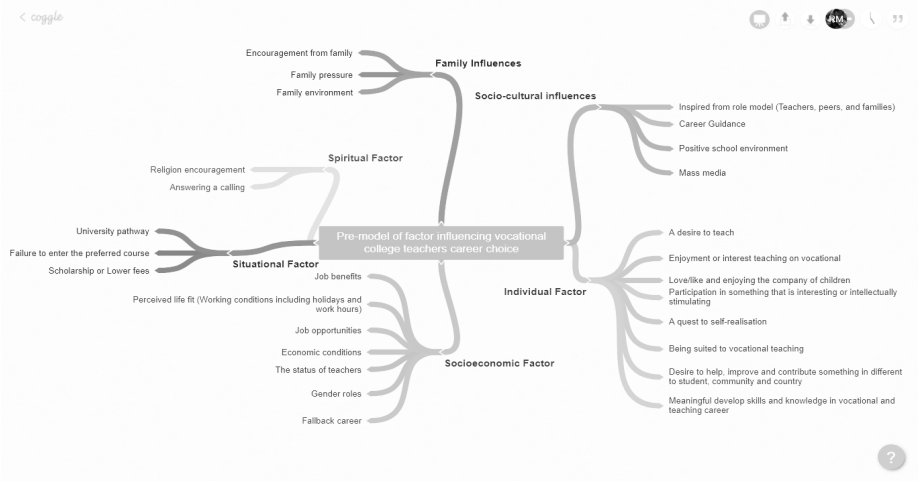
*Religion encouragement* – All religions encourage their followers to choose to teach as a profession since this career was considered as a noble job that involves dedication, commitment, and self-sacrifice.

*Answering a calling* – Teaching has been recognized as 'calling' where teachers get connected with their field and feel compassion towards their potential career and students. Teaching profession is meaningful and will give positive effect towards academic achievement and personality of their students because they relate this job as the calling from God.

## 9. CONCLUSIONS AND SUGGESTIONS FOR FURTHER RESEARCH

Figure two below an overview of factor and sub-factor influencing vocational college teachers career choice.

Figure 2:
**Overview of the factor and sub-factor influencing vocational college teachers career choice**



In this research, development of a comprehensive model of factor influencing Malaysian VC teachers' career choice will be tested. Factors influencing Malaysian VC teachers' career choice would be an essential contribution towards the career development theory, research methodology, and TVET teachers training institutions. These factors will provide vast exposure to the field of teaching to parents, vocational teachers, and guidance counsellors to promote vocational teacher education programs to their children or students if they detect any keenness in choosing vocational teaching as a profession. Finally, these influencing factors will be suggested to be used as a determining factor for the selection of high-quality vocational teachers in Malaysian especially in the vocational college or another TVET provider.

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# The Paradox in the Industrial Technology Programme

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**Abstract:** In this article, we examine two Swedish industrial teachers' stories about their education, professional life and teaching. The stories are discussed in relation to the first paragraph of Article 23 of the UN Convention on Human Rights. The methodological starting point of our study is based on life stories and our analysis tools are taken from Bamberg (1997), who discusses how people position themselves in their stories. Our analysis shows three positionings. The first positioning appears in relation to workshop workers and to workshop work. The second positioning appears in relation to the industrial company and employer aspects. The third positioning appears in relation to employability. These three positions show that industry companies did not help industrial workers prevent occupational injuries and unemployment, and the industrial workers who were loyal to their employers did their best in the given set of circumstances. Vocational teachers educate Swedish children and young people to industrial workers, for the competitive industry companies in a neoliberal labour market, but we see a

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professional ethical dilemma in relation to the first paragraph of Article 23 in the way the industrial companies treats their industrial workers.

**Keywords:** Vocational education, Vocational teacher, Professional ethical dilemma, Neoliberal labour market, Life stories.

## 1. INTRODUCTION

The purpose of this study is to investigate what two Swedish and two Finnish vocational teachers working in different upper secondary schools in Sweden tell about their vocational education, working life and teaching. In the study, our focus is on the first paragraph of Article 23 of the UN Convention on Human Rights (Regeringskansliet, 2011), and the stories that have been selected for more detailed analysis and presentation here were based on this paragraph of Article 23. The selection of stories was explicitly focused on what the vocational teachers told about their own conditions for professional practice, and about their vocational students' conditions for professional practice. The selection of stories was also focused on vocational teachers' own choice of professional and vocational education, and on their vocational students' choice of professional and vocational education. Furthermore, the selection of stories was focused on what the vocational teachers told about their own working conditions when once they worked as industrial workers at industrial companies. The methodological starting point of our study starts from a story perspective where vocational teachers' stories are at the centre. Our analysis is taken from Bamberg (1997), who discusses how people are positioning themselves in the nar-

rative. Through the two vocational teachers' stories on teaching we will discuss the difficulties of living up to the ideals that the **Industrial Technology Programme** commit to. The stories will be understood in relation to the first paragraph of Article 23 of the UN Convention on Human Rights.

## 1.1 PREVIOUS RESEARCH ON EMPLOYABILITY

There is a lot of national and international research on vocational education with a focus on employability. This may be explained by the fact that vocational education should lead to employment (see e.g. Fejes, 2009; Hiim, 2013; Johansson, 2009). The concept of employability is also a key concept in the field of boundary crossing between school and work, where vocational education will lead to work and employability (see e.g. Andersson & Köpsén, 2017; Berner, 2010; Fejes & Köpsén, 2014). In the field of boundary crossing between school and work, vocational teachers' professional experiences of working life, and what vocational teachers based on their own professional experiences teach, have become important aspects for vocational students' employment at industrial companies (see e.g. Asghari, 2014; Berner, 2010; Tuomi-Gröhn, Engeström, & Young, 2003). Earlier research on employability highlights the vocational school's pursuit of proximity to working life. What, why and how students should be taught are often determined, planned, implemented and evaluated with regard to working life, to vocational students' employability (see e.g. Berner, 2010; Hiim, 2013; Johansson, 2009; Tuomi-Gröhn et al., 2003), and to vocational teachers' previous experiences of working life (see e.g. Asghari, 2014; Asghari & Kilbrink, 2018). **The opportuni-**

**ties for employment, and having a good income, seem to be a couple of reasons why many students in the Industrial Technology Programme choose this type of education** (see e.g. Bjurulf, 2012).

Vocational education is not only about teaching the vocational students' knowledge of the profession but also training them to become employable professionals who will be prepared for employment and also given prerequisites to retain their employment (Hiim, 2013; Lindberg, 2003b). In order to become employable professionals, the knowledge that vocational students need to learn include both concrete knowledge of the profession and knowledge of how a professional worker should behave in the workplace (Hiim, 2013; Lindberg, 2003b). Communication and the ability to socialize with others are also important aspects for employability (Berner, 1989). In addition to learning good communication skills, a good vocational education is intended to lead to employability in teaching relevant concepts, occupational documentation and occupational norms (Hiim, 2013). That is to say, vocational education should lead to prominent professional identities for the vocational students, and motivate them to complete their vocational education. The prominent occupational identity as a professional worker and the motivation to cope with vocational education studies are considered by, for example Hiim (2013), Johansson (2009) och Tuomi-Gröhn et al (2003), to be contributing factors to the employment of vocational students after their education. Vocational teachers can by motivate their students for vocational education by showing them an interest in the profession and in vocational knowledge development. Vocational students who, thanks to motivation, have improved their

professional knowledge are expected to have more opportunities for employment after their education (Hiim, 2013). However, there are forces in vocational education that are outside of the vocational teachers' control and limited vocational education programmes which are aimed at employability of students based on the demands made by the labour market of skilled professional workers. These forces can, according to Hiim (ibid.), be the tools and equipment used in teaching, work assignments, or even the rules applied by schools regarding what content vocational education should have and what objectives the student should achieve (ibid.). In this context, we would like to mention that among the forces that considered limiting vocational education to employability, we have to take into account the neoliberal labour market. The neoliberal labour market places demands on what a professional worker should be able to, how the professional worker should be, what times the professional worker should work, what tasks the professional worker should carry out and what salary the professional worker in a competitive labour market should have.

## 1.2 HUMAN RIGHTS IN SWEDISH VOCATIONAL EDUCATION

In this section, we will present an overview of the anchoring of the UN Convention of Human Rights in the policy documents that are central in Swedish vocational education. In the study, our focus is on the first paragraph of Article 23 of the UN Convention on Human Rights, which states that everyone has the right to work, free choice of employment, justice and satisfactory working conditions and protection against unemployment

(Regeringskansliet, 2011). As in all other countries that ratified the UN Convention on Human Rights, Swedish programmes also take into account human rights from 1948, and apply to all people. According to the Swedish School Act, school activities must be designed in accordance with fundamental democratic values and the promotion of each person's own value (Regeringskansliet, 2002). In accordance with the UN Convention on Human Rights, it is emphasised in guidance documents for vocational education and guidance documents for the preparatory courses in Sweden that education will develop the whole person as broadly as possible.

### 1.3 MEANINGFUL WORK AND NEOLIBERAL LABOUR MARKET

Within vocational education, employability is often related to the knowledge that vocational students need to get a job and to keep the job (Hiim, 2013; Lindberg, 2003a). The knowledge involves both knowledge of the practicality of the profession (carrying out work related tasks) and knowledge of how a professional should behave in working life and in society (ibid.). Research also shows that the employment conditions are crucial for employment and employability (see e.g. Andersson & Köpsén, 2017). For example, a vocational teacher who has a part time job as a teacher and a part time job as a professional, also has the opportunity to retain the professional knowledge and skills that are related to the profession (ibid.). Such a vocational teacher also has a greater degree of employability than a vocational teacher who for a long time has worked solely as a teacher (ibid.). In this context, the issue of meaningful work

can be discussed. The concept of meaningfulness is described by Miller & Glassner (1997) as the creation and maintenance of an appealing lifeworld that is associated with the living reality of informal, culture-bound understanding, and common space. We therefore mean that the meaningful work can be work that is appealing where the employee can feel comfortable with their employment and experience social and economic security. Here we also lean towards Dewey (1944), who believes that meaningful work is work where the employee carries out meaningful tasks that may be useful for themselves and/or for others. In a meaningful work setting, career development opportunities are created for the employee (ibid.). As far as industrial work areas are concerned, previous research (see e.g. Bjurulf, 2012) shows that many industrial workers believe that industrial work is meaningful work. Industrial workers also consider industrial work varied and cumbersome, but some industrial workers also believe that industrial work is heavy and that they eventually get physical injuries (see e.g., ibid.)

In this context, we believe that four actors are responsible for the meaningful work: 1) An employer who does not only provide the employee with assignments and tasks. In this case, the employer does not see the employee as an instrument to carry out tasks. The employer creates the conditions for meaningful work (cf. Miller & Glassner, 1997), protects the employee's social and economic security and creates development opportunities for him/her (cf. Dewey, 1944). 2) The employee, with a focus on lifelong learning, should be proficient in continuing education, and be attractive in the labour market (for a critique see Biesta 2010). In that case, the right to work is associated with the employee's responsibility to be attractive in the labour mar-

ket. 3) The education system must be designed to give the students appropriate tools to get employment and retain employment. We should also be careful not to ignore the fact that there can be employment implications when the vocational students are trained and specialized within a specific field of work, and their competences fit better in a particular profession compared to other professions. This means that their opportunities for employment can be limited and if they lose their employment at some point, it can be hard for them to find a job that will suit their knowledge and skills, and sometimes they can be forced to start from scratch again. From a social perspective, education should aim for lifelong learning for the reason that it is more efficient, and less costly to society, to avoid constantly having people in education because of unemployment (cf. Schaffar, 2017). Research also shows that employers make demands on vocational education and want to hire professionals who have the skills that the labour market needs. Politicians can take this claim as a welcome scapegoating, and then they may say that if only the education system had educated people better, vocational students would get faster and easier jobs and not end up in unemployment. Politicians avoid taking responsibility for not having succeeded in creating employment opportunities (Allais 2014). 4) The political system has left the responsibility of organizing work to the citizens. The responsibility has fallen upon the citizens to ensure that they are employable. In this case, the political system helps to provide education to citizens.

### 1.4 PURPOSE AND RESEARCH QUESTIONS

The aim of the study is to increase the knowledge of how two Swedish vocational teachers position themselves in relation to other participants in the events described during the conversation. Based on the purpose, these research questions are formulated:

1. What positions are expressed from the vocational teachers' stories on vocational education, working life and vocational teaching?
2. How can vocational teachers' positioning be understood in relation to Article 23 of the UN Convention on Human Rights?

