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HÄME UNIVERSITY OF APPLIED SCIENCES

Global Teachers Change Paradigms – Practical Paths to New Learning

Ryymin, E. (Ed.)

Global Education Innovations Volume 3

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Foreword

The paradigm shift from a teacher-centred approach to a student-centred based on student-driven learning is not always easy. This systemic change needs, for instance, strategic planning, innovative curricula, uplifting leadership, quality administration and lots of practical experiments and examples.

Professional teachers are in a key role in this changing educational culture. They construct and create new knowledge collaboratively and build sustainable learning communities through their competence, character, and communication. They dialogue, go digital and facilitate student-driven deep learning. They know how to align learning methods with competence goals and how to personalize the learning process to meet students' passions, interests and aspirations. They integrate theoretical, practical, self-regulative, and sociocultural knowledge (Heikkinen, Tynjälä, & Kiviniemi, 2011; Tynjälä & Gijbels, 2012) in learning environment design.

How to manage all this? How to manage the disruption of education? How to flourish and succeed in an age of global reversal and digital disruption?

The most important advice comes, surprisingly, from The Madagascar Penguins: "*Never swim alone!*" Working in teams, sharing challenges and successes with colleagues and building schools together with communities and regions, with trust and openness, enhance wellbeing, resilience and engagement in change. The networked expertise of teachers moves mountains.

In this collection of articles, teachers from the global community of Häme University of Applied Sciences share their experiences in pedagogical development and considerations of new learning. The contributors have participated in the international education programmes of the School of Professional Teacher Education of HAMK, for instance, the Brazilian-Finnish VET Teachers for the Future (2014–2017) and International Pedagogical Teacher Education (IPTE, 2016–2017).

The VET Teachers for the Future professional development programme was a customer-oriented and tailored teachers' in-service programme for the Federal Institutes Network of the Ministry of Education of Brazil, and

it scored 30 ECTS. There were 106 participants from vocational and higher education institutions in the programme. The co-operation in teacher education between Brazil and Häme University of Applied Sciences continues.

The International Pedagogical Teacher Education (IPTE) programme scores 60 ECTS and is the accepted pedagogical qualification for all forms of education institutions in Finland. The English programme is open to international students from all over the world and for Finns, who aim to work as teachers, educators, or human resources developers in a global context.

The articles study and reflect the educational paradigm shift and new learning from three perspectives: 1) curriculum development, 2) pedagogical case examples, and 3) building the learning community. To show appreciation for the diversity of voices and choices, the editors of the book did not restrict the choice of writing style and theoretical framework the contributors could use.

For more stories of the global community of teachers and descriptions of the international education programmes, please visit the Global Education Blog at: blog.hamk.fi/global-education

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Essi Ryymin

Introduction

Curriculum Development

In the first article, “Developing a competence-based curriculum: case study of a vocational qualification in urban transit”, **José Luiz Amado, Miguel Albuquerque, Flavio Lopes, Rosângela Melo and José Wlamir Soares** present the recreation process of an innovative, competence-based curriculum for urban transit vocational education for the Brazilian Federal Institute Network. The developers demonstrate new thinking and creativity in their 3D module of the curriculum shown in the figures in the article.

Further, the article by **Erika Tiemi Anabuki**, “Changing Brazilian education paradigms – a description of a change of approach in a subject plan at a Brazilian vocational school”, concentrates on curriculum reform as well. Her article describes the way, how the design of traditional subject plans can be transformed to a competence-based approach in a technical course at a vocational school in Brazil. The approach emphasizes project-based learning (PBL) and student-centred methods, which all demand change in learning paradigms.

In “Teacher education in Universities of Applied Sciences”, **Alexandre Zaslavsky** reflects his experiences of teacher education in the VET Teachers for the Future programme in the context of universities of applied sciences and compares his observations to the teacher education offered by Brazilian polytechnics. Based on his experiences, he presents new ideas for more integrated teacher education curricula.

Case examples of pedagogical change

Antônio dos Santos Junior, Leonardo Emanuel de Oliveira Costa, Rodrigo Otávio Decaria de Salles Rossi and **Essi Ryymin** present practical case examples of how to implement digital tools in pedagogically meaningful ways in vocational and higher education in the Federal Institute network in Brazil. Their article, “Digital tools in student-centered learning: practical examples and considerations”, also reflects on

digital competences and how to support teachers to gain new skills and competences for managing digital disruption.

The article "Problem-based learning on energy consumption and social responsibility" concentrates on PBL (project-based learning) in science studies in vocational and higher education. The authors **Giani B. M. Bohm** and **Regina C. O. Carvalho** describe the development of PBL regarding energy consumption and social responsibility as applied to the discipline of energy resources and environment of the Federal Institutes of Brazil and consider the implications and methodological foundations of PBL.

Rodrigo Fernandes Calhau and **Paulo Sérgio Santos Júnior** represent and discuss a case of innovative learning in their article, "Social business challenge: an experience report". The authors founded a social business event aimed at encouraging social change and an innovative mindset through social businesses at their campus in Brazil. Their source of inspiration was the Amazing Business Train concept from Häme University of Applied Sciences (HAMK) and Pro Academy from Tampere University of Applied Sciences (TAMK).

A switch from teacher-centred to student-centred learning is challenging and may need support from educators. **Godfred Adduow Obeng** investigated the experiences of the paradigm shift among international students from the Global South studying social services in Diaconia University of Applied Sciences (DIAK). He presents his research and discusses the study results in the article "Student-centered learning: perceptions and experiences of international students studying social services in Finland". The research was part of his studies in International Teacher Education Programme (IPTE) at HAMK.

Building the learning community

In their article "Team development stages and patterns of collaboration", **Azenaide Abreu Soares Vieira, Conceição de Maria Cardoso Costa** and **Juliana Campos Sabino de Souza** write about their experiences of learning in teams and group development stages during their studies in the VET Teacher for the Future programme in Finland. They critically discuss the challenges and possibilities of collaborative knowledge creation.

Sheylla Chediak and **Irma Kunnari** write about pedagogical change in educational institutions from the perspectives of organizational behaviors and learning theories. The article, "Some reflections on how to engage students/people in learning and build learning communities for change" describes Sheylla Cheidak's experiences of the VET Teachers for the Future

programme. The focus of the reflection is on social interaction as a key component of learning.

Building a well-performing learning community requires trust. In his article, “The Teacher as a trust builder” **Kimmo Kuukasjärvi** considers trust building from the perspective of his own experiences as a teacher in the Police University College of Finland and the findings of the latest research on trust in education and leadership. **Essi Ryymin** contributed to the article with her expertise on pedagogical leadership and research. The article is part of Kimmo Kuukasjärvi’s studies in the International Teacher Education Programme (IPTE) at HAMK.

Curriculum development

José Luiz Amado, Miguel Albuquerque, Flavio Lopes, Rosângela Melo & José Wlamir Soares

Developing a competence-based curriculum: case study of a vocational qualification in urban transit

Keywords: competence-based curriculum, vocational education, urban transit, 3D model

Introduction

Vocational education is increasingly becoming a key part of a person's professional qualifications. Discussions about the need for vocational education as a means of developing competences, instead of an exercise in acquiring diplomas, have drawn the attention of researchers in professional education (Biemans, 2004). In this sense, the design of the competence-based curriculum becomes one of the most debated subjects in communities of practice, in education sciences and of curriculum designers (Soare, 2015).

According to Soare (2015), the use of the competence concept has its roots in the theory and practice of the curriculum field that can be traced back to when the competence movement started in the United States in the 1960s and1970s, and which has spread from there across the world. Competence-based teaching in education institutions and its evaluation have become a prevalent topic, particularly in the European Union (Bergsmann, Schultes, Winter, Schober, & Spiel, 2015). In the last few years, the debates on competences have turned to the actual education context andthe necessity for educational systems worldwide to adopt the European Union's key competence and the 21st Century Skills models has been recognized.

In Brazil, vocational education has been a function of the Federal Institutes, where currently investments have been associated to the Local Clusters. However, the growth in the supply of jobs has not been in consonance with the competences and skills necessary to supply the requirements of local economies. According to Marin, Lima, Paviotti, Matsuyama, Da Silva, Gonzalez, Druzian, and Ilias (2010), in the recognition of the pedagogical trends which direct the learning process, the influence of traditional learning methods centred around the teacher and the contents are still strongly applied in the Federal Institutes. This study aims to discuss the effects of considering the competence, as the main aspect in the elaboration of the curriculum. The focus of this paper is the planning of a new course (Urban Transit), for vocational schools in Brazil, based on competences and skills.

Structure of the vocational course in urban transit

A major issue affecting Brazil today is the problem of urban mobility. One study made by the company that runs subway transportation in São Paulo (Informações & Domiciliar, 2013), the biggest city in Brazil, showed the results: there are 4.2 million private vehicles in the city (excluding taxis, buses and company cars), and 46 percent of journeys are made using private vehicles. Despite this, we found almost no concern in educational institutions on how to deal with the problem of urban mobility. So, how to build policies for an enhanced citizenship that encourages society participation without providing them mobility? And how to integrate the educational sector in these policies?

Our answer to these questions was to plan a vocational course focused on the problem of urban transit. The structure of this vocational course aims to carry out the procedures for the traffic planning, management and operation. Furthermore, this course aims to promote traffic education, accessibility and security. Among the activities developed within the course, the student will learn about the organization and control of traffic, as well as equipment maintenance, monitoring transit and public highways.

Methodology

In agreement with Harden (2000), we proposed a course that emphasizes a multi- and interdisciplinary approach, not one based on traditional subjects and disciplines. The methodology for the course relied on Project-based Learning (PBL), which is in all stages of the course. The student will experience theoretical content in a practical way (learn-by-doing). In PBL, the learning is contextual and shared. Students collaborate on meaningful projects that require critical thinking, communication, and creativity; so that they can answer challenging questions or solve complex problems in real work and life situations.

During the course, the students need to develop a set of skills and competences (table 1), which will allow them to develop a new vision of the structural components of the curriculum.

Table 1. **Group of competences and skills necessary in the course on urban transit.**

Group of Competences and Skills necessary in the course on urban transit	
Competences	**Skills**
Knowing how public transport operates.	Surveying available resources.
Assessing whether the amount of transport is sufficient when compared to the volume of passengers.	Surveying activities related to the logistics of traffic flow in the region.
Analyzing the available resources and the technical, economic and social situation of the region.	Collecting data for the preparation of a traffic plan with the mapping of the transport stream.
Evaluating the impact of the activities and the environmental impact caused by transit.	Collecting data to prepare environmental impact reports.
Quantifying and calculating the need for manual labor, human resources, machinery, equipment and materials.	Scaling out improvements and installations.
Applying regulations regarding vehicle traffic and passenger transport, identifying the agencies that regulate traffic in Brazil and abroad.	Developing an action timetable that integrates theory and practice.

Establishing networks among stakeholders has a big role in the course. This is a way to facilitate students' integration with practical work. At this stage, the students apply their knowledge in resolving daily work problems that meet the community's needs. This community can be defined from projects already being carried out by companies.

During the course, some lifelong skills are also developed, such as learning and problem solving, interaction and co-operation, vocational ethics, health, safety and the ability to function, initiative and entrepreneurship, communication and media skills, numeracy and scientific literacy, ICT literacy, active citizenship and cultural awareness. All these skills aim to help the student entering the labor market and to develop group-related competences.

From this perspective, a new draft curriculum is created to consolidate in a practical and objective way the competences presented in the curriculum.

Traditional subjects are substituted by fields of knowledge so we can pursue a more transdisciplinary approach. Figure 2 shows the structure of the new course format.

Figure 2. Course programme.

Results and discussion

During the creation process of a new vocational course, which should be based on competences and skills, the institutions should open up themselves to the possibilities generated by new technologies. In the proposal of the vocational course in urban transit, the students have to create a cooperative company in order to provide benefits for urban transit in their city, seeking to develop teamwork and leadership skills. In this way, during the study process, they gain experience and can earn money for the team cooperative companies, promoting the benefits of urban transit. Collaborative networks are built during these studies and the students have easier access to the world of work.

During the process of curriculum elaboration, it is important that the student experiences are exposed to some theoretical contents, but the course is mostly practical (learning-by-doing). Students should collaborate on meaningful projects that require critical thinking, communication, and creativity, so that they can answer challenging questions or solve complex problems regarding the course skills. According to Florenzano, Lima, and Moraes (2011), it is the teacher's role to know how to explore the educational potential offered by technological resources. There should be less emphasis on the role of the disciplines in the curriculum, an increasing requirement for a central curriculum organizational structure with

appropriate resources at its disposal, and a requirement for greater participation by staff in curriculum discussions and planning (Harden, 2000).

In addition to the development of a curriculum based on competences, it is important to involve professionals in the new proposal to be implemented. As long as a curriculum has an inflexible structure of writing, it could easily become unattractive to students and even to teachers who may find these documents overwhelmingly large. Rather than constructing a concise curriculum, it also has to be fresh and attractive to the learning community. To reach an innovative way of presenting a competence-based curriculum, we focused on the task of making a concrete design of conceptual knowledge. We also wanted to incorporate digital tools in this new approach on curriculum planning.

The idea of mobility is a widespread concept in our society and it is a major issue in a course devoted to the problems of transit. A tangible object that could combine the idea of mobility in transit and mobility in education was our main goal towards innovation in curriculum construction. In one of its reports, UNESCO (2013) describes mobile learning thus: "learning can happen at times and in places that were not previously conducive to education", and so "learners need to carry the technology with them throughout the day; mobility is crucial."

To fill this blank, we proposed that the object would be a bus, a symbol of flexible mass transportation. We used a 3D model to show this. A competence-based curriculum for the qualification of urban transit as a 3D model can be seen in Figures 1 and 2.

Figures 1 and 2. A 3D model for a vocational qualification in urban transit. (Photographer: Essi Ryymin)

The main information on the course skills and competences can be found in the bus model, but naturally we could not include the whole curriculum on this bus without the help of digital tools. By incorporating a QR code in the model, we could link the mobility concept to the document, making it accessible to anyone with a portable device, such as a tablet or smartphone. We believe that using this approach we can reach students that would not

normally get involved in the curriculum discussion and, as a part of the learning community, should be as involved as other stakeholders should.

Conclusions

The competence-based curriculum is a common theme in the Finnish curriculum in all levels of education. In this learning process, the skills and competences are required for the improved training of students. In the Brazilian context, new ways of approaching these concepts are a great challenge in the Federal Education Network. In this way, a curriculum based on competences becomes a viable alternative to consolidate the learning process. A student-centred approach aligned with project-based learning could make changes in the paradigm of vocational courses.

However, accomplishing these objectives cannot be so significant if they are only present in the course documentation and not turned into practical action. To be able to do so, the whole learning community has to be aware and be in accordance with the learning outcomes and competences proposed in the curriculum. In order to facilitate this process and to engage teachers and learners, we propose the use of digital tools applying the concept of mobile learning so a student or teacher can access the curriculum anywhere.

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Erika Tiemi Anabuki

Changing Brazilian education paradigms – a description of a change of approach in a subject plan at a Brazilian vocational school

Keywords: project-based learning, teacher development, collaborative work, educatioal paradigms, student-centred methods, transdisciplinary approach

Summary

The article describes the way in which the design of a traditional subject plan can be transformed into a competence-based approach in a technical course at a vocational school in Brazil. The approach is based on the VET Teachers for the Future ® professional certificate programme offered by the School of Professional Teacher Education at Häme University of Applied Sciences (HAMK) in Finland, which emphasized project-based learning (PBL) and student-centred methods, all demanding change in learning paradigms.

Introduction

The challenge of changing traditional teacher-centred practices to learner-centred ones has been recognized worldwide. Some useful approaches and frameworks have been developed to overcome that challenge. Focusing on competences instead of contents has created a competence-based curriculum framework for changing paradigms in education. Further, the idea of constructive alignment (Biggs & Tang, 2007), where pedagogical practices and environments are aligned with targeted competences, has highlighted the importance of organizing learning in close connection with the world of work. As an example, project-based learning has been proved a good way to change practices.

