

Chapter 11

Student Feedback as a Source for Reflection in Practical Phases of Teacher Education



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Abstract The chapter focuses on the use of student feedback on teaching during practical phases in teacher education. After a brief introduction into the general relevance and validity of students' perceptions on teaching, and on the use of student feedback for teaching development, core findings from two comparable quasi-experimental studies from Germany and Switzerland are presented in detail. The studies focus on the change of attitudes towards student feedback and towards reflection on teaching. The chapter concludes with a discussion of challenges and opportunities for the use of student feedback as an instrument for reflection on teaching and professional development for pre-service teachers.

Keywords Teacher education · Reflection · Practical phases · Validity of student feedback · Quasi-experimental studies

1 The Relevance and Validity of Students' Perceptions

Teaching in class is a complex situation as teachers have to master many different tasks at the same time (Bromme, 2014; Stürmer et al., 2017). In this context, receiving feedback on their behaviour can be particularly helpful for teachers, as it expands their perspectives in a meaningful way and might give insights into the teaching process (Helmke, 2015). For teachers and even more for pre-service teachers, it is

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difficult to process relevant information during teaching in class. In order to counteract restricted and possibly self-serving perspectives, student feedback may offer a specific perspective which may hold further information on teaching and learning processes relevant in the classroom (Clausen, 2002; Clausen et al., 2020; Hascher et al., 2004).

The relevance of student perceptions on teaching is apparent by the very fact that students and their learning are targets of teaching, and as such, students can refer to their experiences with different subjects and teachers. Hence, their observation of the teaching and learning process may contain highly relevant information for teachers. Concerning empirical results on student perceptions of teaching quality, studies in primary and secondary education reveal factorial validity of student ratings. They conclude that students are capable of differentiating between various aspects of teaching quality, such as classroom management, motivational quality and teaching clarity (Fauth et al., 2014; Lenske, 2016; Wagner et al., 2013). Furthermore, several studies point at the predictive validity of student ratings as student perceptions of teaching are linked to learning outcomes: Studies in mathematics reveal a correlation between classroom management, goal clarity and support for autonomy for students' mathematical learning and their self-concept or interest in mathematics (Clausen, 2002; Kunter et al., 2007; Wagner et al., 2016). A large-scale study on English learning in secondary schools shows a correlation between classroom climate, motivational quality and clarity as perceived by students with their development of listening comprehension in the course of one school year (Helmke et al., 2008). Moreover, intercultural learning outcomes in EFL (English as a Foreign Language) secondary classes could be predicted with students' perception of specific aspects of teaching quality, such as a positive error culture and classroom management (Göbel & Hesse, 2008). In some studies, the predictive validity of student ratings is even higher for the prediction of learning outcomes than expert or teacher ratings (Fauth et al., 2014; Göllner et al., 2016; Wagner, 2008).

While there is empirical evidence for predictive and factorial validity of student ratings on teaching, current studies also point at limitations when it comes to gathering information on teaching quality by student ratings. In a German interview study, 14 secondary school students were confronted with their ratings on teaching quality and asked to explain the reasons for their feedback on each of the rated items (Lenske & Praetorius, 2020). Interviews with these students revealed that they did not fully understand all items of the implemented questionnaire, although it was an instrument which had been validated in former studies. Another study by Röhl and Rollett (2020) examined data from a student survey administering student feedback questionnaires on teaching quality ($N = 860$). Their analyses on factorial validity point at halo effects of teachers' communion (community orientation) for different teaching quality ratings.

Although student feedback might be fraught with uncertainty due to problems of validity and reliability, it represents a special perspective on the teaching process and provides teachers with important orientation information on their teaching (Clausen & Göbel, 2020). Studies on the use of student feedback on teaching of in-service

teachers point at a positive impact on teaching development in terms of the teacher–student relationship and a more sophisticated view on the needs of students (Ditton & Arnoldt, 2004; Gärtner, 2013; Rösch, 2017). Analyses of in-service teachers using student feedback point at the relevance of teacher–student co-construction of the meaning of student feedback in class for a better understanding of students’ ideas (Gärtner & Vogt, 2013). Furthermore, the positive effect of student feedback seems to depend on teachers’ attitudes towards student feedback, attitudes towards cooperation, teachers’ stress experience and the quality of student feedback (Gärtner, 2013; Ditton & Arnold, 2004).

