

Teachers' Metaphors and Beliefs About Teaching and Their Relationship With Job Satisfaction

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☞ This research focuses on Estonian teachers' beliefs about teaching, the metaphors of their knowledge base, and the emotions connected with being a teacher. The relationships between these aspects and teacher job satisfaction were explored. In total, 658 mathematics, English language, biology, and class teachers participated in the research. The research applied a mostly quantitative design involving a mixed methods approach. The results highlight the complexity of teachers' understanding of their role. Statistically significant differences were found between the teacher groups participating in the study. The results showed that the affective connotations of metaphors teachers attach to their work are related to teachers' job satisfaction. However, there were no significant differences between teacher groups based on the nature of their metaphor and their beliefs about teaching. However, the results indicate that teachers expressing student-centred beliefs were more satisfied with their job environment than those with teacher-centred beliefs. The study suggests the importance of considering beliefs, knowledge base, and emotions in understanding job satisfaction.

Keywords: beliefs about teaching, emotions, job satisfaction, metaphors, teachers' knowledge base

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Metafore in prepričanja učiteljev o poučevanju ter povezave z zadovoljstvom pri delu

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≈ Ta raziskava se osredinja na prepričanja estonskih učiteljev o poučevanju, metaforah iz njihovih baz znanja in o čustvih, povezanih z delom učitelja. Raziskane so bile povezave med temi vidiki in zadovoljstvom učiteljev pri delu. V raziskavi je sodelovalo 658 učiteljev matematike, angleškega jezika, biologije in razrednega pouka. Uporabljena je bila pretežno kvantitativna zasnova, ki je vključevala pristop mešanih metod. Rezultati poudarjajo kompleksnost učiteljevega razumevanja svoje vloge. Med skupinami učiteljev, ki so sodelovali v raziskavi, so bile ugotovljene statistično pomembne razlike. Rezultati so pokazali, da so afektivne konotacije metafor, ki jih učitelji povezujejo s svojim delom, povezane z zadovoljstvom učiteljev pri delu, vendar pa med skupinami učiteljev ni bilo pomembnih razlik glede na naravo njihovih metafor in prepričanj o poučevanju. Rezultati pa kažejo tudi, da so bili učitelji, ki so izražali prepričanja, osredinjena na učence, bolj zadovoljni s svojim delovnim okoljem kot tisti s prepričaji, osredinjenimi na učitelje. Študija kaže, da je pri razumevanju zadovoljstva pri delu pomembno upoštevati prepričanja, bazo znanja in čustva.

Ključne besede: prepričanja o poučevanju, čustva, zadovoljstvo pri delu, metafore, baza znanja učiteljev

Introduction

Teachers define themselves through their past and current roles, values, and beliefs about the kind of teacher they wish to become in an evolving political, social, institutional, and personal context (Day et al., 2006). Teachers' beliefs function as filters for sifting what is integrated into one's professional knowledge base and what is rejected as unsuitable professional knowledge, competence, and behaviour (Calderhead, 1996; Joram & Gabriele, 1998; Pajares, 1992). Beliefs about teaching are not directly observable behaviours, but they guide a teacher's perception of a situation and mediate teachers' responses to teaching and learning situations and actions taken (Hannula et al., 2013; Lam & Kember, 2006; Pratt, 1992). Teachers' responses to teaching and learning have often been conceptualised through how teachers view their role, whether that of an information transmitter or a facilitator of learning, resulting in teacher-centred and student-centred teaching (see Kember & Kwan, 2000). A teacher with a teacher-centred approach focuses on the subject, whereas a teacher with a student-centred approach focuses on supporting students' learning. Teachers with a student-centred approach are pedagogically aware and vary their teaching methods according to the students' needs and context (Lindblom-Ylänne et al., 2006). Beliefs about teaching must change first for teaching practice to change (Postareff et al., 2008), and here, teacher education plays a crucial role (see Smrtnik Vitulič & Lesar, 2017). Therefore, working with beliefs is crucial for the development of teaching.

Furthermore, the knowledge base influences the teacher's focus and emphasis on teaching and the teacher's role (Beijaard et al., 2000). Beijaard et al. (2000) identify three main knowledge bases: subject matter, pedagogical, and didactic expert (cf. also Shulman, 1986). The forms of expertise co-exist, but there may be individual differences in emphases. An emphasis on subject knowledge means understanding the teacher's role primarily as a subject matter expert. The underlying belief is that teacher expertise equals profound subject competence. An emphasis on subject matter expertise may fail to recognise the learner and to establish relationships that are crucial in pedagogical interaction (Kember & Kwan, 2000). Those who view the teacher's task primarily as that of a pedagogue (Beijaard et al., 2000) emphasise relationships, values, and moral and emotional aspects. According to this emphasis, teaching is more than information transmission; it is a moral and ethical profession involving educating for citizenship and for an uncertain future (Beijaard et al., 2000). The didactic expert role emphasises subject-matter teaching using discipline-specific knowledge. The focus is on the planning and execution of teaching, the creation of a

positive learning environment and the evaluation of learning (Beijaard et al., 2000). Prior research shows that Estonian mathematics teachers view themselves as didactic experts, whereas teachers of English as a foreign language view themselves as pedagogues and didactic experts (Löfström et al., 2010).