## 2. THEORETICAL AND METHODOLOGICAL FRAMEWORK

Our study is based on a narrative perspective in which the vocational teachers' stories are at the centre (cf. Mishler, 1999). The teachers in this study have been called Henry and Leif and their stories can be seen as both a theoretical and methodological framework. The theoretical framework is about the understanding of what the vocational teachers tell. We have a social constructionist perspective (Berger & Luckmann, 2003) on stories and see the stories as social actions that are constructed together with, and in relation to, other people (cf. Goodson, 1991; Mishler, 1999; Pérez Prieto, 2000). Based on a social constructionist perspective on stories, we mean that vocational teachers, in narrative, make sense about themselves and about their own world (cf. Mishler, 1999). They already highlight in

the interviews what they consider relevant for the interviewer and/or what they think that the interviewer wants to hear (ibid). When vocational teachers talk about vocational education, working life and vocational teaching, they look back on the life they already have lived, and on the occasions that they met and taught their students (cf. Bruner, 1986). In the narrative they reflect on their experiences (cf. Freeman, 2010) and in interaction with the interviewer they construct their stories based on the interview situation (cf. Asghari, 2014; Karlsson, 2006; Pérez Prieto, 2006). Consequently, through language they give form and meaning to their experiences of the life they already have lived, but the interviewer is with them, both as conversational partners and as audiences, when they tell and reflect on the experiences.

The methodological framework in the article and the basis for our research is a narrative approach. Henry and Leif have been part of a larger study on vocational teacher told experiences of teaching between 2009 and 2014 (Asghari, 2014). The reason why the discussion only is based on the stories of the two teachers in this article is that these teachers focused on the vocational students' choice of profession and vocational education as well as what the teachers told about their own working conditions when they once worked as industrial workers at industrial companies. Henry and Leif work at the same upper secondary school and know each other, but the interviews have been conducted individually. Both vocational teachers were interviewed twice during the research process, once in 2010 and once in 2012. The interview with Leif lasted a total of 3 hours and 44 minutes and the interview with Henry lasted a total of 1 hour and 59 minutes. All interviews were conducted at the vocational teach-

ers' school, were recorded with a dictaphone and transcribed immediately after the interview. The transcribed material from the first interview became pooled with the transcribed material from the second interview for each vocational teacher. The pooled material became constructed chronologically and analysed based on Bamberg (1997) as described below.

## 2.1 ANALYSIS OF THE VOCATIONAL TEACHERS' STORIES

The analysis of vocational teachers' stories is inspired by Bamberg's (1997) description of how narrators position themselves in relation to dominant discourses. Through stories we get access to the vocational teachers' experiences, but also that the teachers in the interview situation create stories based on how they want others, including the interviewer, to perceive them (cf. ibid.). Bamberg points to the importance of understanding stories as socially situational. It means that stories are formed by the context in which they are told. Bamberg addresses the importance of narrative positioning and he considers that in a positioning the committed narrator is central in the constructed process of a story. According to Bamberg (ibid.), there are three different levels of positioning: 1) narrators position themselves in relation to other individuals and/or characters in the events described during the conversation, 2) narrators position themselves in relation to the audience in the interview situation where the conversation takes place, and 3) narrators position themselves in relation to themselves. This means the conversation is used to claim the truths about oneself that go beyond the interview situation. In our case, we use Bamberg's analytical reasoning to study the relationship between the characters, to see which intrigue it causes. More specifically, we use Bam-

berg's first level of positioning and study how vocational teachers position themselves in relation to other individuals and/or characters in the events described during the conversation. Based on Perrino (2015) we mean that when the teachers position themselves in relation to other individuals and/or characters, it also means that they position themselves in different times and spaces in their stories. The vocational teachers draw up their experiences of past times, with the present, and with what can happen in the future, and in this way, they create relationships between different events in different times and spaces and construct their stories (cf. Ricoeur, 1991). We assume from Bamberg (1997) and from Perrino (2015) that our analysis of vocational teachers' stories highlights how they present themselves in their stories when they were industrial workers in industrial companies, and now that they are vocational teachers at schools. In this context, our study focuses on the first paragraph of Article 23 of the UN Convention on Human Rights, how different professional ethical dilemmas are illustrated from vocational teachers' stories on education, working life and vocational teaching.

## 3. RESULTS

In response to the first research question of the study, we will present the vocational teachers' stories on vocational education, working life and vocational teaching there three positions are visible. These are put in relation to other individuals and/or characters in the events described during the conversation. The positions are: 1) *Positioning in relation to workshop workers and to workshop work*, 2) *Positioning in relation to industrial company and to employer*, and 3) *Positioning in relation to employability*.

In response to the second research question of the study, the positions will be discussed in relation to the first paragraph of Article 23 of the UN Convention on Human Rights.

### 3.1 WELDING TEACHER HENRY

Henry is a 55-year-old industrial teacher who moved from an English speaking country to Sweden when he was 26 years old. Henry was trained as a welder at a labour market educational programme in Sweden and then he began working as a welder, at an industrial company in a big city in Sweden, where he then worked for 18 years. Henry says about his job:

> It was a varied work, one day I was in a building and welded an ordinary steel construction, another day I was way down in the tunnel and welded stainless steel tubes, another day I was up on a bridge and repaired it, almost every day I had different jobs, all the time. And it wasn't always bad, but as the years went by I thought I couldn't handle it, it was a heavy job. I was then 44 years old and thought; I can handle the workload for a few more years, but then what? There was nothing that I possibly could do after the age of 50. I had started to feel pain in my body, and what really kept me at work was my welder friends. We had very good contact with each other and we met outside of work. We had become family friends, our wives knew each other and our children played with each other, but the problem was the employer. The employer didn't have anything else to offer, and then I started thinking about changing jobs because there were no other options.

Henry tells that he saw an advertisement in the newspaper one day that an upper secondary school needed a welding teacher. He applied for the job and he got it. During this time, Henry studied one year at a Swedish university and gained teaching skills. Henry has been working for 11 years as a welding teacher and he teaches all welding courses on the Industrial Technology Programme. About his teaching, Henry says:

> It is very important for me that my students will become employable, and that is also the goal of vocational education. They choose a vocational education to get jobs after the education, but at the same time, it is a fact that work in the industry goes up and down, sometimes there's plenty of work and then they hire people, sometimes not, and then they fire people. Then it is important that our students should have such a good welding knowledge that they can get work elsewhere, even internationally, if the industry in Sweden goes down and they are dismissed. So for me, nothing else matters, I'm only here for my students to make sure they get employment.

### 3.2 LATHE TEACHER LEIF

Leif is a 53-year-old lathe teacher, born and raised in a big city in Sweden. Leif obtained his lathe worker education at an apprenticeship educational programme at an industrial school when he was 16 years old. The education programme was three years, and after graduating, Leif became employed as a lathe worker at a large and international industrial company in Sweden. Leif tells about his apprenticeship education: "The education was very good. I wanted to get a job, and then I was studying to become

a lathe worker, and I got it. I got the job right after my studies". About his work as a lathe worker, Leif says:

> We, workshop workers at the company, we had a friendship relationship, a good way to communicate with each other. Also, I didn't stand down here and they up there, but when we were at work, then we were at work, then we helped each other. We were a bunch of workshop workers who didn't wait until someone said; you, come and help me. It was just good manners to help out. I help you, you help me. We were a team and everything was teamwork. We had a bigger perspective, we wanted a job to go tomorrow. It was important to be a good lathe worker, and it was important to be able to produce right from the start. Focus was always on producing right, producing right and producing right. We did our best to make it good for the company. We made the right products and we made sure they were delivered at the right time.

When Leif talks about his workplace, he brings to light the conflicts that existed between workshop workers and management. These conflicts eventually became the reason why Leif resigned from the industrial company and stepped into the vocational profession. About the conflicts, Leif says:

> The conflicts involved different things, for example problems with the work environment, the type of work as it involved heavy work and because it was easy to get injuries, the working hours, which weren't suitable for those of us who had family and young children at home. The wages weren't that high compared to other industries. There weren't many career oppor-

> tunities either. There were many managers, and above all, they didn't listen to us workers. And then I got tired of it and started looking for a new job, and then I got a job here [at this school], but what the managers of the company gained one day was lost in the long run. So, they simply didn't understand the consequences of their own actions. And now I've been working here as a teacher for about 20 years.

During the time, Leif studied for one year at a Swedish university and gained the teaching skills. When Leif talks about his teaching, he says:

> My goal is that the [students] should be employable and if they want to become employable, they must learn to be trustworthy, so much of my role is about teaching them wisdom and labelling. [...] For example, I say to them [the students]; If I've said I'm coming in, then I'll come in. Then the boss expects these products to be delivered to the customers. If I fail to show up at work and don't inform the boss, he doesn't know it. Then he can never put another guy in my place either. So, there is a responsibility for everyone to communicate. So, I want them to understand the importance of honesty and tangibility if they want to become employable.

### 3.2.1 Positioning in relation to workshop workers and to workshop working

In the stories, Henry and Leif position themselves in relation to other *workshop workers* at the industrial companies when they tell about their colleagues. Henry explains that welders in

his workplace were close friends and had family get-togethers in their free time. Leif also says that there was a good relationship between him and other workshop workers, they worked in teams, had good communication with each other, were equal and helped each other. Henry also positions himself in relation to the *varied* and *heavy welding work* he had at the industrial company in the big city. He explains that the welding work was varied, but also heavy, which gave him some bodily injuries, aches and pains. Because of the heavy work, Henry could not imagine working as a welder after the age of 50. Similarly, Leif positions himself in relation to the *careful* but *heavy lathe work*, where it would apply to hold tolerances during production and produce right from the beginning to the end. The heavy lathe work also caused Leif more bodily aches and pains.

### 3.2.2 Positioning in relation to industrial company and employer

The positioning in the stories also takes place in relation to *industrial company* and to *employer*, from what Henry and Leif say. Henry tells about the unsafe industry in Sweden, an industry that kicks or hires industrial workers depending on access to work orders. Henry also says that although he had been physically injured, the industrial company and the employer did not offer other tasks to him. This meant that there was no other alternative for him than leaving the welding work at the industrial company and becoming a welding teacher at an upper secondary school. Leif also says that he and other workshop workers did their best for the *industrial company*, including producing the right products. This is because they "wanted a job to go tomorrow". However, the *employer* did not listen to

the workshop workers when they made suggestions to improve their tiresome work situations. These tiresome work situations, which led Leif changing jobs from lathe worker to lathe teacher, were mentioned by Leif as; uncomfortable working hours at the industrial company for families with children, low wages at the industrial company, and the industrial company's inability to create development opportunities. From Leif's stories, it is also apparent that he has a loyalty to the industrial company and to the employer. This is when Leif says that the employer expects the products to be delivered to customers on time, and if a worker does not inform about their absence, the employer cannot delegate the production to other workers to implement.

### 3.2.3 Positioning in relation to employability

In the stories, Henry positions himself in relation to his students' *employability* after the vocational education, where he tells that his students chose vocational education to get a job after the education. He also says that he is in school for his pupils, and it is important for him that his students become employable, and good welding skills can help students get employment internationally when the Swedish labour market becomes uncertain. He also connects employability to the goal of vocational education. Leif, on the other hand, positions himself in relation to both his *employability* and his students' *employability*. Leif says he wanted a job, and so he trained as a lathe worker. He also says that his goal is to help his students become employable. To make that happen, Leif says he teaches the students honesty, tangibility, wisdom and labelling.

## 3.3 THE POSITIONS AND THEIR RELATIONS TO THE FIRST PARAGRAPH OF ARTICLE 23

According to the first paragraph of Article 23 of the UN Convention on Human Rights, every person should have the right to work, free choice of employment, justice and satisfactory working conditions and protection against unemployment (Regeringskansliet, 2011). Although the UN Convention on Human Rights has a clear role in vocational education in Sweden, vocational teachers' positioning shows that vocational education and vocational teaching may in some respects have a professional ethical challenge.

Based on vocational teachers' positioning in relation to workshop workers and workshop working, it appears that Henry and Leif had a free choice with regards to both vocational education and occupation. Both chose independently to train as welder workers and lathe workers. Both of them also chooses to work in industries themselves. On those points, their choices are in accordance with the first paragraph of Article 23, regarding their right to work and their free choice of employment. Henry also tells about a varied welding work which, based on the paragraph, can be interpreted as satisfactory work. Both Henry and Leif also tell about a working life with good relationships between workshop workers, which, based on the paragraph of Article 23, can be interpreted as a satisfactory working relationship. From the teachers' stories it emerges that neither Henry nor Leif experienced fair treatment by the management of industrial companies when they worked as industry workers, and that is in conflict with the first paragraph of Article 23.