In practical phases of teacher training, student feedback has the potential to bring about changes in the attitudes of future generations of teachers, so that they can use feedback—being aware of the challenges and problems of this information—for continuous reflection and development of their teaching (Clausen & Göbel, 2020). Pre-service teachers can consider student feedback on teaching in addition to feedback from in-service teachers or lecturers during practical phases. However, the use of student feedback for learning and reflection processes during practical phases in teacher education is still rare (Hascher et al., 2004) and the students’ perspective on pre-service teachers’ teaching and professional development has been scarcely investigated empirically (Lawson et al., 2015). Therefore, the following sections seek to shed light on present research and findings in the field of student feedback in teacher education.

In the following, we present empirical results on the implementation of student feedback in teacher education. After giving an overview on international results on the topic, we present two comparable quasi-experimental studies from Germany and Switzerland which focus on the change of attitudes towards student feedback and towards reflection on teaching. The two studies are interconnected as they are similar in research design and make use of the same instruments to evaluate attitude changes in the course of student feedback use in practical phases of teacher education. At the end of the contribution, the chapter concludes with a discussion of challenges and opportunities for the use of student feedback as an instrument for reflection on teaching, and professional development of pre-service teachers.

2 Empirical Results on Student Feedback for Reflection on Teaching in Teacher Education

Although there are several hints at the relevance of student feedback for teaching improvement as well as claims for their integration into teacher education, the number of empirical studies focusing on student feedback use in teacher education is still limited (Lawson et al., 2015). The work on student feedback in teacher education started in 1942 when Porter published a paper on an exploratory study on this topic. Analyses from a questionnaire focusing on characteristics of pre-service teachers

revealed a close agreement between the ratings of students and supervisors. Pre-service teachers evaluated the feedback of their students as beneficial and their respective students reported that they appreciated being part of the evaluation process (Porter, 1942).

2.1 Systematic Settings and Measurement Problems

In 1969, Lauroesch and colleagues investigated the use of student feedback by pre-service teachers from the University of Chicago to assess the impact of student feedback on the teaching of pre-service teachers. The quality of pre-service teachers' instructional practice during the internship was measured two times using student ratings. The findings of this quasi-experimental study indicate that the provided summary of the student ratings may not be sufficient to encourage future teaching activities of the pre-service teachers. At the second time of measurement the teaching quality of those pre-service teachers who received a summary of student ratings of their lesson was rated even less positively than before (Lauroesch et al., 1969). The authors conclude that the feedback was potentially misunderstood or that pre-service teachers were overburdened to use the feedback constructively and change processes in teaching. These findings might hint at the need for implementing systematic settings for the reception and reflection of student feedback to provide pre-service teachers with concrete starting points for development in teaching. Possibly, it might not be a lack of development in teaching, but a problem of measurement. For students it might be difficult to assess changes in teaching quality. A study by Holtz and Gnambs (2017) points at the fact that student feedback could be problematic for the assessment of changes in instructional quality. They measured the teaching quality of 181 pre-service teachers in a 15-week internship at a secondary school in Thuringia (Germany) using three different rating sources (self-assessment, mentors' assessment and student ratings). The findings indicate differences in change scores between the three rating sources: Pre-service teachers themselves and their mentors perceived larger changes in instructional quality than students. Similar findings have been reported in a study by Biggs and Chopra (1979) where changes in teaching quality could not be detected by student ratings.

2.2 Constructive Feedback for Instructional Development

In the course of an exploratory study in France, Genoud (2006) implemented student feedback in the course of teacher training focusing on the classroom climate in class using the TIP—questionnaire (Trainee Interaction Profile; Wubbels & Levy, 1993). In a sample of approximately 50 pre-service teachers and their students from grade 5 and 6 a TIP questionnaire was implemented in order to show differences between

pre-service teachers' self-assessments, those of their students and their training supervisor. The intervention was evaluated positively by the pre-service teachers and their students. Pre-service teachers reported a positive perspective towards the use of student feedback on teaching for their professional development during initial teacher training.

A further exploratory study by Snead and Freiberg (2019) examined the use of Freiberg's Person-Centered Learning Assessment (PCLA; Freiberg, 1994–2017) for reflecting and developing instructional practice of 10 pre-service teachers in the United States. The pre-service teachers reported that changes in their teaching as a result of using PCLA occurred mostly in areas of planned instructional changes like engagement, levels and types of questioning, and teacher-to-student communication. Although the use of PCLA has the potential to lead to deeper levels of self-reflection and changes in teaching, further qualitative analyses of pre-service teachers' reflections on the implementation of student feedback (as a component of PCLA) showed that the quality and quantity of student feedback was heterogeneous. The authors therefore propose that in order to derive more relevant information, it would be helpful to teach students how to provide constructive feedback for instructional development.