Project-based learning (PBL) is a form of situated learning (Krajcik & Blumenfeld, 2006) and it is based on the constructivist finding that students gain a deeper understanding of material when they actively construct their understanding by working with ideas and using them. In PBL, students engage in real, meaningful problems that are important to them and that are similar to the real world. A project-based classroom allows students to investigate questions, propose hypotheses and explanations, discuss their ideas, challenge the ideas of others, and try out new ideas. Research has demonstrated that students in project-based learning classrooms get higher scores than students in traditional classrooms based on lectures (Marx, Blumenfeld, Krajcik, & Soloway, 2014).

The research on learning has shown that the most effective learning occurs when the learning is situated in an authentic, real-world context. In some scientific disciplines, scientists conduct experiments in laboratories; in others, they systematically observe the natural world and draw conclusions from their observations. Situated learning in science would involve students in experiencing phenomena as they take part in various scientific practices such as designing investigations, making explanations, modeling, and presenting their ideas to others. One of the benefits of situated learning is that students can more easily see the value and meaning of the tasks and activities they perform (Krajcik & Blumenfeld, 2006).

Therefore, to develop PBL in our classroom it is important to let the students construct their own way to learn, with the teacher guiding/orienting the students to achieve their learning goals. The student-centred approach allows the students to develop their competences in their own way and time in an active learning process, where the learning process becomes more authentic and interesting for the students.

Finnish experience

From their experiences of VET in Finland, the author could see the implementation of project-based learning (PBL) and the focus of the school's approach on real life and the world of work. The companies participate in projects developed in the classroom, and the competences worked on in subjects are based on the competences required in the world of work. As a result, Finnish students have a close relationship with the world of work, taking their experiences and competences into the real world from the classroom and vice versa. Thus, students learn what is important in the world of work, deal with real problems and always have an eye on the future after school.

In addition, the author learned about the student-centred approach, where the classes are arranged according to the student's timetable and preferences. The author found the student-centred approach a particularly meaningful and motivating methodology both for her students and for herself as a teacher: it allows freedom for students, but on the other hand, it requires more responsibility and commitment from the teacher, simultaneously developing a generation of students with the capability for critical and logical reasoning.

Further, the author highlights the importance of a school's autonomy in developing their own curriculum, making it interesting to the local community and productive sector. For example, if there is a vocational school with a course on mechanics, and local companies need a professional with competence to work with a particular machine, the

school has the autonomy to enter/modify the curriculum/ subject of the course to work with the competences according to real world needs.

Brazilian current context

In Brazilian vocational education, these approaches and methodologies reported to develop a competence-based curriculum is only in theory, where the author can highlight as factors to support the curriculum of the Federal Institutes of Technological Education the National Curriculum Guidelines for Education (DCNE 2013) and the Guidelines and Benchmarks National Curriculum of Technical Professional Education (DCNET 2000).

In the Brazilian Frameworks, the curricula of vocational schools are based on competences that the students have to develop for the world of work. Therefore, the curriculum should not be centred on content or necessarily translated into school subjects. It must be centred on student competences that they have to develop (to solve) and the real challenges they face in a world that determines that productivity and competitiveness are survival conditions. According to this context, the central focus of the curriculum of vocational schools must shift from the contents to competences, where the DCNET 2000 defines competences as "actions and mental operations, articulating the knowledge (the know-how, the information articulated operatively), the abilities (psychomotor, the know-how developed cognitively and socially) and values and attitudes (the know-being, the predispositions for decisions and actions, from an aesthetic, political and ethical reference point)" (DCNET 2000).

Thus, it is observed from DCNET 2000 that the curriculum to be applied in vocational schools should be based on competence, but in practice, we do not see this occurring. Slowly we see our vocational schools adopting a curriculum model based on the competence required by the world of work, but still education is focused on theoretical content and is sometimes far from the real needs of the world of work.

In this context, the aim of this article is to describe the way how the design of a traditional subject plan can be transformed to a competence-based approach in a technical course at a vocational school in Brazil from the knowledge obtained by the author within the VET Teachers for The Future ® professional certificate programme, and how the VET programme has contributed to the author's reflections about the traditional paradigm of Brazilian vocation education. The author's biggest challenges were to recognize that the curriculums of Brazilian vocational schools are based on content, while they should concentrate on work with the student competences, and how to change this paradigm and work with the student competences in the classroom to achieve the competence-based curriculum at vocational schools.

PBL and student-centred learning as approaches to achieve a competence-based curriculum

Below (Table 1), we can see the old subject plan taught by the author, that highlights the approach as the author worked the subject's competences and abilities in the classroom, which are based only on content and lectures. In consequence, the assessments are based on theoretical tests and do not include the actual demonstration of student competences required in real life.

Table 1. **The old subject plan.**

CEFET-MG Centro Federal de Educação Tecnológica de Minas Gerais

Subject: Analysis of Digital Systems	**Code: ASD**
Axis: Professional **Total hours total: 120 hours/ year** **Modality: Theory and Practice**	**Weekly hours: 3 lessons**

Course(s)	Year
Electrotechnical	**3rd year**

Department / Coordination: Electrotechnical Coordination

Competences: the subject should enable the student to develop the following competences
1. Analyze, solve and apply minimalization techniques and synthesis of combinational circuits;
2. Analyze and apply techniques related to numbering, codes and binary logic;
3. Analyze, apply and design oscillators and Flip-Flops on practical projects;
4. Analyze and apply techniques MUX and DEMUX;
5. Analyze, operate and apply techniques of A / D and D / A;
6. Analyze, operate and apply microprocessor-based systems
7. Know, identify and analyze logic families to intergrated circuits.

Skills to be developed and acquired

1 – Use of computational tools (software and emulators) of Digital Systems and Microprocessor: Deeds, Constructional Circuits, FPGA, Arduino, PicSim, MPlabx.
2 – Use of electronic and microcontrolled platforms: FPGA, breadboard, Arduino.
3 – Applicability of integrated circuits TTL and CMOS family.

Units	Total class hours
1. Introduction, Historic and Digital systems and analog signal and digital signal	4
2. Numbering system and codes	10
3. Logic gates and combinational systems	24
4. Simplification and synthesis of logic circuits	24
5. Flip-Flops	16
6. Sequential Logic	16
7. Components applications and PIC	26
Total	100

Approach
Expository lecture
Lecture with use of computers and electronic platforms
Class exercises and problem solving

Assessments	Poits
Theoretical Assessment 1	25
Theoretical Assessment 2	25
Theoretical Assessment 3	25
Project and excercises	25
Total	100

It is possible to note from the example above that the subject plan uses the reference adopted by DCNET, however, the competences developed in the subject are based on perspectives and ideas that the world of work may require, and they are sometimes confused with academic perspectives. Practical classes and projects are developed based on exercise books, brochures, and based on academic projects, such as Master's Theses, but they do not use projects or problems from the world of work for developing student competences. Another disadvantage is that the subject is taught the traditional way, i.e. the teacher-centred approach focusing on lectures, not the real needs of students.

For example, the author redesigned her subject plan using PBL and the student-centred approach to achieve the competences demanded by the subject. The competences and abilities worked in that subject remained

the same, only the approaches were changed, and in consequence the assessment. In the redesigned subject plan, the assessment will not be based on theoretical tests, but on demonstrations of competences and a portfolio confection of prototypes and audiovisual materials, as we can see in Table 2 below.

Table 2. **Application of PBL and the student-centred approach in a redesigned subject plan.**

CEFET-MG Centro Federal de Educação Tecnológica de Minas Gerais

Subject: Analysis of Digital Systems **Code: ASD**

Axis: Professional
Total hours total: 120 hours/year **Weekly hours: 3 lessons**
Modality: Theory and Practice

Course(s)	Year
Electrotechnical	**3rd year**

Department / Coordination: Electrotechnical Coordination

Competences: the subject should enable the student to develop the following competences
1. Analyze, solve and apply minimalization techniques and synthesis of combinational circuits;
2. Analyze and apply techniques related to numbering, codes and binary logic;
3. Analyze, apply and design oscillators and Flip-Flops on practical projects;
4. Analyze and apply techniques MUX and DEMUX;
5. Analyze, operate and apply techniques of A / D and D / A;
6. Analyze, operate and apply microprocessor-based systems
7. Know, identify and analyze logic families to intergrated circuits.

Skills to be developed and acquired

1 – Use of computational tools (software and emulators) of Digital Systems and Microprocessor: Deeds, Constructional Circuits, FPGA, Arduino, PicSim, MPlabx.
2 – Use of electronic and microcontrolled platforms: FPGA, breadboard, Arduino.
3 – Applicability of integrated circuits TTL and CMOS family.

Units	Total class hours
1. Introduction, Historic and Digital systems and analog signal and digital signal	4
2. Numbering system and codes	10
3. Logic gates and combinational systems	24
4. Simplification and synthesis os logic circuits	24
5. Flip-Flops	16
6. Sequential Logic	16
7. Components applications and PIC	26
Total	100

Approach	Assessmets	Poits
Developing projects from work	Demonstration of competences during the development of projects	35
Demonstration of competences and abilities to develop and solve real problems/projects	Confection of Prototypes (products)	35
Student-centred learning	Confectiont of project seminars and audiovisual materials	15
Teacher as a coach	Confection of portfolio / logbook	15
	Total	100

Conclusions initiatives for future investigations

In the context of learning acquired in the VET Teachers for The Future ® professional certificate programme, the author was of the opinion that the success of Finnish vocational education is mainly due to the approach used by the teachers inside the classroom, which is centred on the student and real life problems. As a result of a dialogical learning process, the author acquired the confidence to face and make educational changes in her teaching work, and she also got new ideas for her research area. She had several ideas on how to develop student motivation and engagement, decrease the drop-out rates and empower her students in applying project-based learning in several courses. She reached a level of new motivation and enthusiasm for constant professional growth as a teacher (life-long learning) and how to develop collaborative work in her school, including different subjects.

As a conclusion on the reflection, it can be summed up that the development of the approaches showed in this article can help the Brazilian vocational education achieve some of the following:

- ✓ Improve and align the competence-based curriculum of vocational schools.
- ✓ Encourage and motivate students to complete the technical courses, where they will develop competence for the world of work and develop perspective for their future.
- ✓ Reduce the rates of drop-out of vocational schools, because teachers will work with the competences, not strictly theoretical contents, and in consequence change the forms of assessment and alignment in pedagogical issues.
- ✓ Stimulate and improve the community's relationship with the vocational schools.
- ✓ Improve the appreciation and the quality of the vocational education.

It is interesting to realize that this article has been done at the end of Finnish training period. In the next phase, in Brazil, the author would like to develop and examine further her student-centred pedagogical practices and PBL approach when she goes back to her own institution. One interesting research theme in the future is the experiences of the author applying student-centred methods in practice, showing empiric outcomes.

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IFRO

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Teacher education in Universities of Applied Sciences

Keywords: teacher education, universities of applies sciences, polytechnics, integrated curriculum, Finland, Brazil

Summary

This article is a brief reflective account, a literary analysis, inspired by a five-month internship at Häme University of Applied Sciences (HAMK), in Finland. This internship took place within the School of Professional Teacher Education, specifically in the VET Teachers for The Future – professional development programme. From the 1930s until its peak in the 1970s, teacher education both in Brazil and in Finland took place in comprehensive universities, under the auspices of baccalaureate standards and traditions. More recently, VET (vocational education and training) higher education institutions, polytechnics (now Universities of Applied Sciences in Finland) in both countries began to offer teacher education programmes. Thus, this new fact invites us to wonder about the possibilities of proposing and achieving more integrated, effective and inspiring teacher education curricula.

Introduction

Teacher education is the simplest basis for quality in education. It has to be strategical in any country that has a serious plan to develop and improve its educational system. We will take this principle for granted: there is no quality in formal education without well-educated and trained teachers.

In Finland, a university of applied sciences is defined as the institution integrating theory and practice in a vocational *bildung* (Volanen, 2012), educating citizens for the world of work, equipped with working skills and deep scientific knowledge. Teacher education began in Finland as normal schools (normaalikoulut). Its pioneer was Uno Cygnaeus, an enthusiast of handicraft (slöjd) and Pestalozzian pedagogue.

Teacher education programmes, both in Brazil and Finland, used to be offered by comprehensive universities (universidades / yliopistot) since the normal schools started to be absorbed by their departments in both

countries in the 1930s (Kansanen, 2003; Tanuri, 2000). However, comprehensive universities are generally very attached to baccalaureate tradition, what Basil Bernstein (2015) calls a *collection* type of curriculum. Considering the practical character of teacher education, we propose that a good scenario for integrated teacher education programmes (Bernstein, 2015) would be those institutions known as Federal Institutes in Brazil. This is the theme of this article.

On the other hand, polytechnic institutions as a form of higher education had only begun in Brazil in the end of the 1970s, in institutions known as Federal Centers of Technological Education (CEFETs). Most of them became Federal Institutes of Education, Science and Technology in 2008. In Finland, Universities of Applied Sciences started in the early 1990s as a government policy aiming to integrate technical schools, but the Polytechnic Act was introduced in 2003. Thus, the polytechnic institution in Brazil and universities of applied sciences in Finland are fairly recent.

Concerning teacher education programmes offered in polytechnic institutions, in Brazil they were initially offered at the CEFETs, but when the network grew in the end of the 1990s, teacher education departments and programmes appeared, similar to the ones of the comprehensive universities (Frigotto, Ciavatta, & Ramos, 2012). The Federal Institute Act inherited these programmes and, taking it even further, established the minimum of 20 percent of the total vacancies to be offered in teacher education bachelor courses.

In Finland, teacher education can be either concurrent, with pedagogical education integrated into the Master's programme, or consecutive, with the pedagogical qualification completed after the initial degree. The latter is the case for example in vocational teacher education. The consecutive model also serves those who decide on a teaching career later. Five universities of applied sciences in Oulu, Tampere, Hämeenlinna, Jyväskylä and Helsinki offer teachers' pedagogical qualification with an emphasis on vocational education. (Piesanen, Kiviniemi, & Valkonen, 2006; Chen, Ryymin, & Kunnari, 2018)

Nonetheless, this calls attention to the way Finnish universities of applied sciences design their teacher education programmes, tuned with the very spirit of polytechnics – the integration of theory and practice or, in other words, the applied sciences. That does not mean a more superficial approach; on the contrary, it means the possibility of a deeper one, whilst practice is normally very complex and theory defying. The aim of this article is to highlight some differences observed at the vocational teacher education programmes in Häme University of Applied Sciences (Finland) that may inspire similar programmes in Brazil.

Theory

The quality of teacher education programmes means here the way the curriculum is structured, that is to say, how is teacher education actually established throughout the disciplines of the course? In the old normal schools, everything was about practice, meaning the imitation of one's own school teachers. To become a teacher was a matter of practice, of doing it right after enough repetition. With the advent of teacher education departments, in the 1930s, the curriculum became much more theoretical, even speculative. Then it was mainly about experimental psychology, moving towards a concept of active education, but paradoxically reserving the lion's share of the curriculum for theory and reducing practice to a final application, a sort of completion test.

In Brazil, this model became famous with the epithet "3+1", meaning three years of theory and one of practice. However, the polytechnic spirit does not fit in the former nor in the latter; it is about integrating theory and practice. Thus, the theories here must help to define, clarify and make operational the concept of *educational integration*.

Basil Bernstein, the English sociologist known for his work in the sociology of education (1975/2015), proposed a famous distinction between two types of curriculum – the collection and the integrated. A collection type of curriculum is composed of insulated contents, separated and in a closed relation with each other, of which the student should note that some are more important than others. An integrated type of curriculum is composed of contents without rigid borders and having an open relationship between them. The limits between contents are defined in a temporal manner; in the collection type, the contents are more diachronic and in the integrated type, they are more synchronic. What integrates contents in the integrated type is a common idea, which needs to be clear to all the teachers involved.

