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SCIENCE STUDENTS: WOULD I LIKE TO BE A STEM TEACHER?

Rita Birzina[1], Dagnija Cedere[1], Inese Dudareva[1], Jazeps Logins[1]

[1] University of Latvia, Latvia

ABSTRACT

Teaching is an increasingly important profession that contributes to the sustainable social and economic development of societies by providing quality education and promoting the development of pupils, while teacher shortages are the most widespread problem in Europe and worldwide. The role of the STEM (science, technology, engineering, and mathematics) teacher is to facilitate the application of science, mathematics, technical and engineering knowledge to solve everyday or societal problems, making the learning of science, technology, engineering and mathematics more meaningful. Fewer and fewer students choose to become teachers. This situation is particularly problematic in science education, so the aim of the study was to find out the views of students in science faculties on the choice of science teaching as a career. In order to achieve this goal, the research question was put forward: what factors determine the choice of science students to become/not to become a science teacher?

Using the *QuestionPro* e-platform, 285 students of Bachelor and Master degree programmes at the Faculties of Biology, Chemistry and Physics, Mathematics and Optometry of the University of Latvia were surveyed in 2022.

The results showed that there was no difference in the opinions of students from different science faculties. The main factors that would determine the choice of a teaching profession were the teacher's working environment, the student's personal views and professional qualifications. The most common socio-economic perceptions mentioned were the low prestige of the teaching profession, the workload of teachers with no fixed hours and inadequate salaries. Students appreciated the role of the teacher in developing young people's interest in studying science. Thus students, few of whom have worked as a teacher alongside their studies, have a fairly good idea about the work of the science teacher.

Keywords: *personal factors, professional factors, science students, STEM, teacher profession, working environment.*

Introduction

Over the last 20–25 years, interest in STEM education has grown in most European countries, as well as elsewhere in the world. It is often seen as an expensive and elitist

education, requiring a high level of resources, with a growing trend towards hands-on work in laboratories and linking the learning process to everyday real-life examples, thus replacing mere memorisation of facts. Moving from abstract facts in textbooks, to action and concrete experience in the laboratory where the science process takes place, is at the heart of successful science learning (Rudolph, 2020). One of the main goals of science education is to make science learning relevant to both the learner and the society in which they live (Stuckey et al., 2013), thus fostering creativity through science learning (Hetherington et al., 2020). However, the problem is getting pupils interested in science. Educators, scientists and policy makers are concerned that too few students choose to study science in depth in their final years of secondary school (Palmer et al., 2017). This raises concerns about STEM learning in schools because the future world of work in which current pupils will be working will change significantly, so we need to consider how to prepare pupils for future career success (Tytler, 2020). Global education initiatives and reforms are focused on increasing the number of pupils acquiring STEM subjects (McDonald, 2016). Understanding how to educate pupils is important in STEM learning (Portz, 2015), so the role of teachers is becoming increasingly important.

European countries are tackling educational, social and economic challenges (Eurydice, 2018), and teachers have a unique place in this process because they have a complex and challenging job, where there is a tension between the public and the personal (UNESCO, 2022). At the same time, as it is acknowledged, the most widespread problem in Europe and the world, is the teacher shortage, which is no longer a myth (Martin & Mulvihill, 2016) but a real and growing problem, perhaps more significant than currently believed (García & Weiss, 2019) and in fact an "educational catastrophe" (Dolenc et al., 2021). Already in 2015, the European Commission identified the challenges of the teacher shortage: teacher shortages in some subjects, in some geographical regions, ageing teachers, high dropout rates in the teaching profession, insufficient numbers of students in teacher education programmes and high dropout rates of students. The pandemic has also affected the number of in-service teachers due to changes in workload and increased stress levels (Darling-Hammond & Hyler 2020; Schleicher, 2020). Teacher shortages, particularly in STEM (science, technology, engineering and mathematics), are a well-known global problem, acknowledged by many (Diekman & Benson-Greenwald, 2018; Kunz et al., 2020; OECD, 2019). More than half of European countries have mentioned this problem (Eurydice, 2018). It is an international problem (OECD, 2019; Perryman & Calvert, 2020), which is also pronounced in Latvia. High proportions of ageing teachers are recorded in Lithuania (50%), Estonia (49%), Bulgaria (48%), Greece (47%) and Latvia (46%) (Katsarova, 2019).

