

## Article

# The Impact of an Online Professional Development Course on Teachers' Comprehension and Self-Efficacy in Developing Students' Self-Regulated Learning Skills

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**Abstract:** The ongoing process of digitalisation requires teachers not only to use technologies in their lessons to provide high quality opportunities for learning, but also to learn through this format themselves. In recent years, a new competence-based curriculum has been implemented in Latvia, introducing new content and paying attention to self-regulated learning (SRL) as one of the transversal skills. This requires appropriate teacher professional development (TPD) and the implementation of various digital solutions in teaching and learning, especially since the COVID-19 pandemic. Considering the benefits of online learning and the importance of SRL skills for ensuring sustainable lifelong learning, an online TPD course was conducted to enhance teachers' knowledge of SRL and self-efficacy in developing students' SRL skills. The course was attended by 126 teachers of grades 7–12. The research analyses teachers' self-evaluation of the impact of the online TPD course on their knowledge and skills in developing students' SRL skills, and data prove that both teachers' theoretical understanding and competence in developing students' SRL skills can be significantly improved through this format of TPD.

**Keywords:** online professional development; self-regulated learning; impact of online teacher professional development; self-efficacy; sustainable education



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## 1. Introduction

Changes in the world have accordingly necessitated changes in the systems of education [1,2]. Currently, a new competence-based curriculum is being introduced in Latvia and educators are supposed to elaborate on numerous aspects concurrently: (a) to reconsider and alter their teaching methods and approaches in order to deliver effective student-centred teaching; (b) deliver new, revised competence-based content and oftentimes create new teaching materials; (c) work on developing students' transversal skills; and (d) promote the development of values [3]. The introduction of all those aspects requires a lot of additional planning and preparation, hours spent on becoming acquainted with the new regulations, working in collaboration groups, lesson observations and attending teacher professional development (TPD) courses, which considerably increases teachers' workload.

The concept of self-regulated learning (SRL) has only been introduced in Latvia since the introduction of the new competence-based curriculum, as SRL has been assigned a significant role as one of the six transversal skills in the new curriculum [4]. Despite the fact that the new curriculum introduces a lot of changes, the professional support offered is not always sufficient, as teachers lack appropriate knowledge and competence in developing students' SRL skills [5–7]. Additionally, although the introduction of important new projects in the system of education require intensive TPD and training [8], only 8.47% of the TPD course applicants in the pre-test survey mention that they have attended a TPD course on SRL before, and half of them mention that it was not a full course, but merely a part of a course on another topic, which shows that teachers have not received adequate

TPD training and that there is a gap between the education policy's goals and the real situation.

Although the importance and benefits of an online TPD course and training have already been proved by numerous scholars [9–13], practitioners still have doubts and question whether online learning can ensure the same level of efficiency [14]. The aim of this research was to analyse the impact of an online TPD course and whether online learning can not only improve teachers' knowledge of SRL, but also develop their competences to apply it in practice, thus contributing to the sustainability of education through the opportunities offered by digitisation.

The outburst of the COVID-19 pandemic and the development of technology have greatly influenced systems of education, introducing a greater application of technologies in education [15] not only during the remote learning period caused by the pandemic, but also afterwards, thus enforcing the ongoing digitalisation of education. Furthermore, digitalisation has emerged not only in the learning process at school, but has also influenced the ways of delivering TPD, as online formats via Zoom or MsTeams offer several significant advantages, such as saving travel expenses and time, ensuring greater autonomy and choice due to the possibilities of synchronous and asynchronous options of teaching and learning, and providing opportunities for teachers from remote areas to join the course. Taking into consideration teachers' insufficient knowledge of SRL and the necessity for an appropriately tailored and conducted teacher professional development course that enables all interested teachers to participate, an online TPD course on SRL was developed and offered.

The TPD course on SRL was targeted at teachers of grades 7–12 from all over Latvia, and the online format of the TPD course, delivering workshops via Zoom platform, was chosen as it was considered the most appropriate format without limiting the availability of the TPD course to teachers from only one region. As this was a year-long TPD course that explored many aspects of SRL, this article focuses on the usefulness of the delivery format and teachers' self-evaluation of the impact of the course, while other aspects of the course will be analysed in future publications. Therefore, the aim of this paper was to investigate teachers' self-evaluation of the overall impact of the online TPD course, and the objectives were to research teachers' self-evaluation on:

- (1) the impact of the online TPD course on their knowledge of SRL;
- (2) the impact of the online TPD course on their competence and self-efficacy in developing students' SRL skills;
- (3) how the TPD course influenced teachers' daily practices in developing students' SRL skills.