Another important theoretical approach is the Integrative Pedagogy Model (Heikkinen, Tynjälä, & Kiviniemi, 2011). This theory conceives professional expertise as a tight integration of theoretical or conceptual knowledge, practical or experiential knowledge, self-regulative knowledge and socio-cultural knowledge into the scope of professional expertise. The development of this multidimensional expertise stands on problem-solving processes, which require the four kinds of knowledge from the students at the same time. Perhaps the common idea that Bernstein claims to integrate the curriculum could be linked to the problem-solving process, which is central in this Integrative Model. The research performed by Kunnari and Ilomäki (2014) is a good example of an application of this theoretical approach to teacher education in a University of Applied Sciences, although aiming at life-long learning processes of university teachers, not the students in formal programmes.

Observations

As the internship was in a university of applied sciences context, it was repeatedly possible to observe the integration of theory and practice during the five months spent in Finland.

Generally, the disciplines we had were largely student-centred. The tasks we needed to accomplish were proposed in the form of challenges, taking us to *problem-* or *project-based* learning. The formed groups engaged in discussions towards achieving the aim. There was a whole host of other kinds of activities: from poster making to videos, from the creative use of digital applications to visits to many kinds of education institutions. Some of these experiences will be highlighted here, focusing on the theory-practice relationship.

One of the things that called my attention in the first place was the design of the spaces in the campus we were based at, the Lahdensivun Kampus, particularly the Tapiola building. The main classrooms were ample. A sequence of four classrooms, with large windows on one side and large glass walls on the other, which made the space quite transparent, reinforced the impression of wideness and let everyone watch what was going on in there. The student tables fit together organically, instead of being the usual square shape. The teacher had a space in the front of the class, but instead of having a traditional table, one that makes a symbolic separation of the space, it looked more like a high-tech workstation, with a computer and other devices where the teacher could sit and organize the class. So, the space in a classroom is not fixed at all. Actually, it seemed that each time I passed there the layout of the tables and furniture was different. Moreover, I have not even mentioned the couches at the back of the classrooms. Students can go and sit at the back, or even lie down, without necessarily giving the impression that they are not interested in the class or manifesting indiscipline.

On the contrary, although outwardly informal and light, education is taken very seriously in Finland. So, one feels that the education environment is an informal, happy place, not heavy or regimented. Its social meaning is the great thing about Finnish education: because it is so important, it is imperative to respect the way and the rhythm individuals deal with it. At first, it might seem paradoxical, but it makes perfect sense from a humanistic perspective. People really do not learn important things, like complex higher thinking skills, in a mechanic or robotic way. I could sense this kind of atmosphere in all the schools we visited.

It was in one of those classrooms that I participated in a VET teacher education programme for people actually living in Finland, though not every participant was a Finn. The students had formed groups in the meeting before and each group had to teach some important skills related

to VET, but in a practical way, with only a minimum of lecturing. The students should learn it through experiencing and reflecting on it. For example, one group had "Media literacy skills" as their topic. They formed groups with the other students, including us visitors, and each group received some printed media material to read and analyze.

After that, the groups had to comment on the materials they received. Their aim was to focus on the critical interpretation of the source of the information. When the activity ended, the whole class and the two teachers started to give feedback to the performing group. It was interesting to realize that the feedback was truly honest! It meant that everyone was trying to give their best contribution to reflection, pointing out what was good and also what was not so good. They did this very naturally, with no "drama" at all. Thus, the integration between theory and practice happened in the way the task was proposed to the teacher students: as a performance and in a student-centred way, but with really rich and realistic feedback.

A third account I would like to give is about the module of our course called *e-Learning in the 21st Century*. An interesting orientation given on the very first day was that we would not be working with *Moodle* or *Wiki*, but instead, we were able to meet a handful of new applications, most of them collaborative, free of charge and, above all, quite exciting.

The concept behind it all is the authenticity of learning, that is to say, digital tools as *means* and not *ends* in themselves. I have seen for more than a decade a sort of fetishization of technology, as if it was some sort of saviour or guarantee of good education, of keeping the students interested. Just the opposite: I firmly think that what keeps the students interested is how engaging the challenges they have to deal with and solve are, and not the superficial appearance of it, i.e. the material tools available. Having said that, having material tools is still important. M-learning or mobile learning was a major issue. A highlight of it was geocaching. It is a kind of sport, a sort of modern treasure hunting, in which a box with some gift inside and usually also a letter and a list, is hidden and registered in a proper website with the geographical coordinates of where it is. This way people can access these caches and, depending on what the purpose in each case is, interact with it, leaving something there, signing the list, in summary, participating in this global game network. However, the most interesting fact is that it is a game and it can be organized by the teacher or by the students. In the inner space of a campus, for example, thematic geocaches could be left to be found in the context of some learning goal. It is a very modern way to integrate different kinds of content in an authentic way, without putting too much attention to one in particular.

Initial applications

The applications I am able to use after returning are mainly in the research field. I coordinate a research project about teacher education programmes in polytechnic institutions, the very topic that took me to Finland. During this period we wrote two articles about the possibilities and limitations that these institutional context offer, as follows. The first one can be translated from Portuguese into English, "Levels of curricular integration in physics teacher education programmes of the Federal Institutes of Education, Science and Technology" (Alderete & Zaslavsky, 2015).

After analyzing the curricula of 30 different programmes, we propose to classify them as basic, intermediate and advanced levels of curricular integration. Five programs are considered advanced, because of some of the special disciplines that really do integrate content, teachers and students. The second article is a sequence of the first and can be translated from Portuguese into English, "Advanced curricular integration in Physics teacher education programmes of the Federal Institutes of Education, Science and Technology: a preliminary study" (Kalb & Zaslavsky, 2015). This article presents a summary of an interview with the coordinators of one of these five programmes, aiming to understand their view about curricular integration and how they try to achieve it in the programme. Some initial hypotheses that were raised after the interview included the importance of the education those teachers had and the link between teacher education, VET and scientific research. The final results of this research are published at the article called, also translated from Portuguese into English, "The offer of the Bachelor's degree programmes in Physics at the Federal Institutes of Education, Science and Technology: a study on curricular integration" (Zaslavsky, Alves, Kalb, & Alderete, 2018).

Although less formal, another branch of initial applications is planning and performing educative actions. I have been putting some effort to make classes as student-centred as possible and also as problem-solving as possible. Philosophy itself can favor it, despite the sometimes very traditional way that many teach this discipline. I see teaching philosophy as primarily being the study of philosophical problems aiming to develop the philosophical skills of students, so to speak. Secondly, it is the study of philosophers, because they were the ones that proposed the philosophical problems in the first place. Usually, the students appreciate studying the philosophers after becoming familiar with the philosophical problems. Therefore, I have organized many debates and many activities to raise questions and critical comments from the students, as much as possible.

Conclusion

Despite the differences between the two countries, i.e. vocational teacher education in Finland and subject teacher education in Brazil, the advantages of the universities of applied sciences and polytechnic institutional environment are considered to be similar. Polytechnic means an institution that educates professionals through the integration of theory and practice, in a very meaningful and authentic curriculum. The affinity that polytechnics have with practice and technology, but without relegating theory, on the contrary, is the exact approach needed in teacher education programmes – of course, also without receding to the mechanistic training of old normal schools. So, the polytechnic institution in Brazil, like universities of applied sciences in Finland, can be considered very promising as a way to renew the subject of teacher education.

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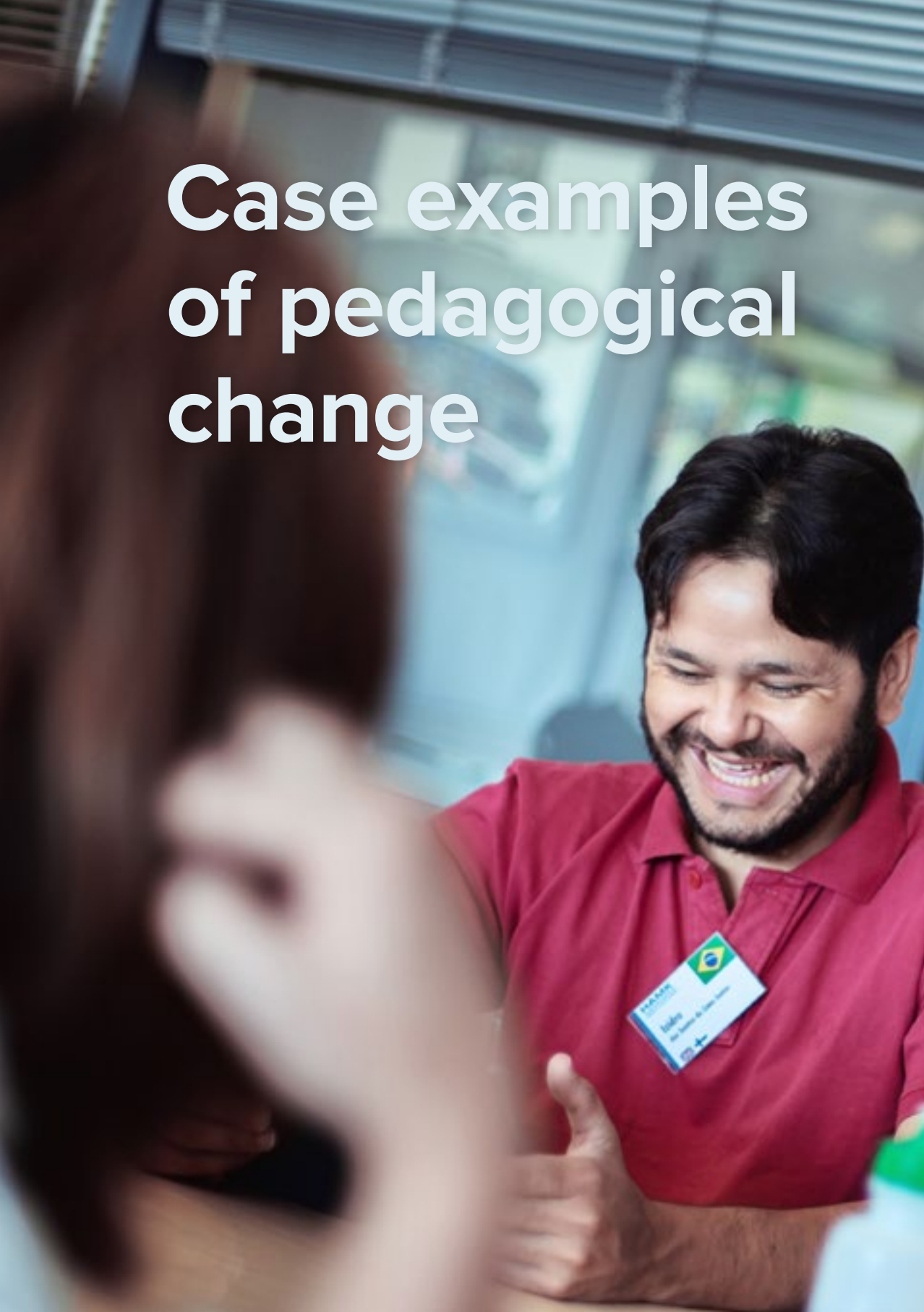
Case examples of pedagogical change



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Digital tools in student-centred learning: practical examples and considerations

Keywords: student-centred approach, digital tools, digital competences, teacher training, TPACK (technology, pedagogical and content knowledge), competence demonstration

Summary

Digital tools are almost ubiquitous in teaching and learning nowadays. The skill to implement digital tools in a pedagogically meaningful way is one of the core competences of TPACK (technology, pedagogical and content knowledge) teachers. In addition, digital competence is considered to be one of the 21st Century Skills and transversal future work skills students need not only in education but later in working life. Implementing digital tools and mobile learning in pedagogically meaningful ways relies on a student-centred approach, collaborative construction of knowledge (Bereiter & Scardamalia, 1996) and learning as knowledge creation (Paavola, Lipponen, & Hakkarainen, 2004). In this article, we have reported on how we have implemented digital tools to student-centred learning in the Brazilian Federal Institute Network in vocational and higher education within and after the VET Teacher for the Future professional development programme at Häme University of Applied Sciences (HAMK).

Digital competences for personal development, active citizenship and employment

There is an ancient Greek myth about Pandora's box, saying it should never be opened, otherwise all manner of evil could fly out of the box making the world a terrible place to live. Some teachers may have similar considerations when they wonder if they should implement digital tools in teaching in their classes. The feeling is not unexpected, because it is something totally new for many teachers and new things can be also frightening. Furthermore, some teachers may be suspicious of what the impact of digital tools on the quality of studying is – does it really support learning?

The world has changed a lot over the last few decades, mainly after the dawn of the internet. The school needs to give students a set of competences they need, not just for school but also for life – for personal development,

social inclusion, active citizenship and employment. These competences include literacy, numeracy, science and foreign languages, as well as more transversal skills such as digital competence, entrepreneurship competence, critical thinking, problem solving and learning to learn (Vuorikari, Punie, Carreto Gomez, & Van Den Brande, 2016). Also Iordache, Mariën, and Baelden (2017) stress that the development of digital skills and competences has become a key element on the agenda of scholars, practitioners and policymakers worldwide in order to ensure citizens' ability to fully participate in today's increasingly digitized society.

It is also important to realize that digital skills and competencies constitute an area of education that is changing continually in tandem with the development of new technologies. The next decade will see the rapid growth of mobile internet access, cloud-based computing, the Internet of Things (IoT), digital data, artificial intelligence and an increase in computer-driven decision-making and other forms of automation (Broadband commission, 2017).

Thus, we believe it is time to challenge teachers and say: "Don't be afraid, you can open the box! There are good things inside! You just have to learn how to make an efficient and meaningful use of the digital tools in learning – and we are here to give you some tips.

Need for digital competence development in Federal Institutes

Learning how to make a meaningful use of digital tools in schools is almost mandatory in the Federal Institute network in Brazil. For example, we need them in online education, in connecting schools to working life partners such as companies and industries, and in creating portfolios as a showcase for applying for a job. In digital disruption, also the industry needs skills and competences for creating new knowledge and matching vocational and higher education and labor market is critical for workers in knowledge economies as well as in transformations of the labor market itself (Tavoletti, 2010, p. 7). The Federal institute network is in the process of developing new pedagogical and educational thinking and practices in higher education that are considered important in collaboration between education and working life (see e.g. in Tynjälä, Välimaa, & Sarja, 2003). Mobile learning with cellphones, smartphones and social media are good examples of digital competences that are also crucial future work skills. (Gikas & Grant, 2013; Eerola & Majuri, 2016)

Developing learning environments to promote digital competence and future work skills requires more than creating an organizational website, perform Massive and Open Online Courses (MOOC) or installing a

framework for delivering Wi-Fi for everybody. All of them are important and "basics" for education institutions in a digital age. From the point of view of learning, the most important paradigm shift is to change the teacher-centred approach to learning to a student-centred one (Fuchs, 2014). This change may need a professional development programme for teachers, where teachers can learn from each other in networks supported by collaborative learning technologies. (Ryymin, 2008; Ryymin, Kunnari, Joyce, & Laurikainen, 2016)

From a teacher-centred approach to a student-centred one

Teachers need many experiments, peer support and practical examples on how to implement digital tools and how these technologies make the student-centred approach feasible. (Cochrane & Bateman, 2010; Herrington, 2009)

The important contents of teacher training could be how to implement digital tools in collaborative inquiry learning, in problem solving and learning project creation. Also, how to facilitate and guide the learning process supported by digital tools is an important competence for teachers. How then to plan, implement and assess a student-centred learning process? In our article, we share some examples, particularly on the challenge of how to make the learning outcomes visible. How can digital tools support students' competence demonstrations and show evidence of learning?

One concept that may help in recognizing challenges in teachers' professional development is TPACK (Koehler & Mishra, 2009; Voogt & McKenney, 2016), which means technological pedagogical content knowledge referring to an understanding that emerges from interactions among content, pedagogy, and technology knowledge. Underlaying truly meaningful and deeply skilled teaching with technology, TPACK is different from knowledge of all three concepts individually (Kohler & Mishra, 2009). Hence, there is a paradigm shift that is important to take into consideration in teacher education: a change from a teacher-centred approach to a student-centred approach and a change from an analogue approach to a digital approach. (Chai, Koh, & Tsai, 2013)

Thus, digital tools and mobile learning are not for delivery content, promoting a passive learning. Overcoming this narrow perspective is important for reaching a new vision on how many possibilities a teacher has for facilitating, inspiring and improving students' learning. (Fuchs, 2014; Cochrane & Bateman, 2010; Herrington, 2009; Koehler & Mishra, 2009.)