Based on positioning in relation to industrial company and employer, Henry's and Leif 's protection against unemployment

can also be discussed. Having employment seems, based on the stories, to be important for both Henry and Leif. In Leif's story some loyalty to the industrial company he worked in shone through, to have "a job to go tomorrow". Over the years, when the heavy work affected Leif's and Henry's health, and they got bodily injuries, the management of industrial companies could not offer them other duties. The speculation about the tiresome work situation could for example be that if Henry and Leif had continued to work as workshop workers, they would eventually become sick. If they because of the tiresome work situation had resigned and not received the teaching positions, they could also have become unemployed. This means that although Sweden, based on its constitutions, protects its unemployed residents, but Henry's and Leif's workplaces and their employers did not do anything to protect them against sickness or unemployment. A consequence of the way in which industrial companies treat their workers may make it more difficult for Sweden to implement the first paragraph of Article 23 in terms of free choice of employment, justice and satisfactory working conditions and protection against unemployment.

Vocational teachers' positioning in relation to employability shows that vocational students' employability is important for vocational teachers. In this context, vocational teachers are trying to create opportunities for their students to get a job after vocational education. This is in line with the first paragraph of Article 23 that every person should have the right to work and free choice of employment. For Henry, good welding knowledge can create opportunities for students in terms of national and international employment, and for Leif students' honesty, tangibility, wisdom and labelling can create opportu-

nities for employment. Although both Henry and Leif describe the heavy workshop work and Henry also tells about the uncertain labour market in Sweden, it seems that for the vocational teachers aspects regarding the students' employment as industrial workers after completing vocational education are important. Regarding employability, Leif highlights the importance of honesty to managers and industry companies and urges the vocational students (or future industrial workers), to notify the managers when they risk not getting to work on time, so that any other workshop worker may complete the production. This recommendation is made by Leif despite the fact that his employer at his workplace did nothing to change Leif's tiresome work situation when he was in pain, his salary was low, and when he had no alternative career opportunities at his workplace. In conclusion, employment at industrial companies may involve the implementation of a heavy work which causes the industrial worker to receive bodily injuries. In addition, employers at industrial companies can treat industrial workers unfairly. These aspects may collide with the first paragraph of Article 23, but vocational teachers still try to educate their students to reliable industrial workers for a functioning industry.

Vocational teachers are positioning themselves in different times and spaces when they worked as industrial workers (past) in industry companies, and when they worked as vocational teachers (present) in schools (cf. Perrino, 2015). These positions appear when they tell about their heavy job in industry companies at a young age and in older days or when they tell about their working hours that were not suitable for those who had family and young children at home. However, the stories also show an important aspect, which is how the vocational teachers

in their stories position themselves, in relation to the future. This position appears when the vocational teachers tell about industrial companies which are going to have varied order intakes at different periods, what behaviours their students should show in the workplaces, and how much vocational knowledge their students have to have, so that they can expand their employment opportunities when the order intakes are low for certain periods.

## 4. DISCUSSION

According to the UN Convention on Human Rights, the countries should create conditions for its citizens to get work. Assuming that Sweden, as a democratic country, creates the conditions for its citizens to get work, this does not mean that Swedish industrial companies, in a competitive labour market, help the government of Sweden to create jobs for community citizens in the country, or help them to retain their jobs. The state is obliged to educate the children and adolescents of the country, and education is costly for the society, but when these children and adolescents grow up and get employment at industrial companies, they can become instruments in the neoliberal labour market (as a tool in the machinery of the company). They carry out industrial work, but when they due to heavy work cannot carry out their duties, or when they, because of the lack of career opportunities, need new challenges, they may no longer be desirable by industrial companies. Then they must either find new jobs (as Henry and Leif did it) or resign/be dismissed and end up in unemployment. We mean that these clashes with fair and satisfying working conditions and with protection against unemployment as it stated in the first paragraph of Article 23 of the

UN Convention on Human Rights (Regeringskansliet, 2011, s. 6). In addition, with focus on lifelong learning, it will be difficult for an industrial worker who has been proficient in education in a particular field of his/her industrial company to be attractive in the labour market when in older days he/she has to change job/get into unemployment. This can also be discussed from a societal perspective where the former industrial worker's knowledge and skills are lost, if he/she does not get a job as an industrial teacher.

What we have found particularly interesting is that the industry teachers in our article are telling us about occupational injuries due to heavy industrial work (even Bjurulf (2012) has raised this problem with industry workers in her article), but they still educate the children and young people of country to industrial workers for industry. In addition to occupational injuries, the industry teachers are telling us about a lack of development or career opportunities and uncomfortable working hours for industrial workers who had a family and young children at home , but they are still loyal to the industry and to educating new industry workers for industry. Here we mean that there is a paradox in the Industrial Technology Programme to educate the children and young people of a country to instruments for the neoliberal labour market (as tools for machines of the companies). The industry education at the Industrial Technology Programme is financed by taxpayers to lead the children and young people of the country to employability, but the industry also create conflicts regarding fair and satisfactory working conditions, as well as with protection against unemployment, which is defined in the first paragraph of Article 23 of the UN Convention on Human Rights.

Given the industry's clear orientation towards a more neoliberal and competitive labour market, industrial teachers face different occupational ethical dilemmas in order to implement the UN Human Rights Convention in education. These include dilemmas where professional teachers need to ask themselves how they can, and have the opportunity to, speak honestly with their students about their future plans, the chances of employability for the students in the labour market and the working conditions of industrial companies. This concern protects the teacher's pedagogical autonomy in vocational education in order to ensure that the UN Convention on Human Rights is not opposed through organisational structures and reforms that put teachers in professional ethical dilemmas (cf. Schaffar, 2017).

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# Emergence of the VET Practitioner Research Network: Nurturing a QA Enhancing Australian VET Practitioner Researching Community of Practice

Lewis Hughes*

**Abstract:** In Australia, beginning July 2015, discussion between visionary VET colleagues led to the establishment of the VET Practitioner Research Network (VPRN). The intention being to motivate and support VET teachers/practitioners in embracing research as part of their professional practice and, thus, further contributing to enrichment of the 'what' and 'how' of VET delivery through nurturing a *VET teacher as researcher* culture, but in a VET way preserving unique VET identity – VETness – in the Australian tertiary education arena. Drawing upon past research and ongoing exploration of VET teachers and research, this paper hypothesises that there is an entwining of teacher/practitioner scholarly identity – as arises from researching and drawing upon the research of others – with strengthened quality assurance. To achieve this, partnerships between VET teachers, providers and others in the VET stakeholding milieu beckon and VPRN motivations and means are discussed.

Progress to date is mostly in the establishment of VPRN website as a portal for teacher/practitioner accessing and contribut-

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ing to VET research and as a *VET teacher researching* community of practice place for collegiate sharing and supporting. The website is now active, with 100+ members, but still in development toward being as is required to engage VPRN members beyond the early adopters.

**Keywords:** VET teacher, VET research culture, VET delivery, Quality assurance

## 1. INTRODUCTION – TOWARD A *VET TEACHER AS RESEARCHER* CULTURE

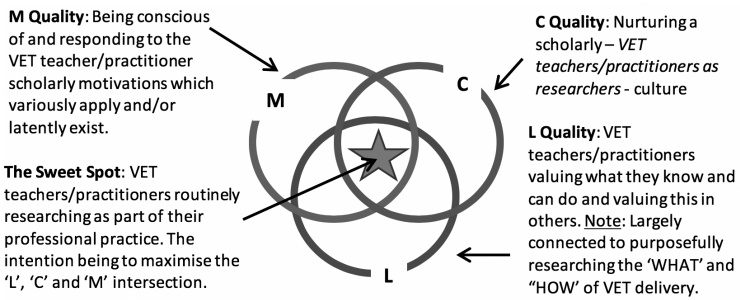
This paper follows from the *Maintaining VETness* [VET identity] *in a scholarly environment* presentation (Hughes 2018a) made at the May 2017, Stockholm University '*Emerging Issues – Voices from Research*' conference and is sharing of an Australian experience in working toward VET teachers[#1] including research as part of their professional practice – i.e. nurturing a *VET teacher as researcher* culture. The logic being that teachers engaging in research – being inquisitive, reflective, empowering and reliably self-informed, valuing the knowledge of others and motivated to act – will lead to enhanced quality assurance in the delivery of vocational education and training (VET) in Australia – i.e. a teacher's capability is strengthened by being *scholarly* in a VET way.

#1: In Australia, the identifier 'VET Practitioner' refers to teachers actively engaging with students in learning activity and those who are closely connected, but non-teaching, such as program co-ordinators and heads of teaching department.

Accordingly, whilst being mostly directed at teachers as the largest cohort, this paper also addresses the expanded grouping of practitioners – in this paper 'teacher/practitioner' is frequently used to remind of this overlap. And, importantly, declaring that the objective is not to recruit all (an unrealistic goal) but to build toward a critical mass of VET teachers/practitioners identifying as researchers; and thus enriching their, and others, delivery of VET through generating and making the most of teacher/ practitioner owned (not imposed) knowledge.

As expanded upon in Hughes (2018a), being *scholarly* in a VET way is characterised by the VET teacher – as researcher – being purposefully focussed upon the 'what' and the 'how' of VET delivery. An approach – drawing upon the research derived LCM Achievement Model (Hughes 2007) – to bringing this about is illustrated in Figure 1.

Figure 1:
LCM Achievement Model (Hughes 2007) applied to recruiting and retaining VET teachers as researchers.



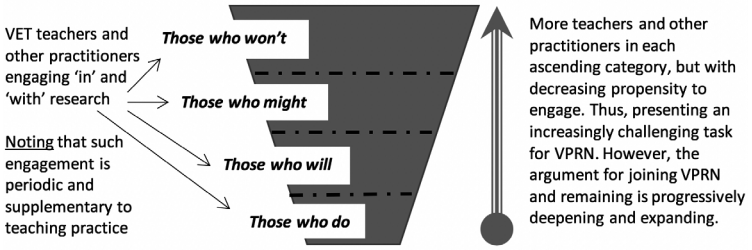
The LCM Achievement Model arose from Hughes (2007) research into the relationship between lifelong learning and organisational (broadly defined) achievement. The principal arena of research was in the Country Fire Authority of Victoria and focussed upon the retention (recruitment being associated) of volunteer firefighters. In this regard, there is resonance (as for other instances of recruiting, retaining and drawing upon knowledge) with inviting, motivating, supporting and retaining VET teachers/practitioners to collegiately join a VET teacher/practitioner researching community of practice. Accordingly, as illustrated in Figure 1, the target (Sweet Spot) is for VET teachers/practitioners to embrace research as part of their professional practice. Such a target being achieved by motivating and supporting teachers/practitioners to value and consciously add to, the outcomes of their lifelong learning – the 'L' – through including research as part of their professional practice. In essence, this requires nurturing valuing of a scholarly culture – the 'C' – and having regard for the motivations – the 'M' – which variously exist (or might be nurtured) and which forge and secure a *being scholarly* environment.

## 2. EMERGENCE OF THE VPRN AS AN INITIATIVE OF ITS FOUNDING PARTNERS AND PARTNERS TO COME

Having in mind that in terms of propensity for VET teachers/practitioners to include research as part of their professional practice there is a spectrum – ranging from those who do; to those who will; to those who might; and those who won't – as illustrated in Figure 2. Accordingly, the activity ahead for the

VET Practitioner Research Network (VPRN) is to follow a path where the early joiners, 'Those who do', create a foundation of activity which attracts others – i.e. existing VPRN members acting in a role which is somewhat akin to being ambassadorial. Then having recruited, as a next phase, from within 'Those who will' the nurturing of joining motivation progresses to 'Those who might'. With respect to 'Those who won't', it is not beyond the bounds of expectation that as they (at least some) see, and beneficially experience from, their colleagues engagement 'in' and 'with' research they will shift toward periodically (dipping in and dipping out as appropriate to need and interest) engaging with the VPRN. Not making too bold a claim, energetic VPRN activity stands to enrich VET culture – as underpins strong VET outcomes – through the device of contributing to a scholarly trajectory in a VET way – VETness (Hughes 2018a).

Figure 2
VET teachers/practitioners as researchers




The experience – here addressed – is of the early days nurturing a *VET practitioner researching community of practice* via the embryonic VET Practitioner Research Network (VPRN); and with preserving *VETness* much in mind. Also, whilst the intent

is clear and there is evidenced (Hughes 2000, 2017a, 2018b) justification in the creation of the VPRN, the task ahead requires persistence in recruiting and satisfying VPRN members and fulfilling the expectations of the Australian VET entities (peak bodies and others) which are the Founding Partners of VPRN. The experience, to date, is that recruiting *early-adopter* members is relatively easy, but engaging them in energetic community of practice sharing has its challenges – including ensuring user-friendly attributes of the VPRN website – www.vprn.edu.au.

