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Reflections on Transformation, Teamwork, and Mentoring: Student Teachers' Self-Assessed Learning, Equality, and Equity in Competence-Based Education

Säde-Pirkko Nissilä* 

Oulu University of Applied Sciences, FINLAND

Esa Virkkula 

Oulu University of Applied Sciences, FINLAND

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Abstract: This research concentrated on observing academic student teachers' teamwork, especially its effectiveness and their attitudes to collaboration and transformation, as well as their reflective, written self-assessments in relation to teamwork. Teams have been studied widely, but these kinds of special contexts are rare. The target group was higher education teachers, the context was an introduction of a new pedagogical program, and the teams acted under the guidance of mentors and occasional lecturers. Besides the content analysis, the study method was a deep analysis of the essays. The most effective positive influencers proved to be social exchanges, including mentoring, peer support, input for learning and the experiences of wellbeing. Individual distrust of working methods in teams, and emotional suspicions of their self-efficacy in transformational settings emerged as latent factors, revealing mainly the difficulty of changing traditional mindsets. The analyses offered individual and community-wide opportunities to steer education in the future.

Keywords: *Collaboration, conscious experiences, latent meanings, mindset, motivation.*

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Introduction

Student teachers' effectiveness, equality, and equity are dynamic and can impact an organisation's overall sustainability. Since human behaviour is determined by nonlinear, complex, and dynamic phenomena, significant challenges are therefore present in efforts to use analytic methods for simulation. Thus, the emphasis of the current study is to observe student teachers' learning during the transformational pilot program, which was started to make adult student teachers aware of their earlier professional experiences. Learning is examined from the viewpoints of student teachers' collaboration, teamwork and learning experiences.

The study commences with a few words regarding the learning prerequisites and proceeds to student teachers' transformational adaptability. A qualitative case study, including multivariate methods, will be presented to specify these criteria. Connected to the case study, latent meanings behind the student teachers' social way of speaking will be searched. Thus, some respondents' text passages will be deeply analysed. The results will be discussed in relation to possible strategic planning of future study courses.

Learning is assumed to appear in people's behaviour. It turns out in performance and efforts to do their best with their acquired knowledge, skills, and abilities (Appelbaum et al., 2000). They need opportunity and motivation to participate, and form the core of the so-called abilities, motivation, and opportunity theory (Boselie et al., 2005; Boxall & Purcell, 2000). Performance is generally affected by human behaviour, social exchanges, management, organisation, measurement of performance, means of assessment and individual engagement (J. P. Campbell et al., 1993). Consciousness of one's abilities and commitment will promote the reflection on learning.

* Corresponding author:

Säde-Pirkko Nissilä, Oulu University of Applied Sciences, Finland. ✉ sadepirkko.nissila@gmail.com

Literature review

“In emancipatory learning the learner is presented with an alternative way of interpreting feelings and patterns of action; the old meaning scheme or perspective is negated and is either replaced or reorganised to incorporate new insights” (Mezirow, 1991, p. 88).

This study is based on the assumptions of Bandura’s social cognitive theory which posits that individuals are proactive and self-regulating rather than reactive to environmental forces or hidden impulses (Bandura, 2001). It recognises that human action is influenced by personal, behavioural, and environmental dimensions (Eoyang & Holladay, 2013).

A transformational learning context, such as the one examined in this study, provides an opportunity for mentoring and unlocking the staff’s capabilities (Harris & Muijs, 2003). The transformational development model emphasises the engagement of the entire community in planning change programs and sharing knowledge to facilitate change promotion (Fullan, 1993; Nissilä, 2006). It highlights the mutual benefits of personal strength and effective collaboration in educational contexts (Nissilä, 2006).

According to social cognition theories, sustainable change occurs through reflective sense-making interaction among individuals (Kezar, 2001). Emancipatory Learning involves connecting one’s own experiences, perspectives, and emotions with those of others, leading to more conscious consideration of things (Illeris, 2002; Kelchtermans, 2005; Mezirow, 1998). Learning from experiences requires reflection, and the challenge in teaching is to facilitate deep learning that results in a positive change (Karjalainen & Nissilä, 2008; Nissilä, 2009). Deep learning can be aided by critical thinking that is partly promoted by practicing problem solving. It means theoretical learning, reflection, and ability to use the gained knowledge in new situations (Nissilä & Virkkula, 2015).

Reflection plays a crucial role in personal development, involving both cognitive and emotional factors. It can occur through internal processes and interpersonal communication—where others serve as sparring partners, actively mirroring one’s self-comprehension, and facilitating insights (Bass, 2007; Mezirow, 1991). Virtual/online teams, on the other hand, are flexible, have access to larger talent pools and networks, and save travel time and costs. Disadvantages show risk of misinterpretations, challenges to build trust and team feeling, lacking transparency and information sharing (Ferrazzi et al., 2022).