Metaphors were used to investigate teachers' knowledge base. Metaphors are a tool for thinking and a means of meaning-making (Lakoff & Johnson, 1980), and have been previously used to access teachers' beliefs about teaching and the teacher's role (Bullough, 1991; Saban et al., 2007; Tobin, 1990), approaches to teaching (Leavy et al., 2007; Martinez et al., 2001; Saban, 2010), and teacher beliefs (Alger, 2009; Leavy et al., 2007; Mahlios et al., 2010; Martínez et al., 2001; Seung et al., 2011). Prior research using metaphor has often been inductively qualitative in nature (e.g., Leavy et al., 2007; Martínez et al., 2001; Martínez-de-la-Hidalga & Villardón-Gallego, 2017; Muñoz-Salinas, 2023; Patchen et al., 2011; Thomas & Beauchamp, 2011; Pinnegar et al., 2011; Tubin, 2005) with a few exceptions (e.g., Alger, 2009; Saban, 2010; Saban et al., 2007). In this study, we attempted to understand the relation of underlying beliefs as 'measured' through metaphor choices to variables identified as important in the teacher profession and retention (e.g., Dreer, 2021; Judge et al., 2001; Klusmann et al., 2008; Moé et al., 2010; Wang et al., 2022).

The emotional climate affects teacher development, as well as attitudes and practices in teaching and learning (Bakkenes et al., 2010). A school's micro-culture, including norms and values, is reflected in the school's teaching practices; however, the micro-culture is transferred to teaching practices through teachers' beliefs (Hannula, Pipere et al., 2013). Teachers' interpretations of the person-environment interaction are ultimately reflected in their teaching-related emotions (Cross & Hong, 2012; Prosen et al., 2011). Job satisfaction as a psychological dimension (OECD, 2020) is a crucial aspect of occupational well-being (Moé et al., 2010) associated with emotions and behaviours in teaching, which can further influence student motivation and learning (Klusmann et al., 2008). In other words, teachers who are more satisfied with their work tend to use more adaptive and engaging strategies in their teaching (Chaaban & Du, 2017) and have more positive teacher-student interactions (e.g., Weiqi, 2007). Teachers also have more energy to deal with challenging situations at work and find solutions when they have positive emotions and feel enjoyment in their work (Wang et al., 2022). Teachers' perceptions of fulfilment in day-to-day work influence their performance, commitment, absenteeism, physical and mental health, and overall well-being (e.g., Judge et al. 2001). Positive emotions play a vital role in teachers' job satisfaction and subsequent retention (Dreer, 2024; Klassen & Chiu, 2011). Teachers who perceive that their work meets their

expectations derive more enjoyment from their role, have stronger self-efficacy and are enthusiastic, whereas dissatisfaction is likely to lead to a lack of motivation (Burić & Moè, 2020).

The Estonian Lifelong Learning Strategy 2020 (Ministry of Education and Research of Estonia, 2014) advocated a shift towards more student-centred teaching. However, the strategy can be successful only if teachers adopt the belief that student-centred teaching is beneficial for learning and develop their pedagogical practice in ways that manifest in student-centred teaching. A cross-cultural study published around the time of the introduction of the Estonian Lifelong Learning Strategy 2020 showed that Estonian teachers were the strongest proponents of traditional beliefs about teaching compared to Latvian and Finnish teachers who exhibited beliefs in line with constructivist teaching approaches (Hannula, Lepik et al. 2013). Now, a decade after the adoption of the strategy, we investigated Estonian teachers' beliefs about teaching and their professional knowledge base. Considering PISA, in which Estonian students are achieving good results, Estonian teachers appear to be doing a good job (OECD, 2015). Learner-centred teaching facilitates conceptual change, specifically higher-order thinking (Prosser et al., 2000; Kember & Kwan, 2000), but while exhibiting traditional beliefs about teaching (Hannula, Lepik et al., 2013), Estonian teachers have been found to design learning activities geared towards higher-order thinking (Henno, 2015). We also addressed how teachers feel about their work and job satisfaction, as teacher-centred or traditional teaching has been associated with negative emotions, which in turn is associated with lower levels of job satisfaction (Kyriacou, 2001; Skaalvik & Skaalvik, 2011).

We posed the following research questions:

1. How do teachers express knowledge base (subject matter, pedagogical, and didactical expertise), and which affective attributes are associated with it?
2. How are teachers' knowledge base and emotions about teaching related to their beliefs about teaching and job satisfaction?

Methods

The study used primarily a quantitative design but also involved a mixed methods approach. To measure beliefs about teaching and job satisfaction, we used survey-type instruments. To access teachers' knowledge base and emotions, we used metaphors, which were analysed deductively and treated as nominal categories in the statistical analyses.