## 2. Literature Review

Self-regulated learning is a multi-faceted term based on a social cognitive perspective, and Zimmerman (2015) [16] defined SRL as learners' self-initiated actions to manage and sustain the metacognitive, behavioural and motivational processes of learning in three phases of a cyclical loop: the forethought phase, the performance phase and the self-reflection phase, where each phase consists of several sub-processes. Researchers have emphasised the significance of SRL in countless learning contexts, indicating that an individual with SRL skills can proactively self-regulate their metacognitive [5,17] behavioural [18] and motivational processes [19,20] in order to reach their goals.

Numerous research studies have outlined the necessity and advantages of possessing SRL skills, as they are beneficial at all levels of school settings, from primary [21] to elementary [22,23], post-secondary [24] and college level [25,26]. SRL skills proved to be crucially important for students in the remote learning process during the COVID-19 pandemic in order to deal with the unprecedented situation [27]. Additionally, SRL plays an important role not only in the formal learning process, but also in informal learning situations, future careers and has been considered as one of the most important skills for lifelong learning [28,29].

Previous research has emphasised the significance of professional development (PD) training that can empower teachers with the necessary knowledge of SRL and provide practice opportunities and feedback [30,31]. It has also been concluded that intensive PD training can facilitate such teachers' SRL skills as goal setting, planning, using appropriate strategies and self-monitoring [32], which are important subprocesses of the phases of SRL; therefore, it is essential to look for the most appropriate solutions for providing TPD training in order to enhance teachers' knowledge of SRL and self-efficacy in developing students' SRL skills.

Expedited by the COVID-19 pandemic, remote learning has become a widespread and casual alternative for face-to-face learning, especially amongst adults. Online learning offers several benefits, including flexibility, cost-effectiveness and access to a wide range of courses and resources [15,33,34], which allows adult learners to gain access to high-quality education that might not otherwise be available to them. Online learning also offers the opportunity to acquire new digital competences, which, due to digitalisation, have been in high demand in recent years, including in the field of education [35,36]. It has been researched that online learning is suitable for learning not only basic knowledge and skills, but also to develop more complicated competences, such as critical thinking, argumentation, metacognitive awareness, professional competences, as well as problem-solving skills [9,11,13]. Previous studies have also acknowledged that online learning can provide the same learning outcomes for learners as traditional face-to-face learning both in terms of competences acquired and satisfaction gained from the learning experience [12], especially in a blended learning format [10].

Overall, the use of online learning is likely to continue to expand [34,37,38]. Online education is a relatively new learning format and with the rapid development of technology and the increasing variety of activities available online, it is important not only to explore, but also to research the benefits of using different approaches and teaching different subjects, including competences and transversal skills, offered by this format.

To sum up, online learning offers a number of advantages for developing adult competences, including flexibility and access to a wide range of courses and resources. However, adult learners may face challenges such as the lack of face-to-face interaction and the need for self-discipline and self-motivation, as well as the need for sufficient pre-existing digital skills to participate in online learning activities [15,33,34]. Online learning can be an effective method for improving knowledge, skills and competences, but it is crucial to take into account the specific needs, preferences and abilities of the target audience when designing an online learning experience [9,11,13,35,36].

### 3. Methodology

A mixed-methods research design was used to collect quantitative and qualitative data with the help of semi-structured questionnaires using Google Forms during the sessions of the online TPD course. The combined use of quantitative and qualitative data provides an opportunity to receive the answers to the research questions at an adequate and substantial quality [39,40]. According to the (a) level of mixing, (b) time orientation and (c) emphasis of approach [41] this research was based on a fully mixed concurrent equal status design. The data analysis was carried out using Excel mathematical calculations and content analysis.