The focus of this research is on the transformation of the competence-based (CBE) professional teacher education pilot program (Finnish National Board of Education [FNBE], 2015; Mulder, 2012; Virkkula, 2022; Wesselink et al., 2007). The program aims at connecting work and education (Mulder, 2017). Competence and professional expertise are necessary in all professional works as they are defined in specific job domains. The professionals aiming at teaching must also enable their career development in pedagogy and enhance their colleagues to have faith in their professional approach. (Evers & van der Heijden, 2016). In practise, CBE students demonstrate previously acquired competencies through authentic practical work tasks, which are assessed (FNBE, 2015; Mulder, 2012; Virkkula, 2022; Wesselink et al., 2007). Effective mentoring by university teachers throughout the learning process is crucial for achieving optimal learning outcomes (Virkkula, 2022; Wesselink et al., 2010).

In the current teacher education program, learning is seen as a meaningful social process that contributes to personal development in social contexts. Team learning involves both discussion and dialogue. Discussion aims at making motions and defending proposals, while dialogue strives to create new horizons and action models (Senge, 2006).

Biographicity is significant in the present context as it relates to how students perceive and interpret their lives in relation to opportunities and choices, providing an overall framework for learning through reflection (Alheit, 1995). According to Wenger’s theory of social learning, the social context encompasses practice and community, while meaning and identity bridge the individual and social dimensions (Virkkula, 2016; Wenger, 1998). After collective reflection, individuals engage in post-reflection, evaluating their experiences against the backdrop of collective experiences. This process creates new knowledge that becomes connected to the individual’s epistemic structures (Boud et al., 1985; Nissilä & Karjalainen, 2020; Wenger, 1998). Storytelling, the most often used life history method, is a way to understand (Paul, 1998).

Teachers’ ability to effect change in education depends on their reflective capabilities and professional competences (Fox, 1983; Menges & Rando, 1989; Yero, 2010). Therefore, this research emphasises the importance of mentoring practice, collaboration, and the respondents’ reflective experiences.

Mentoring in education encompasses personal characteristics, behaviour, and contextual variables, and it is considered an integral part of educational transformation (Bandura, 2001; Curry, 2010; Nissilä, 2013; Young & McLeod, 2001). Over time, mentoring has evolved from autonomous mentors passing on their craft to novices, to mentors supporting teachers’ self-efficacy, and finally to the current emphasis on collaboration and emotional encouragement. (Cochran-Smith & Paris, 1995; Hargreaves & Fullan, 2000). Training helps mentors understand their roles, which involve—supporting, encouraging, and listening to mentees. Mentors also learn that they shouldn’t try to accomplish too much at once, even though they might be tempted to do so. This advice applies to those mentors who are all about getting stuff done as well as the more traditional direct supervisors (Deltsky & Baerlocher, 2007).

Methodology

This is a case study that aims to explore the self-assessed learning process of multidisciplinary, academic, adult student teachers selected for pedagogical education by official admission principles. The program consists of 60 credits of pedagogical studies within the time frame allowed for them.

The research approach is phenomenography, which is a theory describing manifestations of human experience and qualitative differences. The respondents themselves evaluated their learning experiences. "It is argued that people's different ways of understanding or experiencing the surrounding world is all there is, whether scientific or not. We may only compare research persons' conceptions, but we cannot compare them with reality itself" (Marton & Neuman, 1989, p. 37).

The research methods were multivariate. First, qualitative case studies with content analyses were supplemented with some quantitative data, observing either words, parts of sentences, or whole meanings to see the core ideas of the writer. Finally, a deep analysis was performed according to objective hermeneutics (the following paragraph and Attachment 1),

The qualitative paradigm (e.g., Denzin & Lincoln, 2005) is generally used in examining teachers' thinking and interpretation processes in their reflective writings. The deep analyses follow the principles of objective hermeneutics. It offers a clear and comprehensive classification model through which to define meaningful action. It is based on the sociological writings of Oevermann et al. (1979, 1983) and further developed by Siljander and Karjalainen (1991) and Karjalainen and Siljander (1993). The basic idea is to examine the case's latent meanings (Rostila, 2019). Its focus is set on reconstructing interaction processes and social structures with their underlying logic, values, and norm systems.

The methodological strategies to ensure the validity and reliability of the findings included: (a) meticulous record keeping and ensuring the consistency and transparency of interpretations, (b) observing similarities and differences across accounts to ensure the representation of different perspectives, (c) including participants' verbal quotations as a basis of findings, (d) demonstrating thought processes during the data analysis and subsequent interpretations, (e) engaging three researchers in evaluating the validation, credibility and coherence processes, (f) using triangulation of different methods and perspectives, i.e. qualitative thematic and content analyses with quantitative data, and deep analyses based on the meaning matrix (Eisenhardt, 1989; Karjalainen & Siljander, 1993). All the prerequisites as mentioned above have been considered.

The research context was Oulu University of Applied Sciences, Professional Teacher Education, Finland. *The aim.* The research concerns a HE (higher education) professional teacher education model, the competence-based education (CBE) which was piloted in 2015-2018. The aim was to determine how student teachers experienced the new program and how sensitive they were to the changes in traditional learning systems. *Research participants* (N=16) were multidisciplinary, academic experts who now studied education for their 2nd or 3rd profession. Individual data on their ages, fields of science and employments were not available. The only fact known was that they had at least master-level degrees, some were doctors, and at least three years' work experience in the respective field.