Participants

A total of 887 teachers, selected randomly across Estonian schools, participated in the research. Metaphors were written by 658 teachers, among them 210 class teachers (CL), 156 mathematics teachers (M), 154 English language teachers (E) and 138 biology (B) teachers. Their ages ranged from 22 to 73, and work experience from 1 to 55 years. The most experienced were mathematics teachers, almost half of them (46%) had at least 21 years of work experience. The less experienced were English teachers, as 36% had worked at the school for less than nine years. Table 1 provides an overview of the average age and work experience of the teachers surveyed.

Participation in the research was voluntary and based on informed consent. No personal identifiers were collected. Consequently, we do not have information about the schools that the teachers work in and cannot assess how many schools the participants represent. No incentives for participation were offered. Participants could terminate their participation at any time by discontinuing to respond to the questionnaire. After submitting their response, participation could not be cancelled as there was no way to connect the respondents to their anonymous responses. The study did not require an ethics review in the Estonian context (Centre for Ethics, University of Tartu and the Estonian Research Council, 2017).

Table 1

Teachers' average age and work experience.

Teachers	Average age (Years)	Average work experience (Years)
Mathematics	47	23
English as a foreign language	42	18
Biology	44	19
Class	44	22
Total	44	20

Instruments

Metaphors. The participants were prompted by the statement 'A teacher is like...'; which they were asked to finish and provide an explanation for (see also Saban et al., 2007; Löfström & Poom-Valickis, 2013; Löfström et al., 2010). The unit of analysis was the metaphor with its explanation.

Survey. Parts of the *Teaching and Learning International Survey* (OECD, 2010) were used to measure beliefs about teaching (14 items), the Teacher Burnout Scale (TBS) (Seidman & Zager, 1987), and the Teacher Job Satisfaction

Questionnaire (TJSQ) (Lester, 1987) to measure job satisfaction. Regarding the measurement of beliefs about teaching, the constructivist dimension was strengthened by modifying or adding items central to a constructivist teaching approach, for example, learners constructing knowledge and the introduction of assessment criteria as a mutual agreement between the teacher and the learner. These items are marked * in Table 2. Regarding the measurement of job satisfaction, recognition, and support (e.g., Andrews, 2011; Björk et al., 2019; Yildirim, 2015) and satisfaction with work and career (e.g., Björk et al., 2019; Timms & Brough, 2012) have been identified as indicators of work overall job satisfaction and well-being at work. Consequently, we focused on items to measure these constructs. More precisely, from TBS and TJSQ, we used the following items: ‘Teaching encourages me to be creative’ (TJSQ), and ‘I look forward to each teaching day’ (TBS) to measure satisfaction with work and the career; ‘No one tells me that I am a good teacher’ (TJSQ) and ‘In this school, staff members are recognised for a job well done’ (own item inspired by Perie & Baker, 1997) for an additional item to measure recognition; and ‘I feel that the administrators are willing to help me with classroom problems, should they arise’ to measure perceived support. English language items were translated into Estonian.

Analyses

Metaphors. First, we used deductive content analysis (Marshall & Rossman, 1995; see also Saban et al., 2007) based on the knowledge base model by Beijaard, Verloop, and Vermunt (2000). The categories identified were subject matter, pedagogical, and didactics expertise. We labelled combinations of these as ‘Hybrids’ (see also Martínez et al., 2011). Two additional categories were created, namely ‘self-referential’ metaphors pertaining to the teacher’s personal characteristics (see Leavy et al. 2007) and ‘contextual’ metaphors describing work settings rather than the teacher’s work itself or roles (Löfström & Poom-Valickis, 2013).

In the next phase, the affective connotations of the metaphors were coded as positive, negative, or neutral. Metaphors that included positive adjectives (*good, bright, warm, clever*), adverbs (*well, happily, gladly, positively*) or verbs with positive connotations (*brighten, enjoy, enthuse*) were coded as conveying positive emotions. The following is an example of a metaphor labelled as positive in terms of emotions: *A teacher is like a sunray that makes others happy, creating a friendly and motivated atmosphere.* Metaphors that included negative adjectives (*poor, bad, tired...*), adverbs (*helplessly, isolated, poorly...*) or verbs with negative connotations (*kill, imprison, hate*) were coded as conveying

negative emotions. The following is an example of a metaphor labelled as negative in terms of emotions: *The teacher is like a fool; everyone can call them names, they need not be listened to, and pupils can disrupt the class.* Metaphors with negative effects illustrate teachers' dissatisfaction with their profession and criticality about the teacher's role and position in society. The third group was coded as neutral in terms of emotion. These metaphors stated something without a positively or negatively connoted vocabulary, such as *A teacher is like a guide to the world of knowledge at the start of the road trip.* The categorisation of metaphors was judged case-by-case through a procedure in which two authors independently categorised the metaphors. When the categorisations did not match, an agreement was reached through negotiation. The examples of metaphors are presented in italics, and the abbreviation in brackets indicates which subject teacher is involved: M (mathematics), E (English as a foreign language), B (biology), and CL (class teacher). In the end, the authors agreed on all the metaphors. Had there been discrepancies, there were related to whether to categorise a metaphor as a single-category one or as a hybrid. The discussions helped to judge the prevalence of each form of expertise and its 'strength' in relation to the other possible forms of expertise. We were inclusive in our categorisations in the way that if the metaphor and its explanation could be interpreted as a hybrid, we categorised it as such. This decision was also in line with what Beijaard et al. (2000) have noted; the various knowledge bases often feature in parallel. To support our analysis, we utilised a manual to interpret metaphors applying the teacher knowledge base model (Beijaard et al., 2000) compiled by Löffström et al. (2011) for an earlier research project using metaphors as data.