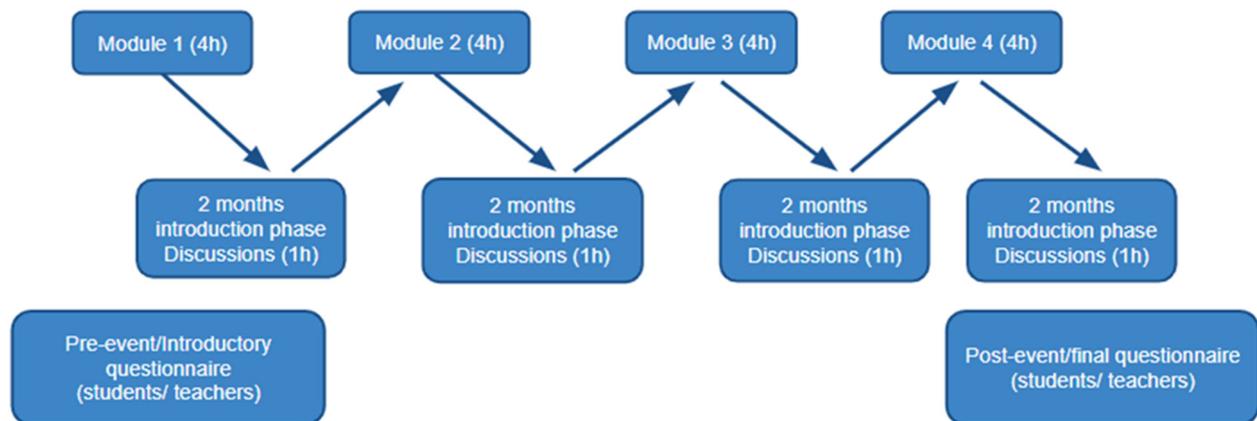
#### 3.1. Procedure

In order to foster teachers' knowledge and competence in developing students' SRL skills, a year-long online TPD course "Developing Self-Regulated Learning Skills in the Teaching/Learning Process at School" was developed and offered to teachers of grades 7–12. The course was conducted in the academic year 2021/2022, during the second wave of the COVID-19 pandemic, which led to intermittent full or partial school closures and severe restrictions on travelling and social gatherings. As a result, the online format was the only possible option for the TPD. In addition, it also enabled teachers from more remote regions of Latvia to participate in the course, which would otherwise not have been possible.

Taking into account the necessity for a course on SRL, the structure of the course was carefully considered to ensure that it would be as useful as a face-to-face course and would include networking opportunities and active participation of teachers. The course was structured in 4 modules (see Figure 1), and each module consisted of a 4 h input session elaborating on the theory of SRL and providing practical suggestions for its implementation, as well as a lot of group work facilitating opinion and experience exchange and discussions, and providing the opportunity to clarify any issues related to SRL.

The 4 modules of the online TPD course were based on the theory of SRL. Module 1 focused on the definition of SRL, the necessity of developing learners' SRL skills and elaborated on the subprocesses of the forethought phase of SRL. Module 2 focused on the subprocesses of the performance and self-reflection phase, cognition, metacognition, learning strategies, assessment and feedback. Module 3 overlooked social emotional learning, the role of a relationship-oriented learning environment and teaching methods in order to foster a friendly learning environment and positively influence learners' attitudes and behaviour. Finally, Module 4 raised teachers' awareness on how to foster and maintain students' motivation and develop a growth mindset.

At the end of each online module, teachers were asked to put forward their own aim for the next 2 months, then in between the modules there was a 2 month introduction phase when teachers were asked to implement their acquired theoretical knowledge in practice, and a 1 h online meeting via the Zoom platform for discussions in order to share good practice examples and, if necessary, receive any suggestions or help from the course provider or colleagues on any aspects of SRL.



**Figure 1.** The structure of the online TPD course on SRL.

As the participants of the online TPD course were teachers of grades 7–12, from different types of schools teaching different school subjects, it was their autonomy and responsibility to choose the most appropriate pedagogical techniques in order to elaborate on developing their students' SRL skills, and to put into practice the theories and methods they had become acquainted with in the corresponding module of the course. OECD (2022) [42] highlights that educational research can only be successful if external researchers and teachers participating in it are treated as equals and competent experts and teachers understand the significance of their activities, are active participants in the process and have the opportunity to apply the knowledge and skills gained in the TPD course in practice based on the needs of their classroom.

The course was advertised during the 29th Annual Conference of the Latvian Association of Teachers of English (LATE) in August 2021 and through several regional educational councils and was offered to any subject teachers, class teachers, or members of the school administration. Teachers applied to the course by completing a Google Form and acknowledging their consent with the course requirements, e.g., the necessity to attend all the input sessions of the 4 modules and discussions, as at the end of the course, the participants who had completed the course requirements received a TPD certificate.

### 3.2. Code of Ethics

When completing the application form, applicants also gave consent to participate in the research. During the first session, teachers received a code that was used throughout the research, thus allowing more precise data analysis. The General Data Protection Regulation and ethical considerations were respected and the study was approved by the Research Ethics Committee of Social Sciences and Humanities of the University of Latvia (11 January 2023; Nr. 71-46/12).

### 3.3. Sample

Participants of the TPD course on SRL were in-service teachers of grades 7–12 from 38 schools from all the regions of Latvia, representing different types of schools from elementary to secondary schools, state gymnasiums and vocational schools. Although the course was started by 126 participants and 104 participants completed the course, the pre-test of the online TPD course on SRL was completed by 119 and the post-test by 103 teachers.