Since 2020, Latvian schools have gradually introduced new curricula and approaches in line with the new standards for primary and general secondary education. Schools can choose subject areas and subjects to be taught at the advanced level in the final years of secondary school. Approximately 70% of the curriculum time is allocated to compulsory subjects, and 30% to elective subjects in line with the pupil's future career (National Reforms..., 2020). In secondary education, the content is grouped into seven

subject areas, of which STEM is covered in three – science, mathematics and technology. According to a recent study in Latvia (Pētījums par ..., 2021), around 27% of educational institutions, mostly secondary schools and state gymnasia, are implementing the new STEM programmes as of academic year 2019/2020. The choice of STEM subjects is limited by the lack of teachers in this field (45%), as well as inadequate school infrastructure and insufficient material technical facilities (41%). Overall, only 9% of teachers work in a STEM field. The age structure of STEM teachers also differs significantly from that of other teachers. While among other teachers the pre-retirement age group (56–65 years) represents 23% of the total number of educators, STEM teachers in this group represent almost half (40%) of all STEM educators. The share of STEM teachers under 35 years of age is markedly low at just 6%.

Another problem, not yet fully recognised in Latvia, is that many teachers teach STEM subjects after completing relatively short professional development courses. This broadening of their qualifications leaves them less well prepared and unable to provide high quality education in science subjects. Thus, the shortage of teachers is related to a wide range of factors, including birth rates, the number of graduates overall and in each subject, the socio-economic context, curriculum requirements, workload, retention of teachers in the profession, retirement age and changes in retirement age (Ingersoll, 2002; See et al., 2022). These factors may vary from country to country and region to region, and teacher shortages are a complex issue that requires an integrated approach to its solution. In the research conducted, the factors affecting teachers' work are divided into three groups: work environment, personal and professional factors (Figure 1).

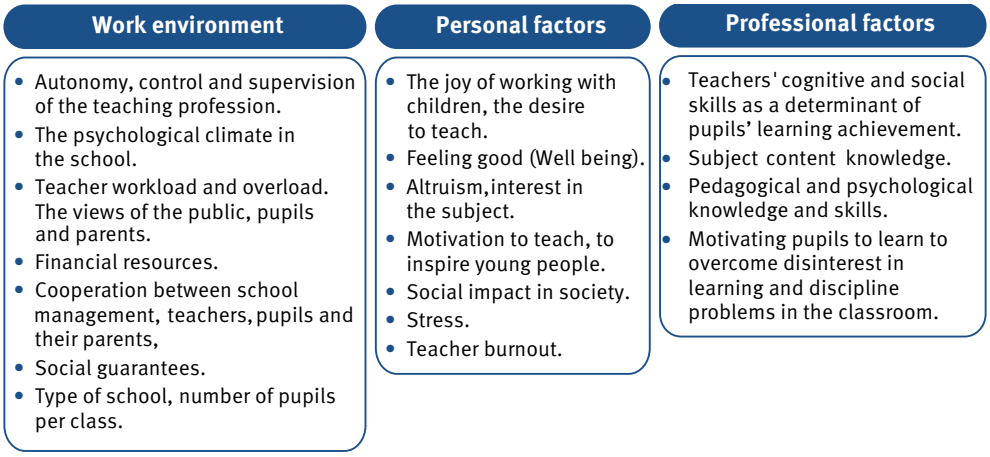

Figure 1 Factors affecting teachers' work

Note. Adapted Aragon, 2016; Barth et al., 2016; Cowan et al., 2016; Dolenc et al., 2021; Geske & Ozola, 2015; Han et al., 2018; Klassen et al., 2022; Kuijpers et al., 2022; Kyriacou & Coulthard, 2000; LIZDA, 2016; OECD, 2020; Richardson et al., 2014; Schutz et al., 2001; Toropova et al., 2021; UNESCO, 2022.

Factors related to the work environment describe teacher job satisfaction. These can be diverse, such as lack of recognition, low remuneration, opportunities for advancement and loss of autonomy (Aragon, 2016). Other researchers, on the other hand, note parametres characterizing the school such as the type of school and the number of pupils per class (Cowan et al., 2016), lack of respect for teachers (Barth et al., 2016), teacher workload, and teacher collaboration (Toropova et al., 2021). Teachers' health status, work motivation and collegial support can also be determinants (Casely-Hayford et al., 2022). In Latvia, teachers' job satisfaction is mostly influenced by "a positive and democratic school culture – teacher relationships, teacher-pupil relationships and teacher-principal relationships" (Geske & Ozola, 2015, p. 206). LIZDA (Latvian Education and Science Employees' Trade Union) research (2016) indicates that the greatest difficulties teachers face in their work are the lack of respect from education policy makers, children's permissiveness, increased media interest in negative events in school life, stress and professional burnout.