A qualitative case study focusing on pre-service teachers' experiences with the use of feedback from different sources (teachers, faculty supervisor, peers and students in class) during their school internship was carried out by Tulgar (2019). The study examines written feedback reports from 28 pre-service teachers in Turkey. After using different sources of feedback, the participants reported development in different areas of their own professional competence, such as self-reflection, self-regulation by identifying strengths and weaknesses, evaluation of teaching performance, reflection on stress-related experiences and their planning of future lessons.

2.3 *Summary*

The presented studies in this chapter reveal a positive attitude of pre-service teachers towards student feedback, also the respective students seem to appreciate the use of student feedback. Although different instruments have been used, they all appear to have a positive impact on pre-service teachers' professional development concerning different areas of reflection on their professional actions. While student feedback is positively evaluated by pre-service teachers in general, the quality and quantity of student comments on the lesson are perceived as heterogeneous. Therefore, it is not surprising that the measurement of change in teaching quality by using student ratings is not consistent and seems problematic. In the presented studies a systematic variation in reflection settings to support reflection has not been addressed. In the following sections, two studies are presented in more detail, as they are investigating the relevance of different reflection settings when using student feedback in teacher education.

3 Studies in Germany and Switzerland

3.1 Concept and Main Findings of the ScRiPS-Study (Germany)

3.1.1 Introduction

Positive attitudes and the willingness to engage in self-reflection are considered central competences in the teaching profession; thus, an open attitude towards reflection of one's own teaching and pedagogical actions should be promoted in teacher training (Svojanovsky, 2017). The ScRiPS-study (*Schülerrückmeldungen zum Unterricht und ihr Beitrag zur Unterrichtsreflexion im Praxissemester* / The use of student feedback for reflection upon teaching during practical term) is an intervention study carried out at the University of Duisburg-Essen, North-Rhine Westphalia, Germany (Göbel & Neuber, 2017, 2019; Neuber & Göbel, 2019) and aims at supporting and analyzing the reflection on teaching with the use of student feedback in teacher training. In North-Rhine Westphalia (Germany), the first phase of teacher education is provided by universities in a Bachelor–Master structure. This first phase is mostly theoretical, addressing content knowledge, pedagogical knowledge and pedagogical content knowledge. Furthermore, two practical terms are integrated. The first practical term is an internship in schools at the beginning of the Bachelor program (duration: 5 weeks). The second internship is placed at the beginning of the Master program and lasts around 5 months. The aim of this internship in schools is to gain first experience in teaching, to reflect on practical experience and to link theoretical knowledge with practical experience. The second phase of teacher education is a mostly practical one which is realized in schools and guided by the centres for practical teacher training. The ScRiPS-study seeks to support and analyze the reflection of pre-service teachers during the 5-month practical phase of the Master program and the reflection of in-service teachers in schools when using student feedback. Changes in attitudes of pre-service and in-service teachers towards reflection and student feedback have been investigated.

3.1.2 Method

The study included 164 pre-service teachers (in the 5-month practical phase of the Master program, see above) from the University of Duisburg-Essen and 106 in-service teachers (Göbel & Neuber, 2020). The participants of the intervention groups were asked to implement student feedback on their teaching. As student feedback, a written feedback form which consisted of three open-ended questions about the quality of the lesson (What did you like about the last lesson? What did you not like about the last lesson? What could be improved for the next lesson?) was implemented. Furthermore, standardized questionnaires with a focus on either classroom management (e.g. Gruehn, 2000), classroom climate (e.g. Rakoczy et al., 2005) or cognitive

activation (e.g. Baumert et al., 2009) were provided to gather feedback from students. Both groups of teachers (pre-service and in-service) used the open-ended feedback questionnaire and could decide about the further standardized feedback questionnaire they wanted to use. The received student feedback was evaluated by the pre-service and in-service teachers individually and then discussed with the students in class.