Practical examples of implementing digital tools in a student-centred approach

Next, we described how we have implemented some free digital tools in the Brazilian Federal Institute Network. We classified these tools according to Gikas and Grant (2013) to media sharing sites, creation and publishing tools, and social networking sites. In addition, we discussed some observations of students' positive behavior in learning processes. The links to the practical examples are listed and resources cited at the end of the article. We will also present three photos from authentic learning situations from our institutions.

Media sharing sites

We have implemented media sharing sites, such as Stayfilm, Magisto and YouTube, successfully in two different approaches. Firstly, to engage, motivate and empower students (Cochrane & Bateman, 2010): we have noticed that when our students document and share their work with each other openly, they become even more inspired and motivated in studying and co-operating together in teams. The team spirit and good atmosphere is important for learning.

Second, teachers have guided students to share their learning videos via YouTube as competence demonstrations, making their learning visible and showing evidence of learning. (Herrington, 2009) The videos have also been a method of formative assessment in the process. Making a competence demonstration video has included five (5) steps: 1) students have studied the contents and goals of a subject or a phenomenon including several subjects according to their curriculum in a vocational study programme, 2) students have documented what they have learned of key concepts, 3) they have planned collaboratively a video script that shows evidence of their learning results, 4) they have shot videos and experimented video making in practice and 5) they present the video to other students and for a teacher, and dialogue critically about the learning process, learning results and their competences demonstrated by a video.

The teacher is facilitating the production process phase by phase by making good questions and giving practical support when needed. According to our observations, the video engages not only the student, but the whole school community by showing what happens in classroom and how you can learn and study together. We have used the digital tools mentioned above also for creating students' e-portfolios for job applications and making digital showcase curriculum vitaes.

Creation and publishing tools

Creation and publishing tools, such as Padlet, Thinglink and Blogger, have their own advantages and limitations, but all of them support learning and improving students' outcomes. They can be used in enriching face-to-face learning or online learning and it is good to remember that the main goal is to enhance the commitment of students, not to abandon traditional lectures forever. (Richardson, 2008).

We have implemented Padlet for making a digital learning environment for all and for giving a voice and a choice to everyone in a classroom. It is important that also students who do not feel they are so familiar with sharing their ideas in a large group have a forum where they can make their thinking, observations and thoughts related to learning content visible to others. (Fuchs, 2014) This is also important for the teacher, so that he or she can follow the learning and recognize possible misunderstandings or misinterpretations during the learning process, not at the end of the course. This also helps the teacher to adjust and tailor teaching flexibly according to the needs of the students.

We have also implemented both Padlet and Thinglink in the collaborative and creative work of student teams and as a forum where students share their personal learning resources for other students: webpages, e-journals, videos, guidelines and annotations.

Blogger is a free blog platform that we have used in two different strategies. The first one, again, has been in the guidance and assessment of students' learning processes and making both the process and results visible. The second strategy has been to make the school visible and transparent to the surrounding community, for parents and the region, entrepreneurs, companies and governmental agencies. We blog very openly about what students have studied and learned and how we work in the school. Since we started to blog about our expertise, we have made new connections and networked with companies and industries. In collaboration with the world of work, we have widened our learning environments from school and classroom facilities to authentic working learning. Students have contributed to real life problem solving and they have found new ways of helping the community and the region.

Social networking sites

We implemented Facebook and WhatsApp groups for the purpose of expanding the learning environment digitally, guiding students' learning processes online and in sharing learning results and outcome. The Facebook

group is also a good tool for keeping teachers and students connected and committed to lively discussion about the content and goals of studies. Students can ask for advice from other students.

Because the learning process rarely happens only inside the classroom, in these study groups, students also share their personal learning environments (PLE) with other students. They share news, scientific papers and blogs and can start online discussions anywhere and anytime. According to our observations, active use of Facebook groups supports student-centred approach also by personalizing learning and by giving students a flexibility to study wherever and whenever. Students also have the possibility to demonstrate the knowledge and skills that they have learned. At its best, students help each other to understand complex knowledge and the teacher facilitates the process with inquiries, tips and challenges. (Gikas & Grant, 2013; Cochrane & Bateman, 2010)

Vicknair, Elkersh, Yancey, and Budden (2010) suggest that social networking sites, such as Facebook and WhatsApp, must be considered also as recruiting tools for employers and therefore educational institutions should pay attention to students' positive behavior in their use. Your footprint on social media may have an effect on your job opportunities; on the other hand, social media sites create a forum to build the showcase, an e-portfolio, of your knowledge, skills and competences for future employers.

There are many other free digital tools we have implemented in learning, for example, TodaysMeet (https://todaysmeet.com), Zoobe (http://www.zoobe.com), Instagram (https://www.instagram.com), Tellagami (https://tellagami.com) and Google Docs (https://www.google.com/docs/about). We recommend readers to get to know these better via the link and create their own, inspiring ways of applying them!

Conclusions and considerations

In this article, we reported how we have implemented digital tools to student-centred learning in the Brazilian Federal Institute Network in vocational and higher education. We would also like to offer several practical examples via the link list below. According to our reflections, our digital tool implementation emphasizes the student-centred approach from the following perspectives:

1) Students advanced in their studying by utilizing the tools in creative ways in their competence demonstrations, displaying that they have learned the knowledge and skills they were expected to learn in their study courses. We can call the learning projects as examples of *competence-based education* or proficiency-based learning.

2) Teaching and learning was *personalized*, paying attention to students' interests, passions, and needs. Students drove the learning process themselves as teachers were facilitating the process. Students, for example, participated in the planning of their learning, were responsible for their learning and could influence what they learned and how.

3) Students had the *flexibility* to learn online anytime and anywhere, while the learning environment was digitally expanded outside the traditional classroom and school facilities.

These elements can be considered also as fundamental characteristics of the student-centred approach (Abbott, 2014).

Shifting a paradigm from a teacher-centred approach to a student-centred one and from the analog world to digital world needs engaging in-service training for teachers, where teachers can contribute to the collaborative construction of knowledge (Bereiter & Scardamalia, 1996); learn from each other and by experimenting together; learn through knowledge creation. (Paavola, Lipponen, & Hakkarainen, 2004)

Like Bokova and Galvin (2017), we believe that teachers' digital skills and competencies underpin efforts to better integrate digital skills development in education, while ensuring sustainable, inclusive and equitable approaches. There is a continued need for teachers' professional development programmes, particularly for teachers working in non-technology subject areas.

After our own experiments and collaborative knowledge creation, we believe that you do not need to be afraid of Pandora's box at all. Once again, we encourage you to open the box and maybe you will find angels that will help your learning fly!

Links to practical examples

Stayfilm

Sustainable development policies and Bradshaw's model for restoration ecology (Environmental Management postgraduate students):
http://www.stayfilm.com/movie/watch/8a00046f-c38b-4acf-a455-4c1a577846ad

Environmental resilience, Brazilian Environmental law and Bradshaw's model for Restoration ecology (Environmental Management postgraduate students):
http://www.stayfilm.com/movie/watch/37890128-457f-4061-9610-7e3e048eb093

Magisto

Active learning strategies and alignment between vocational education curriculum and learning assessment (Vocational education postgraduate students):

https://www.magisto.com/video/YFYEZFkaSygtQRViCzE?o=w&c=e&l=mmr1&tp=AgMCXjUmPFZBBQ1fXHZsWkBTCFhaemAIR18JCFItPV9CVF8MDH1sDVcUCUkFOioIFDkFXlc5MQ8UCTNIDy48ElcTH18YEDEPTFdeDlh6aFtGXopZAi42BRQKUV8HLjEH&trydeeplink
https://www.magisto.com/album/video/ID1wUFdeRkklKywHDmEwCXp-

YouTube

Prokaryotic and eukaryotic cells (Students' project in chemistry) :
https://www.youtube.com/watch?v=4moELO2-eF0

Roping cattle (Agriculture students in vocational education):
https://www.youtube.com/watch?v=ayRzx_TTodY&feature=share

Padlet

21st Century Education (Vocational education postgraduate students):
https://padlet.com/denisejocasta/xmihvx8v0gn7

Microbiology review (Students' Project in Chemistry):
https://padlet.com/leonardo_costa/ob9hzzy67xwk
https://padlet.com/leonardo_costa/slbo4ksanyz9

Thinglink

Managing cattle for dairy production (Agriculture students in vocational education course):
https://www.thinglink.com/scene/834788613198708736
https://www.thinglink.com/scene/834786396756508673

Blogger

Reports about Microbiology (Students' Project in Chemistry)
http://micro-ifrj.blogspot.com.br/

Reports about Vocational Education and teacher professional development
http://makingifrotransparent.blogspot.com.br/

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Problem-based learning on energy consumption and social responsibility

Keywords: problem-based learning, interactive method, teaching science, comprehension skills

Summary

The problem-based learning method can be considered a change of paradigm with the student being responsible for their learning. This method encourages critical thinking and the development of skills for real-world problem solving. Thus, a project on problem-based learning in energy consumption and social responsibility was developed and applied in the discipline of Energy Resources and Environment of the Federal Institute. Thus, the structure of the work initially considers important issues in the debate about the implications of the PBL and methodological foundations for the implementation, following presents the research methodology to be applied in the design and possible expected results. As educators, we want our students not only to learn science, but embrace it and be able solve problems in the future. The barrier for science educators is higher than ever for teaching science. We are preparing our students to meet a global future for students.

Introduction

This paper reports part of our experience gained during the course called the VET Teachers for the Future programme, conducted from February to June 2015 in Häme University of Applied Sciences (HAMK), located in Hämeenlinna in Finland. During this time, we had the opportunity to experience and become familiar with the problem-based learning methodology, as well as its application in local institutions of vocational and higher education. Motivated with the knowledge of this methodology and in order to use it in our institution in Brazil, we developed a project on problem-based learning in energy consumption and social responsibility, to be applied in the discipline of Energy Resources and the Environment of the Federal Institute. The necessary knowledge was acquired in all the subjects studied during the VET course and the project was developed in collaboration with other colleagues who were also taking this qualification. As a starting point, we developed the following guiding question: How can

we reduce electric energy consumption and be more efficient and sustainable? This PBL was planned to be developed with students in the four-week period and included the following topics: energy and environment, ethics and social sciences (social responsibility, sustainability, etc.), physics, mathematics, and languages.

The problem-based learning method can be considered a paradigm shift, the future for education. In this method, the students are responsible for their learning. This method encourages critical thinking and the development of skills for real-world problem solving, the skills that have been called "skills of the XXI century".

Brazilian federal institutes have emerged with the mission to provide a professional technical or higher education (technology, engineering and postgraduate) along with the skills to enter the labor market. In this context, the literature indicates that PBL methodology is the method that allows students to assimilate the competences (knowledge, skills and attitudes) required for the professional conduct significantly and in a realistic context.

This PBL was planned to be developed with students and integrates with following subjects: energy and environment, ethics and social sciences (social responsibility, sustainability, etc.), physics, mathematics, languages.

Thus, the structure of this work initially considers important issues in the debate about the implications of PBL and the methodological foundations for the implementation of PBL. The following presents the research methodology to be applied in this project and possible expected results.

Theory

Contextualizing problem-based learning – PBL

PBL, known in Brazil as problem-based learning (PBL), emerged in the course of medicine, motivated by the dissatisfaction of students with the knowledge acquired by them. There were pioneers implementing the method at Case Western Reserve University Medical School (USA), McMaster University (Canada), Queen's University (Canada), Harvard Medical School (USA), Maastricht University (Netherlands), the University of Newcastle (Australia), Southern Illinois University (USA), among others. Soon it spread around the world to various universities (Barrows, 1980).

Some institutions in Brazil use this method of teaching, these being mostly in the medical field, such as: the Federal University of São Paulo - UNIFESP, the State University of Londrina - UEL, in all courses of the School of Arts, Sciences and University of Humanities São Paulo - EACH /

USP. PBL is still incipient in the environmental management area in Brazil, where the literature is scarce on the subject, but there are many opportunities for its application.

Implications of problem-based learning

Problem-based learning (PBL) is an educational approach that has been used successfully for over 30 years and continues to gain acceptance in various disciplines.

The methodology of questioning the teaching of certain subjects of a discipline are extracted by observing the teaching reality, whereas in problem-based learning they are prepared by a team of experts to cover all the essential knowledge of the curriculum (Berbel, 1998). These approaches are focused on students who are able to conduct research, integrating theory and practice, as well as apply knowledge and skills to solve a predefined problem (Savery, 2006). According Hollenbeck (2008), these processes are designed so that students are guided in the search for new scientific knowledge needed to solve the assigned problem. Therefore, questioning methods for the observation of reality encourage individual learning through the collective construction of a deeper understanding, making students responsible for their own learning.

Thus, the educational objectives contemplated by PBL, to Hadgraft and Holecek (1995):

(I) active learning – occurs through asking questions and seeking answers;

(II) integrated learning – to solve the placement of questions, knowledge in various sub-areas is necessary;

(III) cumulative learning – placing increasingly complex problems facing up to the entry-level professionals; and

(IV) learning for understanding – rather than information retention, through the allocation of time for reflection, frequent feedback and opportunities to practice what has been learned.

Methodological foundations for the implementation of PBL

PBL brings changes to the role of teachers and students. It creates a tutorial group consisting of a guide (teacher) and five to eight students. Teachers become tutors who, as Ribeiro and Mizukami have said (2005), have a guide

function, facilitate, explain concepts and help students to outline issues, answer questions regarding the project requirements and tasks to be accomplished. A good tutor must have the following characteristics: knowledge, personal attributes (acceptance and responsibilities) and skills.

For students, there are two roles: leaders and secretaries. The leaders, according to Unifesp (2000), are responsible for the "management" of meetings and discussions, ensuring the participation of all. The secretaries record what was said (stages of discussion), facilitating the participation of all. Also, they make note of the list of goals, references to use and, ultimately, deliver a report to the tutor.

The roles of the leader and the secretary must be understood and played by everyone in the group, if possible. Thus, each student will have the experience of being a leader, secretary and member of the study group, which will provide him/her with extensive experience from participating in each role and experience the different perspectives of teamwork. Students must take responsibility for their learning through teamwork, to identify, analyze, and solve problems using prior knowledge and experience of the course, evaluate their own contributions and that of their colleagues and still provide the teacher feedback on the course (Ribeiro & Mizukami, 2005).

According to Hansen (2006), one PBL problem reaches a higher cognitive level than a typical case study. The case study presents events occurring in a given situation in a company, which may be of any nature, with a view to being analyzed by students. The problem of PBL, the student first think about what evidence it will need and where you can get them (using knowledge); then it determines the objectives and procedures (requires knowledge and understanding and then applying the acquired knowledge and analysis); and, lastly, it evaluates the best way.

Thus, a good PBL project is one that awakens in the student's will search through the developed problems and transforms the student active agent in teaching. In the process, the teacher (mentor) teaches the student to learn how to learn.

According to Park (2006), there are few systematic steps to assist in making a student learn the task by means of PBL:

(I) clarify the difficult or unfamiliar terms;

(II) list problems;

(III) discuss the problems (brainstorming);

(IV) summarize;

(V) formulate learning goals;

(VI) search for information; and

(VII) integrate the information and resolve the case.

PBL as a teaching method in the discipline of Energy Resources and Environment will aim to meet the needs of both teachers and students in relation to teaching and learning.

The teachers will benefit because they are acquiring knowledge on education. The students will benefit, as well, because the method allows curiosity, critical thinking, and long-lasting learning skills.

For the development of this methodology, eight elements are needed: content that has meaning, skills for the real world, a thorough research theme, guiding questions, the need for knowledge, voice and choice, criticism and revision, and exhibition of the work to the public.

Methodology

Initial Applications

The PBL on Energy Consumption and Social Responsibility has as its starting point the driving question: **How can we reduce electric energy consumption and be more efficient and sustainable?**

This project was organized to be developed in four weeks as an in-person meeting per week. The tables below are divided by weeks and present the content, activities, sources and tools for each week.