The logic underpinning the connection between VET teachers as researchers and quality assurance is that an inquisitive and reflective teacher is more likely to rejoice in continuous enrichment of their teaching practice than is the case for a complacent teacher who, in essence, is somewhat stuck in the present. Also, logically, the changing world of work and the 'what' and the 'how' of the changing world of learning are entwined. A capable[#2] VET teacher requires '*ahead of the game*' knowledge and insight; and, importantly, is empowered by owning this knowledge and insight (having researched and reflected) rather than having knowledge imposed by approaches to professional development which are commonly of a 'telling' nature. Accordingly, upon being awakened to latent 'researcher disposition' and supported to act there is advantage to the teacher, the VET system and, in particular, the student and community at large. In respect of 'awakening', my experience (auto-ethnographilly drawn upon) has been that convening research informing conversations on the *VET teacher and research* topic is, in itself, a useful strategy in shifting the possibilities from back-of mind to action – i.e. asking questions, stimulates sharing of differing perceptions and both informs and prompts action.

#2: Drawing upon Stephenson (1998), as for a university lecturer, a capable VET teacher is one who is effectively confident in working in the realm of unfamiliar circumstances and new challenges – such, arising in a world of work where the knowledge, skills and other desirable attributes of today will not be as required in the, not too distant, future. There is a difference between a VET teacher acting in instructor mode (which may be appropriate some of the time) and a teacher acting in educator mode (Hughes & Cairns 2013, p. 150, Hughes 2018b, p.9,) with an eye on what the student needs as different to what the teacher knows from the time that they were *on the tools* (broadly meant). In the course of my research into the relationship between lifelong learning and organisational (broadly defined) achievement (Hughes 2007), it emerged that learners had more respect for trainers (as the learners referred to them) who were intent upon meeting their (the learners) competency needs more so than demonstrating what they (the trainers) know.

In the Australian VET case of prompting action, ongoing exploration of *VET teachers and research* (Hughes 2017a, 2018b) is generating conversation linking a teacher's engagement 'in' (themselves researching) and 'with' (drawing upon the research of others) research with expanding pedagogical and vocational capabilities; and, thus, enriching VET delivery. For example, the exploratory conversations have informed consideration, at Board of Management level, by a significant and broad scope provider of the '*teachers as researchers*' relevance to their organisation's teaching quality and innovation programme. And, in this and other instances, the potential for teacher research sup-

porting pursuit of vocational currency has newly arisen. Also, in conversation, the possibility has been raised for teacher/provider/industry partnership in research resolving the paradox that teacher continuing professional development and maintaining vocational currency is an expectation as a quality requirement (Commonwealth of Australia 2017, ASQA 2017a pp 61-66) but a broadly viable means of achieving this is not in place – as a contributor to resolution, action research/learning based projects beckon. In addition, there has been a foreshadowing of attention to the prospect of evidenced teacher capability and professional commitment – a matter of teacher pride and identity – being at the heart of quality assurance (see Figure 3).

It is against this prospect of VET teachers as researchers to enhance VET delivery that the VPRN initiative has emerged. Strengthening the status of VET and, hence, the status of VET teachers and practitioner colleagues is entwined with the VPRN raison d'etre. With global sharing in mind, this paper is an overview of the Australian VPRN experience to date (April, 2018) and inviting conversation with global VET colleagues.

## 3. MOTIVATING NEED AND RESEARCH INFORMING THE VPRN INITIATIVE

With respect to need:

In Australia, VET teachers are required to bring appropriate, and current, vocational knowledge and skill to their role and to have a Certificate IV in Training and Assessment (or equivalent) – noting that in the Australian Qualifications Framework, a Certificate IV is three levels below Bachelor Degree (AQF Council 2013). However, there is vulnerability to the teacher being

weak in teaching capability at the point of entry as illustrated by the Australian Skills Quality Authority alerting to the occurrence of unduly short VET training in which the Certificate IV in Training and Assessment was cited as of particular concern (ASQA 2017b pp. 95) and, over time, lapsing into non-currency. Accordingly, from time-to-time, discussion arises regarding how to address these vulnerabilities; and the notion of VET teachers being motivated and supported in including research as part of their professional practice is much in mind. The thinking being that a reflective and scholarly teacher (Hughes 2017a) – in a VET way (Hughes 2018a) – has the potential to strengthen both vocational and pedagogical capabilities. This prospect was under consideration by the VISTA Association of VET Professionals (VISTA) (of which I was an Executive Committee Member) at the time of deciding to wind-up in the face of viability challenges impacting upon many professional bodies. However, Exhibit 1 – outcome from Hughes (2000) research – gives some insight into what continues to drive me in adding to the conversation – and action – advocating motivation and support for VET teachers engaging 'in' and 'with' research as part of their professional practice.

## EXHIBIT 1 – 1999 RESEARCH (HUGHES 2000) CONTRIBUTING TO INFORMING VPRN FOUNDATION

Overview: '*To live, Inquire and Grow in Interesting Times*'

"This 1999, ethnographic, study inquired into the factors that influence the degree to which Victorian TAFE institute teachers draw upon vocational education and training (VET) research

data and contribute to research processes. The research was posited upon a view that in an environment of great change, such as is experienced by these teachers, being well informed through engagement with VET research is both a tool for survival and for professional growth.

Notwithstanding the potential for personal advantage, the study found that there is low propensity for Victorian TAFE Institute teachers to engage with VET research in a conscious manner. Where this does occur, engagement with VET research for teaching practice and professional development are closely linked. The degree to which engagement occurs is significantly influenced by others acting as information conduits and/or motivators to engage. Professional commitment is a major engagement driver. Insufficient time is perceived as a significant inhibitor which is exacerbated by an apparent weak research culture within Victorian TAFE institutes.

The study findings suggest that there is opportunity to awaken interest in engagement with research. This requires leadership in nurturing a research culture and action to reduce the perception that research is an academic activity not suited to the environment of TAFE teaching practice."

(Hughes 2000, p. 29)

Note: Notwithstanding the passing of time, this situation persists to today, but with expanded insight that VET teachers do informally research but not recognise this.

Consequent upon the May 2015 VISTA ceasing trading, and upon the initiative of Ron Wilson (previously, VISTA Executive Director), a group of VET stakeholders convened by Andrew Williamson, Executive Director, Victorian TAFE Association) took up consideration of the potential gains from supporting VET practitioners including research as part of their professional practice – as had been under discussion within VISTA. The outcome of this – rescuing an idea – has been the formation of the VET Practitioners Research Network (VPRN) and the creation of a website – www.vprn.edu.au – as a portal for practitioners accessing and sharing VET research along with accessing resources and information. Significantly – evidencing commitment by founders – the VPRN has been, to date, resourced (funding and in-kind) by those organisations and individuals with vision and passion directed at enriching VET through practitioners researching and drawing upon the research of others. Such engagement 'in' (researching) and 'with' (drawing upon) research, adding to a practitioner's reflective capacity through purposeful valuing what they themselves and others know and can do in a way which informs their acting to enrich VET delivery. And, along with this, adding to professional satisfaction, strengthening the status of VET and, consequently their own status and resilience[#3] as a VET practitioner.

#3: In the course of my ongoing exploration of *VET teachers and research* (Hughes 2018b), the matter of teacher resilience has emerged (in the informing conversations) as a factor (beckoning further research) supporting the proposition that there is much to be gained by teachers (and fellow practitioners) engaging 'in' and 'with' research.

> VET, in Australia, is felt by those involved to be in a constant state of change and uncertainty as, for example from a teacher's perspective, governing and informing structures change, seemingly varying approaches to quality assurance cause uncertainty, debates regarding the specification of competencies bring into question what should be taught and how. And, consequent upon government fostered competition, provider (a teacher's employer) sustainability comes into question. Under these circumstances, a researching and drawing upon research informed teacher is in *getting-ahead* mode rather than stressed in catching up, alert to and better understanding of the changing VET environment, and has the opportunity to be a contributor to an evolving VET environment rather than – some might say – a victim of changing circumstances. Hence, the teacher strengthens their resilience and is *armed* (Hughes 2017c, p.109) to look for and act upon opportunity rather than feel debilitated by uncertainties. In essence, a teacher through knowledge empowerment is a better teacher and more professionally confident – more resilient.

On the matter of VET status, VET in Australia suffers under the burden of being perceived as a second-class tertiary education pathway when compared to university. In my experience as a technical school student (secondary and tertiary), technical school mathematics and science teacher, enterprise manager maintaining engagement with VET, industry-wide manpower development officer, sessional VET teacher, consultant in making best use of knowledge, member of a government VET quality assurance panel and VET researcher, the second class status is largely a consequence of parental aspirations for their children

and maybe connected to their own fulfilment. Parents perceiving that a better working life and social status follows from university qualifications and, in some minds, VET is for students of lower academic ability. Further, parents and others don't recognise that VET 'welcomes all' – the academic and not so academic, youth to mature age, second chance learners, confident learners and not so confident, etc. – and this is a major 'inclusive' attribute the scope of which is indicated in Exhibit 2. Also, to those undervaluing VET, we should put the illustrative question – "Where would we be, for example without the plumbers, the VET qualified nurses, or VET qualified commercial airline pilots? There are, of course other questions such as relating to fulfilment in life, earnings and life style. Also, it might be that careers counselling by counsellors without meaningful experience of VET have long been inappropriately directing young people away from VET.

## EXHIBIT 2 – AUSTRALIAN VET STUDENTS AND COURSES 2016

In 2016 Training activity reported by 4279# training providers

- Estimated 4.2 million VET students
- Estimated 24.2% of the population aged 15-64 years participating in VET
- 3.7 million program enrolments
- Nationally recognised training accounted for 85.2% of all program enrolments
- 30.1 million subject enrolments

47.8% of all subject enrolments were Commonwealth or state funded
815.9 million VET hours were delivered
772,900 preliminary program completions

(Source NCVER (2017)

#At March 2017, the Department of Education and Training advised that there were 42 Public Registered Training Providers (RTOs) and 4594 Private RTO's. Note: Public providers are generally referred to as Technical and Further Education (TAFE) Institutes.

In large part, the status of VET in the public mind is entwined with the status of a VET practitioner and, consequently, a VET practitioner's self-image. Accordingly, as has emerged in the Hughes (2018b) *VET teachers and research* on-going explorations, the matter of teacher/practitioner identity is a significant factor in nurturing a circumstance where a teacher will transition from not recognising – and, hence not valuing – their scholarly dispositions to a circumstance where the teacher consciously takes pride in being scholarly in a VET way – contributing to and asserting *VETness*. (Hughes 2018a)

With respect to informing research:

Insights from the research informing my contribution to the emergence of the VPRN has accumulated over many years as reviewed below. To this, the recent inquiry of VPRN Founding Partners and VPRN Members regarding their expectations has enabled confirmation of rationale for establishment, congruence

of interests (Hughes 2018c) and established a basis for going forward.

- **Hughes (2000):** Prompted by curiosity regarding the extent to which VET teachers actually draw upon VET research, a combined questionnaire and interview approach yielded reason to suggest that there was latent interest but teachers were not routinely encouraged to so engage – drawing upon VET research was not in their mind. As this appears to be the case to the current day, with much loss to VET vigour, my involvement in establishment of the VPRN flows from this earlier researching experience. Voices from this ethnographic study inform my contribution to the VPRN initiative.
- **Hughes (2007):** Prompted by experience that people do not routinely value the fullness of what they – and others – know and can do and that organisations (broadly defined) likewise tend to be blind to this, ethnographic research into the relationship between lifelong learning and organisational achievement yielded the LCM Achievement Model (Figure 1). The model couples valuing the outcomes of lifelong learning (the 'L') with nurturing a valuing of learning culture (the 'C') and valuing the diversity of impacting motivations (the 'M'). In applying the model, the process begins with specifying the goal (in mind at the time) as the Sweet Spot and seeking to maximise the L, C & M intersection – e.g. acting upon the L, the C and the M.

  In the course of the *VET teachers and research* explorations the LCM Achievement Model has emerged as an action tool and related conversations have yielded much

potentially guiding the VPRN initiative. For example, with maintaining VETness as the Sweet Spot, application of the model involves attention to valuing of scholarly learning in a VET way, the nurturing of VET culture as uniquely contributing in the tertiary education space and regard for purposeful VET motivations.