### 3.4. Data Collection and Analysis

During the four modules of the online TPD course, teachers were asked to complete Google Forms and participate in discussions analysing their current knowledge and practice according to the theory acquired in the module, and put forward further aims for the two-month introduction phase, which was meant for applying the acquired knowledge in practice. Participants were asked to self-assess their knowledge of SRL and their skills in developing students' SRL skills according to the 10-point Likert Scale during each module, as well as to complete the pre- and post-test in order to provide an overall assessment of the course. Participants were also asked to answer open-ended questions providing reasons for their ratings and the opportunity to describe, self-analyse and self-reflect on their comprehension of SRL and efficacy in developing students' SRL skills. The 10-point Likert Scale was chosen as the teachers in Latvia are familiar with it because it is used on a regular basis in the system of education: 1 (very, very poor), 2 (very poor), 3 (poor), 4 (almost average), 5 (average), 6 (almost good), 7 (good), 8 (very good), 9 (excellent) and 10 (outstanding).

Although Huang (2022) [43] emphasised the importance of teacher self-assessment in promoting teacher self-regulation and self-efficacy, previous studies have also investigated self-assessment biases; for example, Dupeyrat et al. (2011) [44] studied the accuracy of self-assessment in mathematics, where they divided students into three groups (overraters, accurate raters and underraters) and compared their progress in mathematics. Scientists discovered that overraters were the only group who made progress, while no relation was found between the other groups. Ross and Bruce (2007) [45] claimed that self-assessment can be an effective technique for TPD regardless of the accuracy of their evaluation, as it directly influences further goal-setting and self-efficacy by fostering teachers' beliefs and confidence in trying out new teaching ideas. This article elaborates on the findings that refer to the overall impact of the TPD course on enhancing teachers' knowledge of SRL and efficacy in developing students' SRL skills based on teachers' self-evaluations conducted through the pre-test survey at the beginning of the first session and the post-test survey at the end of the final session, and as this is a part of a larger on-going research, detailed data of each module and student's pre-test and post-test survey results will be analysed in future articles.

## 4. Results

Initially, 145 teachers of different school subjects of grades 7–12 applied for the course on SRL and were divided into six groups (Group 1—G1, Group 2—G2, etc., see Table 1) according to the regional, school, or individual applications. However, 13% ( $n = 19$ ) did not start the course. In total, 126 teachers started the online TPD course on SRL and 104 ( $n = 96$  female,  $n = 8$  male), or 82.53%, completed the course. A total of 82 teachers

(78.84%) completed 100% of the assignments, 15 teachers (14.42%) failed to complete only one assignment and only 7 teachers (6.73%) missed more than one assignment.

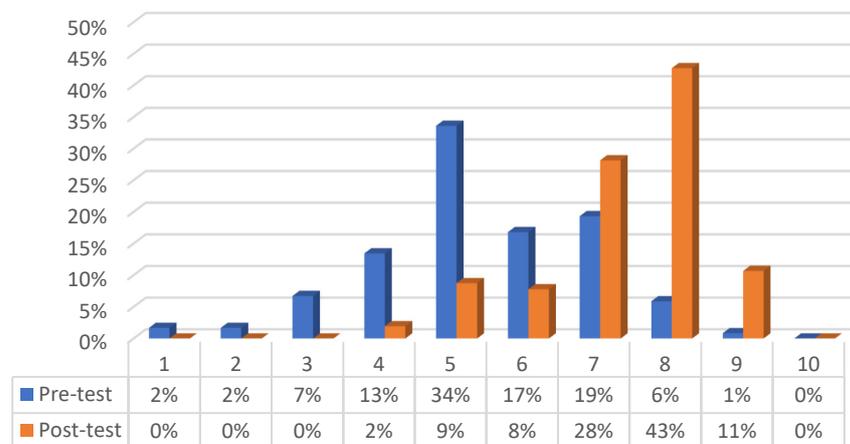
**Table 1.** Online TPD course attendees.

TPD Course on SRL	G1	G2	G3	G4	G5	G6	Total
Applied	28	14	16	36	11	40	145
Did not start the TPD Course	3	1	1	13	1	0	19
Started the TPD Course	25	13	15	23	10	40	126
Dropped out	1	1	1	8	3	8	22
Completed the TPD Course	24	12	14	15	7	32	104
Completed 100% of Tasks	22	11	9	12	6	22	82
Missed 1 Task Completion	2	0	3	2	1	7	15
Missed more than 1 Task	0	1	2	1	0	3	7

4.1. The Impact of the Online TPD Course on Teachers’ Knowledge of SRL

Figure 2 depicts that at the beginning of the course there were teachers who evaluated their knowledge of SRL from 1–3, which is considered unsatisfactory, the highest number of teachers (34%) evaluated their knowledge as “average”, only 1% as “excellent” and none as “outstanding”, which indicates that the majority of teachers do not possess strong awareness of the theory of SRL. However, at the end of the course, it was visible that teachers’ awareness changed remarkably, as there were no teachers with unsatisfactory (1–3 points) knowledge, the highest number of participants, 43%, rated it as “very good”, 28% as “good” and 11% marked it as “excellent”.