Personal factors are mainly related to teachers' perceptions of the teaching profession and their motivation to work in schools, as understanding teachers' attitudes and perceptions of STEM teaching is a key way to improve the effectiveness of STEM teaching (Sellami et al., 2022). Kyriacou and Coulthard's (2000) study of undergraduate students' views of teaching as a career suggests three categories of the most motivating factors: altruistic reasons (desire to benefit the society), intrinsic motivation (interest in the subject and knowledge) and extrinsic incentives (such as remuneration levels). As the current situation in STEM education calls for increasing pupils' interest and motivation to learn science, the teacher is given the role of an inspirer. Motivation to teach pupils can be seen as a multidimensional construct that includes motivational factors (e.g. social influence, positive prior teaching and learning experiences, personal attitudes) and positive/negative perceptions of the teaching profession (Kuijpers et al., 2022).

Professional factors relate to the teacher's performance in the classroom, which can be described by "do my knowledge, skills, and attributes fit with those demanded by the profession?" (Klassen et al., 2022, p. 6) and whether I as a teacher am "flexible in adapting to changes" (Dolenc et al., 2021, p. 4) in the teaching/learning process. It can be considered that successful teaching is based on a multidimensional model of teachers' professional competence, which includes cognitive aspects, teaching skills and motivation to teach (Kunter et al., 2013). Student discipline, disengagement-related barriers and the appropriateness of the instructional resources/materials used in the classroom significantly influence the teacher performance (Sellami et al., 2022). This means that teachers need skills (to explain the subject in a way that pupils understand, to use different teaching/learning methods) and knowledge (subject content, pedagogy and psychology) to achieve the goals of implementing the teaching/learning process and learning objectives they have set.

The teacher shortage is becoming more topical as fewer and fewer students choose to become teachers. This situation is particularly problematic in STEM education, so the aim of the study was to find out the views of science faculty students on the choice

of STEM teaching as a career. To achieve this aim, the research question was set: what factors determine the choice of science students to become or not to become a STEM teacher?

Method

In 2022, 285 Bachelor and Master students from the Faculties of Biology (N = 108), Chemistry (N = 93), and Physics, Mathematics and Optometry (N = 84) at the University of Latvia were surveyed using the *QuestionPro* e-platform, of which 200 were female and 85 were male students. 217 students were at Bachelor level, 66 at Master level and 2 at the level of professional studies.

The questionnaire consisted of two parts: general and conceptual. The general part was a closed-ended questionnaire (n = 7), which asked about the student's identity: demographic data, faculty, level of studies, choice of teaching profession and expected salary. In the conceptual part, open/closed questions (n = 3) on a 4-point Likert scale (from strongly disagree to strongly agree) were used to elicit students' opinions on the advantages, disadvantages and problems of the teaching profession. Finally, an open-ended question (n = 1) was asked to find out the conditions for studying and working as a teacher.

The data were processed using SPSS and AQUAD statistical data processing software. Descriptive statistics, non-parametric Spearman rank correlation test, Kruskal-Wallis test for multiple group comparisons were used to interpret the quantitative data. According to the theoretical background and the questions of the conceptual part, a qualitative data coding system was developed (Figure 2).

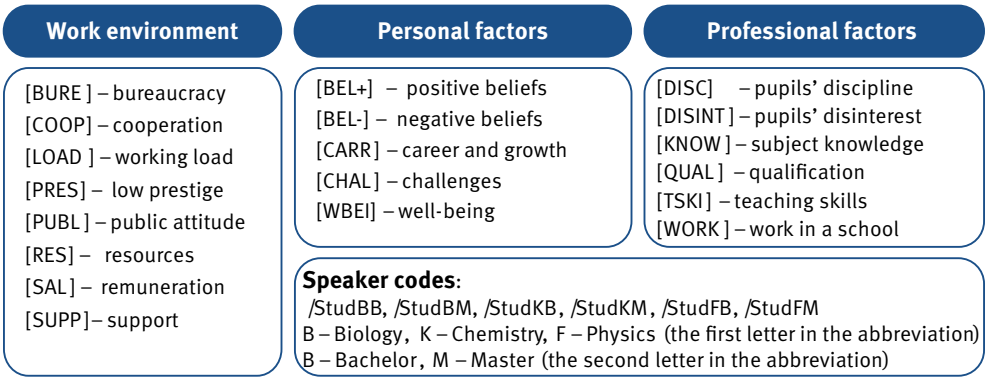

Figure 2 A code system for coding qualitative data

Results

In order to identify the views of science students on their potential choice of a STEM teaching career, the survey asked about the advantages and disadvantages of a teaching career, i.e. a teaching job (TJ) compared to a non-teaching job (NTJ), and what conditions would be conducive to choosing a teaching career.

Description of student identity in the context of career choice

A student's identity is characterised by his/her possible choice to become or not to become a science teacher, his/her views on the expected remuneration in the teaching profession and in his/her chosen specialisation.

As shown in Figure 3, the majority of students (67%) have no major objections to becoming a teacher, and only 17.5% of students are categorically opposed to a career in teaching.