- **Hughes (2008):** Prompted by social and community service sector needs to recruit VET qualified staff, a scoping study of the potential to recruit men 45+ years, in changing of career circumstances was undertaken and reported upon at the 2008 Community Services and Health Industry Skills Council Annual Conference. VET teacher valuing voices from this ethnographic study inform the VPRN initiative.
- **Hughes and Hughes (2011, 2012, 2013):** Prompted by the Northern Melbourne Institute of TAFE (VET provider) Centre of Excellence for Deaf and Hard of Hearing Students winning two Victorian Training Awards – one for the Innovation attributes of the Centre and the other for the Certificate IV in Training and Assessment being delivered entirely in AUSLAN (Australian sign language) – Libby (my life partner now deceased) and I undertook a series of studies exploring the relationship between VET when well taught and adding to social capital via the accrual of VET learner social capital attributes such as pride in self, enthusiasm in drawing upon what they know and can do, adding to social cohesion in the workplace (and beyond) and being lifelong learners. Voices from these ethnographic studies inform my contribution to the VPRN initiative.

- **Hughes (2017a & 2017b):** Beginning May 2016 – referred to in this paper as *VET teachers and research* – I have been ethnographically exploring the question '*What motivates, and/or inhibits VET teachers in drawing upon research and, themselves, engaging in research – i.e. being reflective practitioners?*' Voices from outcomes to date inform my contribution to the progressive development of the VPRN initiative – noting that I am but one Executive Committee voice.

In addition to the foregoing, exploration of VPRN Members and other stakeholder needs and expectations is ongoing. In this respect, Hughes (2018c) is commentary upon the congruence of VPRN Founding Partner expectations with VPRN Member expectations – outcomes thus far.

## 4. THE VPRN JOURNEY THUS FAR

The VPRN is in the early period of its development; however, much has been achieved thus far. The foundation for this achievement is the Founding Partners co-operating together of VET entities such as displayed (but not exclusively so) on the home page of the website www.vprn.edu.au –And now, the taking forward is very much in the *encouraged-and-supported* hands of VET practitioners joining as Members of the VPRN as they draw upon the website as a portal for information, accessing research, and engaging in VET researching community of practice activity through sharing and other processes. The other processes including posting comment, giving and receiving critical friend support, and mentoring as is helpful in a community of practice where membership ranges from new (maybe uncertain)

entrants to highly experienced (confident) researching practitioners[#4].

> #4: The *VET teachers and research* conversations (Hughes 2018b) give reason to anticipate that beyond those VET teachers/practitioners already engaged in research (e.g. pursuing further qualifications) generating motivation to research and support of research activity will be significant factors in recruiting VPRN Members from the general body of VET teachers/practitioners. And, beyond this, there must be very deliberate and energetic rewarding of all members irrespective of their initial motivations to join – i.e. deliberate action to retain members is a VPRN imperative and, likely, includes face-to-face relationships.
>
> In the research leading to the development of the LCM Achievement Model (Hughes 2007) *Finding a Family* was found to be the glue securing retention of Country Fire Authority of Victoria volunteers (very much a learning community) and I suggest resonates with other instances of learning communities of practice such as the VPRN – a VPRN actively pursued goal (among others) should be securing a sense of family within its membership. The family is abiding – albeit the active engagement with VPRN is intermittent as is helpful to professional practice.

Whilst the Founding Partners of VPRN are drawn from a wide spectrum of interests and stakeholdings, the commonality between public provider and private provider motivations and expectations bodes well for the VPRN and, beyond that, for VET in Australia. Notwithstanding competition (being

the government intention) between and within these two sectors of VET delivery in Australia, there is common interest in community valuing of VET and the role of teachers as researchers. The collaborative public/private provider *supporting teachers* posture, logically, involves strengthened collaboration with teachers/practitioners. In this way, enhancing the perceived and real professionalism of teachers /practitioners leads to enhanced valuing of VET by the community. With this in mind and in broader overview, whilst variously expressing, the Founding Partners of VPRN are seeking enhanced VET image, enhanced delivery of VET[#5], and contributing to the resilience of VET practitioners.

> #5: Clearly, enhancement of VET image and enhancement of VET delivery are entwined. However, in the Australian VET case, there is a job to be done in overcoming the perception that VET is a second-class (compared to university) tertiary education pathway. Accordingly, enhancing of VET delivery may be as much about highlighting the advantages to the student and the community as it is about addressing weaknesses in delivery such as have existed or may arise – VET has much cause for pride, but there are remedial matters to be addressed.

In congruence with Founding Partner expectations, VPRN Members advise that they are variously seeking networking and collaboration with colleagues; support in researching and sharing; and access to resources, information and ideas. Accordingly, as each feeds the other, there is partnership building congruence between Founding Partner and Member expectations as illustrated (later) in Figure 5 which is a representation of partnership

as is akin to marketing exchange where seller and buyer each put in and each take out something of value as satisfies respective needs. In this case, the Founding Partners are putting in initiating and sustaining the VPRN as a place (largely virtual, but not exclusively so) where nurturing of VET teacher/practitioner engagement 'in' and 'with' research occurs with strengthening of VET as the sought return – noting that this strengthens their own position/security. And, in partnership, VPRN Members put in effort and commitment in return for enhanced professional satisfaction and identity. Such partnership is a means of strengthening the respective partners' own position/security. For both parties – Founding Partners and Members – the VPRN is a tool to be drawn upon in securing an individually valued role in the evolution of VET.

Having partnering with Members in mind, the Founding Partners were asked two questions:

- What do you see as your organisation's business focus? and
- What benefits to your organisation's interests do you anticipate/seek as accruing from VET practitioners engaging with the VPRN?

Regarding the future involvement of VET entities, I anticipate that other than VPRN Founding Partners will join as sustaining partners and it is likely that the notion of being a founding partner will become just a matter of VPRN history, but the motivating issues are likely to remain essentially the same as, even in changing times, the strengthening of VET has universal appeal. However, VPRN Member views are as offered by early joining colleagues and although probably indicative of the growing

body of membership (at April 2018, having grown beyond 100) there will be other nuances of reasons to join and sought outcomes as suit the needs of those to come. For example, increased casualisation of the VET teacher workforce may substantially change the cause (not diminishing but expanding) for valuing VPRN membership and, hence, enrich the nature of partnership between Members and those entities sustaining the VPRN.

## 5. VET PRACTITIONER IDENTITY AND ENHANCED QUALITY ASSURANCE

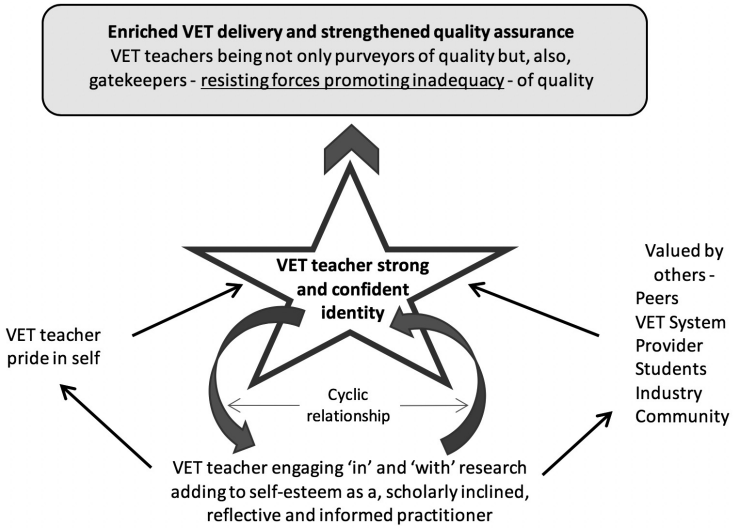
I begin with an experience of my wife, Libby who was my co-researcher in the VET and Social Capital explorations (Hughes & Hughes 2011, 2012, 2013). At the time in question, Libby was the head of a teaching department in a TAFE Institute. The circumstance was that an Australian manufacturer of automotive leather was seeking a contract with a European prestige car manufacture and it was a surprise to the Australian company that the prospective client – upon visiting the Australian manufacturer – sought reassurance of abiding workforce capabilities. The visitors (prospective clients) made it clear that confidence in abiding workforce capabilities had more influence upon their decision to purchase than was the case for inspection of sample product. And, given that this Australian company had a large migrant workforce with English language, literacy and numeracy skills (LLN) needs, partnering with Libby's TAFE department in providing language LLN strengthening training for the workforce became a significant factor in achieving the contract. And, of course, the capabilities of Libby's LLN teaching staff were central to a successful contract bid. Later research (Hughes

& Hughes 2011) revealed strong, abiding, department 'educationalist' cultural disposition across the, multi-programme, breadth of the VET teaching department. This VET circumstance strongly resonated with my manufacturing and service industry experience (including quality assurance in respect of VET learning design and delivery) where workforce[#6] capabilities and commitment were at the core of producing quality outcomes. I too looked to the capabilities of people beyond sampling product at a point in time. Accordingly, Figure 3 is offered as an illustration of connection between VET teacher identity – pride-in-self – and quality outcomes for students.

#6: In the VET instance, 'workforce' is generally thought of as mostly teachers and those colleagues included in the 'practitioner' category, but in the course of the VET and Social Capital research (Hughes & Hughes 2011, 2012, 2013) it emerged that beyond the segment of VET practitioners there are people in the VET workforce such as administration personnel and technical support personnel who are in close contact with students and are influential in the satisfaction of student needs and expectations (and, even, other clients of VET such as employers, parents and the broad community) whose contribution to VET quality and image is often overlooked. I raise this as, although the VPRN is focussed upon teachers and other practitioners, there is merit in recognising that VET practitioners have collegiate association with others; and, practitioners in being scholarly has a flow on effect upon these 'others' in the workforce. There is a potential 'ripple-out' effect from VET practitioner membership of the VPRN.

Embracing the notion that being qualified and vocationally current is not the same as being valued, returning to the instance of a contract hinging upon the quality of personnel producing product, there is merit in reflecting upon the possibility that valuing Australian VET by the quality of student output (albeit questionable that this is actually, effectively, in place) – whilst, clearly, very appropriate as an inclusion – may not be taking sufficient account of valuing the VET workforce as being at the '*quality core'* of VET's production. I raise this as it may be that VET teachers (and workforce colleagues) are more *back-of-mind* (only tacitly), quality-wise, valued than one might think. Accordingly, Figure 3 is offered as illustrating an approach to strengthening quality assurance (QA) in a way which raises teachers, consciousness of what they contribute in scholarly mode and, also, raises VET system consciousness of this – leading to a circumstance where trust in the teacher is strengthened along with teachers' regard for themselves and commitment to quality.

Figure 3
Engaging 'in' and 'with' research strengthening VET teacher identity and QA (Refer Hughes 2015b)




Supported by conversations arising from on-going exploration of *VET teachers and research*, in Figure 3, the foundation for VET quality outcomes is illustrated by the cyclic relationship between VET teachers having strong and confident – valued by self and others – identity and engaging 'in' and 'with' research. Whilst, I don't yet have specifically (other than auto-ethnographic) researched evidence of this, my life experience is that where a service or a product is being delivered by a person with competency and commitment[#7] there is a greater degree of confidence with respect to quality than what might be indicated by quality audit of systems and product from time to time. This said, by all means, conduct periodic conventional quality audits,

but with justified applause *of those who produce* in mind. Changing from a policing approach to a – with justification – applauding disposition.

> #7: In amalgamation, competency and commitment to draw upon what is known and can be done with a lifelong learning orientation are key attributes of capability. Accordingly, I contend that a competent and committed VET teacher/practitioner who sees this as at the core of their identity will strive for excellence and will resist forces leading to inadequate quality outcomes. In this sense, a VET teacher acts as a gatekeeper of quality and is better defence than specified rules which a provider may go around with opportunist intent or ignorance. And, further, there is uncertainty with VET quality compliance models which rely upon customer feedback where customer feedback may be unreliable. For example, as part of my *secret shopping* explorations of delivery quality I was a student in a VET handling food safely subject (delivered in two hours rather than the 15 nominal hours and billed at $5/hour for 15 hours) where, at the outset, the teacher advised that there was a test but not to worry and, from what I sensed, all students (other than me) recorded high satisfaction in their formal feedback to the VET system, but didn't indicate that this was because they effortlessly (didn't really engage in a learning and demonstration of competency activity as would be expected of competency-based training) got their statement of attainment certificate required to be sighted by health authority – being actually competent was not their prime objective. And, by the way, the test was open book written answering of questions which in the course of

> the thin delivery had been identified in the handout notes to ease transcribing, or otherwise responding, to a test paper (noting there wasn't any demonstration of competency as would be expected in competency-based training regime). Alternatively, confidence in VET delivery is increased where there is justified confidence in respect of teacher capability, commitment and thus empowerment to resist opportunist (or by ignorance of others) erosion of the learning experience – such a teacher acting as a break upon opportunistic short-cutting/usurping of VET system expectations.