**Teachers’ Self-Evaluation of their Knowledge of SRL**

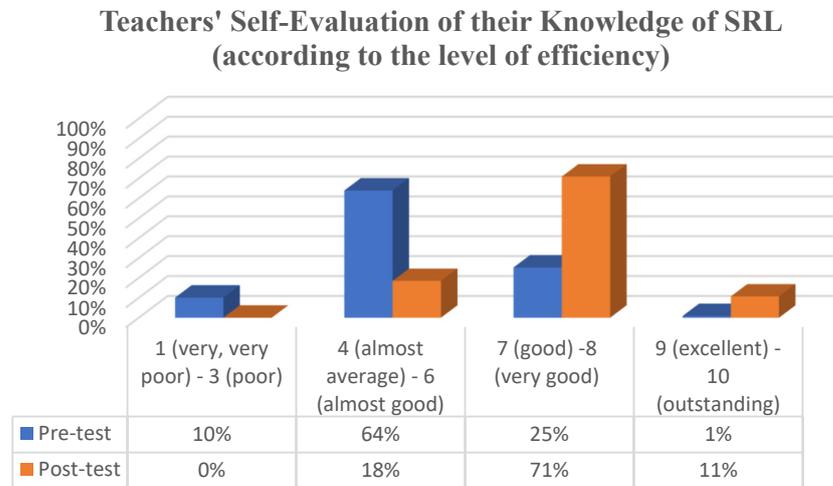


**Figure 2.** Teachers’ self-evaluation of their knowledge of SRL.

The results are clearly visible proportionally in Figure 3, which depicts the knowledge of SRL according to the levels: (a) unsatisfactory level, rating their knowledge from one “very, very poor” to three “poor”; (b) low level, from four “almost average” to six “almost good”; (c) high level, from seven “good” to eight “very good”; and (d) very high level, from nine “excellent” to ten “outstanding”. At the beginning of the course, 10% of teachers evaluated their knowledge of SRL from one to three, which is considered an unsatisfactory rating in Latvia. This suggests that if teachers evaluated their own knowledge of SRL as unsatisfactory, it was unlikely that they would feel confident and able to develop students’ SRL skills.

There were few respondents, 2% ( $n = 3$ ), whose post-test knowledge score deteriorated from six to five, and 11.65% ( $n = 12$ ) who assessed their knowledge at the same level as that at the beginning of the course, with an average score of 6,58. This indicates that there

may be teachers who need additional support, and this could be a suggestion for future research.

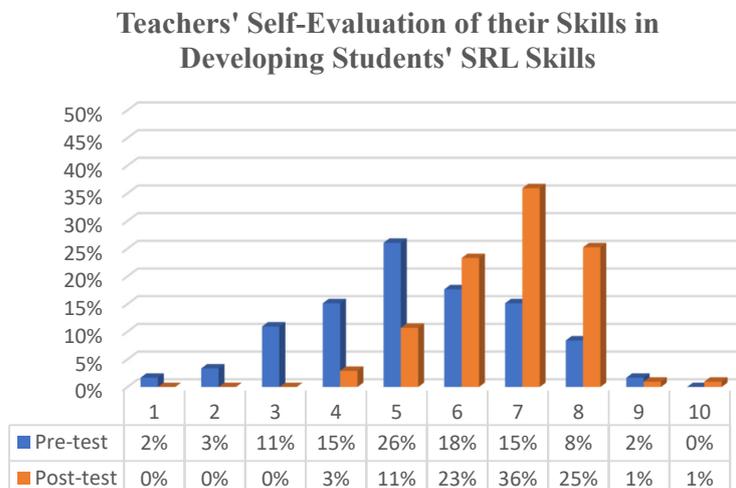


**Figure 3.** Teachers’ self-evaluation of their knowledge of SRL (according to the level of efficiency).

Nevertheless, at the end of the course, teachers’ knowledge immensely increased, as there were no teachers who evaluated their knowledge as unsatisfactory, and the number of teachers with a low level of knowledge decreased from 64% to 18%, which means by 46% (see, Figure 3). Additionally, the number of teachers who consider their knowledge to be at a high level increased by 46%, and the number of teachers with a very high level of knowledge of SRL also increased by 10%. This indicates that an appropriately organised and conducted TPD course can greatly improve teachers’ theoretical knowledge, which suggests that teachers will more likely be knowledgeable, confident and efficient in applying the theoretical knowledge in practice.