Data collection. The data consisted of written individual reflective essays/ learning blog texts/ Facebook comments about their learning, experiences, and feelings concerning the pilot program during the contact learning period of six months and adjoining studies thereafter. All voluntary writers gave consent to the research use of their texts. Writing was non-structured but supported by suggestions concerning writing: Describe learning in the CBE, its promoters and obstacles of learning, and motivators for studies. The research material/ essays consisted of 20 text pages (Font 11, Calibri), 172 lengthy statements, and occasional blog texts. The comparative material available was collected from 8 parallel groups.

The organisation of the CBE. The persons elected to the program were divided into multidisciplinary teams of 15-20 persons by the study office, mainly randomly. In addition to online work, contact teaching included various activities concerning pedagogical theories and methods. The teams met in 15 contact days, 8 hours per day. They were instructed and guided by university teachers of pedagogy, mentors, or "tutors" as they preferred to call themselves. Each team had two randomly selected staff mentors and some visiting lecturers. The mentors had planned the program collaboratively with colleagues. The team members were guided to communicate with peers face-to-face, through Zoom virtual meetings, ePortfolios, WhatsApp, Howspace learning environment, and email.

Initially, the student teachers listed the pedagogical competencies that they had collected throughout their lives. This was the phase of recognising the prior learning and competence. It was followed by the practical demonstration of skills, mostly in genuine work environments, and then by recognition and verification. Finally, individual learning paths were designed together with the mentors.

The research questions were:

- 1) What do the research persons write about their experiences in the CBE teams, and how do they evaluate their studies?
- 2) What measures should be learnt from the CBE, according to the student teachers' opinions, to foster their development?

- 3) What latent meanings can be found in the texts, and how might they influence the continuous transformation of courses?

The research implementation. The respondents were given identification codes known only by the main researcher. S/he didn't know the respondents personally. The first phase of the analysis was thematic. Each theme that was found acted thereafter as a title. The full text was analysed through a qualitative content analysis. It considered words, groups of words, relationships between them, ways of joining and manners of expression. The results of analyses were placed under the thematic titles respectively. If the comments included ingredients from several themes, their main content was defined. Finally, the percentage share of each theme was defined, and examples for the presentation chosen.

The deep analysis started by reading the texts of all respondents again and again. Gradually small breaks in thinking were noticed which were inconsistent with the logical progression. An alternative model of thinking was drawn up to continue the chain of thoughts. It revealed latent meanings. The interviews of the respondents would have been useful at the end, but it was impossible because of timing and the anonymity of the respondents.

Findings

In the first part of this study, the results of the thematic analyses appear as titles. The content analysis results will be presented under the sub-titles.

The Case Study: Experiences of Teamwork

1. Social exchanges (46%)

In groups and team learning, the participants must ensure trustworthiness, which is the glue of commitment. They share aims, have a platform for expressing opinions, obtain support and sympathise with peers and mentors in multidisciplinary peer groups.

a) Group activities and quality of actions

"Peer support and the power of our group have inspired me forward even on those days when my own idea has been lost."

"Using Facebook is convenient... when there is always somebody to solve problems together with me. ... Sociability and doing together, sharing knowing and learning spur me in these studies."

"It has been great to notice that although we come from different backgrounds ... most of us ponder the same phenomena and problems. Many of my prejudices have shaken during the "travel", The greatest promoter in my learning has been the atmosphere that we have built."

b) Groupwork as a method

"Although we have had a lot of group works, they have mostly been well-grounded and well justified."

"As a learning method in our group, we have done group work relatively often. It has certainly served its purpose, but I feel that I get a lot out of working in large groups."

c) Mentoring and team leadership

According to Bass (2007), leadership style has an influence on the organisation, managers, and students in educational contexts. There is a high correlation between the leader's transformational style and the organisation performance level.

"According to a student's opinion the key words are dialogue, speaking up, the skill of listening and caring... perhaps it is the question of methodological familiarity of good conversation starters (Esa, Tiiu, our mentors), but my learning is supported by the way in which after a clear starter we discuss the theme from various viewpoints."

"In my studies I have been motivated by a gorgeous group and professional tutors They have planned and implemented the study unit which really considers the student group ... We have been trusted and we have hopefully proved worthy of trust."

Teams mainly follow the democratic, transformational values and principles of the organisation in question (Nissilä et al., 2022). Side-by-side leadership requires trust, engagement, commitment, broad perspective, and emotional intelligence (Goleman, 1998). It means trusting the teacher educators and carrying the holistic responsibility, but not micromanaging in daily practices. Trust follows from mutual agreements, on which collaboration is based (C. Campbell et al., 2018).

2. Learning in CBE (27.9%)

Education was simultaneously directed to two different groups, either as an initiative for novices to obtain needed pedagogical capabilities and skills (Keeping & Levy, 2000), or as a support to experienced vocational student teachers who were not up to the expected pedagogical level and needed support to gain it.

a) Initial training for vocational pedagogy

"The most challenging to me has been the starting layout, since now I don't have any teaching task against which I could mirror the matters to be dealt with at any given time. ... I must surf between my historical reality and the image of my future reality. ... Sometimes I feel that the education program has been built for the students who already have that kind of teaching task."

b) Support to employed student teachers in vocational pedagogy

"I have got support and confirmation to the fact that my ways of acting as a teacher have been pedagogically justified, although I don't have any official competence."

c) Competence-based education (CBE) and pedagogy

"One of the motivators has been clear aims that have made it possible for me to sketch the picture of what is to come. ... but also, concerning competence-based education and new teaching methods."