Survey. Statistical analysis included exploratory factor analysis (Principal Components Analysis with Varimax rotation), Cronbach's Alpha, correlation analysis using Kendall's τ , and testing statistical differences between the groups using non-parametrical Chi-Square and Kruskal-Wallis tests. Cronbach's Alphas for beliefs about teaching were .759 for constructivist student-centred beliefs (10 items) and .561 for traditional, teacher-centred beliefs (4 items). As the Alpha for the second factor is low, results should be interpreted with great caution (Table 2). Cronbach's Alpha for job satisfaction was .659 (5 items) (Table 3).

Table 2*Factor analysis for teacher beliefs.*

Beliefs about teaching Items	Factor 1 Constructivist student-centred beliefs	Factor 2 Traditionalist teacher-centred beliefs
Teachers should guide students to discover or construct knowledge on their own*	.726	
Students should have the opportunity to work flexibly in small groups with peers to discuss new ideas and listen to their opinions	.681	
Students should be allowed to think of solutions to practical problems themselves before the teacher shows them how they are solved.	.663	
My role as a teacher is to facilitate students' own inquiry	.628	
In order to achieve meaningful learning and understanding for students, teachers should vary their methods in lessons*	.604	
Teaching should make use of knowledge and skills acquired in other subjects*	.559	
Assessment must include practical problems, projects, inquiry*	.546	
Students learn best by finding solutions to problems on their own	.500	
Thinking and reasoning processes are more important than specific curriculum content	.427	
Assessment tools and criteria are developed collaboratively by teachers and students*	.383	
Instruction should be built around problems with clear, correct answers, and around ideas that most students can grasp quickly		.718
Effective/good teachers demonstrate the correct way to solve a problem		.665
A quiet classroom is generally needed for effective learning		.606
How much students learn depends on how much background knowledge they have - that is why teaching facts is so necessary		.599

Note. * Item modified from the original (OECD, 2010).

Table 3
Factor analysis for job satisfaction.

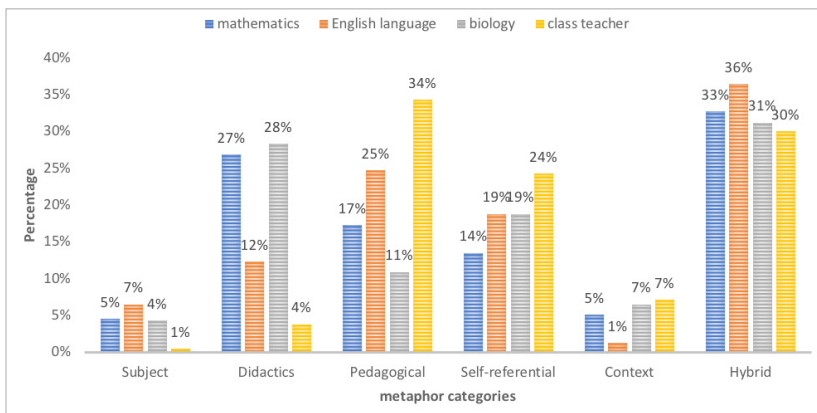
Job satisfaction Items	Factor 1 Job satisfaction
Teaching encourages me to be creative	.516
In this school, staff members are recognised for a job well done	.744
No one tells me that I am a good teacher	-.585
I feel that the administrators are willing to help me with classroom problems should they arise	.730
I look forward to each teaching day	.576

Results

Teachers' Knowledge Base and Affective Connotations Reflected in Metaphors

The largest group of metaphors was that of *Hybrids*, which constituted a third ($n = 213$) of all metaphors, suggesting that teachers understand their role as complex (Figure 1).

Figure 1
The percentage distribution of teachers' metaphors by different categories.



The following metaphor and its explanation illustrate a combination of expertise and related knowledge bases:

A multi-functional wonder machine – *A teacher must be able to do so many things, such as teaching the subject, being a parent to some kids, being a psychologist, social worker, and whatever else. At the same time,*

the teacher must have a good, warm heart and a patient mind and treat students and colleagues with goodwill and tolerance. (M = Mathematics)

Based on the statistical significance tests, there were no statistically significant differences among teachers based on subject or grade level in their preferences for hybrid metaphors (Kruskal-Wallis $H = 1.76$; $p = .62$).

The most common **pedagogical expert** metaphors were *mother, friend, guide, and gardener*. These metaphors emphasised care, guidance, and affect. According to participants, the task of the teacher includes supporting students in and outside class, including social problems. The following is an example of a pedagogical expert metaphor:

Lighthouse. *Shows the light and is a guide, but the captain steers the ship. A lighthouse cannot directly save someone from running aground, but it is helpful in finding the right path. (M)*

Statistically significant differences emerged in this category ($H = 29.53$; $p = .00$). Pedagogical expert metaphors were most common among class teachers (*mean rank* = 366.3) and English language teachers (*mean rank* = 334.7) and least common among biology teachers (*mean rank* = 289.3).