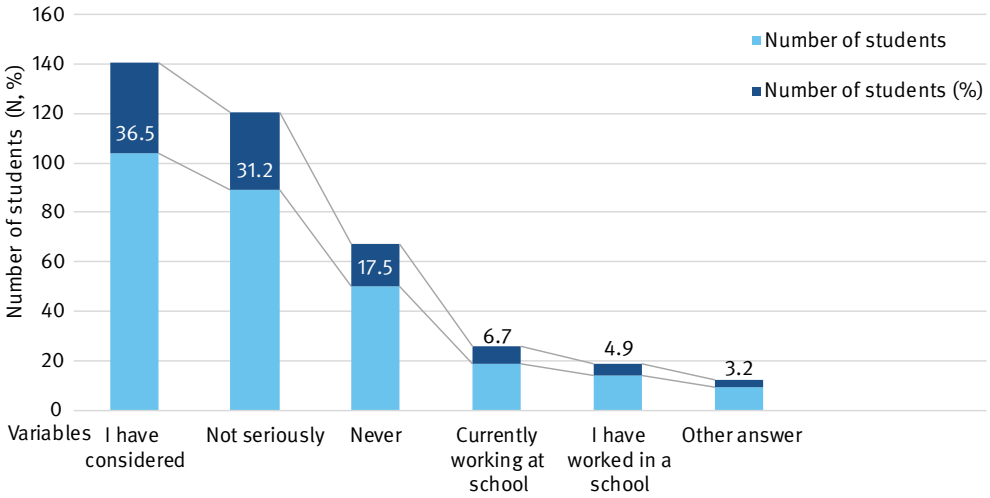

Figure 3 Students' choice of the teaching profession

The Kruskal-Wallis test showed that there were no significant differences between the opinions of Bachelor and Master students from different science faculties. The only difference was in the students' views about the level of remuneration in teaching and non-teaching jobs (X^2 (2, N = 285) = 37.42, p < .001). The expected salary of a teacher (TJ) according to the 2022 survey data (monthly average between EUR 1200–1500) is actually the same as their expected salary in the NTJ after obtaining their Bachelor's and Master's qualifications. Students at the Faculty of Physics, Mathematics and Optometry have a different view, mentioning a higher salary (average monthly salary between 1500–1800 EUR).

Strengths and weaknesses of the teaching profession

Students' views on the advantages and disadvantages of the teaching profession are presented in Table 1.

The majority of the surveyed students (over 80%) see the main benefits of teaching as the opportunity to learn public speaking skills, to inspire young people to learn STEM, and to link this with a teacher's ability to teach complex science topics in a simplified way, thus attracting and developing young people's interest in science. The students' consensus is strongly supported by the narrow standard deviation range (SD = 0.72–0.81) of the questions. In the open-ended questions, students indicate that teaching requires «*patience, understanding and empathy... the ability to inspire if not interested in science at all*» (/StudFB18), at the same time mentioning that «*the greatest benefit of the teaching profession is the satisfaction that the pupil understands*» (/StudBM225). Accordingly, students consider the opportunity for self-learning and development as less important and with a higher difference (SD > 0.90) because they consider teaching as a routine job. Working conditions are mentioned as the main limiting factor for the teaching profession. The most dissatisfactory factors for students (84–93%) are the teacher's salary (M = 3.74; SD = 0.54), the heavy workload (M = 3.39; SD = 0.82), and the fact that teaching STEM subjects often does not result in a full workload in one school (M = 2.69; SD = 0.92). In their answers, students confirm the prevailing public perception of the low prestige of the teaching profession.

Table 1 Strengths and weaknesses of the teaching profession in view of STEM students

Issues	*M*	*SD*	*Mo*
Strengths of the teaching profession			
Q-6.1. Speaking in front of an audience	3.55	.72	4
Q-6.2. The opportunity to teach complex things simply	3.18	.81	3
Q-6.3. Inspire young people	3.38	.79	4
Q-6.4. Long vacation	2.61	1.02	3
Q-6.5. The possibility of continuous self-education	2.94	.93	3
Q-6.6. Opportunities to feel younger in youth work	2.48	1.03	3
Weaknesses of the teaching profession			
Q-7.1. Low prestige of the profession	2.95	.97	3
Q-7.2. Inadequate salaries	3.74	.55	4
Q-7.3. Long working hours	3.39	.82	4
Q-7.4. Routine work	2.75	.96	3
Q-7.5. Difficult to collect the required workload	2.69	.92	3
Q-7.6. Insufficient financial support during studies	3.14	.90	4
Q-7.7. Limited opportunities for growth	3.18	.90	4

/StudBM46. *Given the workload – both physical and psycho-emotional – the remuneration is ridiculous;* /StudBM4. *Preparation of materials and lessons takes much more time than is allocated for it in the tariff (salary calculation normative documents). If you add to this the preparation of laboratory work and the correction of tests, a part-time job very quickly turns into an unpaid full-time job;* /StudBB118. *Constant stress;* /StudFB8. *Losing the ability to separate private life from work, .. you feel burnt out...;* /StudBB136. *Disrespect of pupils; too much paperwork (bureaucracy), not related to the main function of a teacher – to teach. Especially during the pandemic.*

Teacher's professional profile

The problems anticipated in the teaching/learning process are summarised in Table 2.