"My professional pedagogical thinking developed ... so that it was structured and concretised into different concepts. I got an image and template in my head of what a teacher's professional competence really is and whatever it contains. In the beginning, my conception was much narrower concerning mainly how a slide show is arranged and what else I can use as my teaching method. ... The conception was rather theoretical and narrow from my part ... The education has been clarifying."

"The idea of competence-based education has been promoted, i.e., by evaluating competence not staring at the teaching hours. I wish we could make our experienced colleagues with long teaching careers think in this way, if so, it would be superb. Our experiences of studying in the CBE group are good."

d) Goal orientation and the CBE

Goal-orientations have a strong connection to motivation and emotions. When teachers think of their goals, they describe student engagement and performance. Another aspect is how to enhance teaching and teacher effectiveness. Similar effects of engagement and performance occur between motivational and behavioural patterns (Bell & Kozlowski, 2002).

"Our CBE group has had a shared aim and ... it has come across at every time we met. I will surely long for this side of our studies later."

"From the beginning I longed for a clearer holistic picture. Obviously, I am of the type of person who wants even in the start to know what will be done and why. It took a relatively long time for me to understand how this kind of studying which is based on demonstrating one's competence functions. ... The idea of writing a blog ... as a learning journal has not worked."

The idea and practice of the CBE was generally accepted, but the time required to internalise the idea of the system varied. Therefore, the new program caused divergent feelings and emotions and constant activation of threats that people faced (cf. Damasio, 1994, 1999). Feelings are experienced consciously, while emotions manifest unconsciously or subconsciously (Lazarus, 1991).

Emotional actions and reactions are mediated by self-understanding and contextual conditions (Kelchtermans, 2005). They help create motivational and behavioural patterns which lead to engagement and performance.

"When we speak of tacit knowledge, I could use ... the term tacit learning. No great, single experiences I don't remember that I have experienced, but when I look backwards, learning has happened. ... Familiar things have become analysed and through it considered once again."

3. Wellbeing (9.8%).

Bakke (2005) linked wellbeing to promoting an environment that allows work/ studies to be rewarding, enjoyable, stimulating, and exciting. Edwards et al. developed an assessment process based on six variables: career satisfaction, home-work interface, working conditions, general wellbeing, stress, and control of work (Edwards et al., 2009).

a) *Home-work interface*

Student teachers reflected on their webs of human relationships. Clearly, they needed the skill of organising, the ability to discern the important from the less important and find support from their peers.

"Because in my workplace the autumn has been record heavy, it has been great to come to Oulu and get peer support and approval ... Of course, also my husband's support has had a big role."

"The daily realities came along to the studies in August. Although it would have been nice to concentrate only on studies and family through the autumn, still nicer it was to get a new employment. In schedules I have been compelled to be elastic, and even in contact hours now and then. I am not even yet sure if my card house stays together until I can complete my studies."

b) *Working conditions*

The external environment of studies can bring challenges to students who suffer from allergies or develop symptoms from unclean indoor air, like the following:

"My learning has been slowed by many things that you don't even think if you don't happen to suffer from allergies and migraine. Recovering from poor ventilation of the premises, building mold, the flickering of fluorescent tubes and early wakeups has taken even a couple of days after the contact days."

c) *Stress*

The above quotation describes the physical impact on learning, while the following comment describes mental stress. They both appear together with external circumstances.

"During them (contact days) you have no time to quieten down, to stop and deepen in the matters dealt with otherwise than superficially..."

d) *Control of work*

Generally, people need very concrete advice about unfamiliar practices introduced at the beginning of a new program. Breaking old habits is not easy for anyone. Some students would have benefitted from additional guidance to help them feel safe and understand expectations.

"This became easier in the autumn when the things were discussed the second time and the concepts had become familiar. I would have needed A LOT OF TIME at the beginning.... I made use of my irritation since nothing doesn't speed up studies so much as anger. I thought that as nobody is interested in my studies, I will do this exactly how it seems best to me."

e) *General wellbeing*

"I learnt to understand in a quite new way how important it is to get a personal contact with every student in the team and give everyone the feeling of being equally important in the team, and that his/her opinions are as important as anyone else's."

Wellbeing, if related to the environment, concerns student teachers' physical, psychological, and social states, and feeling oneself appreciated. In daily work, mental wellbeing is hidden in practices and will be reached with a mission, vision, and the feeling of meaningfulness (Karjalainen & Nissilä, 2022).

4. *Reflection (7.6%).*

Reflective work aims to integrate beliefs and images, knowledge, and experiences on personal and collective levels. Sensitising existing structures can create new understanding (Mezirow, 1990, 1991, 1998; Senge, 2006). The significance of reflection is in the construction of personal knowledge and meanings.

"I think that finally I have internalised the meaning of reflection ... Writing a blog is personal processing on the matters I learnt. I have been supported in it by peer students and tutors."

"I have somehow figured out teaching and my own competence, and the reflecting action has been central ... Through my reflection I have understood what my strengths and needs for development are."