Reinforcing the connection between VET teachers/practitioners researching as part of their professional practice and quality assurance, I draw upon autoethnographic evidence in proposing such an *applauding rather than policing* hypothesis and suggesting that action research type exploration beckons. Further, in putting this forward, I believe that I am not alone in having experienced that quality in outcomes – where people are the tool – arises from rising above complacency by inquisitive and reflective people who are motivated and supported in self-directed continuous improvement. Indeed if such – in recent Australian VET times where opportunist providers have damaged the valuing of VET – was in place, the broad collegiate professionalism of VET teachers/practitioners would have been at least a partial break upon inadequate delivery. In saying this, I have in mind that even a well delivered/experienced Certificate IV in Training and Assessment should be regarded as a beginning in teacher qualifying to be progressively built upon by further study and/or self-educating as accrues from research activity and drawing upon the research of others – in both pedagogical and vocational arenas.

As reported upon in other papers arising from my exploration of *VET teachers and research* (Hughes 2017a, 2018a, 2018b, 2018c), the conversational exchanges in which the merit of strategic vocational currency research emerged is iconic of the quality enhancing potential for teachers purposefully[#8] engaging 'in' and 'with' research.

> #8: It should be noted that in the course of the *VET teacher and research* explorations (Hughes 2017a, 2018b) the worth of VET teachers/practitioners focussing upon exploration of strengthened teaching practice entwined with strengthening vocational currency emerged as 'purposeful' research of appeal to teachers/practitioners. This 'purposefulness of VET research by teachers/practitioners as part of their professional practice being a feature of being scholarly in a VET way – i.e. preserving VETness (Hughes 2018a)

In essence, the proposition is that where a teacher is released from teaching duties for a period of time to re-enter the workplace (for maintaining vocational currency purposes) if this is purposefully focussed upon research informing the 'what' and 'how' of teaching then there is a tangible programmed outcome – i.e. a report to be shared and discussed with VET colleagues. This is different to the circumstance where a teacher just spends time in the workplace in the hope of – in some way – adding to vocational currency. And, importantly, there is a multiplier effect arising from the experience of the researching teacher through research report sharing and arising critical collegiate debate. Thus giving rise to the possibility of one teacher's experience/findings prompting exploration (even informally and,

maybe, even usefully challenging) by others – there is a rippling-out effect from the sharing of new knowledge. However, to achieve this advantage, deliberate action is required to make it so. '*Making it so*' action is different to having complacency that sharing will just happen. The VPRN has a role in motivating and convening discussion – leading to action – forums.

In summary, with respect to heightened VET quality assurance, this paper posits that a VET culture which nurtures and supports VET teachers/practitioners valuing identity as inquisitive and reflective scholarly (in a VET way) professionals is a foundation upon which to construct strong confidence in VET quality of delivery – both pedagogically and vocationally.

## 6. PARTNERSHIP AND CONGRUENCE OF INTERESTS

It is self-evident that a partnership – of any form – requires congruence (harmonious relationship) of interests. This is the case on a person-to-person basis and in the instance of organisations (broadly defined and themselves being constructs of people) co-operatively pursuing a goal even though there are differences in their respective motivations. For example, as has arisen in the course of the *VET teacher and research* exploration, a teacher may have professional satisfaction as the prime objective. Whereas, in pursuit of the common overall goal of strengthening VET, a head of teaching department is likely to have department sustainability achievements such as enrolments and retention through to graduation of students as the prime objective in partnering with teachers as researchers.

Consequent upon teachers feeling that they are time-poor

– having many, imposed and unwelcome, duties other than teaching – the importance of partnership in the *VET teacher and research* case has been prominent in the conversations. For example, the conversations (17 interlocutors in 42 person hours) yielded unanimous agreement that, in an *acting*[#9] environment, division of labour – partnership between teachers and providers – was pivotal to initiating and sustaining a VET teacher researching culture. In such a partnership, each puts in as is appropriate to their respective means and each benefits as is appropriate to their respective needs – e.g. a teacher will put in a proportion of personal time if the provider also allocates some time for research by relieving other duties demands. In overall terms, the partnership could be one in which each invests some time. This aspect of a teacher/provider partnership touches upon the entwined issues of whether continuous professional development and maintaining vocational currency is a joint (load shared for mutual gain) responsibility.

#9: Drawing upon an activity system framework (Engestrom 2001), the *VET teacher and research* conversations have included sharing views as to which of 'Rules', 'Community' or 'Division of Labour' are most influential and therefore to be placed as the pivot point (Hughes 2017c) of the 'Hinge' – pivot point, agreed object and tool – coupling interacting activity systems (see Figure 3). Whilst governing rules such as aid or inhibit teachers researching activity and nuances of community are seen to be important influencing environment factors with respect to a teacher/practitioner engaging 'in' or 'with' research, division of labour has been the unanimous nomination as the most influential. In reporting this, it should

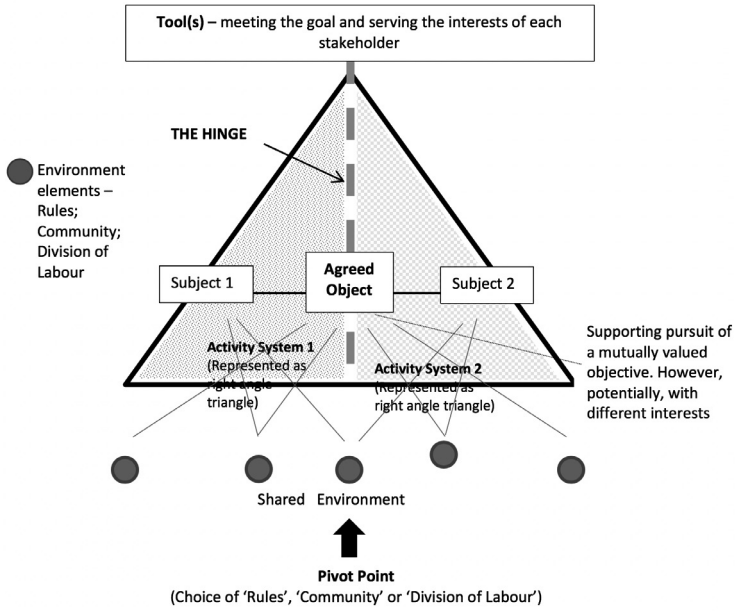
be noted that the process of seeking agreement on pivot point, whilst facilitating taking the process forward, is not so much about the actual decision as to what it is about the broad conversation – thus generated – regarding the scope and nature of the '*acting*' environment in which teachers/practitioners are motivated and supported to value research as part of their professional practice.

In the foregoing, '*acting*' environment is deliberately used to underscore that interrogation of the environment is focussed upon the activity of VET teachers/practitioners researching and drawing upon the research of others as the object in an activity system sense and the subjects are the teachers/practitioners. In such an environment there are actors other than the teachers/practitioners – such as VET provider management and VET system agencies – which influence the occurrence of VET teachers engaging 'in' and 'with' research. Accordingly, there are a myriad of interacting activity systems where the object – teachers/practitioners researching and drawing upon the research of others – remains the same, but the subjects are the respective VET entities. And, not surprisingly, teachers/practitioners – along with these other entities – come to a view that partnership between them is the pathway to realisation of the object and hence contribution to the objective of strengthening VET deliver as a contribution to social and economic productivity.

Returning to the *VET teacher and research* conversations, Figure 4 illustrates the abutting of two interacting activity systems (refer Hughes 2017c) where Subject 1 is the teachers/practitioners and Subject 2 is the delivery managers. The agreed

Object being VET teachers/practitioners researching and drawing upon research so as to contribute to the Objective (different to but related to 'Object') of strengthening VET delivery to community advantage. In the instance of *VET teacher and research* informing conversations, the interlocutors unanimously chose Division of Labour as being at the Pivot Point.

Figure 4
Hinged activity systems (a representation of two, but there could be more, integrating activity systems)



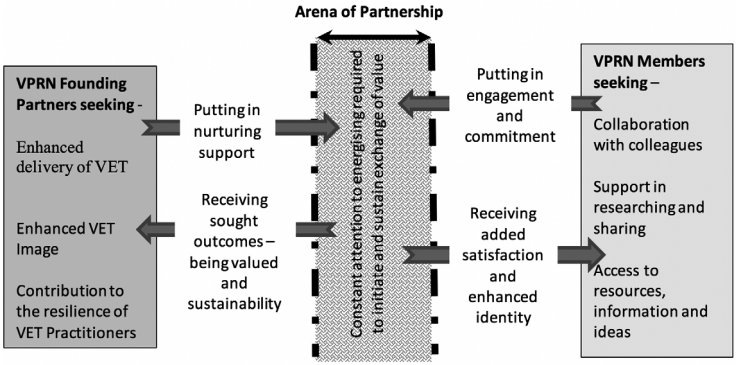

Among the milieu of partnership possibilities there are two configurations of partnership addressed in the following. That is, firstly, partnership between VET entities giving rise to the

VPRN and members of the VPRN and, secondly, partnership(s) between VET teachers and their employing VET providers.

## 6.1 PARTNERSHIP BETWEEN VPRN FOUNDING PARTNERS AND VPRN MEMBERS

The 2017 survey of VPRN Founding Partner and VPRN Member expectations (Hughes 2018c) indicates congruence of expectations as commented upon in the foregoing. However, whilst this alignment is reassuring, it is also a reminder of the need to couple action with intent. Accordingly, Figure 5 illustrates the respective partnership interests and contributions in the form of a market exchange model. Importantly, as marketplace exchanges typically require promotion (e.g. advertising) and maintenance (i.e. ensuring meeting the respective needs and satisfaction of the parties), the achieving and sustaining of partnership between VPRN Founding Partners and VPRN Members requires creating and sustaining action. This said, it should be noted that the VPRN is a 'tool' initiative of the Founding Partners which seeks to expand partnering possibilities in such a way as to add to respective contributions to strengthening VET. Accordingly, the Figure 5 partnership is at the core of VPRN reason for being and sustainability.

Figure 5
Initiating and sustaining partnership as an exchanging of value – each partner putting in something of value and taking out, in exchange, something of value




With respect to action, and with the vision articulated by the VPRN Executive Committee of '*Raising the Australian VET sector research capability and reputation through effective use of VET practitioner research*' in mind, I am reminded of what I understand to be a position taken by Nelson Mandela – Vision without action is daydream and action without vision is nightmare (Japanese Proverb). Also, with making-it- happen action in mind, the VPRN mission is articulated as '*Interactive aggregator of VET research connecting individuals and agencies by encouraging reflective research practice*'. Accordingly, Figure 5 is offered as an exchanging of value, planning, and action approach to deliberate and energetic VPRN support of its members across the spectrum of engaging 'in' and 'with' research disposition. This said, I caution against complacency that having established the VPRN and the website they will come (Drawing from the Phil Alden Robinson film 'Field of Dreams' – substituting 'they'

for 'he'). The 'they' being VET teachers/practitioners variously located within the continuum from early adopter through to reticent – as illustrated in Figure 6. Recruitment to VPRN membership requiring progressively more attention to the 'L', 'C' and 'M' of the LCM Organisational Achievement Model (Hughes 2007) as illustrated in Figure 7.

Figure 6
VPRN Memeber joining inclination – a continuum

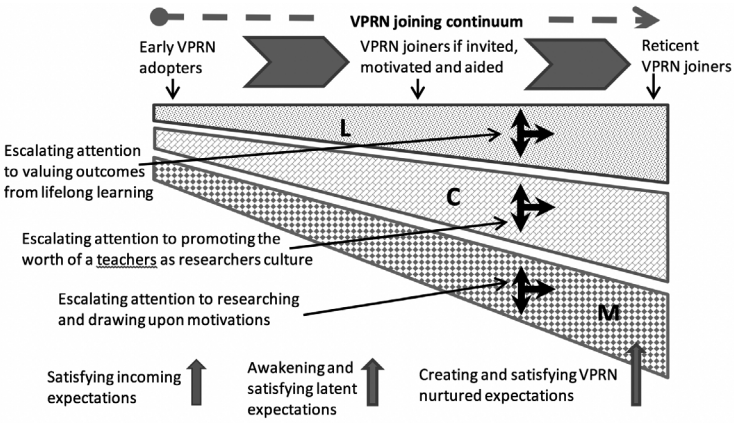



Figure 6 illustrates the requirement for escalating enmeshing (refer Sweet Spot of Figure 1) attention to motivating and supporting a VET teacher/practitioner in respect of their valuing what they know and can do as is accrued from being inquisitive and reflective. In this respect, including research and drawing upon the research of others as part of their professional practice has much value – expanding their repertoire of what they know and can do coupled with motivation to act. However, as the VET teacher's/practitioner's pre-disposition moves from left

to right in Figure 6, more is required of the VPRN in recruiting, welcoming and retaining new members. Accordingly, as is appropriate to position in the early adopter to reticent VPRN joiner spectrum, the nature and strength of VPRN drawing upon the LCM Achievement Model (Figure 1) changes in terms of effort to be applied. It is with this in mind that the notions of mentors and/or critical friends and/or raising awareness of professional development opportunities, vocational currency innovations, etc. are inclusions in what is or might be accessed through the VPRN.