Table 1. **The content, activities, and resources and possible tools in week 1 and 2 of the project.**

Content	Activities	Resources and possible tools
• Equations (Energy calculation). • Electrical Circuits and Electromagnetism.	• Group Discussion: how to select and collect data about power consumption (house, industry, laboratory etc.) • Then, students are presented with the task on how to calculate power consumption (some equations can be presented by the teacher).	Wolfram Excel • Numbers App • Office tools (Excel, PowerPoint, Word, Google Docs)
	• Students plan the project in groups using collaborative online tools. **Assignment**: Students collect technical information about electrical equipment consumption and organize an online spreadsheet with the collected data.	• Online Collaborative tools (TodaysMeet, Padlet, Google Drive) Google Drive Excel or other
• Language (specific vocabulary/ presentation/ persuasion strategies/ target audience, genre, text display, text purpose etc.	Reading and comprehension skills – text reading; videos etc. Think-pair-square-share: students discuss specific vocabulary, persuasion strategies, target audience, genre, text display, text purpose etc.	

Table 2. **The content, activities, and resources and possible tools in week 3 of the project.**

Content	Activities	Resources and possible tools
• Energy consumption reduction • Energy efficiency technologies	• Students show their results through audios recording and short videos (Audio/Video Recording).	Podcast Videos (Animoto/ Imovie/ MovieMaker /Screen-o-matic
	• Group discussion about what to do to reduce consumption and apply energy efficient technologies.	TodaysMeet Face-to-face
	• Students write some bilingual charts on how to reduce energy.	Glogster PowerPoint
	• Students present their results to the class/school (school assemblies) using different instruments, such as short videos and audio recordings. • Students could discuss the MPOG decree and suggest practical ideas in a forum.	Prezzi PowerPoint Keynote TodaysMeet

Table 3. **The content, activities, and resources and possible tools in week 4 of the project.**

Content	Activities	Resources and possible tools
• Final Presentation • Assessment	• Present their productions in the Science and Technology Event (SNCT-2015, October) – the theme for this year is “Light, Science and Life” – International year of Light.	Get all the materials produced together
	• Assessment: Students reflect and assess the process – self-assessment; students assess each other.	

Methods, methodologies and approaches

- ✓ Cognitive learning
- ✓ Active learning
- ✓ Interactive method
- ✓ Collaborative methods
- ✓ Dialogical method
- ✓ Experimental learning
- ✓ Communicative approach
- ✓ Deductive method

Resources:

- ✓ Computer
- ✓ Literature (books and other text portable)
- ✓ Office tools (excel, word, power point)
- ✓ Statistics software
- ✓ Video
- ✓ Projector
- ✓ Flipcharts

Assessment

- ✓ Formative and summative assessment
- ✓ Self-assessment
- ✓ Students' assessment (one another)
- ✓ Teachers' assessment (each teacher could create their own rubrics and assessment tools. At the end, all of them could have a meeting with students and carry out a general assessment of the project, the teacher and the whole group performance/results)

Conclusions

The results are divided into learning outcomes and skills to be developed by the students.

Learning outcomes:

Students will be able to:

- ✓ Recognize electrical consumption equipment.
- ✓ Calculate and analyze energy consumption and its relation to time consumption.
- ✓ Create graphs and spreadsheets to present data.

- ✓ Analyze the possibility for reducing consumption and suggest solutions.
- ✓ Present a literature review on new efficient energy technologies (could also be in English, Spanish, etc.).
- ✓ Produce charts and reports on how to save energy and behave sustainably.
- ✓ Relate energy consumption to social responsibility.
- ✓ Have their own word bank (English/Spanish/Portuguese).
- ✓ Interact with one another and consider each one's opinion.
- ✓ List some examples of social responsibility relating to energy consumption.
- ✓ Use language strategies to present their ideas in oral and written forms.
- ✓ Work collaboratively, using computer tools.
- ✓ Create, edit and publish short audios and videos.
- ✓ Use digital platforms to propagate ideas (blogs, podcasts etc.).

Main skills to be developed:

- ✓ Critical thinking
- ✓ Reflective thinking
- ✓ Problem solving
- ✓ Creativity
- ✓ Decision-making
- ✓ Social responsibility/Ethics

Final Considerations

Students involved in problem-based learning have the opportunity to acquire knowledge and become proficient in problem solving and self-directed learning as well as learning teamwork. Problem-based learning can be a learning methodology/process or a curriculum based on its application by the teacher.

As educators, we want our students not only to learn science, but embrace it and be able solve problems in the future. The barrier for science educators is higher than ever for teaching science. We are preparing our students to meet a global future for students.

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Social business challenge: an experience report

Keywords: social business, entrepreneurship education, pedagogical experiment

Summary

This paper describes the discussions, observations and experiences around the realization of a Social Business Event. This event was aimed at the diffusion of new cultures and new methods of educating in Brazil. It was held at the Federal Institute of Espírito Santo (IFES), and organized by Brazilian students in partnership with Finnish students of the Pro Academy and Tampere University of Applied Sciences of Tampere (TAMK) Finland. This work was organized in the context of the VET Teachers for the Future programme, a Finnish-Brazilian agreement with Häme University of Applied Sciences (HAMK) and TAMK.

Context and Motivation

Finland is now a benchmark in education quality. The country is innovating in different ways and achieving many positive results, as pointed out in recent PISA exams (OECD, 2012). New educational methods have been applied with great success and are contributing to these results, such as project-based learning, curricula based on skills, non-formal learning environments, individualization of education, and student-centred education, among others.

In addition, perhaps the most important and most differentiating factor of Finnish education is its values. Finnish culture is known for its trust, autonomy and cooperation. Thus, these cultural aspects are very helpful in the application of new educational methods and, therefore, innovation in education.

On the other hand, it can be a challenging task to replicate this successful Finnish model in education in different contexts, because new educational methods require new mindsets. Thus, the simple and straightforward application of new methods and educational practices would not be enough.

On the contrary, it would be quite difficult, for example, in places where there is resistance to change, competitiveness or suspicion. In this case, along with such new methods, it is important that there is a change of mentality for those involved.

One possible way to stimulate educational change and diffusion of new ways to learn is through *innovation events*. They are quite common in the area of entrepreneurship for stimulating a spirit of innovation. A well-known event is the Startup Weekend (Nager et al. 2011). Through it, participants compete sorely for 54 hours to propose innovations. Another similar event, which is organized in Finland, is the Amazing Business Train (ABT) (Tuomela 2015) by the Häme University of Applied Sciences (HAMK) in Hämeenlinna, Finland. Unlike the Startup Weekend, it is an entrepreneurship event that is facilitated during a train journey. Such kinds of events usually promote a very intense experience for participants and achieve a high level of immersion. Thus, innovation events can be quite useful as tools to stimulate changes in mentality and disseminate new methods of educating.

Based on this assumption, this paper presents a report of the realization of a Social Business Event aimed at the diffusion of new cultures and new methods of educating. It was held at the Federal Institute of Espírito Santo (IFES) and organized by Brazilian students in partnership with Finnish students of the Pro Academy, a Business School of Tampere University of Applied Sciences of Tampere (TAMK), Finland. Called the Social Business Challenge of IFES, this event stimulated cultural change and the promotion of the Finnish education model through an intense interaction between Brazilian and Finnish students. The event will be described in detail below.

Social business event

The Social Business Challenge of IFES happened at the Serra Campus, on November 13–15, 2015. It was a realization of teachers' and students' Laboratory of Extension in Systems Development (LEDS) (Calhau et al., 2014) with the support of NAC (Art and Culture Center) and was sponsored by the Sebrae (Support Service to Micro and Small Enterprises).

The event aimed to encourage social change through social business. It was held in the format of a marathon in which proposals were submitted by the participants and then were selected and developed with support from mentors. Finally, the proposals were evaluated by a jury of experts.

Although the primary target audience was mainly students of the Institute, the event was open to the general public. Participants were grouped in up to a maximum of four participants per proposal. Vacancies for the event

were limited to twenty proposals. The submitted projects were selected and evaluated according to predefined criteria: Market Aspects, Social Impact, Scale potential, Social Innovation.

The event took place in two main stages. At first, workshops of Social Business were held in the four largest campuses of the Institute: Vitória, Vila Velha, Serra, and Cariacica. These workshops were guided by Sebrae consultants. In the second phase, there was the main event, the Challenge of Social Business with selected teams. The event started with an opening ceremony in which teachers, educators, principals as well as students learned more about education and innovation in Finland. The opening was performed by the students of the Pro-Academy who presented their education model, as well as addressed Finnish education more generally.

During the challenge, participants developed the proposals through the business model canvas (Osterwalter & Pigneur, 2010) and support of mentors. The event took place with various activities such as lectures, training workshops, business presentations (pitching), practical group activities, mentoring, and evaluation activities. The activities had a practical focus, with direct application of knowledge, helping participants learn more efficiently.

At the end of the event, an awards ceremony was held for the winners of the challenge with the three best proposals being awarded. The winners received an entrepreneurship course offered by Sebrae, which also offers consultancy during the development of the business plan. In addition, the winners were given the possibility of business incubation in one of the incubators of the Federal Institute, as well as support for the development of the solution by LEDS and now Junior's Company Phocus (of the Federal University) in the solution design.

As mentioned, the mentors helped the participants reflect on various aspects through constant interactions, questions, comments and feedback. Among the mentors, there were teachers from different campuses of the Institute, market professionals, as well as the students of the Pro Academy. In addition to mentoring, students of the Pro Academy helped in organizing the event and made a record through videos and photos. To help in communicating with participants during the mentoring, each Mentor of the Pro Academy had a Brazilian student acting as an interpreter.

Results and future steps

The workshops held in the campuses of Vitoria, Vila Velha, Cariacica, and Serra, received about 300 participants. The Challenge in turn had registered sixty-eight proposals, of which twenty were selected, totaling approximately forty participants. Among the twenty campuses of IFES,

fifteen campuses participated in the event, showing the potential of involvement that the event has throughout the Institute.

A direct result of the event was the broader engagement of students and teachers in the issues and problems of society. It encouraged the discussion and understanding of the surrounding community's issues in the various campuses of the institute.

In addition, one of the main results of the event was the cultural exchange between Brazilian and Finnish students. This exchange was very constructive for both sides, helping in the change of mentality and dissemination of new cultures. Contact with Finnish mentors helped a lot in the development of proposals by the participants. As they had a different background, Finnish mentors stimulated participants to look at the problem from different perspectives, thus helping to create new ideas.

In addition, with respect to the participants, the event focused on the development of skills of the participants. These include teamwork, negotiation, empathy, conflict resolution, adaptation, communication and presentation, decision-making power, critical thinking, creativity, innovation, citizenship, listening, problem-solving skills, among others. Thus, this type of event proved a great opportunity to develop the four pillars of education proposed by UNESCO.

The event also encouraged collaboration among teachers of Campus Serra, teachers of other campuses of the institute, internal entities such as LEDS, NAC and administrative departments.

Another important outcome of the event was the dissemination of educational methods adopted in Finland. The presentation of the students of Pro Academy had about 100 participants who interacted with questions at the end of the lecture. However, perhaps the disseminating with the greatest impact occurred indirectly beyond the formal presentation. During the days of the event, Brazilian students and teachers lived intensely with the students of Pro Academy and were able to witness their skills and culture by themselves. Brazilian students and teachers had the opportunity to experience a bit of Finnish culture and their mentality, even though in Brazil.

One of the next steps, which is already being planned, is replicating the event in other campuses of the institute. One possibility being studied is the realization of local stages at different campuses of the institute, and another stage with the winners of the local stages, thus involving the entire institute.

This kind of event is a temporary activity. For this reason, we are considering how to integrate such events into non-formal learning

environments (continuous activity), such as LEDs and incubators. In this case, such environments may be initially responsible for holding the event in each campus and later, through absorbing projects and the solution proposed at the event, allowing the continuity of results.

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Godfred Adduow Obeng

Student-centred learning: perceptions and experiences of international students studying social services in Finland

Keywords: student-centred learning, teacher-centred learning

Summary

The study investigated the perceptions and experiences of international students studying social services from the Global South in a switch from teacher-centred learning (TCL) to student-centred learning (SCL) approach. International students studying social services at a University of Applied Sciences in the Helsinki region were selected for this study. By using the teacher-centred learning (TCL) and student-centred learning (SCL) approach as reference, qualitative interview questions were deployed to arrive at research findings. The findings are discussed in relation to the international students' perceptions and experiences.

Introduction

Finland is among pioneering countries in the global level championing a paradigm shift from a teacher-centred learning approach (TCL) to a student-centred one (SCL). The Finnish approach to this learning approach has not been a mirage, but a successful one where Finland finds itself among the leading countries in terms of quality education delivery in the world today. The discourse about this monumental achievement has over the years centred on the use of the approach with the emphasis on teaching and learning processes. It is no secret that Finland prides itself as championing the use of the student-centred learning approach right from pre-school to the university-level education.

However, globalization and the internationalization of education are reshaping our modes of thinking, teaching and knowledge building in fostering human development in our societies. While some scholars (Harrison, 2006; Harrison & Huntington, 2000) may argue over a 'clash of cultures', this cannot be the same in the educational systems of countries around the world, where knowing the supposed differences only inspire us to develop strategies to harmonize and promote effective teaching and learning. As a result of internationalization of education and to place itself amongst the best destinations for higher education, Finland offers

a host of higher education programmes taught in English to prospective international students. The CIMO report on international students' mobility to Finland from the year 2006 to 2015 shows a remarkable increase in numbers (CIMO, 2015). The number of international students moving to study in Finland increased from 10,066 in 2006 to 20,353 in 2015. The CIMO 2015 report does not break these figures down into the countries or regions these international students are coming from, nonetheless, there are a greater number of these students who come from regions or countries where traditional teacher-centred teaching is still valued and used in the learning environment.

This development comes with enormous responsibility on the part of educational policy makers and most importantly, it pushes teachers to acquire multicultural competences in order promote meaningful learning outcomes. Cannon and Newble (2000) posit that, among factors that promote learning, the previous experiences of the student are key to the teacher's work output.

This study aims at understanding international social services (bachelor's degree) students' perceptions and experiences of the student-centred learning (SCL) approach. It is imperative to investigate and understand perceptions and experiences of the international social services students about SCL to inform teachers to adequately prepare as they introduce SCL to them. Higher education teachers handling international students need to be familiar with their international students' educational backgrounds to effectively help them (international students) make a smooth transition from teacher-centred learning (TCL) to student-centred learning (SCL).

What is student-centred learning (SCL)?

We first need to explain what SCL means and clearly point out the apparent characteristics that are embedded in its application in teaching and learning processes. What is a fact about SCL is that there are both epistemological and theoretical structures attached to it. SCL as a learning approach has no clear-cut definition (Farrington, 1991), but what various authors agree on in principle is that the learner is paramount in critical knowledge building. According to Gibbs (1992), in the student-centred learning approach, the student is strategically encouraged to take control of his or her learning process with less reliance on the teacher. In learner-centred teaching as Weimer (2002) would like to call it, students' development in learning dwells in three cardinal goals, which are autonomous, self-directed and self-regulated. Teachers in this regard are challenged to devise strategies that can help students to meet the

three set goals mentioned above. The needs of the student are central to the student-centred approach. This is partly due to the fact that SCL "is an orientation that gives rise to the idea of education as a product, with the student as the customer and the role of the faculty as one serving and satisfying the customer." (Ibid.) In the same vein, the student-centred learning approach makes students active learners rather than passive learners, in which case their (students) thoughts are deemed relevant in building comprehensive and well-organized knowledge. (Mayer, 2004) Richardson (2003) posits that SCL allows learners to use prior knowledge in the construction of new knowledge. In fact, SCL shares the view of constructivists who believe that learners construct their own meaning by building on what they already know based on their previous knowledge and experience. (Carlile & Jordan, 2005) The student becomes a "*lifelong learner*" as result of changes of responsibility in the learning processes. (Baker College, 2009) Also, collaborative studies such as group work play a vital role in SCL. (Johnson & Johnson, 1999; Weimer, 2002) In addition, SCL promotes flexibility in learning on the part of students (Taylor, 2000) in such a way that they are able to negotiate with teachers how and when, for example, to submit assignments.