"I have not before reflected regularly, but during these studies the evaluation of my action and competence has been daily, which has also increased self-knowledge."

In assessing attitudes and motivation, antecedents and consequences were studied in student contexts, like self-sense (Covington, 1992), self-determination (Deci & Ryan, 2000) and causal attributions (Weiner, 2000), but they do not paint

the whole picture. Teachers' ability to reflect and recognize their experiences and emotional states and assess social, psychological, and pedagogical consequences is vital in clarifying their own life world.

5. Motivation (5.2%)

Motivation is most often found as a component having an impact on student learning. Its key elements are engagement, commitment, as well as especially intrinsic or extrinsic motivation. Campbell highlights that, in addition, declarative and procedural knowledge and skills also affect performance (J. P. Campbell et al., 1993). In some cases, mentioning the motivation was hidden within expressions.

a) Extrinsic motivation (formal competence)

"These credits are needed to get the formal competence ..., which again can make it possible for me to get the jobs that I find meaningful to pursue."

b) Intrinsic motivation (pedagogical interest)

"I was motivated by clear aims, interesting themes, continuous learning, and challenges."

In individual learning, motivation involves the age-old desire to feel or appear competent and avoid feeling or appearing incompetent (White, 1959). Personal competence, in the next paragraph, is observed from the viewpoints of the ability and skill to interact effectively with the social community and environment and the desire to develop oneself.

6. Satisfaction with the studies and organisation culture (3.5%)

Satisfaction is related not only to the student teachers' individual feelings but also to the organisation. This was revealed in the students' views of the course contents, tutoring, study environment and study arrangements. Motivation, social relationships, meaningfulness and, management, for instance, are related to the feeling of satisfaction (Wood et al., 2012). *"I am still satisfied of being able to follow the team and get fresh snacks in my backpack."*

Today's challenges are often connected to social changes. They require adaptive emotional skills (Goleman, 1998). Consequently, involvement emotionally in learning occasions is in the focus since it influences cognitions, motivations, and behaviours (Leithwood & Beatty, 2008). An organisation's culture also comprises beliefs, values, rituals, and symbols.

Trust promotes the flow of information as well as creates common meanings and shared aims, says Cui et al. (2018). Emotional trust takes teamwork in the workplace to the next level (ibid.) and prepares the community to meet challenges and crises, anticipate problems, and solve them (Karjalainen & Nissilä, 2022; Nissilä & Karjalainen, 2020).

Student selection means an opportunity to be involved in academic, pedagogical teacher education:

"I felt privileged to be accepted to teacher education. It was not possible for all aspirants willing."

Flexible study arrangements and individual choices refer here to studying patterns that make individual and optional choices possible, e.g., flexible, fast track and slow-track programs.

External environment can, e.g., influence the respondents' families or personal life, or have an impact on the volatility or stability of the organisation.

To sum up, the next table summarises the appearance of factors in the research data.

Table 1. The Most Important Components of CBE Experiences in the Data (Total 172, 100% *)

No	Components	Student teachers %	No	Components	Student teachers %
1.	Social exchanges: Team interaction, peer support, mentoring and leadership.	46	2.	Learning in CBE	27.9
3.	Wellbeing	9.8	4.	Reflection	7.6
5.	Motivation	5.2	6.	Satisfaction with studies and organisation culture.	3.5

*The total of statements is 172. The number includes components that are overlapping, as only the central meanings were counted. Shorter mentions of the data are included into the main titles.

Although table 1 shows that *reflection* promoted learning only in 7,6% of respondent's statements, it can be considered a fallacy. The entire data set is the result of reflection and self-evaluation. The central way of reflecting on the data occurs in the final essays and ePortfolios and respondents' short introductions to the themes of contact days, each in turn.

Conscious learning through reflection forms a framework of learning activity: one can acquire metacognition through reflection.

"Actually, I am not studying new things, methods, gimmicks or theories, but reflecting in a guided peer group on what I already know."

The Deep Analysis: Latent Meanings

Another model is required to understand the emotional and cognitive barriers of change that are seldom directly expressed. Academic education is characterised by social meanings (Lueger & Vettori, 2014). Revealed "social grammar" offers keys to understanding contemporary developments and hidden, unconscious meanings of the respondents. "Social grammar" addresses issues that are relevant for understanding the policy in HE. (Karjalainen & Nissilä, 2011). According to Oevermann et al. (1983) and Karjalainen and Nissilä (2011), objective hermeneutics strives (1) to understand human action and interaction better and find out about the social programming of the human mind, (2) to find rules that enable using language and consensus successfully in social situations; and (3) to define the automated social competencies which are unconsciously mastered (Hitzler, 2005; Lanza, 2008; Maiwald, 2005; Reichertz, 2004; Schnettler, 2002).

Consequently, the third research question asks:

3) What latent meanings can be found in the texts, and how might they influence the continuous transformation of courses?

The sample of chosen essays (n=12) was analysed according to the method of objective hermeneutics (Karjalainen, 2009; Oevermann, 2013, 2014). It is mirrored against the case study so that it can serve a more general interest (Laine et al., 2007). Therefore, it is also called methodological realism by Oevermann (2010). In it, the meaning of the text that exceeds the subjective, conscious meaning of the speaker is familiar, e.g., in ethnomethodology (Grounded Theory). Objective hermeneutics is also "ambitiously interdisciplinary and aims to cover many areas of disciplines: social, historical, and cultural disciplines" (Oevermann, 2013, p. 71), including literary science.