Didactics expert metaphors described the teacher as a facilitator of students' learning through teaching appropriate to field, topic, and context. The didactics expert was described as a teacher who plans learning activities, makes the learning process attractive, and offers students help in that process. Examples of didactic expertise metaphors were *actor, conductor, chameleon, builder, and stage director*. The relationship between teaching and learning is emphasised in the following metaphors:

A chameleon. *The teacher must adapt their teaching according to the students so that the students take their learning to the maximum. (B = Biology)*

The orchestra leader. *The teacher must create the necessary learning environment and find various activation activities, which are also a motivating technique in the learning process and lead the class as an orchestra to a successful learning outcome. (CL = Class teacher)*

Statistically significant differences between teacher groups emerged in the use of didactics expert metaphors ($H = 52.78$; $p = .00$). Mathematics (*mean rank* = 364.08) and biology teachers (*mean rank* = 368.48) emphasised this role the highest and class teachers the lowest (*mean rank* = 288.03).

Self-referential metaphors focused on what teaching represented for the respondents as individuals and did not refer to teaching, students, or classroom instruction. The positive characteristics depicted the teacher as a *lifelong learner*, *bee*, *sunshine*, *good wine*, or *candle*. The following metaphor is an example in which the teacher's sentiments are visualised but in which pupils, learning, school subjects or school environments do not feature:

Mountain climber. *You begin climbing a peak every autumn with enthusiasm, energy, and hope, but soon, you get tired of reaching some very difficult places that occur on your way, but you can't give in until you have reached the peak. At the peak, you have no energy left, but you feel happy anyway, and you set yourself up on another journey.* (B)

Many self-referential metaphors were focused on negative attributes, such as in the following example, where the teacher is pictured as someone who is tasked with an impossible or unfair burden or who is completely at the mercy of others:

A squeezed lemon – *The teacher has responsibilities, and there are practically no rights; the parent and the student, on the other hand, seem to have only rights and responsibilities as if they do not exist.* (M)

A puppet. *To be pushed, pulled, and criticised by everyone. Fortunately, there are only two arms and two legs, so tearing more is impossible.* (CL)

These images connote a lack of power to influence one's situation and work. Self-referential metaphors had a similar distribution in all subject teacher groups, and there were no statistically significant differences ($H = 6.80$; $p = .079$). Nevertheless, compared to the other groups, class teachers' metaphors mostly carried positive connotations.

The smallest group of metaphors constituted subject and contextual metaphors. **Subject expert** metaphors contained the idea of the teacher as a knowledge source. Metaphors frequently occurring in this category were *book*, *encyclopaedia*, *computer*, or *well of knowledge*. The teacher is mainly seen as a subject specialist possessing a great amount of knowledge that can be transmitted to pupils, as suggested in the following example:

A cuckoo laying eggs, *i.e., knowledge, in the other birds' nests, i.e., students' heads. Doing so, the students' conceptual thinking will change.* (B)

The results showed that class teachers gave significantly fewer *subject expert* metaphors than other teachers ($H = 10.05$; $p = .018$; *mean rank* = 319.07). Statistically significant differences between other groups did not emerge.

Metaphors coded as *contextual* described environmental or contextual characteristics. Many metaphors carried negative connotations, expressing dissatisfaction with workload and responsibilities and lacking support. Examples include *slave*, *paper worm*, and *lemon without any juice left*. The explanation focuses on tasks that are perceived as handed over to teachers while not being the core of the activities that a teacher should engage in:

Paper moth. *There is too much bureaucracy at school, and too much energy is spent on various analyses and work plans. At the same time, it could be used for the benefit of the children.* (M)

In the *contextual* metaphors, statistically significant differences between groups were not noted ($H = 6.88$; $p = .076$).

The relationships between metaphors and teachers' age and years of practice were tested using non-parametrical Kendall's Tau correlation. A statistically significant negative relationship emerged only in the *subject expert* category, which shows that proponents of subject expert metaphors were younger ($\tau = -.086$; $p < .01$) and less experienced teachers ($\tau = -.112$; $p = .001$). In numbers, the average age of the respondents who emphasised subject expertise was 38 years compared to 44 years for those who held other views of the teacher's role. On average, the teachers providing subject expert metaphors had 12 years of teaching experience compared to 21 years for all other teachers.

In addition, based on their years of experience, teachers were grouped into six groups (1–3, 4–6, 7–11, 12–20, 21–30, and 31–40 years of experience). A Chi-Square test indicated a statistically significant difference between the providers of *didactics expert* metaphors and all others ($\chi^2 = 12.087$; $p < .05$): 1–3 years of experience (didactics 18% of the whole answers vs. not didactics: 11%), 7–11 and 12–20 (didactics 12% vs. not didactics 20%, and didactics 17% vs. not didactics 25%, respectively), and finally 31–40 (didactics 14% vs. not didactics 7%). In other words, at the very beginning of the career (1–3 years) and latter end of the career (31–40 years), teachers provide more didactics expert metaphors, while in the middle of their career (7–20 years) they provide didactics expert metaphors to a lesser degree. There is no difference in distribution in the in-between periods (4–6 and 21–30 years of experience).