SCL, or learner-centred teaching as Weimer (2002) prefers to call it, has distinct characteristics that differentiate it from other teaching and learning approaches. Weimer (2002) provides what she termed as five key ingredients that make SCL worthwhile. These five ingredients in this study are referred to as the characteristics of SCL. The five characteristics of SCL based on Weimer (2002) are:

a. It is teaching that engages students in the hard, messy work of learning.

b. It is teaching that motivates and empowers students by giving them some control over learning processes.

c. It is teaching that encourages collaboration, acknowledging the classroom (be it virtual or real) as a community where everyone shares the learning agenda.

d. It is teaching that promotes students' reflection about what they are learning and how they are learning it.

e. It is teaching that includes explicit learning skills instruction.

Literature review

The conspicuous nature of student-centred learning (SCL) in the educational discourse has compelled many scholars to study this sought-after approach. Notable authors in SCL include Gibbs, 1992; King, 1995/2003; Lea, Stephenson, & Troy, 2003; Mehdinezhad, 2011; Weimer, 2002; Lonka & Ahola, 1995; Schiller, 2009; Cannon & Newble, 2000. In a study conducted by Lea et al. (2003) on higher education students' attitudes to student-centred learning, the findings in their study showed that students hold positive views concerning student-centred learning. According to Lea et al. (2003), students whose opinion forms the bases of their research finding pointed out that the traditional method of teaching which places the teacher at the heart of knowledge building inhibits students' motivation in the learning process. In this regard, teacher-centred learning compared to student-centred learning is less effective.

Zeki and Guneyli (2014) conducted a study on student teachers' perceptions about their experiences in a student-centred course. The findings from this study pointed out the student teachers' perception of positive effect of cognitive development as result of active role nature of student-centred learning. In spite of the overwhelming positive perception about student-centred learning, the result also shows the student teachers' perception about the time consuming nature of the approach, which according to them affect instructional time negatively. The study also pointed out apparent confusion due to the complexity of the role the teacher should play in the classroom. (Ibid.)

A research study conducted by Baeten, Kyndt, Struyven and Dochy (2010) to determine factors encouraging or discouraging the effectiveness of the use of the student-centred learning environment to stimulate deep approaches to learning revealed many factors. According to the study (Baeten et al., 2010), both the encouraging and discouraging factors can be attributed to the environment in which the student learns, the students' view of their study environment and most importantly the students' own characteristics. Baeten et al. (2010) pointed out that the issue of students' personality, for example, is amongst many factors that influence their approaches to learning. Baeten et al. (ibid.) support the findings with the argument that students bring their previous experiences to the learning environment, which in turn may influence their approaches to learning. Also, a doctoral research project conducted by Mtitu (2014) on perceptions and experiences of geography teachers in Tanzania revealed that SCL cannot be implemented where class sizes are large. Besides the high number of students on a course, the study also revealed that a lack of teaching resources, such as textbooks, computers, etc., constrains the implementation of SCL.

In Finland, the SCL approach implementation on the side of teachers has not encountered the same kinds of challenging issues, such as class sizes or a lack of teaching resources, with computers, reference and textbooks being adequately catered for at all levels of education. In the same way, Finnish students and students coming from the most advanced countries where the SCL approach is used in instructional teaching do not experience difficulty in learning with this approach. In this study, the findings show to provide views of students who may have just for their first time encountered the SCL approach in their learning environment and suggestions are given on how to incorporate the findings in designing and implantation of SCL. In other words, the perceptions and experiences of the international students should help teachers who handle international class where most students might never have SCL as learning approach.

Methodology

This empirical study, investigating the perceptions and experiences of international students studying social services in Finland, employed a qualitative case study methodological approach in data collection and analysis. Qualitative research methodology was applied, as the study investigates a phenomenon known as the SCL approach in learning. (Shank, 2002) More so, the empirical study looks at perceptions and experiences of a section of our society (Paul, 2004).

In all, twenty international students from Asia and Africa were selected from four Universities of Applied Sciences located within the Helsinki metropolitan area (Helsinki, Espoo and Vantaa) and interviewed. All the interviews were conducted face-to-face using open-ended questions. All the interviews were recorded with the consent of the interviewees and the assurance that their identity would be protected in this empirical study to prevent ethical dilemmas. (Meredith, Joyce, & Borg, 2003) The study ensured that all the interviewees were indeed social services students studying full-time at a University of Applied Sciences through the help or assistance of teachers teaching in this area and colleague students in order to make the study valid and credible. One major limitation of this empirical study is the sampling size, which was limited to students located in the greater Helsinki region. This owes to the fact that the whole idea for this study only came up during the practical teacher training (PTT) period and there was not enough time before graduation to conduct a more comprehensive study.

As stated earlier, the study employed the case study approach, the reason being that it investigates the perceptions and experiences of a particular group (Creswell, 2007), which in a way helps to understand the realities involved in educational strategies (Silverman, 2005). In this case, empirical findings from previous research projects were used to reflect on the results of the data gathered for this study in the data analysis part

through thematic analysis. The perceptions of the interviewees in this study were analyzed and discussed verbatim, while their experiences were analyzed based on themes generated from the Weimer's (2002) five key ingredients of learner-centred teaching.

Results and discussions

The results of this study are in two parts based on the research questions and are supported by the themes generated from the theories and literature review under this empirical research. It is important to let it be known that interviewees were first asked to describe the teaching approach in their home countries and draw the similarities or otherwise to the approach used in their current studies in social services. It was from that point that questions seeking answers from the study were introduced to the interviewees.

Part 1: Perceptions of student-centred learning

Most of the social services students said they initially had a negative perception of SCL, but that their perception had changed. According to the students interviewed, they had the feeling that their teachers were being lazy and shirking their responsibilities in teaching. Eight of the interviewee students shared almost the same view on the assertion that teachers were failing to take control of learning. Here is one example of an initial perception of SCL: "*our teachers talk less in class whiles we the students are made to do a lot of study work. They hardly define to us the really meaning of concepts, but only always seeking our opinions. They are supposed to tell us and not the other way round*." The study also reveals an initial perception of SCL as placing too much workload on the students. According to the interviewees, they initially thought that they were being given too much study-related work to do during class sessions. Here is one example to back this claim by the interviewee student; "*in a study module, one study course which lasts for five contact days may start 8 o'clock in the morning and end 4 o'clock in the evening on those contact days. We have to do too many study-related activities with fewer coffee breaks in between*." These perceptions may be partially related to their previous learning experiences, where the teacher controls the learning process and leads the student to what they are to know. (Carlile & Jordan, 2005)

The results also revealed the students' perception that SCL does not help learners to provide definite answers or solutions to salient topical issues. According to them, the answers that they bring forth in group collaboration work are never challenged as right or wrong, which is what learning is supposed to be. "*We are always given tasks to do in class and after class; during presentations teachers never say our works are correct or wrong.*

They only sometimes ask what we think can be done better." This assertion from the students interviewed may not be far from the truth of what SCL really stands for. That is, the above quotation confirms of one of the characteristics of SCL, which is reflective learning. (Weimer, 2002)

The immediate result shows the interviewees) negative perception initially about SCL; they also believe that SCL encourage students to be open and practically minded. That is, they construct their own meaning to whatever study topic they are taught and present practical solutions to the topic. Here are two excerpts from the interview data collected; "*I used to be good only at memorizing and reciting, but felt short when it came to practical application of learned theory. The method of teaching adopted here has helped me to practice the theories in real life situations. I now understand the theories learned to be the means and not the end.*"; "*the study approach helps as to learn to understand and not study to pass.*" These two perceptions on SCL confirms the position held by Weimer (2002) that this study approach motivates and empowers students to effectively take full control of learning processes.

Part 2: Experiences of student-centred learning

Most of the students reported about the positive experiences with regards to student-centred learning approach. The students said the use of SCL as an instructional approach has helped them to have an active and meaningful student and teacher relationship. They said that they are able to interact with their teachers on both an individual and group basis. Here is one example of a quote from an interviewee; "*I always get the opportunity to discuss learning needs with my teachers. The opportunity of meeting them and sharing ideas is something I am happy with.*" This stated view is supported by Weimer's (2002) view on SCL characteristics where learning is a shared agenda.

The students who were interviewed reported having a positive experience of SCL in the dialogical skills and cooperative learning. They pointed out that they did a lot of group work and presentations at school and that these activities had taught them how to pay attention to other students, for example, during group discussions. According to them, this experience is very important to their career as future social services workers as the job requires good temperament collaborative skills. This is what the interviewee students said in dialogical skills development; "*We do a lot of group work and presentations. In most cases, our tutors are not there to assist us, but rather we do everything ourselves. We have all learned to be good listeners and not to interrupt others when they are sharing ideas and we think they may be off-track. This has helped me to be a good listener and a team player.*" This revelation echoes the assertions made by authors such as Evertson and Noal (2006), D. W. Johnson and R. T.

Johnson (1999), and Nowicki and Meehan (1996) that working together as students inevitably leads to achieving a common good in which the world stands to gain from when students entering working life.

The interviewees also claimed to have gained in-depth knowledge in information search and retrieval. Most of the students who were interviewed said they did not rely solely on the study materials provided by their lecturers alone as they (lecturers) provided them with additional information sources to look for in order to get a wider view of the topics being studied. Among the interview results that were corroborated by most of the social services students interviewed is the following: "*I have learned how to search for study-related materials online (internet). I now know which key words to use when searching for information and try not to rely on one source in doing my assignments*" The above claims by the students buttresses Weimer's (2002) assertion that student-centred learning (SCL) supports students in developing good learning skills. That is, teachers that adopt the SCL approach explicitly let their student know that they (students) do not only need to rely on the study materials the teacher has provided.

Another experience the students revealed about SCL is peer support. According to the students interviewed, they were supported in learning from their fellow students both inside and outside the classroom. This is a quote from one of the interviewed students to support this claim: "*I never get too much worry when I find it difficult to understand a concept because my colleagues are there to explain further to me. This is a common practice we have been doing to help each other so that we can all complete our studies.*" This finding supports Fisher, Coleman, and Neuhauser's (2005) argument that since students engage in peer learning, they help each other to deeply understand their study materials through synthesizing, analyzing and evaluation of materials.

Also, the students in the study mentioned trust. The students who were interviewed claimed that the use of SCL as an instructional approach made them feel trusted by their tutors. According to them, tutors trust them so much that when they give them (students) tasks, they will not copy or pick someone's work to present as their own work for grading. Here is one excerpt of the interview answers about trust which was corroborated by almost all the students interviewed; "*My best experience in this whole study period is the show of trust in us as students on the part of our tutors. They (tutors) give us the opportunity to explore and do not show any mistrust of our judgments.*" The above statement is a confirmation of Weimer's (2002) assertion that SCL motivates and empowers students. In other words, the trust that the tutors placed in them incentivized them to create their own personalities, which in turn meant hard work.

Last, but by no means least, the results of the study showed the flexible nature of studying. The interviewees claimed that this teaching approach allowed them to effectively plan their studies in such a way that they could pick what to learn and when to learn. The students also revealed that they did have study agreements with their teachers, but even so, they were able to make changes when they felt they needed to do so. These are a few excerpts to back the claim of the social services students interviewed for the purpose of this study; "*Tutors discuss with us in class how we would like the studies to proceed and when to submit our work for assessment. At some point, we were able to convince them (tutors) to give us more time. This was also done on an individual basis." "I still have some studies pending, but I have discussed with the responsible lecturers that I will take them later. I would like to get it done, but in a good frame of mind*." These experiences of the student seem to back Taylor's position on student-centred learning, which is that of a flexible learning environment. In other words, deadlines for submitting study-related tasks are never absolute deadlines.

Conclusion

The internationalization of education has come to stay and so there is the need for teachers to know the background of international students well, in particular their study orientations in order to facilitate good learning outcomes. The perceptions of social services students on student-centred learning are positive. The students perceive SCL to be activity-based learning which is inclusive to all students. The findings show that SCL promotes deep thinking and probing. For example, instead of trying to reproduce what has been done or said, they construct their own meaning of the topic. Another conclusion drawn from this empirical research with regards to social services students' perceptions about SCL is the practical application of knowledge. SCL enables social services students to be more practical, especially when they embark on practical training.

Based on this study, we can say the experiences of social services students regarding student-centred learning are also positive. There is a healthy interaction between teachers and students. Students feel recognized and accommodated by their teachers in the study environment. Teachers trust their students' abilities to do things as expected. Students do not feel pressured in their studies and get enough time to do their assigned tasks. The students experience peer-support among students in the study environment profoundly, too.

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Building the learning community

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Team development stages and patterns of collaboration

Keywords: co-operation, collaboration, learning in teams, lifelong learning

Introduction

Currently, we are living in the information-age, driven by advances in the internet. This phenomenon has brought challenges for humanity, since human beings are required to have skills that have never been thought of before, such as lifelong learning skills.

Current learning theories emphasize learning as the construction of one's own knowledge (Bereiter & Scardamalia, 1996) and learning as knowledge creation (Paavola, Lipponen, & Hakkarainen, 2004). Learning has been defined as a very social process and needs excellent collaboration skills. However, authentic collaboration is sometimes difficult to achieve. Mostly, we find it easier to cooperate with partners than collaborate.

Considering the educational context as a rich environment in interaction and responsible for citizens' development for lifelong learning, we intend, in this paper, to reflect about one important learning skill, collaboration.

The first part of this article presents a theoretical frame regarding cooperation and collaboration in order to make clear our conceptual approach. Then, we introduce the conceptual definition of team development stages and patterns of interaction and collaboration. Finally, considering collaboration takes places through interaction, we show cooperation and collaboration as complementary working methods, that each one is part of a process from to deeper level of integrative works. So, the aim of this paper is to discuss team development stages, patterns of collaboration and reflect the interactive dynamics in teams in order to achieve innovation.

Cooperation and collaboration

Some researchers suggest a reversal of meaning between cooperation and collaboration. For Roschelle and Teasley (1995) "Collaboration is a coordinated, synchronous activity that is the result of a continued attempt to construct and maintain a shared conception of a problem", which involves a "(...) mutual engagement of participants in a coordinated effort

to solve the problem together". Additionally, the "Cooperative work is accomplished by the division of labor among participants, as an activity where each person is responsible for a portion of the problem solving".

Kayser (1994) says collaboration "is a joint effort between two or more people, free from hidden agendas, to produce an output in response to a common goal or shared priority. Often, this output is greater than what any of the individuals could have produced working alone".

Dillenbourg, Baker, Bleaye, and O'Malley (1996) agree with Roschelle and Teasley (1995), saying "cooperation and collaboration do not differ in terms of whether or not the task is distributed, but by virtue of the way in which it is divided: in cooperation, the task is split (hierarchically) into independent subtasks; in collaboration, cognitive processes may be (heterarchically) divided into intertwined layers".

In this paper, we adopt the conception that collaboration takes places according to the group development stages (Tuckman, 1965, 2001) and the interaction in the group work defines patterns of collaboration (John-Steiner & Mahn, 1996).

Team development stages

Tuckman (1965) proposed four stages to describe the developmental sequence in small development groups: forming, storming, norming, and performing. Later, he added a fifth stage, adjourning (Tuckman, 2001).

The first one, forming, is usually the starting moment of the group, when the participants of the group get to know each other, but working in an individualized way. Next, there is the storming stage that occurs after an initial contact the group members begin to know and understand the position of the other members of the group beginning to position themselves, presenting their opinions, but still working and thinking in an individualized way. In this stage, there can be conflict between the members of the group, where they cannot be open to listening to and sharing opinions and contributions. In the norming stage, the group starts to know each other more deeply and respect their opinions and beliefs, respecting more those contributions that seek group growth. In this stage, it is possible to note openness to the ideas of other group members.

Despite the conceptual conflicts, comparing collaboration and cooperation with the team development stages brought by Tuckman (1965) it is possible to consider that in the forming, storming, and norming stages the members of a group cooperate to develop some task. In these phases, the members

can work together to achieve a goal, but in a more individualized way, such as in cases where they develop separated activities that each member must perform individually, each one “doing their part”.