The development, or change, is based on solving the crises concerning consciousness. Separating the crises and routines means that reality is divided in two. Routines belong to reality, and crisis is a not-yet-defined possibility. "Defining the phenomena is a process that shows the connection of awareness and language" (Garz & Raven, 2017, p. 3–6). The text can be the bearer of the meanings, like interview recordings, drawings, works of art or novels (Garz & Raven, 2017). The analysis sometimes resembles the literary analysis of a subtext in which the space between the text lines can carry meanings. On the other hand, the interpretations may be assumptions based on linguistic cues.

In the practical analyses of this research, contradictory meanings within a single meaning unit or in joint units were the first feature to prompt closer study. The analysis was aided by the usage of the meaning matrix, which was developed to reveal meaning structures in a written text (Appendix 1, Table 1; Karjalainen & Siljander, 1993; adapted by Karjalainen & Nissilä, 2011). The meaning structures can be objective or subjective, historical, or universal, as well as conscious or unconscious (latent nature). An in-depth example in Appendix 2 explains how a step-by-step process can be reconstrued and show different levels of individual meanings (Appendix 2, Table 2).

The most obvious outcome was the respondents' difficulty in changing their mindsets (cf. Mezirow, 1991, p. 88). While the student teachers did not want to offend their mentors and thus expressed their conceptions and feelings tactfully (the usage of "social grammar"), some conceptions emerged unconsciously. – (The following text refers to all respondents by "he, his, him" regardless of their gender.)

a) Conceptions of the learning methods group work

It seemed that some student teachers were dubious about their teamwork skills which appeared as emotional reactions. In many cases "the official" opinion of teamwork and the writer's contribution to it were different. Tactfully, they were for the group work, but in practice, they were somewhat against it.

"The learning method ... has been groupwork in small groups. It has, of course, served its aim, but I feel that I get a lot out of working in large groups. Is it possibly a question of methodological familiarity or good initializing (mentors), but my learning is supported by the way in which after a clear initialization the theme is talked about from different points of view. Not only sharing one's own experiences, although they are also allowed... As if according to the constructivist perspective."

The writer admits that the method may be good (of course). He limits his opinion to refer to the good intentions of the mentors. His own conception is expressed by "but I feel, possibly, as if, not only, although", which all highlight suspicion, perhaps a negative opinion of the whole system. He refers to constructivism to remind the mentors of what they have taught.

b) *Personal learning preferences (excuses)*

"(I miss teacher leadership.) I already missed clearer instructions in summer about the order in which to proceed. Now, the outlining of the process was left to my own responsibility. After the contact day in June, I was ready to throw the gloves on the nail since I didn't understand anything about anything. Along the way things gradually became clearer. However, I would have liked us to have been given clear step signs, at least I missed it for the sake of my own mental health and orderliness (a perfectionist that I am, and everything must be in tiptop order)."

The writer clings to his earlier experiences openly. Then he gives reason why he didn't understand "now" or "anything about anything". He gives up a bit but draws back his concession and goes on using "however" and "at least".

c) *Learning by writing*

"(... reflection in the blog) This was not a natural way of learning to me so both self-assessment and reflection were left undone, although during the day I often felt that this is a theme that I know. "

"Writing a blog was not activated in the opted way so this has slowed down my learning process to some extent. Through the notes I could have returned to the topics and thus recall the thoughts that ran through the head during the day, but now they are missing. This I see has slowed down my learning."

Learning by writing was new to many respondents. Neglecting blogs was confessed by "so". They admitted the demand of writing to belong to the program, but defended themselves by writing "although, could, but".

d) *Unfair conditions*

"The contact days are busy and noisy, and one can't quiet down, stop, and delve deeper into the themes dealt with better than only superficially, which makes me frustrated... I got irritated even in the beginning because I couldn't catch the concept of competence and couldn't open their meaning and aim alone, by myself."

The quotation begins with a distancing expression as if declaring the truth. The individual experience is told with strong words "frustrated, irritated," and defended by "because". The writer suggests that he should have had the right to receive deeper information than "superficially". He is disappointed because the conditions are unfavourable, and therefore, the result of learning is poorer than his talent would have suggested.

e) *Competence vs incompetence*

Incompetence haunted the students concerning their professional skills.

"I am demanding toward myself, and sometimes even striving for perfection, so my learning is surely slowed down by the fact that although I recognise my competence, I don't admit that I can... At what level my competence is and to what level I appreciate it myself and whether it is sufficient, is difficult to me."

The writer fights between perfectionism and his own insecurity "so, surely, although", This fight is emphasised with repeated questions "what, what, whether". It seems that the current program has not given experiences of learning, but mainly made him insecure and suspect his competence.

f) *Estranged expression**Passive language*

Passive language was used to communicate impersonally about the program change in general, as if from the outside. It tends to observe the transformative measures dispassionately before forming an opinion. If the change does not fit the writer's own conception, it is easy to criticise or defend his behaviour, as if from outside.