The main problems ($M > 3.07$; $SD = 0.77–0.90$; $Mo = 34$) that a new teacher might face at school are: pupils' lack of interest in science subjects, discipline problems in the classroom and bureaucratic demands from the government and school administration. Communication problems with both pupils and their parents, as well as cooperation with other teachers, are also mentioned with less unanimity ($SD > 0.93$; $M > 2.08$). One of the aspects, but less important for all respondents, is the teacher's ability to present the subject in a way that the pupil understands, as well as the insufficiency of teaching materials, which is also commented on, e.g. «*there are teaching materials for mathematics, but there are too many books, too many different ones, the content is written in a way that pupils do not understand. There are no good mathematics books for secondary level*». (/StudFB160).

Table 2 Anticipated difficulties in the teacher's work

Issues	*M*	*SD*	*Mo*
Q-8.1. Communication with pupils	2.50	1.04	3
Q-8.2. Disciplinary problems in the classroom	3.27	.90	4
Q-8.3. Pupils' disinterest in learning	3.41	.79	4
Q-8.4. Cooperation with other teachers	2.08	.94	2
Q-8.5. Cooperation with pupils' parents	2.81	.97	3
Q-8.6. Bureaucratic demands (from government and school administration)	3.07	.87	3
Q-8.7. Insufficient subject knowledge	2.01	1.02	1
Q-8.8. Failure to teach the subject in a way that pupils can understand	2.59	1.03	3
Q-8.9. Insufficient teaching materials	2.39	1.05	3

Key correlations

Spearman's correlation coefficient was used to determine the mutual correlations. As shown in Figure 4, simplified explanation of complex science topics is associated with the likelihood of getting students interested in science (r (285) = .43, p < .001) and with teacher's oratorical ability (r (285) = .30, p < .001). Classroom discipline problems correlate strongly with pupils' disinterest in the subject (r (285) = .51, p < .001) and more weakly with teachers' inability to explain their subject well (r (285) = .23, p < .001), which, in turn, correlates strongly with pupils' insufficient knowledge (r (285) = .53, p < .001).

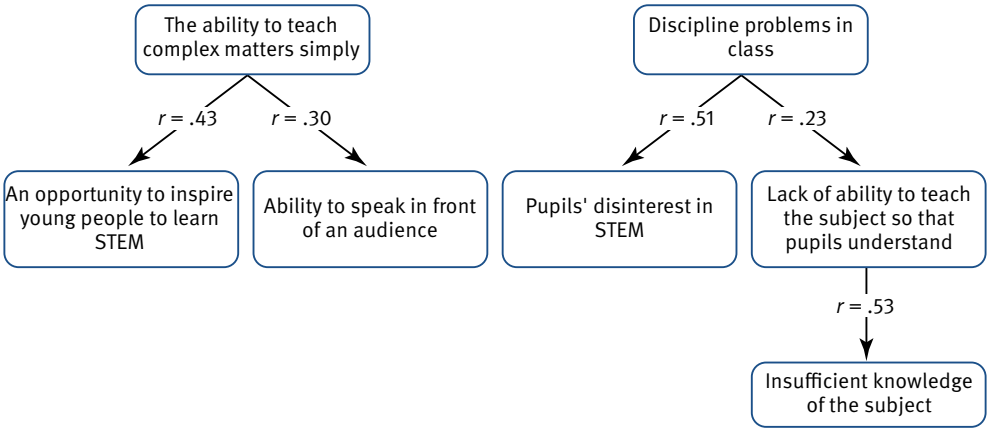

Figure 4 Correlations between attributes of the teaching/learning process included in the survey

Note. Correlation is significant at the 0.01 level (2-tailed)

Conditions for students to choose whether to become a science teacher

Students' responses were coded according to an established coding system, then the frequency of the codes used was calculated and correlations were established.