In the performing stage, the members are proactive and autonomous, trusting and supporting each other, and working as a team. It does not mean ideologies are uniform, but a diversity of ideas are discussed in order to increase innovation, and collaboration starts to take place in the group work. Figure 1 shows a parallel between the development stages of the group and the collaboration process.

On the other hand, in the adjourning stage, the last stage, there is anxiety about the group disbanding separation of the group and the work ending. There is a general feeling of sadness and feelings toward leader and group members (Tuckman, 2001).

Figure 1. **Team development stage of collaboration (Modified: Tuckman, 1965).**

Patterns of interaction and collaboration

According to John-Steiner and Mahn (1996), there are patterns of interaction and collaboration in the groups of students where teachers emphasize coparticipation and cooperative learning. The authors’ work revealed four patterns of the collaboration process according to the collaborators’ values, roles and working methods. The patterns created by the authors are: distributed, complementary, family and integrative, as shown in Figure 2.

Figure 2. Phases of the development research cycle (John-Steiner & Mahn, 1996).

John-Steiner and Mahn (1996) explain that in development groups engaged in collaborative learning, the conflict-resolution strategies are dynamic and "the collaboration can be initiated at any level and be transformed over time".

Following the author's ideas, the distributed collaborations occur in an informal and voluntary way, the learners share similar interests and the collaborative work is spontaneous. There are exchanges of information in the collaborative dynamic, but the main feature is sharing ideologies never conflict them.

Complementary collaboration is based on a clear division of labor, where the collaborators negotiate goals and objectives to achieve in a certain period of time. This pattern is common in discipline-based approaches in the organization of teams in the classrooms.

In contrast, family collaboration is characterized by frequent changes of roles, which the learners change repeatedly and unexpectedly their roles during the collaborative work. The collaborators share goals and objectives leading to a dynamic integration of expertise.

Finally, the integrative collaboration is a critical and deep way of work in a group. The diversity of voices are unified, the roles are interwoven leading to the construction of shared ideologies. The members of the group trust in each other and are able to innovate through a diversity of ideas.

Patterns of collaboration during the VET Teachers for the Future programme

The studies about stages of group development and patterns of interaction and collaboration, promoted by the authors support us to reflect on our experience as teamwork developed during the VET III Programme - Teachers for the Future. This programme has been developed under the coordination of Brazilian Secretariat for Vocational and Technological Education (SETEC-MEC), in association with the Universities of Applied Sciences in Finland, and aims at professional training for teachers of the Federal Professional Education Network.

The programme consisted of a three month immersion in the Finnish educational model, experiencing the guiding principles of its education and culture, which stands out in the world panorama for its results. According to the Finns, education is based on trust, learning by doing, collaborative work, flexibilization and individualization of the curriculum, as well as considering the student as the center of the learning process. It is hoped that the participants in the programme will in future be multipliers of teaching best practices.

In this way, the programme was designed so that the participating teachers experienced the Finnish principle of learning by doing. The first challenge was the formation of working groups, organized by the Finns based on the analysis of preliminary questionnaires and an individual interview held in the first days of the training. These "Family Groups" were challenged to work collaboratively during the first two months of the programme, something far removed from the reality of the teachers participating in the programme, hence the interest in reflecting on the ways of collaboration.

Each "Family Group" was made up of about six teachers with very different academic backgrounds, professional experiences and teaching time. Due to these characteristics, they found it extremely difficult to collaborate. The groups were able to discuss the proposed themes in depth, but the synthesis and textual production were constructed individually by each participant and then collated to o make sense.

Often, some members of the group contributed verbally showing difficulty in collaborating more effectively with written texts. One of the participants began the production of the text and it was very common that the other members would create new fragments of text, each expressing their own vision, but without being able to advance in the production of a collaborative text, with all members constructing their own text.

Observing these difficulties in working in a truly collaborative way, it was sought to observe the behavior of the groups and the forms adopted by them to advance the challenge of collaboration.

The groups have developed and clearly passed through the stages suggested by Tuckman (1965), reaching the performing stage, mainly in acquaintanceship and oral expression aspects. However, some groups still showed difficulties in co-writing. Small advances could be observed, probably motivated by the increase of confidence among group members and the feeling of freedom in suggesting changes and altering texts initially produced by the other participants, without the fear of deconstructing ideas initially produced by the other.

It can be inferred that the time that members of the groups acted together may be one of the factors contributing to this development. It was possible to realize that it is not enough to get people together for them to actually work in a collaborative way as a group. Usually, in Brazilian classes, when there is group work, students or teachers decide the members of their groups and this may or may not be the same for every assignment. It is common that in one semester the students are in several groups for different activities: one group for the activity of history, another one for the geography activity and another for mathematics, for example.

It may be difficult for members of the group to go through these development stages in this type of practice, because they do not have enough time to know each other deeper and consequently there is a separation of tasks with the members performing their task in their own, individual way.

In this case, they may not reach a state of collaboration, because they are together for a short time for the development of a specific task, so they do not have enough time to know each other, their opinions, and to increase the feeling of trust between the members of the group.

The idea of having a "Family Group", i.e. a group that works together over a longer period of time to develop different activities together, allows the group to get to know each other better and to enhance this trust and freedom between the participants to reach the stages of collaboration.

Conclusion

It is possible to conclude that to learn how to live together and to work in a collaborative way is a great challenge for the Brazilians. As Brazilians educators, we must take care with the way development groups of studies are organized and the value we give to this.

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Sheylla Chediak & Irma Kunnari

Some reflections on how to engage students/people in learning and build learning communities for change

Keywords: educators, engaging, learning, organizations, students

Summary

This paper intends to present some discussion, observation and ideas in order to implement pedagogical changes in educational institutions. When it comes to reflecting upon how to make people more engaged in learning, many studies in a variety of environments and situations can be pointed out. In this case, we aim to consider individuals, such as students and teachers, and the environment as school for the students and a workplace for the teachers. Therefore, it is relevant to discuss some studies concerning organizational behaviors as well as learning theories. The idea of zones creates an interesting approach for investigating people's development in organizations (Senge et al., 1999). Furthermore, Vygotsky (1991) calls attention to the role of culture and social interaction as key components of learning.

This paper aims to discuss those theoretical perspectives and relate them to the experiences of the VET Teachers for the Future Programme, collaboration between HAMK University of Applied Sciences in Hämeenlinna, Finland and some Brazilian National Boards, such as the National Research Unit, the Professional Education Division and the Ministry of Education. The programme was conducted in the first semester of 2015. The first author participated to the programme, in which the second author worked as a teacher educator. During the programme there were visits in almost twenty different educational institutions, many school administrators' and educators lectures and study about many different educational models used currently in Finland.

Introduction

The concept of change is already itself something that usually brings about enormous tension. Although discussing changes is something that might be usual and somehow pleasant, in practice, it is always a concern in organizations. To make change happen, there must be a strategical plan, which must be well-structured, well-monitored and assessed. People ought to be supported and closely coached, so that changes may be effective and

bring concrete results. Otherwise, it can make people panic and change will not occur.

Most of countries have been seeking for changes that could bring better results in education. In Finland, for instance, the curriculum has been discussed, and although Finland has obtained good results in the latest PISAs, people are willing to improve even more in a way that they can not only have better and effective outcomes, but also meet the expectations placed on new learning by the demands of global society.

In Brazil, there has also been urge for changes in education. For this reason, we have to think about how we can make our educational institutions become a learning organization, where people – educators and students – are open to overcoming their limitations and taking new paths that can turn ourselves into better human beings through continuous improvement.

Discussing studies

Cognitive psychology has been answering the question of how learning happens inside the brain. On that matter, Vygotsky's study points to the crucial role of social interaction in cognitive development. He explains that the distance between actual and potential development is called the Zone of Proximal Development (ZPD). A child, with the guidance of an adult, for example, can learn and reach his/her potential. Thus, learning occurs through social interaction and the collaborative construction of knowledge (Vygotsky, 1991).

Some studies lay emphasis on how learning is related to emotion. For instance, Stephen Krashen (2013), an American educational researcher and linguist, sets five hypotheses related to second language acquisition and one of them is called the "affective filter". This is related to emotions such as motivation, good self-perception, self-confidence and a low level of anxiety. Combinations of negative emotions may move up the affective filter and thus the language acquisition process may become impaired. Hence, positive affect is extremely necessary, although it is not enough to make a process efficient. Therefore, we could state that learning has a lot to do with feelings and emotions, since you can only learn if you feel emotionally comfortable. Even though that is not enough to make learning happen, it is a starting point. And that is pertinent for a classroom or any other learning community environment.

Broadening our perspective, we could think of schools not just regarding the students' learning process, but also that of the organization. To implement changes towards a growth mindset and modify the behavior

of a learning community, implementers (they do not necessarily have to be in administrative positions) should have some ideas about it.

When discussing organizational change management, Senge (1999) and his co-authors argue that people somehow shape organizations; hence, organizations are a result of what people think about them. Every learning community requires a leadership community or community builders, not just people in official leadership/administrative positions. In this sense, the first step in creating a learning community is acknowledging community builders, people who believe they can change and create better conditions.

Everything is changing all the time, but we are not always aware of that. Therefore, learning should be happening all the time as well. Learning can only occur when, by some means, we are challenged or provoked. This is related to the zones where learning may or may not occur, which are the comfort zone, development zone and panic zone, as stressed by Senge (1999) in his studies about challenges to implement changes in organizations.

The comfort zone is somehow where we like to be. We have a great tendency to remain in the comfort zone, although, in our minds, we wish to go to the development zone, where learning happens. As human beings, composed by a variety of feelings and motives, we also want to be pushed in a challenging way, but not at a distance that can drive us to the panic zone, where learning does not happen at all. If we push too much, people tend to go into the panic zone. Leaders and community builders should be aware of the external and internal forces that stop people from moving from one zone to another.There are individuals in organizations who tend to get stuck; on the other hand, in some cases, organizations get stuck and limit people's growth. Still, organizations just reflect what people think about them (Senge et al., 1999).

Organizational psychology studies explain why this happens. Most of the time, a set of elements constitute the so-called "institutional forces"; which can be from internal or external sources (Lunenburg, 2010). They are subtle, but powerful. We cannot explain; we just feel that nothing, or almost nothing, is working – or at least not the way we would like it to. In most institutions in Brazil, it is common to blame this on bureaucracy, people's struggling for power and political relations, leadership problems, "the system", the policies, the curriculum or simply human/group behavior. In the end, no one is to be blamed, or everyone is, but never oneself.

Observations

Cultural and historical factors are key points when it comes to discussing mindset growth. It is extremely important to understand why people behave

the way they do. By observing the educational practices in Finland, for example, it is possible to perceive some cultural and historical aspects reflected on their teaching-learning practices.

Finland is a young country when compared to Brazil. They gained their independence from the Soviet Union only in 1917. During the Second World War, Finland had to fight hard to maintain its independence. The results were devastating for a relatively small population (nowadays around five and a half million people). At the end of the war, they had to cede twelve percent of their land to the Soviet Union through the peace treaty. One consequence of giving up that amount of territory was the need to relocate those Finns living in that area (OECD, 2010).

What can be learned from that lesson? Some basic notions of sticking together to be stronger, relying on one another to win the battle, providing equal opportunities for everyone, not leaving anyone behind, fighting for their peers, and preserving their land, to mention a few.

They had important landmarks in their politics and history and those made them become what they are today and achieve the results they have achieved.

Finnish educators trust each other and that can trigger many other traits. They rely on what they say and do. Trust encompasses autonomy. If I trust my colleagues, I can delegate tasks and provide autonomy, believing that their best will come up, which will consequently bring more responsibly. Traits are all interconnected and rooted in their history.

Since 2013, Finland has been going through a phase of restructuring their curriculum with the intention of integrating even more disciplines, in an attempt to meet global needs and achieve better results. The latest curriculum was confirmed in 2014. Therefore, it means they worked on this new curriculum for two years to be introduced in 2016. All educators and external stakeholders, such as companies, parents etc. were invited to take part in the discussions, which were conducted differently in each division and educational institution.

In some informal conversations during the visits to almost twenty different educational institutions, it was possible to notice the positive thinking permeating educators, even though some of them did not agree with the way changes had been conducted as regards budget restraints in education; they tend to rely on one another and do their best in their work. There is a genuine belief that students can learn, without any naïve perspective. Finnish educators recognize there are many challenges and work towards solutions. Therefore, many efforts have been made towards the challenges, such as special needs policy, entrepreneurial education,

use of technology to foster teacher collaboration, and teamwork, etc. These are just some examples of how the educators face changes.

Although Brazil and Finland have some aspects in common, for example, the fact that they had to fight for their independence, it is not fair to compare their results, since the proportion of their populations is by far too huge. While Finland has around 5.5 million, Brazil's population is nearly 220 million. Furthermore, the differences are not limited to population, but include the countries' history, culture, and identity. However, just like some countries are becoming inspired by Finland's results, Brazil can also get some inspiration and adapt some features from Finnish education. Interesting features that every country could take note of are, for example, trust, autonomy and the willingness to innovate in education, even when the results are good.

Pathways towards implementation

Change implementation towards educational improvement is a complex issue, which requires a lot of studies, analysis, attention, planning, execution, and assessment considering the specificities of the target community. The first thing to consider is how the scenario is set up, how behavior and mindset are configured. Culture is a key factor. We tend to reproduce the same actions we were submitted to.

Organizational changes have a lot to do with changes in mindset. This does not happen overnight. It is a process that takes time and requires committed people who believe and, of course, people who are technically prepared to conduct that.

When people want to move on and the "institutional forces" keep holding them back, they tend to get frustrated and that is infectious. Danger ahead! We have to keep our eyes wide open to that. Otherwise, our willingness may fade away and we cannot explain why. That might happen to a whole school community: teachers, students, administrators.

We face many contradictions in any organization. Sometimes, teachers are in the panic zone, administrators in their comfort zones and nobody in the development zones. They can also be in different zones. The fact is, we can never find everyone in the same zone, and that is reasonable.

As developers/teachers and community builders, we can sometimes find ourselves in the comfort zones, but being aware of going back to the development zone, so that we can really keep on providing our students or people around us opportunities to learn and grow.

There are many practical ideas about how to engage students and educators. The most effective ones are those connected to constructivism studies; when student's previous knowledge is valued and explored; or when learning community knowledge is also valued and explored. That is the case with teachers as well. Both teachers' and students' ownership to their development need to be assured.

Further, interaction plays an essential role. As Vygotsky states, learning occurs through social interaction. There must be space and place for that. No one possesses the "box of knowledge", he/she is one member of a learning community. Learning is never-ending and it is transformed as social interaction happens. Each individual supports the other and can provide emotional comfort so that they can advance to the development zone (Senge) and into their Zone of Proximal Development (Vygotsky).

The whole educational system in Brazil has been pursuing improvement and better results: educators, students and school administrators, policy makers, and authorities. In other words, society recognizes the need for changes in education. That is already something that makes us feel optimistic.

Conclusion

Shifting from individual work to team work, from fragmented teaching-learning to integrated teaching and learning, from egotistical interests to community interests, from questionable political benefits limited to a small group to benefits for the of whole society are all aspects we have to struggle for in Brazil. Learning communities – in educational organizations or in classrooms – are built by supporters and enthusiasts who believe they can defeat traits that can delay the educational group moving forward.

Therefore, pathways toward educational changes could be started by creating learning communities at schools. They are the basis for all changes and can maintain and sustain mindset growth. It is a means to create space for learning and avoid a fear of changes, as it strengthens a feeling of community, which will provide some comfort to all its members. We need to feel safe during a changing process, otherwise, as mentioned before, we might get blocked and no changes occur.

Although no prescription on how to build and maintain a learning community can be applicable to all realities, there are some technical steps, which must be regarded, for example, focus on students' learning effectiveness and analysis of the community's real state. Then the structural conditions and an action plan must be created. They must take collaborative work into consideration, and aim continuous improvement.