An analysis of the affective connotations indicated that metaphors with negative connotations were present in all teacher groups. The number of years of professional experience was not a differentiating factor ($\chi^2 = 12.367$; $p = .261$), and the distribution of neutral, positive, and negative metaphors was similar for all groups of teachers (Figure 2). Nevertheless, approximately 15% (ranging from 13% in 1–3 years of professional experience to 19% in the 21–30 year range)

of the teachers in every age group provided metaphors that could indicate dissatisfaction with the teacher role and work conditions. Most of the metaphors expressing negative emotions, such as dissatisfaction with workload, responsibilities, and a lack of support, were contextual. In addition, the category of self-referential metaphors included expressions of negative emotions. Mathematics teachers were statistically significantly less neutral and more positive regarding the emotions conveyed in the metaphors than the teachers of other subjects ($\chi^2 = 108.579; p = .000$) (Figure 3).

Figure 2

Distribution of negative, neutral, and positive emotions in metaphors according to years of professional experience.

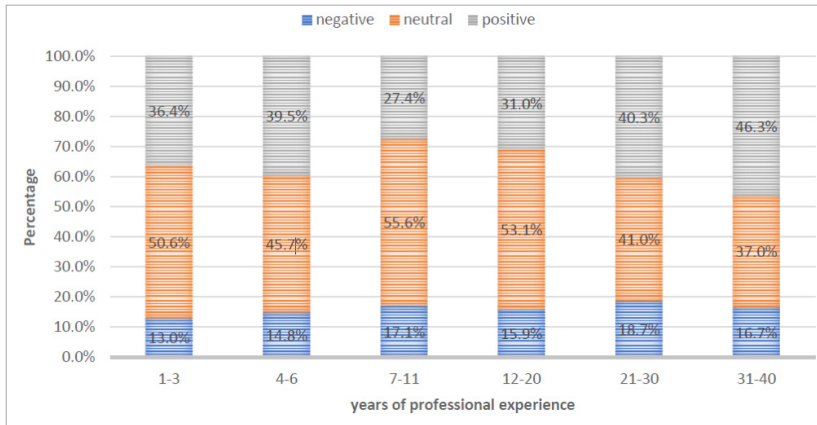
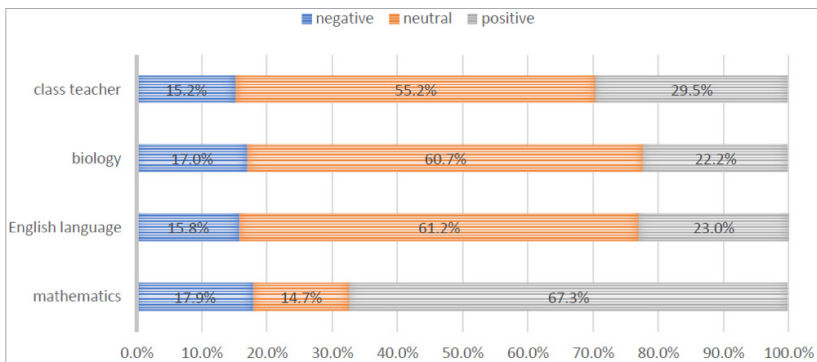


Figure 3

Distribution of negative, neutral, and positive emotions in metaphors.



The Relationships Between Teachers' Knowledge Base and Their Affective Attributes to Beliefs About Teaching and Job Satisfaction

Job satisfaction: The direction (positive or negative) of the affective connotation was associated with job satisfaction or a lack of it (Kruskal-Wallis test $H = 7.777$; $p < .05$). Teachers who expressed more positive emotions in their metaphors were more satisfied with their job conditions (*mean rank* = 346.71) than the teachers who expressed negative emotions (*mean rank* = 285.54 and 282.50, respectively). The Kruskal-Wallis test further indicated statistically significant differences in satisfaction with work conditions ($H = 11.358$; $p < .05$) in various types of metaphor groups. The teachers who expressed contextual metaphors were significantly less satisfied with work conditions (*mean rank* = 255.85). The teachers expressing pedagogue expertise metaphors were most satisfied with work conditions (*mean rank* = 358.64). When comparing job satisfaction ($H = 10.636$; $p < .05$) according to the subject taught, statistically significant differences appeared. English teachers were statistically less satisfied with their work conditions (*mean rank* = 288.76) than others.

Beliefs about teaching: The distribution of negative, neutral, and positive emotions followed a similar pattern among teachers expressing teacher-centred, student-centred, and mixed beliefs (Figure 4). There were no statistically significant differences ($H = 2.090$; $p = .719$). Furthermore, no statistically significant differences emerged concerning teaching beliefs based on the type of metaphors. However, more teachers expressed student-centred and less teacher-centred beliefs among class teachers compared to mathematics teachers ($H = 17.210$; $p < .01$). The difference was statistically significant (Figure 5).