As shown in Table 3, the highest frequency of codes is observed in the students' answers about the teacher's working environment (n = 347), where the most frequent are the teacher's low salary (n = 163), high workload (n = 44) and negative societal attitudes (n = 40). Students believe that a teacher needs «*a decent salary as well as a normal workload so that they do not have to look for jobs in 34 schools; respect for the profession from the community*» (/StudFB53); «*I would start to consider a permanent teaching job if they also paid for hours that are not included in the contract but are actually worked. It takes a lot of time to prepare presentations/lesson plans, especially if you do it for the first time*» (/StudFB113). Insufficient support is also noted, such as psychological and moral support for the new teacher and social guarantees that are not provided, such as «*legal protection of the teacher to prevent the most permissiveness of pupils*» (/StudKB104); «*good salary, good health insurance*» (/StudKM203); «*understanding and supportive school administration so that .. there is both moral and financial support for teachers*» (/StudFB160). Students also mentioned the lack of resources, indicating «*not enough usable teaching materials on Skola2030 site*» (/StudFB263).

Table 3 Frequency of codes in the students' survey

Work environment		Personal factors		Profesional factors	
Category	**Number (*n*)**	**Category**	**Number (*n*)**	**Category**	**Number (*n*)**
Remuneration	163	Negative beliefs	74	Qualifications	33
Working load	44	Positive beliefs	63	Work in school	19
Public attitude	40	Career/growth	38	Teaching skills	18
Support	35	Challenge	33	Pupils' disinterest	18
Low prestige	21	Well-being	28	Subject knowledge	9
Cooperation*	16			Pupils' discipline	9
Bureaucracy	15				
Resources	13				
Total	**347**	**Total**	**236**	**Total**	**106**

Note. *Cooperation with teachers, pupils and parents

Assessing the work environment, students compare teaching in different types of educational institutions – primary, secondary and gymnasia – and would like to «*work in a prestigious educational institution with motivated pupils*» (/StudBB141). The personal factor ($n = 236$) is important for students; it is related to their positive and negative views on teaching and their perceived limited career development, while at the same time pointing to the challenges of the teaching profession. They are «*keen to share their knowledge and try to think of new and attractive ways to attract young people*» (/StudBM7), but to work in a school «*you need to have professional skills and academic knowledge in both the psychological and physical development of children, and pedagogical skills*» (/StudBM55). Also important are the teacher's opportunities for development, «*the possibility of participating in exchange programmes in other schools or other countries*» (/StudFB53) and the geographical location of the workplace, «*few qualified teachers want to work in small rural schools far from the rest of the world. Improving the efficiency of the school network would not only reduce the teacher shortage in numbers, but also increase graduates' willingness to work as teachers*» (/StudFB27).

The number of responses related to professional factors is the smallest ($n = 106$), which could be explained by the fact that students still have little experience in teaching (only 19 work in a school), but at the same time they believe that working in a school requires a teacher's qualification and they know how to obtain it *(/StudBB105 «I am now taking a 72 h course in basic pedagogy, after my bachelor's degree in biology I plan to enrol in a one-year teacher training programme/educational support project «Mācītspēks»).* Students appreciate that not only subject knowledge is important, but also the pedagogical skills to teach the subject to create interest in science in pupils. Not least important, *"a teacher should be able to teach at least two or three subjects at school"(*/StudFB177*)* and recommends *"it is a pity that there is no longer a science teacher programme. At least science programmes should include a Part C study course in pedagogy, acquiring which students could work in schools.» (*/StudKM181*),* and *«first a science degree, then a teaching qualification, as a science degree has a wider application and would act as a "safety cushion"»* (/StudFB42).

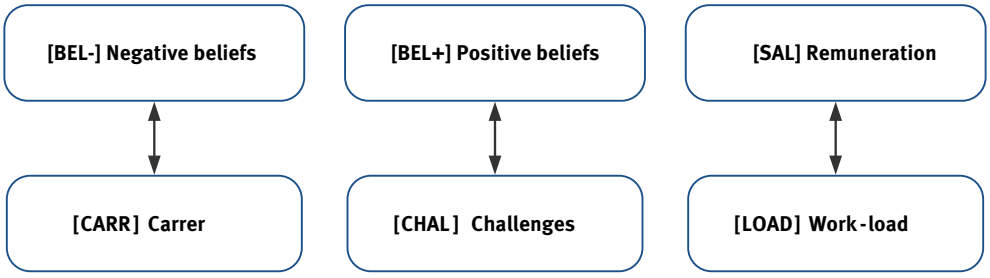

Figure 5 Constructed interrelationships between the factors of choosing the teaching profession
Note. Maximal distance between data-segments: Lines/frames/seconds 3

Based on the fact that the AQUAD software reports the findings by showing the positions within the linked segments (Huber & Gürtler, 2013), linkages (Figure 5) were constructed to clarify the relationships between the coded response segments (Table 3).

The most correlations (79 confirmations) are between the segments [SAL] and [LOAD], which confirms students' views on the inadequacy of the teaching profession in relation to their workload.