"The results of reflection should be seen in new perspectives and readiness when applying new thoughts to practice. Writing a blog is individual processing of learnt matters ... Facebook is a great tool to recall the things discussed, although there is not immediately time or strength to write a blog."

An impersonal review of the writer begins with "should be seen". The reader wonders if the writer speaks of himself in the third person singular, continuing it with "although".

g) *Divided communicative pattern*

The passive voice (idea) and the writer's own opinion and contribution (the practice of true change), i.e., the idea and practice of true change, were torn apart.

"These pedagogical studies seem sometimes difficult (idea) because my own competence has always been acquired through doing and testing, really meaningful things for me to do (practice). You have, however, to try

to process these studies inside your head somehow differently (idea) from the studies of construction industry (practice)."

h) Conceptual level vs real world

On the conceptual level, research persons show the ability to specify concrete activities or efforts for themselves. In the real world, they see constraints.

"I missed the introduction to the teacher's profession (theory) and a slightly more suggestive grip (real world) – I felt that I was all the time in the yard a bit (real world, constraint)."

"I believe that I would have got more out of teaching (real world) if I had had from the beginning a stronger image of the profession – a structure/ wire model where to put new doctrines into (wish of reality, constraint)"

"Without introduction (theory) one should have had more experiences of school life and working with the groups (reality, constraint)."

In the first quotation, "introduction" and "a suggestive grip" were seen as examples of the conceptual and real world. The writer was "in the yard" when the suggestive grip was lacking.

In the optional world, the second writer would have liked to have a realistic image of the profession, which he expresses by an unfulfilled wish: "I would have – if I had had ". The third writer lacks theoretical lectures because he is obviously a novice possessing no actual teaching experience.

Discussion

The research questions were:

1. What do the research persons write about their experiences in the CBE teams and how do they value their studies?
2. What measures should be learnt from the CBE, according to the student teachers' opinions, to foster their development?
- 3) What latent meanings can be found in the texts and how they might influence the continuous transformation of courses?

The main findings were besides learning and increased motivation, finding the joy of social exchanges and peer support, the feeling of wellbeing and satisfaction, and practicing reflection. The hidden meanings told of insecurity in front of new ways of learning and doing and unwillingness to change.

The *first* answer to research questions (1 and 2) is *dialogue*. Learning via the genuine process of listening and having become heard were valued highly. Building communities of dialogue and interpersonal relations emerged as the most important task. Connected to it, teachers should be encouraged to reflect on their self-images to gain in self-understanding. This aspect is extremely important due to the increasing emotional stress experienced in a teaching career today. Thus, the time and opportunity to engage in self-reflection, build self-efficacy and promote pedagogical fellowships are felt necessary. Autonomous, collaborative, and inquiry-oriented approaches require continual enhancement.

Secondly, (question 2) promoting the *CBE* should be made applicable, at least to some degree, at all secondary and tertiary levels. Learning should not be measured by contact hours only but by competencies. Recognising and acting on these facts will require time from the participants, both from mentors/ teachers and students. Adequate time upfront to explain the system must, therefore be scheduled accordingly. The findings do not concern only education. Today, numerous fields of work desperately need new, qualified workforce. Competence-based recruiting should be strengthened e.g., among foreign and domestic applicants.

Thirdly, (questions 1 and 3) according to most student teachers' speeches, teamwork influenced their mindsets in a positive way. The problems of changing learning conceptions concern both individuals and communities, cognitively and especially emotionally. The emotional element is connected to seeing changes as barriers rather than as possibilities, especially without having had any previously related experience. Thus, "it is sometimes more important for a teacher what s/he does than what s/he says" one respondent stated, referring perhaps to model learning. This research also showed the need to accept differences and appreciate individual capabilities (learning preferences). *"We strive for equality and equity but not for equalisation."*

Finally, the deep analyses revealed individual emotions concerning self-assessed incompetencies, individually and in general, over which the respondents felt threatened during the studies. Self-imposed restrictions led to excuses or genuine obstacles to organising the transformative program.

Conclusion

Teacher education is pressured to meet the demands of an ever-changing environment. Cooperative problem-solving groups are increasingly important in our complex world (Laughlin, 2011). The adult education discussed here aims at the competence in a second or third profession and includes developmental expectations. Research and good practices must highlight distinct educational characteristics that hopefully lead to personal and pedagogical growth (McDaniel & Salas, 2018). In our current findings, participants expressed great satisfaction in discovering the essence of social exchanges, the dynamics of dialogue, and the support from mentors and peers. Learning flourished through both individual and collective reflection (Nissilä, 2005; Virkkula, 2016).

Both teamwork and collaboration involve people working for the shared goal. Teamwork aims at reaching the goal, and collaboration stresses collective working. Those who exercise group work collaborate as equals, whereas teamwork is usually overseen by a team leader who delegates individual tasks. They both demand mutual trust and good communication (Hayes, 2020; Nissilä et al., 2022). Concerning the current research, we found that the data introduced several different combinations of working together and individually, like free dialogues about the issues of the program, individual research reports presented to the peers, and further processing of the topic in teams.