Figure 4

Distribution of negative, neutral, and positive emotions according to beliefs about teaching.

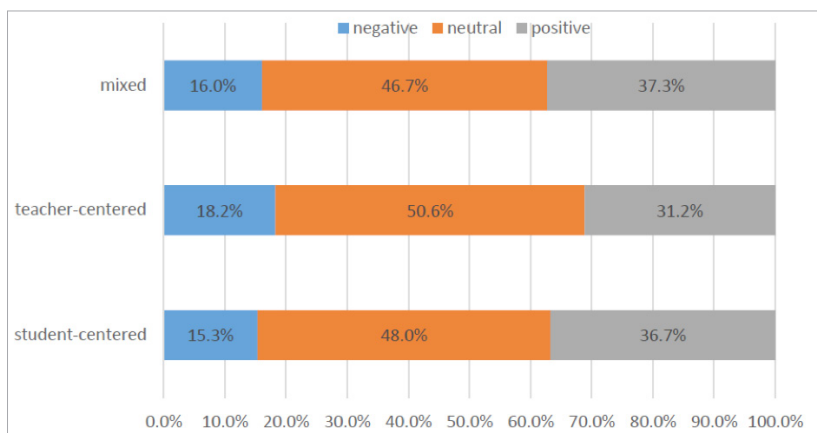
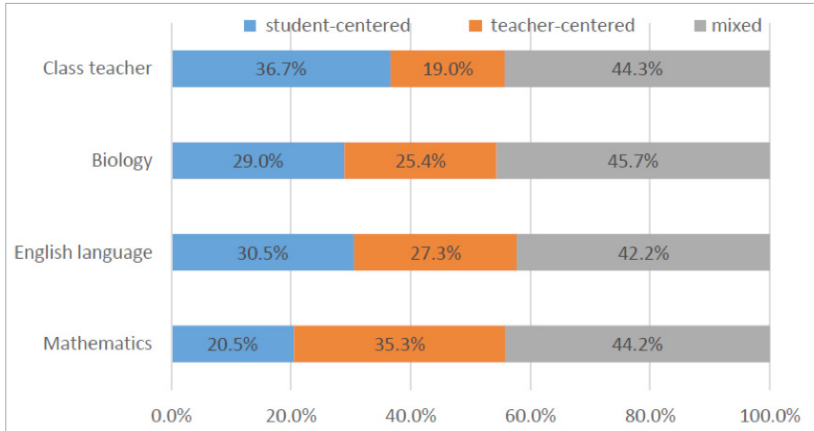


Figure 5*Distribution of beliefs about teaching.*

Controlling for the differences between groups of teachers holding different beliefs about teaching, statistically significant differences in job satisfaction ($H = 17.429$; $p = .000$) emerged. Teachers expressing student-centred beliefs were more satisfied with their job environment ($mean\ rank = 366.18$) than their colleagues who expressed teacher-centred beliefs ($mean\ rank = 283.85$). This difference was statistically significant.

Discussion

This research focused on the relationship between teachers' professional knowledge base and its affective connotations, their perceptions of teaching, and job satisfaction. Many teachers see their professional role as a combination of a subject specialist, pedagogical or didactics expert, indicating a multifaceted conception of their profession (see also Beijaard et al., 2000; Löfström et al., 2010). Prior research suggests that teachers who embrace an expanded role view experience greater satisfaction and professional commitment on the one hand but exhausting and commitment-eroding work overload on the other hand (van Veen et al., 2005).

There were some essential differences between class teachers and subject teachers. Specifically, based on the metaphors, class teachers embraced pedagogical expertise more than subject teachers did. Class teachers also had the most significant number of self-referential metaphors, but compared with subject teachers, their self-referential metaphors were more positive, expressing

self-confidence and belief in their students, reflecting teacher professionalism in student motivating students and supporting their development. Prior research (Day et al., 2006) has shown that primary school teachers' personal and professional identities are intertwined and contribute to motivation and job satisfaction, whereas the subject and its perceived status define the professional identities of secondary school teachers. In our study, mathematics and biology teachers expressed didactic expertise the most. An explanation may be that teaching mathematics and biology requires didactic effort on behalf of the teacher to motivate students. Only a minority of teachers preferred a subject expert role, and when this was the case, the teachers were younger and less experienced. Research (Caleon et al., 2018) has identified more transmission-oriented and teacher-directed instruction in beginning teachers' lessons than experienced teachers. Younger teachers' greater subject-centredness and transmission orientation have been associated with insecurity regarding their competence, lower self-efficacy, and challenges with classroom management (OECD, 2009). This has been explained by experienced teachers having developed more effective strategies (OECD, 2010). Building opportunities to embrace and reflect upon pedagogical and didactic expertise in pre-service teacher education may be helpful for strengthening novice teachers' strategies for overcoming the mentioned insecurities and challenges. Appropriate interventions for developing beliefs, competencies and behaviours involve approaches aiming at conceptual change, coaching, modelling, correcting, and rewarding (contingency management) (Korthagen, 2004).