#### 4.2. The Impact of the Online TPD Course on Teachers’ Skills in Developing Students’ SRL Skills

The data depict that teachers’ self-efficacy in developing students’ SRL skills increased accordingly, as at the end of the course no teachers self-evaluated their skills as unsatisfactory (1–3), and if at the beginning of the course the highest number of teachers (26%) rated their skills as “average”, at the end of the course 36% evaluated them as “good”, 25% as “very good” and 23% as “almost good” (see Figure 4). This implies that it is not only teachers’ theoretical knowledge that has improved, but also their confidence and self-efficacy in applying it in practice.

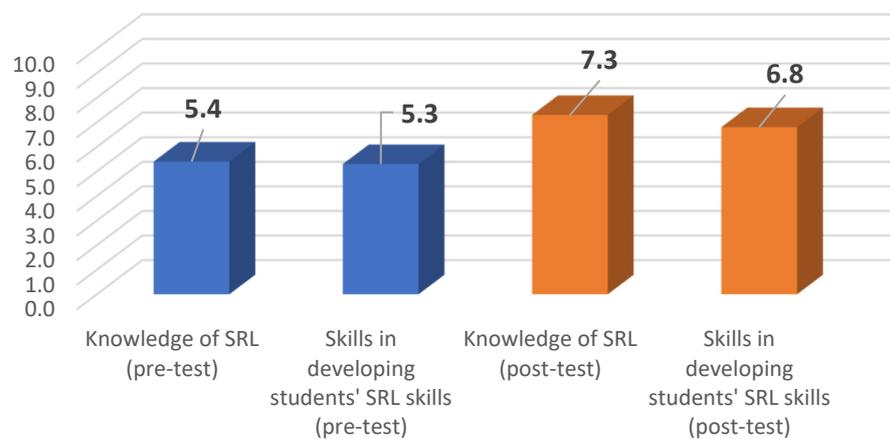


**Figure 4.** Teachers’ self-evaluation of their skills in developing students’ SRL skills.

However, there were also 10.67% ( $n = 11$ ) of respondents whose post-test score on the skills to develop students' SRL skills decreased from 7.36 to 6.09. One of the reasons could be that after gaining in-depth theoretical knowledge of SRL, they rated their skills slightly more rigorously. There were 9.7% ( $n = 10$ ) of teachers whose skills in developing students' SRL skills remained unchanged. This could indicate that they either need more support or more time for implementing the theory into practice, or more motivation to change their way of work. Further research is needed to identify all the reasons.

The analysis of the quantitative data summarising teachers' self-assessment of their knowledge and skills in developing students' SRL skills indicate that teachers significantly increased their knowledge of SRL by 35% and their skills in developing students' SRL skills increased accordingly by 28% (see Figure 5). In the process of learning, knowledge and understanding are acquired first and are then applied in practice.

### Development of Teachers' Self-Evaluation of the Knowledge of SRL and Competence in Developing Students' SRL Skills



**Figure 5.** Development of teachers' self-evaluation of the knowledge of SRL and competence in developing students' SRL skills.

To assess teachers' satisfaction with the course, in the post-test teachers were asked to provide an overall evaluation of the course and rate the course according to the 10-point Likert Scale. The average rating was 8.41, which indicates that the teachers were satisfied with the course and proves that the online format of TPD can also be useful for such a complex long-term course, covering both theory and its application in practice, provided that it is appropriately and thoughtfully organised.

#### 4.3. Detailed Analysis of the Impact of the Online TPD Course on SRL

Previous research has shown that TPD can significantly influence teachers' efficacy in developing students' SRL skills [30] so to explore the impact of the online TPD course participants were asked to provide their opinion on what changed in their work in developing students' SRL skills. Teachers' responses were grouped into four categories, as according to the course participants, the TPD course impacted (a) teachers' activities, (b) though some teachers mentioned that it had no or no visible impact on teachers' activities, (c) impacted the classroom environment and (d) teachers' professional mindfulness.

##### 4.3.1. Impact of the Online TPD Course on SRL on Teachers' Activities

The vast majority of teachers, 95 out of 103 teachers who completed the post-test (92.23%), admitted that the TPD course positively influenced their teaching practice. Firstly, participants mentioned that they take less responsibility and assign more responsibility to students; provide students with more autonomy; involve them in planning, goal setting and reflecting more; and pay more attention to enhancing students' motivation. Additionally, they provide more tasks that involve students' self-regulation, cognition, metacognition,

mindful thinking and reflection. Teachers mentioned that they encourage students to think, act, explore, immerse in deep learning and dare, allowing time for independent task solution, analysing and self-reflection, eliminating teacher's and increasing students' talking time and using the algorithm which leads from individual to pair work and, finally, group discussions, elaborating more on the process of learning. Teachers concluded that although before they were relying on their own organisational skills, they have understood that their students can work more independently and they do not need the teacher's constant presence and supervision; the teacher can act as a guide in the learning process, which helps students to think about their mistakes more and correct them. However, one teacher considered that it might be easier to enhance younger learners', rather than young adults', SRL skills. Finally, one teacher wrote: *'if before most often I gave students "a fish", now with each subject I think how to give them "a fishing rod"'*.