While group work is powerful, incorporating individual learning tasks is essential for promoting learning. Individual tasks allow students to focus on specific objectives and take ownership of their work. In our project, it was used for giving presentations, writing essays and ePortfolios (learning portfolio/blog texts) and communicating on social media. Its advantages appeared in reflections: individual work allowed the participants to manage their time, concentrate uninterrupted, and complete their tasks efficiently. They could also apply their specific knowledge, skills, and autonomy. They were personally accountable.

What other reasons made some respondents prefer individual learning, according to the deep analyses? Unexpectedly, some participants believed that the traditional way of learning was better for them, or felt incompetent in the team, or their talents were overlooked in groups, or they finally rejected the idea of efficient team learning altogether. Argyris (1985) explains this through his theory of defensive routines. According to him, they respond to the need to learn. The need arises from a learning gap between what is known and what should be known. The solution is an inquiry that results in new understanding and new behaviour, i.e. learning. However, the need for learning also creates a threat concerning team and group learning, to which individuals respond defensively. It leads to defensive routines that eliminate the learning gap by reducing the value of team/ group learning (Argyris, 1985). In today's work life, referring to existing knowledge, individual work performance is inextricably linked to team and organisational performance (Koopmans et al., 2011).

Besides team learning and collaboration, pedagogical education tries to introduce new opportunities which require resilience and proactive development efforts, such as life-long learning, ICT competence, different platforms in information technology, keyword optimizations, online advertising and sales, cloud services, and AI. They are becoming more and more common, blurring national borders.

Based on the assumption that the current study corresponds to real situations, the efforts of novice and in-service learning to adopt new pedagogical practices should be taken as a focus. First, teacher education for professionals and organisations is important with its own emphases. Education creates either a basis for development or vice versa for organisational ignorance. Also, strategies concerning workplace development policies and the dynamic role of pedagogical measures inside school organisations should be supported. This may well lead to conceptual change and new mindsets.

Recommendations

The created framework of collaborative, team, and individual work performances can serve as a guide for future research and practice. An important step is to identify existing practices and to develop new methodologies that can adequately combine individual and group/ teamwork activities. To gather empirical data will need an adequate instrument to acquire information on how the different ways of activities can be best trained, whether the different ways of working are mastered, and what is the relation of working together and individually towards transformation.

Furthermore, future research is needed to examine whether the proposed methods are generalizable across all types of jobs. We can suppose that some applications may be job specific.

Future research is also needed to determine whether adding the performance of individual work in teams is justified. It is important to learn more of the relation between individual and team performances which is not known thoroughly.

An important use of teams is in shaping the design of employee selection, recruitment, evaluation, training, and development. In recruiting applicants with diversified professional backgrounds, some findings can help:

- 1) A new member should be familiarised with the work, team content area and mutual aims and values.
- 2) He should be interactive and master mentalisation, i.e., social presence, consideration of the others and authentic listening.

- 3) Meaningfulness and mission will be attained when the person has resilience, is proactive and willing to walk on unknown paths.

In the induction process the team leader is expected to have relevant competence and ability to explain the shared aims in advance. Talent wins games, but teamwork wins championships.

Limitations

The main note of limitations is connected to deep analyses. They included only 12 respondents. Broad interpretations were not dared to be made without face-to-face interviews. As this is entirely a case study, it is not directly generalizable.

Ethics Statements

The studies involving human participants were reviewed and approved by the Oulu University of Applied Sciences. The participants provided their written informed consent to participate in this study.

Authorship contribution statement

Nissilä: Conceptualization, design, all analyses, writing. Virkkula: Data acquisition, conceptualization, reviewing.

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Appendix 1

Table 1. Meaning matrix (Adapted from Karjalainen & Siljander, 1993)

Human Meaning Structures (MS)	Conscious No	Latent No
Subjective	1. Individual intentions/ Motives	2. Unconscious motives/ drives
Objective, Historical	3. Social Norms and roles	4. Social grammars/generative rules
Objective, Universal	5. Knowledge and assumptions upon universal MS	6. Universal social invariances/generative rules

Subjective = Individual

Objective = Shared, cultural, social

Historical = Valid in certain culture (time and place in history)

Universal = Common to all cultures

Appendix 2.

Example 1: “The contact days are **busy and noisy**, and one **can’t** quiet down, stop, and **delve deeper** into the themes dealt with better than only **superficially**, which makes me **frustrated**...” Interpretation: impersonal & personal, defensive linguistic expression → “blaming- defending” attitude

Table 2. An example of deep interpretation –sequence.

Human Meaning Structures, (MS)	Conscious/ CMS	Latent, Unconscious/ LMS
Subjective	The contact days are busy and noisy, and one can’t quiet down, stop, and delve into the themes dealt with... Makes me frustrated ... I got irritated	The person uses the passive voice first as if reporting. He appears to be easily disturbed and demands a lot from other people. Why is he irritated? -That he appears to be incompetent? - That his competence is not at the required level? -That he appears to be a slow learner and is not therefore valued enough?
Objective Historical	To be able to show real talents, one should have favorable learning environment and well-controlled learning situations. Real deep understanding of the issues can be shown only in better organised situations.	A problematic defense - accuses the team (noisy) - accuses the mentors: busy learning situations, no peaceful moments of reflection and of internalising the issues.
Objective/ Universal	- No reference to this perspective.	- Forms of avoidance and blaming others.