> /StudBB183. *Salaries* [SAL] *do not match the huge and hard work, taking long hours* [LOAD] *that teachers have to do on a daily basis;* /StudBB8. *The profession needs to become more prestigious* [PRES] *(hence adequately paid* [SAL] *for people who are the future of the country...), as well as reviewing how to create rest (less homework) for teacher's unpaid overtime by working on correcting pupils' work* [LOAD].

Interestingly, there are correlations between [BEL+] and [CHAL], [BEL-] and [CARR], suggesting that if a student is already working in his/her field, he/she has a relatively more negative view of the teaching profession, while a more positive view is related to the student's intrinsic motivation to get young people interested in acquiring science.

> /StudFB18. *I don't think anything will convince me to work full-time as a* [BEL-] *teacher. I see myself in a business environment or in research* [CARR] *because in these environments I can grow and there are many opportunities to learn and develop;* /StudKB176. *The teaching profession requires a lot of mental strength, patience and communication skills with another generation [*BEL+] *who have different views and lifestyles. You have to study hard to achieve the desired result of getting young people excited about learning science* [CHAL].

Discussion

The choice of a science student to become a STEM teacher or not is determined by a combination of factors. The study analysed these factors in the context of three groups: work environment, personal and professional factors.

Work environment. Even with little or no teaching experience, science students are able to assess the strengths and weaknesses of the teaching profession, recognising that the work environment (remuneration, workload, choice of working in a gymnasium or secondary school, inability to «collect» full-time teaching hours in one school and the lack of support, the lack of teaching resources, bureaucratic requirements and the low prestige of the teaching profession) is not conducive to choosing teaching as a career. Comparatively, Latvian STEM teachers in comprehensive schools (Pētījums par..., 2021) also mention high teacher workload and low public interest in STEM, the lack of modern technical resources and equipment, insufficient preparation of learners, insufficient parental involvement and support for pupils' motivation, as well as insufficient and inadequate availability of teaching materials as inhibiting factors. Class size and school type are influencing factors (OECD, 2014; See et al., 2022). As research shows, teaching/learning effectiveness in science education depends largely on teachers' satisfaction with their working conditions (Casely-Hayford et al., 2022; OECD, 2014; Utemov, 2020; See et al., 2022; Sellami et al., 2022), and quality teaching/learning process is the most important determinant of pupil achievement, yet teachers are still undervalued, underpaid and under-supported by the school administration (Perryman & Calvert, 2020). On the one hand, teaching is a respected profession and requires high qualifications, but on the other hand, teachers work many extra hours in the evenings and on weekends and are underpaid for that (Elfers et al., 2008). Teachers' salaries in preschool, primary and general secondary education are 4–14% lower than the average for non-teaching higher education graduates in OECD countries and other member states. According to the OECD 2017, Latvian teachers' salaries are the lowest among the member states, still among the lowest in Europe, but are projected to increase sequentially (National Reforms..., 2020). It means that most teachers are already paid much more than the minimum salary in Latvia (OECD, 2022, p. 333). The data from the study showed a discrepancy between the teacher's workload and salary, but interestingly, science students believe that higher salaries are also absent in their chosen non-teaching specialities. The higher salaries reported by students of the Faculty of Physics, Mathematics and Optometry show that if a teacher's salary were comparable to that in engineering or technology, it would certainly make students more likely to consider a teaching career (Elfers et al., 2008).

Personal factors. A student's personal beliefs play an important role in the choice of a teaching profession. Only 19 of the surveyed students work in a school, but for the rest, their ideas about teaching may be shaped by their personal experiences of schooling only a few years ago, as well as by the influence of the society, media, their school or family. In the study, this is evidenced by a strong correlation between positive perceptions of teaching in relation to the challenges it presents, as well as students' views on the benefits of being a teacher and the challenges of the teaching profession. It is the pleasure to work with children, the work is interesting and creative. Several students also mentioned career opportunities, the importance of the profession, the opportunity to pass on their knowledge to the next generation, their love for their subject. Such views are in line with the scientific literature that a teacher can inspire pupils to learn and study STEM in

the future if they foster pupils' passion and interest in learning science, thereby developing their understanding of the value of science in the future and encouraging more pupils to learn science at school (Palmer et al., 2017; LIZDA, 2016; Schutz et al., 2001). Interestingly, public speaking skills were identified by students as one of the greatest benefits of being a teacher. In fact, this means that science students do not feel confident about their public speaking skills and consider that they can be improved in the teaching profession. Fear of public speaking is seen to be one of the most common forms of social phobia in the society and also negatively affects the academic performance of university students (Tillfors & Furmark, 2007), as the ability to present one's views and ideas clearly and confidently can help a student to improve academic performance.

Science students also have negative views on the teaching profession, mostly related to experiences that have led them to appreciate the advantages of their specialisation over teaching. To some extent, this is in line with conclusions drawn by Kunz et al. (2020) that STEM students may always have more career options than students in some other fields.