#### 4.3.2. No or No Visible Impact of the Online TPD Course on SRL on Teachers' Activities

However, there were a few teachers ( $n = 7$ , 6.79%) who admitted that there were no or no visible changes in their teaching practice, mentioning that *'students have not reached the level where self-regulated learning can be activated'*, *'motivated and determined students work and the others continue to vegetate'*, *'nothing much, because in grades 7–9, the teacher still plays the dominant role'*, *'I work as I worked before'* or *'there are more problems with discipline as one works independently and the other does nothing because he realises that it is possible to do nothing because it is not controlled and that motivation is different for everyone'*. Previous research has suggested that in order to develop definite skills in students, teachers need to possess them themselves and have the initiative to learn new things in order to be able to change their previous practice [46]. The answers provided show that teachers have not developed sufficient understanding of SRL yet, as although students have different levels of motivation, teachers are the key actors and agents of change, and in order to have a different result, teachers need to change their teaching methods and approaches first to expect a different result.

#### 4.3.3. Impact of the Online TPD Course on SRL on the Classroom Environment

The third group of answers approved that the application of SRL strategies greatly and positively impacted the classroom environment, as the teachers started to pay more attention to students' needs, the social emotional climate in the classroom and that students' motivation has grown. As a result, the social emotional environment and relationships have improved, becoming more equal, discussion-oriented and cooperative, and students have become more open to sharing their opinions on an equal level and are not afraid to express themselves. A teacher mentions that several students have said that before they did not like this subject that much, but now they like it; their learning motivation increased and the working process became more interesting.

#### 4.3.4. Impact of the Online TPD Course on SRL on Teachers' Professional Mindfulness

However, the highest number of responses were related to the impact on teacher professional mindfulness, as the TPD course helped teachers to understand the theory better, which helped them notice what should be improved in their teaching practice. Teachers stated that they analyse their work more, as the vision of the lesson has changed from doing things intuitively to working more mindfully and paying more attention to the methods used in developing students' SRL skills, as knowing theory helps to try out several approaches in order to find the most suitable ones for each class. Respondents also acknowledged that the course gave them confidence and purposefulness in their work, thinking more about the long-term value of the tasks and, if before they thought it was their opinion that it was useful, then now they have become more convinced that it is necessary and important to develop SRL skills, at the same time realising that patience is needed as the results might not be visible instantaneously. However, teachers admit that they still need to improve their strategies, as the ones that work successfully for them do not always

work for students, admitting that it could be done in a longer time period improving their work with each next class, and that now they recognise a number of their own activities as part of self-regulated learning and notice which activities are not promoting learners' self-organisation. To conclude, one of the teachers wrote that *'I get immersed in teaching and my students get immersed in learning'*.

## 5. Discussion

The introduction of significant changes in the education system requires appropriate teacher training and teacher empowerment with appropriate professional development opportunities, yet this is challenging, as Latvia, like several other countries around the world, is facing a widespread shortage of teachers. Therefore, active teachers experience a very high workload, which limits the time that could be spent for PD. Nevertheless, there was a relatively high interest in the course, as 145 teachers applied. Although 13% ( $n = 19$ ) did not start the course, it is quite a common situation as often at the first weeks of the school year teachers get to know about involvement in projects or new responsibilities that were not planned before.

Previous research has emphasised that there are several challenges related to online learning, such as lack of face-to-face interaction with instructors and students, and greater need for self-motivation and self-discipline, as online education requires the learners to structure their own learning and find ways to stay motivated in order to stay on track with coursework, which can be challenging for those adults who lack self-regulation competences or require psychological attributes to thrive in this setting [15,33,37,47–50]. In the current research, 7.47% of participants ( $n = 22$ ) quit the course after Module 1, and eight of them provided an explanation that (a) they had left work at school ( $n = 1$ ), (b) they lacked appropriate IT skills ( $n = 1$ ), (c) this was their last year before retirement ( $n = 2$ ) and (d) they had an excessive workload at school ( $n = 4$ ), suggesting that teachers find it difficult to combine intensive TPD with their workload and work requirements at school.