The in-service teachers implemented student feedback on their lessons but were not further supported in the reception and reflection of the feedback. For pre-service teachers, the use of student feedback was investigated in a quasi-experimental control-group design with three intervention groups (IG) (Göbel & Neuber, 2017; Neuber & Göbel, 2019). Pre-service teachers of intervention group 1 ($n_{IG1} = 22$) obtained student feedback on their lessons but did not receive further support for reflection. Pre-service teachers of intervention group 2 ($n_{IG2} = 32$) and 3 ($n_{IG3} = 33$) received individual support for reflection in the form of a reflective journal entry which was developed in the ScRiPS-project. The reflective journal entry contains a catalogue of questions (prompts), which should enable a deeper reflection of the feedback results (Hübner et al., 2007) and refer to the lesson as well as to the results of the student feedback. The pre-service teachers of intervention group 3 also reflected on the student feedback in a collegial setting (peer reflection in tandems) at the University. To structure the collegial reflection setting, pre-service teachers could use the materials provided in the form of reflective questions and their reflective journal entries. The pre-service teachers of the control group did not use student feedback, reflective journal or collegial setting during their practical term. A total of 87 pre-service teachers were assigned to the intervention groups (use of student feedback and written or collegial setting during practical phase); 77 pre-service teachers were not assigned to any feedback-based reflection setting during practical phase (control group).

The use of student feedback was empirically investigated with regard to changes in attitudes of pre-service and in-service teachers towards reflection upon teaching. The attitudes of pre-service and in-service teachers towards reflection and student feedback were measured before and after the student feedback intervention via standardized questionnaires. The scales regarding the attitudes towards different forms of reflection, e.g. reflective journals or collegial settings, and towards the use of student feedback as a reflection stimulus, were formed by averaging the respective questionnaire items and proven to have acceptable reliability (Neuber & Göbel, 2018). All items are answered by using 4-point Likert scales which range from 1 (“I fully disagree”) to 4 (“I fully agree”). Differences between groups and changes in attitudes were analyzed with unpaired and paired t-tests and by conducting repeated measures ANOVA. In order to examine correlations between the pre-service teachers’ attitudes and their motivational preconditions, the motivation to study (Kauper et al., 2012) as well as the stress experience (Schwarzer & Jerusalem, 1999) were measured via standardized questionnaires. Furthermore, within the framework of a partial study of the ScRiPS-project, the personal experiences of the pre-service teachers with the use and reflection of student feedback on their own teaching were examined. The interviews were evaluated using qualitative content analysis.

3.1.3 Results

Looking at the results, pre-service teachers report fundamentally positive attitudes (Mean $M > 2.5$ in the 4-point Likert scale) towards reflection of teaching and student feedback (Göbel & Neuber, 2017). In addition, a high acceptance of the use of student feedback as well as the use of written and collegial forms of reflection during practical term can be shown ($M > 2.5$; Neuber & Göbel, 2020). The comparison of the different intervention groups showed that the pre-service teachers who were systematically supported in the reception and reflection of the student feedback (intervention groups 2 and 3) assessed the use of student feedback slightly more positively ($M_{IG2} = 3.29$, $SD_{IG2} = 0.41$; $M_{IG3} = 3.30$, $SD_{IG3} = 0.42$) than pre-service teachers without written or collegial reflection support ($M_{IG1} = 3.18$; $SD_{IG1} = 0.43$). However, there are no significant differences between the intervention groups in the assessment of the use of student feedback ($p = .521$). Furthermore, pre-service teachers who reflected on their own teaching both individually and in a collegial manner (intervention group 3) continue to assess the collegial form of reflection ($M = 2.86$; $SD = 0.72$) as being slightly more helpful for reflecting the student feedback than the written reflection sheet, which was used individually ($M = 2.78$; $SD = 0.62$).

In a comparative sub-study, the attitudes of 53 pre-service and 51 in-service secondary school teachers were compared (Göbel & Neuber, 2020). In the pre-test survey both pre-service ($M = 3.24$; $SD = 0.36$) and in-service teachers ($M = 3.20$; $SD = 0.50$) consider reflection on their own teaching to be important; the participants also have positive attitudes towards student feedback ($M > 2.5$). The two groups differ neither in the perceived relevance of reflection ($p = 0.605$) nor in the attitude towards student feedback ($p = 0.196$). The analysis indicates that pre-service teachers ($M = 3.04$; $SD = 0.55$) perceive structured reflection formats to be more helpful than in-service teachers ($M = 2.70$; $SD = 0.55$; $p = .002$). The same is true for collegial reflection formats; again, the analysis indicates a significant difference between the attitudes of pre-service teachers ($M = 3.42$; $SD = 0.42$) and the attitudes of in-service teachers ($M = 2.88$, $SD = 0.57$; $p < .001$). Furthermore, pre-service teachers ($M = 1.93$; $SD = 0.37$) are more critical of individual reflection settings than in-service teachers ($M = 2.29$; $SD = 0.54$; $p < .001$), although both groups tend to reject individual forms of reflection ($M < 2.5$). After using student feedback on teaching, both pre-service teachers ($M_{T1} = 3.32$; $SD_{T1} = 0.36$; $M_{T2} = 3.39$; $SD_{T2} = 0.42$) and in-service teachers ($M_{T1} = 3.20$; $SD_{T1} = 0.56$; $M_{T2} = 3.27$; $SD_{T2} = 0.56$) showed a slight increase in positive attitudes towards student feedback (within-subjects effect of time $F(1, 101) = 4.221$, $p = .043$, $\eta^2 = 0.040$). After finishing the internship ($M_{T2} = 3.34$, $SD_{T2} = 0.35$) the perceived relevance of reflection slightly increases for pre-service teachers compared to the time before the internship ($M_{T1} = 3.24$, $SD_{T1} = 0.36$, $p = .036$). Moreover, pre-service teachers are more critical regarding the use of written structured forms of reflection after finishing the internship ($M_{T1} = 3.04$, $SD_{T1} = 0.55$; $M_{T2} = 2.88$, $SD_{T2} = 0.61$, $p = .048$). For in-service teachers, however, no statistically significant changes in attitudes towards reflection are apparent.