Professional factors. Although science students do not have much teaching experience with pupils, they strongly reflect, based on their personal perceptions of teaching, on the importance of motivating pupils to learn science in order to overcome their disinterest and prevent discipline problems. In this respect, they appreciate the need not only for subject content knowledge but also for pedagogical and psychological skills in order to be able to teach their subject well. One has to agree with Eurydice (2018) that incentives that could attract students to the teaching profession or to a particular subject are rarely used. In this case, the non-categorical refusal of science students to become a teacher (only 17.5% would never choose this profession) is positive. Recommendations are also offered: to complement the science study programmes with pedagogy courses, to continue to prepare STEM teachers in the previous study programme «Science and Information Technology Teacher» offered by science faculties, to acquire 72-hour qualification courses, to study in the one-year "Mācītspēks" programme in a work-based study environment, first specialising in science, then studying pedagogy and, once qualified as a teacher, working part-time in a school or teaching a few hours a week as a hobby, combined with work in their speciality.

Overall, when analysing the conditions that contribute to students' choice to become a teacher, it should be noted that they are to some extent in line with the improvements recommended by the study conducted by the Education and Science Workers' Union (2016) to increase the prestige of the teaching profession: (1) higher financial evaluation of teachers' work; (2) less control and supervision of teachers' work; (3) less workload for teachers; and (4) more social guarantees for teachers. The conditions could be complemented by (5) provision of teaching resources and school infrastructure for laboratory and practical work (Pētījums par..., 2021; Sellami et al., 2022) and (6) personal perceptions of the teaching profession (Kyriacou & Coulthard, 2000; Kuijpers et al., 2022). In order to reduce the shortage of STEM teachers to some extent, the idea of including courses in pedagogy and subject-specific didactics in Bachelor and Master programmes in science should be considered.

Conclusions

The study found out which the main factors are that would influence science students' choice to become or not to become a science teacher.

There are no significant differences in the views of students from different science faculties about the teaching profession. Students are able to assess confidently the strengths and weaknesses of the teaching profession by evaluating the school as a work environment, the teacher's personal perceptions and motivation to work in a school, as well as by identifying the teacher's professional activities.

The main factors for choosing teaching as a profession are the mostly well-known socio-economic perceptions of the low prestige of the teaching profession, the non-fixed hours of the workload and inadequate remuneration associated with the nature of the teaching work environment. In fact, when students evaluate the work environment of a teacher, they compare it with their own non-teaching work, referring to the prestige of the profession, the workload and the remuneration they could receive in this specialty.

A student's personal perceptions of teaching also determine their choice to become a teacher. These are both positive (mostly altruism) and negative (not seeing opportunities for growth, stress and fatigue resulting from the job, burnout). However, it should be noted that it is only through learning and working as a teacher that a teacher's career path becomes clear. It is possible that science students perceive the career development of a teacher as a traditional gradual change of jobs in their chosen specialisation. Yet, in the teaching profession, the development of professional competence through the teacher evaluation process is very important. Surprisingly, the ability to speak in public in front of an audience is seen as a major benefit of choosing teaching as a profession, suggesting that science students do not feel confident about their public speaking skills and demonstrating the need to improve student's academic performance.

The possibility to inspire young people and the ability to teach complex issues in a simple way indicate students' desire to develop young people's interest in STEM subjects, suggesting that students value the role of teachers in inciting young people's interest in science studies. Thus, students, most of whom have not worked in schools, have a reasonably good understanding of the work of a science teacher. Their views on teacher's work are probably also shaped by their personal learning experience at school and influenced by views on the teaching profession in the society, in media and in the family.

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About authors

Rita Birzina has a doctor in Education with many years of experience in biology education, as evidenced by her work experience as a school biology teacher and at university teaching biology and environmental education methodology to future biology teachers. Her research interests include biology and science didactics as well as adult education and e-learning culture.

Dagnija Cedere has a doctor in Chemistry with many years of experience in teaching chemistry to students of various natural sciences specialties. At the same time, D. Cedere has specialized in didactics of natural sciences; currently she is conducting research mainly in didactics of universities in the field of STEM. D. Cedere's research interests mainly focus on improving the quality of STEM education.

Inese Dudareva has a doctor in Physics with 20 years of experience in school and 15 years of experience in teaching preservice physics teachers the methodology of teaching physics and astronomy and the meaningful use of IT in the teaching/learning process. Her research interests include physics didactics and professional development of STEM teachers.

Jazeps Logins has a doctor in Chemistry with 20 years of experience teaching chemistry and science in school, and 20 years of experience teaching chemistry and science education methodology to preservice chemistry teachers. His research interests are in STEM, particularly chemistry and science teacher education and their professional development.