Online learning requires digital skills, and depending on the complexity of the learning activities planned, these can range from basic skills to quite advanced skills that not all learners have. Thus, researchers have pointed to the need to improve the digital skills of both educators and learners to fully use the potential of the online learning environment [51,52]. If the course structure can be purposefully designed, as in this study, with deliberately devoting sufficient time for participants to interact in groups and have the opportunity to address and discuss any SRL issues and share experiences, then it is more difficult to cope with the participants' lack of IT skills, which is why one participant left the course after the first online session and another completed only part of the online assignments. However, these are only 2 of the 126 participants whose IT skills were insufficient, and studies have proved that teachers' IT skills have advanced significantly since the outburst of the COVID-19 pandemic [53].

At the end of the course, teachers were asked to give an overall evaluation of the course using a 10-point Likert Scale and the average mark was 8.41, indicating high satisfaction with the course. Additionally, 92.23% of those who completed the course claimed that the online TPD course on SRL had a positive impact and efficiently improved their knowledge and skills in developing students' SRL skills. Overall, the analysis of quantitative data on teachers' self-assessment of their knowledge and skills in developing students' SRL skills shows that teachers' knowledge of SRL increased by 35% and skills to develop students' SRL skills increased by 28%, which is consistent with previous studies that have recognised the effectiveness of TPD on SRL [54,55].

Previous research emphasises that though TPD course participants on average highly benefited from the course, there were certain teachers who needed additional help in order to be able to change their practice due to the fact that if their knowledge, skills and understanding of SRL have not reached a sufficient level, they also struggle with implementation in practice [30]. Studies also suggest that there is still a necessity to continue providing TPD courses on SRL elaborating on the application of those strategies in

practice, e.g., [56], as teacher empowerment plays an important role in ensuring professional development and sustainability of practice [57].

## 6. Conclusions

An online TPD course is an excellent solution to enable teachers to participate in professional development. In the current situation, teachers experience a heavy workload and not many employers allow teachers to attend TPD courses during their working hours due to a shortage of teachers. The online TPD course is a great opportunity for teachers, as they can save the time needed to travel to the training venue and attend the course immediately after the lessons. In a lot of cases, teachers would also save their personal finances, which would have been spent on commuting, as only a few schools would cover the travel costs to travel to the venue of a face-to-face TPD course.

The research data on the impact of the online TPD course prove that an online TPD course can not only ensure the acquisition of theoretical knowledge, but also help participants develop their competences and, therefore, significantly support the sustainability of TPD and meaningful use of technologies in studies and work. However, the structure and the organisation of the course should be purposefully planned, as it should involve active teachers' participation in the course, theoretical knowledge combined with practical suggestions, examples and time for their implementation in practice, as well as an opportunity for collaboration, discussions and experience exchange.

Additionally, an online TPD course provides an opportunity for experience exchange at the national or even international level. If the teachers are interested in the topic and willing to undergo the training, they do not need to limit their professional development opportunities to the courses offered in their region, but have a significantly broader choice of TPD opportunities based on their personal needs. Furthermore, it provides more opportunities for collaboration, networking and enables more widespread experience exchange.

The results of the research show that practical skills and competence develop more slowly, as the theoretical understanding is acquired first and only then can it be implemented in practice. Furthermore, in order to make changes in daily practice, teachers' professional mindfulness is vitally important, as it involves teachers' own self-regulation and use of metacognitive activities, self-observation, self-judgement and self-reflection and adjusting further teaching methods and approaches. However, change can only happen if the teacher is professionally interested and committed to developing their knowledge and skills, and most importantly, if the teacher applies the acquired theory in practice by consciously self-reflecting and adapting his/her work, as it is difficult to expect different results without changing one's teaching practice.

The results of the research show that a large number of teachers do not possess sufficient knowledge and skills of developing students' SRL skills; therefore, appropriate support with the help of TPD courses that include theory and practice would be of great importance. The data prove that an online TPD course can help teachers not only significantly improve their theoretical knowledge of SRL, but also enhance their competence and self-efficacy in its implementation in practice. Consequently, it would be advisable to support teachers and provide appropriate long-term TPD courses that involve theory and its application in practice.

As this study involved teachers of grades 7–12, it would be advisable to offer a similar online TPD course for teachers of grades 1–6 in order to include teachers working with learners of all age groups. Further longitudinal studies would be beneficial, involving not only teachers' self-evaluation of their practice, but also lesson observations, looking for practical evidence of SRL in their lessons, analysing teachers' practice, providing feedback on their activities and suggesting further improvements. As a result, some of the teachers might become teacher mentors on developing students' SRL skills in their schools and ensure the sustainability of the impact of the online TPD course.

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