## 6.2 PARTNERSHIP BETWEEN VET TEACHERS/ PRACTITIONERS AND EMPLOYING VET PROVIDER

Whilst this paper addresses the emergence of the VPRN, the overall goal is for teachers/practitioners to include research as part of their professional practice. Accordingly, substituting the partners as 'VET Provider' on the one hand and the broader population of 'Teacher/Practitioner' as the partner on the other hand, Figure 5 has utility as an initiating and sustaining model for partnership within a VET delivery institution. In this respect, the *VET teacher and research* conversations point to opportunities arising from conversations specifically applied to a provider's circumstances – i.e. the conversations addressing the particular provider's approach to VET delivery. Moving from the general to the particular, the VPRN role is to contribute to the nurturing of a VET-wide *teacher/practitioner as researcher* culture from which providers can draw as suits their individual – within the VET system requirements – approaches to *quality* delivery of VET. And, similarly, VET teachers/practi-

tioners accrue enriched professional satisfaction entwined with resilience.

## 7. THE WAY AHEAD – CONGRUENCE OF INTERESTS, THREATS AND OPPORTUNITIES

As stated at the opening of this paper, the VPRN is at the beginning of its journey. The journey being contributing to enhanced status of VET in the public mind as a consequence of supporting VET teachers/practitioners engagement 'in' and 'with' research as a part of their professional practice. In this respect, the congruence of VPRN Foundation Partners' and VPRN Members' interests at this early stage bodes well. However, there is the potential hazard of complacency to be acknowledged and addressed.

With complacency in mind, the VPRN has got to where it is through the good graces of a few people who individually, and with the support of their connection to Founding Partners, have contributed much. However, there is a limit to what this core of committed folk can contribute; and, in my view, there is urgency in relieving looming exhaustion by generating VPRN member engagement which serves to bring energy to the table – i.e. creating momentum which becomes to a large extent self-sustaining and not only gives justification for the commitment of the few, but is motivation to keep-the-eye-on the ball and be in pro-active continuous improvement mode. For example, in partnership with the VET Development Centre (VDC), Australian Vocational Education and Training Research Association (AVETRA) and others, the possibility exists for a VPRN Member to draw upon their engagement with VPRN as evidence of con-

tinuing professional development and vocational currency. In this example, I particularly mention VDC and AVETRA (each Founding Partners) as VDC's focuss is upon strengthening the ocuurence and outcomes from professional development in the VET sector and AVETRA's focus, as a professional membership body, is to serve the interests of an expanding VET researching membership. In both instances, VET status is being enriched and there is consequent strengthening attention to community social and economic productivity. Of course, there is a rich milieu of other partnering relationships beckoning. In all these respects, the VPRN – as a innovation initiative – is itself a partner and has a role in identifying and nurturing high value outcomes for all involved. And, in my view, making it happen is now an obligation which the VPRN keenly embraces – vision being coupled with action.

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# Critical incidences and events in vocational teachers' life careers

Krista Loogma*

**Abstract:** The paper considers, what implications the critical events and incidents in the course of the life careers of vocational teachers have on their professional lives and how the changes in their career paths reflect the social transformation in early 1990s. In the life career (Watson, 1980) the personal, non-work structural factors, such as social and class background and structural factors, reflecting broader political and socio-economic structures and changes are tightly interrelated with subjective factors. Individuals´ own view of the processes of work and learning, which his/her life is following, is considered as subjective career. However, in the subjective career paths, some events and incidents – "critical incidents" (Ben-Peretz, 2002) – can have crucial meaning with far-reaching implications on teachers´ self and their professional life as recalled by teachers in their memories. The paper base on the life stories of 12 experienced vocational teachers who are asked in interviews to recall the way they have become vocational teachers. In the paper I argue, that the most dramatic events, causing discontinuities in the vocational teachers' life career paths reflect the societal changes in early 1990s

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from one hand and the teachers ′ changing family circumstances from another hand.

**Keywords:** Vocational teachers, Life career, Narrative interview, Critical incidents

## 1. INTRODUCTION

Contemporary changes in the modern working life driven by technological development, the changing economy, ever growing cultural diversity (Castelles, 1997, Young and Collin, 2000, Riverin-Simard, 2000, Loogma, 2004) and other factors, have resulted in growth in complexity and made working life and careers turbulent, consisting of a number of discontinuities and new beginnings. In addition to facing global challenges, post-socialist countries have experienced fast, deep or "revolutionary" societal transformation that has changed the entire societal system (Loogma, 2004) and caused career disruptions for most employees.

In 1995, with the adoption of the Vocational Teacher Statute, the term "vocational teacher" was first introduced in Estonia, and as a result, the separate teaching roles in vocational schools, such as theory teacher, teacher of a specialist field, supervisor/master of practical training, had combined into the new, integrated role of a vocational teacher (Sirk, Liivik, Loogma, 2013). Since then, the functional complexity of vocational teachers has been continuously rising. At the peak of the transition, particularly in the 1990s, and like most employees in Estonia, they experienced career disruptions because of the transformation of the economy and employment structure (privatisation, reorientation from East-

ern to Western markets, changes in technologies, rapid growth of employment in the service sector and a decline in the agricultural sector, etc). However, in the case of the careers of vocational teachers, the situations could have been even more complex. Generally, they should simultaneously have a double qualification – the one related to their specialist area and the another one in pedagogy. Thus, they may have experienced discontinuity, new starts and work identity discontinuities many times during their working life in the process of becoming a vocational teacher. Although the "normal" career path should start with the acquisition of a vocation or profession, and work experience in the field, which is followed by pedagogical training (Hiieväli, Loogma, 2006) there is great variation between vocational teachers how they have come to this position. The paper relies on narrative interviews with the experienced vocational teachers. Data were collected in the frame of the national research programme "Teachers' professionality and professionalism in a changing context" funded by the Estonain Research Agency.

In this article I ask, what kinds of factors and/or critical events have caused or set off changes in the vocational teachers' working life that have brought about discontinuity and provided an opportunity or need for new beginnings? What can be consequences of their concept of vocational teaching?

## 2. THEORETICAL AND CONCEPTUAL FRAMEWORK

Generally, the concept of 'career' is considered vital and makes it possible to explore the life of an individual as a process, in terms of an individual's movement through time and space and as an

overarching construct that gives meaning to an individual's life, a construct that an individual can use to build up connections between goals, decisions, actions and their consequences. The concept or notion of career has many embedded meanings and can be seen from different angles, which means that the conception can be used to connect many aspects of an individual's life to the socio-economic environment.

The notion of life career (Watson, 1980) describes the (work) life of an individual as a process, linking subjective aspects of life with its objective/structural conditions, while at the same time, reflecting broader political and socio-economic structures and changes. An individual's life career acknowledges the interplay between the personal factors and agency of an individual (such as motives, expectations, interests as well as individual resources and capabilities) on the one hand, and structural factors and contingencies related to both non-work (such as family circumstances, education and others) and work-related spheres (such as socio-economic and labour market conditions and changes) on the other (Watson, p 125). As this links circumstances of personal life with working life and life as a whole, therefore it enables to better understand the working life of an individual. To understand the work experience of an individual, one has to look at their entire life career (Watson, 1980), which includes not only their work-related career, but also the broader societal context of their social and personal life. Furthermore, concept of career connects the past and present of individuals with the future (Riverin-Simard, 2000), enabling us to see how the structural circumstances of the past and decisions made in the past can have implications for the present situation and for the hopes and fears related to the future.

Distinction is made also between objective (occupational career, organisational career) and subjective careers (Watson, 1980, p 124). The individual's own view of his or her career is considered the subjective career.

A subjective career includes individually perceived sequences of movements between various statuses (occupational, organisational), situations, structural conditions, life events, attitudes and behaviours and changes in work environments (Watson, p 124, Hall, cited in Young and Collin, 2000, p 4). Through their own view, individuals try to achieve coherence between and attributing meaning to various aspects of their working lives. This journey may have a certain pattern when viewed by an observer or by the actor him or herself and refer to the *self,* which can assure some stability and continuation in the career path (Watson, 1980, Young and Collin, 2000, Riverin-Simard, 2000, Gardner, 2003). The concept of *self,* "refers to the felt identity... – an identity which develops in interaction with others" (Watson, 1980, p 124).

Therefore, the concept of career manifests or reflects the personal meaning of life, providing coherence, continuity, and social meaning for individuals' lives (Young and Collin, 2000). The same idea is bought up by Gardner (2003) in the argument, that subjective careers narrated by the individuals themselves in their oral histories may refer rather to an individual him or herself, and not so much to the objective circumstances of their lives, and in this way, the career as perceived and remembered by an individual is related to the concept of self.

Riverin-Simard ( ) uses the notion of the vocational project of an individual (p 121) that assures continuity and meaning to the (working) life related to vocational and occupational identity.

However, the vocational project of an individual may be characterised by more or less continuity and consistence (Brown, Kirpal and Rauner, 2007) as career patterns are determined by choices and opportunity structures, which can be seen as two sides of the same coin, as every choice is made within structural constraints (Watson, 1980, p. 126).

Thus, by telling their life stories, individuals try to construct their lives as consistent, and explain their working lives as embedded in a certain continuity. Even though the attitudes, behaviour, and preferences of individuals can change throughout their life-career, there is some integrity, manifesting itself in the concept of self.

In teachers' narratives about their life career, some past experiences or life circumstances are considered as critical (Ben-Peretz, 2010) and perceived by teachers as having a crucial influence on their professional career and the self. Those circumstances – whether they are related to the working life or to the personal life are considered by the narrator as important and causing discontinuities in their work career.

## 2. METHOD

Methodologically, the research reported in this paper is a narrative research. The life narratives shed light on the consequences of discontinuities and the needs for new beginnings. At the same time, the life narratives indicate, what kinds of factors and critical events in the lives of vocational teacher have had consequences on the (continuous) creation of vocational identity and contribute to the understandings, how the concept of vocational teacheing have evolved (Riverin-Ssimard, 2000).

Data were collected by conducting narrative interviews with experienced vocational teachers in the second half of their career, as they have already experienced turbulence, transformations and new beginnings in their working life and in the process of becoming vocational teachers. All of the interviewed vocational teachers have started their working life already in the Soviet time and some of them as vocational teachers. Open, un-structured interviews were applied. The starting or stimulus question was: *Please describe how you became a vocational teacher*? The verbatim transcribed interviews were analysed using the thema analysis (Braun and Clarke, 2006)

## 3. ANALYSIS AND RESULTS

As a result of the thematic analysis (Braun and Clarke, 2006) of the transcribed narratives of their subjective life careers from the viewpoint of critical events, three broad topics emerged:

1. Becoming a vocational teacher / entering the post of a vocational teacher - three routes can be distinguished: a) becoming a vocational teacher right after completing the formal education, b) becoming a vocational teacher by chance after a specialist career path and relying on practical experience in the field, and c) after the long career path, where periods of employment in various organisations and occupations alternated;
2. Structural changes (related to the restructuring of the economy) in the 1990s and fluctuations in the labour market having a two-fold impact on the career either through, a) structural changes expanding the opportunity set, or b)

structural changes making employment unstable, and forcing to organisational, occupational, sectoral and spatial mobility and

3. Changing family circumstances, such as getting married, birth of children, divorce, family breaking up and others

The results of the analysis below are presented as excerpts from the life narratives dealing with disruptive events and changes that cause discontinuities in life career, and therefore impelled the respondent to further changes that sooner or later led to the position of a VET teacher. The categories under each topic are illustrated by the excerpts, giving at the same time the context of the life career development of that person.

## BECOMING A VET TEACHER / ENTERING THE PROFESSION. THREE PRINCIPAL CAREER ROUTES

By recalling the beginning of their working lives, most of the vocational teachers explained how becoming a vocational teacher has not been a conscious nor a desired choice or dream in the beginning of their working life for most vocational teachers. Like in the case of Tiia. She recalled that vocational education had bad reputation and her school teacher stressed, that, "... *if you (students) do not study you remain stupid, obtain low grades and then you should go to the vocational school"*

In many cases, family background (working class background, from small villages in agricultural areas and other circumstances, the need for work and to earn money, to cope) forced people to go to vocational schools (in the Soviet era) to get work and

become independent as soon as possible. Almost all the mid or late career teachers have become VET teachers by a chance, because of material reward (mainly because of possibility to get dwelling/apartment as the bonus from the state) or due to unexpected opportunities. They might be invited to the vocational school by someone they have known from previous positions, or they applied to become a vocational teacher in a specialist field where they have been working for a long time, having solid practical experience in the field etc. A complex set of factors have contributed to motivate individuals in various stages of their careers to start as a vocational teacher. Three principal ways to become vocational teacher can be distinguished.