Further analyses indicate that motivational preconditions of pre-service teachers are important for the use and reflection of student feedback (Göbel & Neuber, 2017).

Accordingly, the analyses reveal a positive correlation between pre-service teachers' attitudes towards student feedback and their motivation to study (Pearson's $r = .30$, $p = .008$) as well as with their positive stress experience (experience of challenge in teaching profession; $r = .40$, $p < .001$). The findings of the qualitative sub-study on pre-service teachers' experiences indicate that, in addition to motivational preconditions, organizational aspects of the use of feedback, e.g. arrangements with participating teachers, as well as time resources and characteristics of the students, are also important for the yield of feedback use and reflection (Neuber & Göbel, 2020). Collegial opportunities for reflection are perceived as being more helpful by pre-service teachers than individual forms of feedback reflection. In particular, the joint reflection of feedback with the students is considered as helpful by the pre-service teachers. However, pre-service teachers report differences between students of different grades in terms of their experiences with feedback and the information content of student feedback, which plays an important role in the yield of classroom reflection and thus in actual changes in teaching.

3.1.4 Summary

The findings of the ScRiPS-study show that both pre-service and in-service teachers confirm their positive attitudes towards the use of student feedback and reflection in general. The analyses for the pre-service teachers show that motivational preconditions are important for positive attitudes towards reflection. Additionally, time resources and characteristics of the student feedback seem relevant for the effective implementation of student feedback during practical phases. Collegial opportunities for reflection are perceived to be more helpful by pre-service teachers than individual forms for the reflection of feedback; in comparison in-service teachers also estimate collegial reflection positively, but not to the same extent as pre-service teachers. In future analyses differences in attitudinal changes between pre-service teachers who systematically used student feedback during practical phases and those who did not use student feedback (control group), will be examined.

3.2 *Concept and Main Findings of the Study SelFreflex (Switzerland)*

3.2.1 Introduction

In Switzerland, the training of teachers is mostly provided by universities of teacher education and is organized in a Bachelor-Master structure. The training includes different disciplines and addresses content knowledge, pedagogical knowledge and pedagogical content knowledge. Special attention is paid to a practice-oriented curriculum that combines theory and practice by allowing students to

gain practical experience from the very first semesters of study. In the practical phases, students have the opportunity to observe the teaching of in-service teachers and peers as well as to teach students in a classroom. These experiences are reflected at the university in order to link the practical experience with theoretical knowledge. In the project “Student feedback to promote teaching reflection” (Schülerrückmeldungen zur Förderung der Unterrichtsreflexion, *SelfReflex*) pre-service teachers at the Zurich University of Teacher Education in Switzerland gathered student feedback for reflection during their practical training. The intervention study was conducted with 235 students of lower secondary education (grades 7–9). The project was integrated into a 7-week practical phase which usually takes place in the 6th semester of 9 semesters. Before participating in the project, students had already completed 4 practical training phases. In the first year of study they completed two day placements and a block internship of 3 weeks duration, in the second year another block internship of 2 weeks duration. The data were collected with two samples of pre-service teachers in 2017 ($n_{2017} = 115$) and 2018 ($n_{2018} = 120$). As a reference group, the data of 20 in-service teachers were collected.