We need more applied research regarding Brazilian cultural specificities and societal problems; we need more deconstruction so that we can construct better settings. In this case, we cannot simply describe a recipe on how to implement changes. Theoretical perspectives already exist to guide first steps, and inspiration can be taken from great educational models; what we really need is a general educators' uneasiness, which cannot be only related to personal profitable benefits, but to be more passionate about the real purpose of education, which is the power of transformation for a better, fair-minded society.

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Kimmo Kuukasjärvi & Essi Ryymin

The Teacher as a Trust Builder – Considerations in the Police University College of Finland

Keywords: development, teaching, trust-building

Introducing the writer

My name is Kimmo Kuukasjärvi. My rank is sergeant and I work as a professional teacher in the Special Skills Sector of the Police University College as a *Use of Force and Police Tactics Teacher*. I am writing this article as part of my studies in the International Professional Teacher Education (IPTE) programme (60 credits), specifically in the research, development, and innovation study module in guidance of and co-writing with teacher educator Essi Ryymin.

My background is quite diverse when it comes to teaching and know-how in the security sector, policing and society in general. I started my career as a government official in the Finnish Defence Forces as a military officer. When I was in the military, my time was taken up by different teacher officer duties, for example, I taught anti-tank and missile operation skills, urban area combat operation skills, military police operation skills, and sports as a head of physical education in the various service places where I was stationed. I must say that my military experience has given me the foundation to be the person and teacher that I am today. My personality has come a long way and so has my teaching. I still see myself as a teacher the same way as before, but my filters have changed as the years have gone by and my methods in teaching have of course evolved.

I have now been working in the police force since 2010 in different duties. Mainly, I have carried out different crime investigation and pre-trial investigation tasks in Helsinki police department's (HPD) Operational Crime Investigations unit. In HPD, I have investigated robberies, aggravated robberies and violence crimes on different levels. While carrying out basic duties in crime investigation, I have been working as a use of force field instructor for my whole police career. At the moment, I enjoy every day I work in the Police University College as a professional teacher while using modern open-minded and student-centred pedagogy and trust as tools in my teaching work.

Our school is a great place to work and develop one's own professionalism. Our school has good facilities for teaching various skills needed in policing. We are the only school in Finland training police officers, so we

have a critical and special mission to "produce" professional police officers for the future. Our study programmes were renewed in 2014 as part of the reform of the police education system. Now, there are two main programmes: Bachelor's Studies and Master's Studies. We also provide further training for police units around Finland and active-duty police officers as well as other high-quality security training for those working in the security sector (e.g. education and training for the private security sector).

Here are some facts and figures:

> *"There were 2,802 applicants for the Bachelor of Policing degree programme which started in 2015, around 9 applicants per study place. 174 students completed the Diploma in Police Studies degree, with around 99% of the students graduating in the target time. 22 people completed the degree Bachelor in Police Command. More than 7,200 persons took part in training outside the degree programmes (further training organised by the Police University College, seminars and tailored courses). The number of personnel at year-end was 221. A total of 43 research publications (investigations, reports, reviews, articles) were published." (Police University College, n.d.)*

My work contribution is focused on the use of force sector in the Special Skills remit. I teach different weapon systems and less-lethal use of force equipment, police tactics, physical use of force and mind, and body adjustment skills (e.g. how to handle stress). All of these are highly needed in the different stressful and difficult situations that police officers face every day in the field.

In 2017, we had to review our curriculums and schedules because our intake numbers almost doubled from the previous year. In 2016, we had an intake of 260 students and in 2017, 400 students. We are facing new challenges because of such big intake numbers and because of the general economic and security situation in Finnish society.

Statistics show that many Finnish people feel more insecure than earlier because of unstable world politics and crises around the world. The perception that Finland is an isolated nation in the far north has changed and Finland is more and more part of Europe and its happenings. Our school does an extremely good job and it shows when looking, for example, at the year 2015 and 2016 image surveys where the Police University College was the most valued university of applied sciences in Finland (Poliisiammattikorkeakoulu 2016). Our work is to make people feel secure and trust in our nation's officials. The state of the world today is going to make us even more needed when looking from the citizen's point of view. I firmly believe that a high level of trust can be place in those graduates from our school who go to work in the security sector as police officers.

This article handles mainly trust and what trust building is when working as a teacher. The main thing is that professional growth and guidance are based on trust. Trust is like invisible "glue" bonding teachers and students throughout their studies. Also, research (e.g. Bryk & Schneider, 2002; Precey, 2012) has revealed that trust in schools and management is increasingly seen as a crucial influence on how well schools work for students. It binds school communities together.

In our school, we are not only colleagues, but also a family with no boundaries. Trust has a common meaning and we build it together. It has a shared meaning in the organization helping people to manage and collaborate. In the organization, trust is the key factor to handle and control order. The nature of trust is to be the life force of the individual and organization. Trust is a humane social phenomenon and therefore motivation and putting yourself in stake are parts of healthy trust. Trust is the key factor to build social relationships between people and organizations. Furthermore, as Fink (2005) underlines, trust is the starting point for any relationship and it is the foundation of human society (Fink 2005, p. 45 as cited in Precey, 2012).

Trust is not obvious in any case, there can be invisible things that make organizations or people's intercourse "crack" in a way that leads to "chronic inflammation" between people or groups. This inflammation can paralyze and weaken communication, effort put into work or effectivity of people or groups. For example, when trust is low in a school community, teachers are more likely to teach behind closed doors and limit their interaction with colleagues. Interestingly, teachers are also more inclined to learn and grow themselves when they trust students and perceive them as responsible learners (Adams, 2013; Tschannen-Moran, 2004). Individual motivation can be boosted so that trust can be enhanced in an organization or group resulting in better well-being and productivity.

In my book, teachers need to work on trust and trust building. It is a well-known fact that trust demands a lot from both the teacher and student. The teacher needs trust and the teacher must build trust in such a way that interaction between the teacher and student is natural and in a sense effortless. Cosner (2009) reveals that actions by teachers and students have consequences for instructional capacity. Interaction patterns among teachers and between teachers and students determine the instructional climate in classrooms and in schools. Trust building requires energy, presence from each party, and the will to make trust happen. Emotions and rational reasoning should be taken into consideration in every party's point of view so that trust as a value can become a collective value for everyone.

We do not need to take trust for granted, but we can, and indeed, we should challenge trust so that it can be built on a solid base. Trust and trust building are invisible parts of modern society and organizations.

Why trust and trust building concerns me?

I have spent most of my life working in such situations and organizations where I did not have any other choice than to trust my supervisors and colleagues. In particular, when starting my adult working career, the "apprenticeship" I went through obligated me to learn from my elders and seniors in the chain of command. When years went by, I understood that there are several truths behind obvious things and ways to face, react and even conquer some things. My objectiveness woke up when I faced naturally good and bad leadership and group dynamics in different groups and organizations, as it did for teaching methods and ways to handle people in teaching situations and in general.

Trust rose to be a great theme and I noticed that bad leadership can break or even destroy trust in an organization and between people. My professionalism has developed to such a level that I now like to speak about leadership and trust openly.

Everything comes together when speaking about teaching. I see a teacher as a leader and a kind of "jack of all trades". A good teacher (GT) presents him- or herself as he/she is. GTs are not ashamed of their own presence. A GT takes into account different people as learners and respects everyone as they are. A GT is objective in every situation and treats learners equally. A GT has the ability to make the environment and atmosphere pleasurable and enjoyable. A GT has a passion for teaching and an enthusiastic mindset for teaching as a profession. Practical and theoretical skills match real-life needs and are controlled through a teacher's competence and constructive self-reflection with the support of teacher colleagues. A GT knows ways to express him- or herself clearly and is highly inspired has a high level of inspiration. Being open minded is needed for effective analysis and innovativeness. A GT is a trust builder in his/her work and teaching. A GT promotes high values in self-knowledge and self-reflection. Constructive criticism in self- and colleague reflection is a good tool to challenge one's own thinking and ways of teaching. The ability to feed students' urge to teach themselves should be the teacher's focus.

As Percey (2012, p. 13) states:

> *"Without trust between all involved in the learning that comes from this, honest helpful dialogue will not happen. Questioning, enquiry, challenge, problem solving, structured reflection and analysis are all more effective when people operate in a community of learners co-constructing knowledge underpinned by peer support and collaboration. This requires respect for self and others, confidentiality and trust. The meta-cognition (learning about learning) that can encourage individuals to higher levels of learning is*

also helped by a climate of trust for honest critical reflection. This is true for children of all ages as well as adults".

My values as a teacher sum up what is expected about my teaching and teaching outcomes. As a GT, I am humble regarding my knowledge and experience. I do not take anything for granted. Therefore, I work hard to face outcomes, targets and deadlines needed to be done so that my teaching is the best that it can be. Good and successful teaching is trust all the way. Also, according to Adams (2013), collective trust has a strong, direct effect on school performance.

What do we know about trust and trust building?

Underlying all significant learning is the element of trust. Trust between teachers and students is the affective glue binding educational relationships together. Trust is not given to teachers as a right, and teachers cannot assume that it exists a priori. It must be earned. (Brookfield, 1990)

As noted, trust is not a given in every case. Students compare teachers to previous teachers and make pre-conceptions especially about "newcomers". Building trust is a slow process. By being persistent, a teacher can build trust where none has existed before. In our field of policing, trust between teachers and students is totally different than in many other professions. Our substance cannot be written in words, for example, what comes to professional "gut instinct" or even intuition, which is needed to be a skillful and aware police officer. Such things cannot be learnt from books.

Teachers' experience, professional substance knowledge and pedagogical skills are keys in teaching students. In our case, trust is highly needed because the students do not have prior knowledge or experience about police work. They need to trust in teachers' competences and guidance. Experience and objectiveness come together in our field of education.

In my teaching, I make myself an example, I demonstrate, I share, and I guide and facilitate the learning process of the students. In police education, it is crucial that the congruence of words and actions is absolutely paramount: professional guidance and trust building starts from this.

Stephen Brookfield (1990) says in his book *The Skillful Teacher* that there are certain steps that need to be taken notice of when teaching so that trust building between teacher and student can happen. Those steps, or better said guidelines, are: "*Don't Deny Your Credibility, Be Explicit About Your Organizing Vision, Make Sure Your Words and Actions Are Congruent, Be Ready to Admit Your Errors, Reveal Aspects of Yourself Unrelated to Teaching, Show That You Take Students Seriously, Don't Play Favorites, Realize the Power of Your Own Role Modeling"* (Brookfield, 1990).

As I see them, all of Brookfield's guidelines are obvious to a professional teacher, but it is still good to read them again and again.

In police studies, our way of teaching includes lots of guided group dialoguing and reflections. A teacher's ability to listen is important. The goal is to listen carefully to any concerns, problems and anxieties voiced by the student. The focus is to be open in teaching methods, so that the student has the time and opportunity to express their thoughts and feelings.

By giving students the freedom to speak, they can reflect their thoughts and develop their individual professionalism. Students' self-reflection is important if previous action, for example, in demo-drills include difficult and complex things to control (e.g. use of force or stress). In teaching, I remind myself day after day to be clear and explain frequently why things appear as they do, and to be holistic and exact. This feeds constructive criticism and makes students ask "Why?" It is also a key question in learning-oriented guidance, in my point of view. Trust is built by giving freedom to think and build knowledge through students' own perceptions.

Trust in leadership equals trust in teaching

In leadership studies, trust influences organizational processes such as communication, cooperation, and information sharing, and it affects productivity (Savolainen & Häkkinen, 2011). My experience during my career includes various examples of good and bad leadership. Usually, both of those also include aspects of respect between people. I see teaching and leading as synonymous with each other. In my teaching, I lead the learning community with communication, cooperation, open information, and guidance.

> *"Trust is a basic element of functioning relationships in organizations. Employees in organizations create trustworthiness by their daily behaviour and actions. Feelings of insecurity appearing in workplaces may be often a reason for atmosphere-related problems such as teasing, conflicts, and disputes. All of them affect the level of trust. Mental well-being is largely sustained by emotional support such as appreciation, respect, openness, and feedback. A commitment to the work and the organization is reflected in employees' work motivation and satisfaction (i.e., work welfare)." (Savolainen & Häkkinen, 2011)*

Trust is a basic element in teaching; students in schools also make and create trustworthiness by their daily actions. Emotions and feelings make a difference in learning situations and need to be taken into consideration. The student's ability to take responsibility for his/her own learning is led by a teacher's positive feedback and learning community building. The

teacher's commitment to his/her work increases students' study motivation and productivity.

> *"Building trust is considered an essential activity in managerial leadership. However, the task of building and maintaining trust is complex. A leader's traits, behavior, leadership style, and skills all matter in building trust and creating an impression of trustworthiness." (Savolainen & Häkkinen, 2011)*

Things are coming together: the teacher is a leader. The same universal traits are needed to perform as a good leader as a teacher. Accordingly, Wilson (2009, pp. 51–52) claims that certain characteristics of a leader build or rebuild trust. He groups these behaviors into three categories: 1) communication practices, 2) character and 3) balanced competence.

Communication practices mean that leaders who want to build trust speak clearly and honestly. In addition to facts, they also share their thoughts, reactions, and feelings. In terms of the frequency of communication, leaders should share information twice as much as they think is necessary; an absence of information leads people to jump into conclusions.

One of the best character-driven ways to build trust for leaders is to keep promises and commitments (Wilson, 2009, pp. 51–52). An important element in a leader's character is also humility. They are not afraid to share their human side. People expect their leaders to demonstrate both intellectual and emotional intelligence.

Balanced competence means that leaders must maintain technical knowledge and skills and, in parallel, seek to enhance their leadership capabilities (Wilson, 2009, pp. 51–52). This is not to say that leaders must be experts in everything, but they must have enough technical credibility to earn their employees' respect. Trustworthy leaders also recognize technical and leadership competence in others and acknowledge it by extending trust.

A teacher's own example, enthusiasm and organization's (educational) culture are the key factors to be trustworthy and to be a trust builder in professional education. According to Savolainen and Lopez-Fresno (2012), trust also interrelates to innovation, for example, in risk taking, acceptance of lower management control, sharing of information and knowledge, empowerment, freedom, and visionary leading.

Teaching at the Police University College is all this. We take part in the student's learning journey and give our effort to students' learning by making the process open and learning results and objectives visible.

We create a professional police officer's theoretical, practical, self-regulative and socio-cultural knowledge (Heikkinen, Tynjälä, Kiviniemi, 2011; Tynjälä & Gijbels, 2012) in collaboration with our students, including challenges and successes, formal and informal, so that our students can holistically grow to take the demanding role of a police officer.

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Developing a competence-based curriculum: case study of a vocational qualification in urban transit

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Teacher education in Universities of Applied Sciences

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Some reflections on how to engage students/people in learning and build learning communities for change

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The Teacher as a Trust Builder – Considerations in the Police University College of Finland

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This article collection consists of ten articles of pedagogical change. Teachers from the global community of Häme University of Applied Sciences share their pedagogical development projects, experiences and considerations of new learning. The articles reflect changing the learning paradigm from teacher-centred to student-centred learning from three perspectives: 1) curriculum development, 2) pedagogical case examples, and 3) building the learning community. To show appreciation for the diversity of voices and choices, the editor of the book offered variety of writing styles and theoretical frameworks.

The authors have participated in the international education programs of the School of Professional Teacher Education of HAMK, for instance the Brazilian-Finnish VET Teachers for the Future professional development program (2014–2017) or the International Professional Teacher Education of the School of Professional Teacher Education (IPTE, 2016–2017) at HAMK.

The VET Teachers for the Future professional development program was a customer-oriented and tailored teachers' in-service program for the Federal Institutes Network, Ministry of Education of Brazil, and it scored 30 ECTS. There were 106 participants from vocational and higher education institutions in the program. The co-operation in teacher education between Brazil and Häme University of Applied Sciences continues.

International Pedagogical Teacher Education (IPTE) scores 60 ECTS is the accepted pedagogical qualification for all forms of education institutions in Finland. The English program is open to international students from all over the world and for Finns, who aim to work as teachers, trainers or human resources developers in a global context.

Editor: Essi Ryymin is an R&D Manager and Principal Lecturer at Häme University of Applied Sciences.

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