#### 1) Right after completing formal education

On rare occasions, the career narratives indicated a linear straightforward path so that VET teachers would have to start teaching in a vocational school right after completing a specialist (vocational or higher) education. In most cases, however, the choice was made considering the circumstances of the individual's personal life, and more specifically, at the beginning of their life career during the last years of the Soviet era (1980s). The primary reason for choosing the job was the possibility to receive a free dwelling/apartement by the employing organisation ′s trade union from the state. At that time, the unions were administratively controlled and their main task was to distribute goods and services that were not otherwise freely available (e.g. cars, places to live) (Loogma, 2004).

The case of *Toomas* illustrates this situation. Although Toomas never wanted nor dreamed to become a vocational teacher, he become vocational teacher right after graduating from the Poly-

technic Institute during the Soviet era. Through the mechanism of the Soviet manpower planning system and work assignments for graduates he was offered five employment opportunities. He chose the vocational school because of the opportunity to receive a dwelling for his family (he was married) and he was offered a flat. Besides a couple of short periods in enterprises during the transition period of the 1990s, he worked all the time in the same vocational school.

> One thing was that by that time I was married. The [vocational] school was given one flat every year and I was the eighth one in the queue. My wife who worked in a department store was maybe 300th in the queue. Therefore, it might have been one reason why I came here. If someone had told me after (school name) that I would become a teacher, I would not have believed him. It was somehow ... I didn't even check anywhere else...

### 2) Becoming a vocational teacher by chance after a specialist career path and relying on practical experience in the field

Often the post of a vocational teacher was offered by the school or through personal networks or sometimes a person has had some previous relations with the school. The teacher of electrical engineering at a vocational school died suddenly, and the post was offered to *Raivo*, who had a higher education in electrical engineering. Raivo had supervised students in their practical training, he believed that his electrical knowledge was sufficient to become a vocational teacher and so he decided to accept the offer.

However, the understanding he had that teaching was "easy work" (having one subject all the time governed by the objective rules of physics that don't change) was not how it turned out in reality. The first year as a teacher was difficult, he didn't know what and how to teach and he felt himself as being alone. There were no teaching materials, he faced pedagogical problems and was disappointed about the low level of the students´ knowledge and motivation, which was much weaker than expected.

> In the beginning yes, of course, the hurray was maybe bigger /.../ but so was the disappointment - seeing what level they had when they come from school and what level we had.

Suddenly, after years of working in the service sector and in a couple of hotels, the local vocational school was looking for a vocational teacher for service sector subjects. Her previous work experience gave *Marika* the confidence to apply. She was immediately taken to work as a vocational teacher in hotel business and services. She decided to accept the offer because the school collective was known as having nice people in this small town. She appreciated that the work at the school provide many possibilities for self-development in various forms, such as training and business visits abroad. There is always something new to learn at a course. Step by step she expanded the scope of the subject area she was teaching and is satfisfied with the work.

### 3) In some cases, entering the VET teaching profession happened after a long career path, where periods of employment in various organisations and occupations alternated. There also happened to be periods of unemployment and casual labour

A rather common way of adopting a VET teaching position was after a career path that can be described as an "boundereless career" (Sullivan, 1999), involving a high level of mobility and transitions between organisations, jobs and specialist fields with many disruptions and new beginnings and also re-entering a vocational teacher position.

However, becoming a vocational teacher in all these cases was perceived as a change that, on the one hand, was unexpectedly difficult and a shock for which they were not prepared, while, on the other hand, it was a new beginning, providing the motivation for learning, for further studies, and professional development and self-improvement.

## STRUCTURAL CHANGES IN EMPLOYMENT STRUCTURE IN1990S CAUSING CAREER CHANGES

The 1990s was a transition period marked by a fundamental restructuring of the economy as well as structural changes in the employment market. The economic restructuring entailed multiple parallel changes such as privatization, state enterprises breaking up and disappearing, the rapid emergence of SMEs, bankruptcies and much more. Structural changes, par-

ticularly changes in employment structure, caused considerable movement of employees between jobs, occupations, organisations and specialist fields. In some cases, the structural changes opened new opportunities, while in others they caused job losses, unemployment and frustration related to the need to find new beginnings. The emerging service sector (including tourism) expanded fast and new career opportunities emerged in the service field. At the same time, the industrial and agricultural sectors shrank causing bankruptcies and massive job losses. However, in one or another way, the structural changes of the 1990s forced people to look for new options and directly or indirectly led many to the occupation of vocational teacher.

The case of Tiia is a good example of how the structural changes in the employment system, and at the same time, EU interventions in vocational education, are often recalled as breakthrough events in the working life of VET teachers by opening up new perspectives.

The breakthrough (learning) experience for her was participating in the EU Phare project that was intended to develop the tourism programmes in Estonian vocational education. Tourism as a field of vocational study was absent in the Soviet era, and so this field was novel in Estonia at the beginning of the 1990s. For her, participation in the Phare project actually involved her in a completely new field followed by the development of new curricula, teaching materials, methods and textbooks. The Phare project was also significant because of its international scope, related to travel, new experiences, new horizons, new interrelations. The international partners - Ireland, Sweden and Norway –also provided a Western or Scandinavian view and principles in the field of tourism.

Tiia was involved in broader cooperation and collaboration with various actors in vocational education, such as other schools, enterprises, particularly in the process of developing vocational standards. The process was highly interesting for her, involved training, and provided the feeling that she was participating and gaining a deeper understanding of the meaning of the practical training in the enterprises. Tiia had positive experiences related to cooperating with enterprises and how they influenced her work positively as there is always something to learn from them. The next significant learning event was formal education when she studied in Norway to acquire her first formal education in country tourism (1992-1994).

> The Phare project has actually formed the foundation of my tourism education, and was generally an extremely positive and life changing experience

The case of *Raivo* illustrates how structural changes can influence a career path and finally lead to a position as a vocational teacher. Raivo had a long career as an electrical engineer and been strongly committed to his profession. In the Soviet era, he was assigned first to work as an engineer in a large state enterprise. He got married and moved to a small town as there was a possibility of getting a place to live. After the regime change, the state enterprises went broke and private firms bought them up. Raivo worked for about 10 years in the same enterprise after the privatization until finally the enterprise also went bankrupt. He then became unemployed and for a couple of years, he worked at various temporary, short-term jobs, such as fisherman, construction worker and others. Finally, he worked at a construc-

tion enterprise where he also supervised the vocational students in their practical training.

However, a teacher in an electrical field at a local vocational school died suddenly, and Raivo, who knew the teacher and believed his electrical knowledge was sufficient, decided to accept the job offer. He was expecting teaching to be an easy job as he knew the field extremely well.

> Once I thought that there is no trouble to be a teacher, one subject all the time, as the laws of physics do not change ... In the beginning yes, of course, the hurray was maybe bigger /.../ but so was the disappointment

However, he is rather satisfied as he can still work in the speciality he likes (as electrician).

### CHANGING PERSONAL AND FAMILY CIRCUMSTANCES LEADING TO CAREER CHANGES

Changes in an individual's personal life, even dramatic changes, such as divorce, the loss of a job, as well as circumstances related to children and the desire to have family time, have all created the motivation for radical changes to life career. The changes involved have often been rather complex, such as a change of residence, going to work in a different company, changing profession or field of work, and sometimes all of these simultaneously. In dramatic situations sometimes, becoming a vocational teacher has offered some kind of "emergent exit" from a dead end.

The case of Ene illustrates how, due to family circumstances, and particularly because of children, women look for new

opportunities that better suit for raising children. In such cases, this could involve fundamentally changing careers, including studying to enter a new vocation/profession, and in this way, family circumstances have functioned as a factor that causes a disruption to their career path.

After completing vocational school at 17-18, Ene was already working in construction. That job was physically difficult for her and so she studied to become a crane operator. After becoming a mother and having a family, she decided to radically change her life. Looking for new options, she decided to accept an offer from a local vocational school to work as a master technician and instruct students in their practical training. At the time, she only had a vocational education (at compulsory level) herself. To teach at a vocational school, she continued her education path and acquired her secondary education and after that a polytechnic education and finally also pedagogical training at university.

> ... for these years [in a vocational school], I had been to work at full speed; I managed to complete my general secondary and polytechnic education, and then I managed to complete pedagogical training at university.

After 8 years at vocational school she felt that she had achieved enough and went to work in an agricultural organisation just before the Singing Revolution. After the collapse of the Soviet Union, state farms and collective farms were closed down. Although she had decided to continue in the medical field, she was invited to come back to the same vocational school she had worked at before. She accepted the offer because it had a

bigger salary. *"Yes, money was the determining factor back then. I thought, all right, I will work this year, after that I can still do medicine ...*" It turned out that she continued to there.

Similarly, career changes in the case of men are complex in their memories, and moving from one place of residence to another is connected with movements at work and family matters. However, the opportunity to receive a place to live (in the Soviet era) provided a decisive motive in these situations.

## 4. DISCUSSIONS AND CONCLUSIONS

This paper looked at what kinds of factors and/or critical events have caused or set off changes in the life careers and working life of vocational teachers as they recall them and that have brought about discontinuity and provided opportunities or the need for new beginnings.

Three complex factors emerged from the respondents' life stories/narratives that have had an impact on the life careers. 1) How they became a vocational teacher or entered the occupation. The pattern consists of three career paths: a) a relatively linear career (right after completing formal education), b) becoming a vocational teacher by chance after a specialist career path and relying on practical experience in the field, and c) a "boundaryless" career (Littleton, Arthur and Rosseau, 2000). Bcoming finally vocational teacher after the long career path, where periods of unemployment and employment in various organisations and occupations alternated. 2) Structural changes (restructuring of the economy) in the 1990s having a twofold impact on the career: a) expanding the opportunity set for some individuals, and at the same time, b) making employment unstable for other; 3) Various (changing) family circumstances.

The personal stories presented here illustrate the complexity of the development of careers of vocational teachers and show how personal life and working life are interconnected in their life careers and how structural and external factors of working life have had impact on career choices. Very often, family circumstances, such as getting married or divorced, becoming a mother and having children exert a complex influence on other factors and create a complex of reasons for a career change. This may include looking for jobs that better suite family life, moving between occupations and organisations, or looking for new places to live. That mean, family circumstances and changes in the family have had the most significance in impacting upon the career and education path. Gender identity (Hargraves, 1997) is an important factor in varying and complex ways. While in the case of women, caring for children in one or another way has been a major motive for career changes. In the case of men, however, the central motive in their subjective career path has rather rational choice, guided by looking for better material reward and have been related to the search for a dwelling for family and a new (better) job.

As becoming a vocational teacher is rarely the first choice in a career path, the primary socialization into the world of work has happened rather via the culture of the chosen speciality /profession. The specialist field is more meaningful and visible for VET teachers than the field of pedagogy, providing more important lines for career development and progression through vocational education. This in turn, results in different work-related commitments, being socialised into their specialist field and rather committed to their profession and underestimating the pedagogical knowledge necessary in the work of a VET teacher.

However, in many cases, the commitment to working as a VET teacher has evolved over time, while working as a VET teacher and gaining satisfaction from the work and/or various patterns of commitment (VET school, specialist field, students).

Even though the position of a vocational teacher requires pedagogical training, in many cases the vocational teachers who began working as vocational teachers in the transition period in the 1990s, did so without pedagogical training, which was not available when they started. Sometimes, it resuled in the great difficulties and disappointment because the teacher´s work turned out to be much more challenging than expected.

In addition, the life career paths of vet teachers involved a high level of mobility - occupational mobility, mobility between various organizations and sometimes, transformations from one field of activity to another. All these changes, however, have involved a great deal of learning, often experiential and workplace learning.

However, although life narratives widen and enrich the foundation of evidence for understanding the consequences of the changes in history, the stories people tell about their lives cannot be looked upon from the position of "historical realism". We have to consider, that arguments and stories told in oral history, can rather be seen as a construction of the self or as a basis for giving meaning to their lives (Gardner, 2003).

## ACKNOWLEDGEMENT

This article is part of the national research project IUT18-2 "Teachers' professionality and professionalism in changing contexts (1.01.2014–31.12.2019)" supported by the Estonian Research Council.

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