A result that is a cause of concern is that approximately 15% of the teachers in every age group conveyed dissatisfaction with their roles and work conditions. Most of the metaphors expressing negative emotions were contextual, conveying dissatisfaction with the workload, responsibilities, and lack of support. These metaphors reflected the demands that teachers struggle to meet. These sources of dissatisfaction were like those identified by Alger (2009), including tensions around curriculum, ability levels and the number of students to teach. Research (Day et al., 2006; Prosen et al., 2011) suggests that because of their emotional investment, teachers inevitably experience negative emotions when deeply held beliefs and rooted practices are challenged. This may also happen when professional identity and moral integrity are questioned through policy changes, parents, school leaders, or colleagues and when associated with unrealistic expectations or perceived shortcomings in student learning. Teachers have been found to associate more negative emotions with their beliefs about the teachers' actual roles than with their ideal conception of the teacher (Cabalin & Andrada, 2023). Negative emotions arising from a teacher's work,

including stress, may lead to severe outcomes like burnout, depression, poor performance, absenteeism, and a decision to leave the profession (Kyriacou, 2001).

Teachers who expressed negative emotions were significantly less satisfied with their work conditions. Teachers' job satisfaction influences performance, commitment, absenteeism, physical and mental health, and well-being, and thus, the implications may be substantial (Judge et al., 2001). Our study showed that teachers who expressed positive emotions were more satisfied with their job conditions than those who expressed negative emotions. A positive identification with the subject and supporting relationships are essential for maintaining self-efficacy and commitment to work (Day et al., 2006).

Class teachers expressed more student-centred and less teacher-centred beliefs about teaching than mathematics teachers. This result aligns with the TALIS study (OECD, 2009), in which mathematics and science teachers reported more structuring, fewer student-oriented practices, and enhanced activities. Teachers who aligned their views with student-centred beliefs were more satisfied than teachers who held teacher-centred beliefs. The results corroborate prior research suggesting that there are important relationships between how teachers emotionally experience teaching and their beliefs about teaching, with positive emotions being associated with student-focused teaching approaches and negative emotions with teacher-centred and transmission-oriented approaches (Trigwell, 2012; Chen, 2019). Moreover, teachers who experience anxiety, fear, or stress tend to be more traditional in their teaching approaches (Cansiz & Cansiz, 2019). The present study corroborates the finding that physiological and emotional states are related to teaching beliefs.

Limitations

The study had limitations. The study's results should not be generalised; rather, they should be indicative and require further research. There are approximately 14,000 teachers in compulsory schools in Estonia (Santiago et al., 2016). This means that our sample captured only about 5% of the teachers at most. The sample was not representative of the population. It is possible that those teachers who are the most dissatisfied with their work did not engage with the inquiry. The reliabilities of all the factors were not strong, and one could be considered weak (teacher-centred beliefs about teaching). While an effort was made to create scales that capture dimensions of teaching that can be viewed as locally relevant, the instrument may have benefited from a broader set of items to measure the relevant dimensions. Also, the analysis of metaphors is vulnerable to subjective interpretation and requires a reflective and critical approach

(Löfström & Poom-Valickis, 2013). Double coding by two independent coders was deemed necessary for mitigating threats to reliability. This research did not address the persistence of the researched dimensions over time, which calls for a longitudinal approach.

Conclusions

We end by identifying the policy implications of our research. For teacher education, the research identifies the following areas of development: subject teacher education may benefit from greater emphasis on supporting student teachers in developing a pedagogical knowledge base, while class teacher education may benefit from the contrary, namely, to support the development of didactics expertise in future class teachers. Teachers expressing student-centred beliefs were more satisfied than their colleagues who expressed teacher-centred beliefs. Emphasising student-focused teaching approaches in teacher education could help to work as a buffer against the dissatisfaction of future teachers. Keeping in mind the growing expectations on teachers and the plurality of roles they need to fulfil, it is essential that teachers have access to support for the emotional, intellectual, and social demands. This is particularly important for approximately 15% of teachers who may be in the risk zone of losing their work satisfaction due to stress, demands, and a perceived lack of support. Just as we are discussing the need for a personalised approach for learners, it is also necessary to consider individual teacher beliefs and needs. Sustaining a positive sense of the role of the teacher, learners, and teaching is essential to maintaining job satisfaction. While the results cannot be generalised, they may resonate with those of other European countries, as differences in teachers' job satisfaction between schools and countries are small compared to the variety within schools (OECD, 2009).

The fact that teachers who aligned their views with student-centred beliefs were more satisfied with their work environment than teachers who held teacher-centred beliefs suggests that the policy goals expressed in The Estonian Lifelong Learning Strategy 2020 (Ministry of Education and Research of Estonia, 2014) have been well-informed. Teacher-centred beliefs about teaching still have a strong hold among teachers, and efforts to facilitate renewal and development should be continued. This should be supported through whole-school initiatives focusing on teaching culture and collegial support rather than individual teachers.

Disclosure Statement

The authors have no conflict of interest to declare.

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