3.2.2 Method

At the beginning of the semester, pre-service teachers were asked about their attitudes towards student feedback and towards reflection by means of an online questionnaire (pre-test). The pre-test survey and other instruments used in the study were taken from the project ScRiPS (see above) and adapted for the project *SelfReflex*. After the pre-test the pre-service teachers received an input on the opportunities and goals of working with student feedback and were given the assignment to gather feedback from their students. During the practical term, pre-service teachers received feedback about their lessons from their students at two points in time. They could choose from three pre-defined questionnaires on the following aspects of teaching quality: classroom climate, classroom management and cognitive activation (see Sect. 3.1.2). In addition to the feedback received from their classes the pre-service teachers assessed their own lesson through self-evaluation. The comparison of the perspectives and the resulting consequences were expected to be discussed with students.

A group of 100 pre-service teachers reflected the findings from student feedback with an individual reflective journal entry (see Sect. 3.1.2). The reflective journal guides pre-service teachers towards a systematic reflection of a lesson while taking into account the student feedback. The reflective journal entries of all students were collected and analysed by means of qualitative content analysis (Mayring, 2015). A group of 130 pre-service teachers initially processed the student feedback together with a peer, who had observed the respective lesson, by means of collegial reflection. This group of pre-service teachers completed the individual reflective journal entry after they had received and discussed additional feedback from their peers. The feedback discussion was structured around the results of the student feedback, the pre-service teacher’s self-evaluation and the peer evaluation.

After completing the practical phase, a post-test survey was conducted using an online questionnaire. Similar to the pre-test, the post-test survey focused on the attitudes towards student feedback and reflection. In addition, items on experiences with student feedback were added to the questionnaire. Differences between groups and over time were analysed by using unpaired and paired *t*-tests. The lower secondary students were likewise asked about their experiences in a final survey. A short questionnaire was used to obtain their ratings on the usefulness of student feedback and on noticeable changes in the classroom. With selected lower secondary students, as well as pre-service teachers, semi-structured interviews were additionally conducted at the end of the practical phase.

3.2.3 Results

Based on the pre- and post-test survey of pre-service teachers ($N = 235$) it is apparent that pre-service teachers consider the engagement with student feedback to be very valuable, both before and after the practical phase. However, the agreement in the post-test survey is significantly lower ($M_{T1} = 3.29$, $SD_{T1} = 0.46$; $M_{T2} = 3.18$, $SD_{T2} = 0.46$) than in the pre-test ($p = .005$). The relevance of reflection is also rated as high whereby significant differences between the pre-test and post-test survey become visible ($p = .039$). After finishing the internship ($M_{T2} = 3.05$, $SD_{T2} = 0.45$) the perceived relevance of reflection increases for pre-service teachers compared to the time before the internship ($M_{T1} = 2.99$, $SD_{T1} = 0.49$).

The pre-service teachers consider collegial reflection to be very helpful. In the pre-test survey pre-service teachers rate the usefulness of peer reflection as high with a mean of 3.16 ($SD_{T1} = 0.49$). Interestingly, there is a difference between male and female participants in this respect. Female pre-service teachers hold more positive attitudes towards collegial reflection ($n = 133$, $M_{T1} = 3.23$, $SD_{T1} = 0.50$) than male pre-service teachers ($n = 102$, $M_{T1} = 3.08$, $SD_{T1} = 0.47$, $p = .028$). The pre-service teachers are generally open to sharing thoughts and information about their own teaching with others, rating the preference of individual reflection rather low ($M_{T1} = 2.01$, $SD_{T1} = 0.50$). However, the preference of individual reflection increases after the end of the internship ($M_{T2} = 2.09$, $SD_{T2} = 0.54$, $p = .029$).

The results of the qualitative data show that although pre-service teachers who worked with a peer highly value peer discussions, the perceived usefulness depends on various factors, such as the composition of the peer constellation. Pre-service teachers report in the interviews that collegial reflection with a peer is only beneficial if the peer shares a similar attitude towards teaching. Analyses of the peer discussions also show that critical aspects of teaching are rarely addressed (Raaflaub et al., 2019). It appears that peer discussions serve above all to positively confirm the student's own lesson reflection. In the discussion, the reflection partner serves primarily to mitigate potentially problematic aspects and to show solidarity with the pre-service teacher's problems.

In further analyses it became clear that the usefulness of student feedback also depends on the class, especially with regard to school level. In the interviews pre-service teachers report that the implementation of student feedback through questionnaires had differing outcomes depending on school level and grade. This estimation is supported by the findings of the final survey of the lower secondary students. The results show that students at a higher school level ($N = 1249$, $M = 3.19$, $SD = 0.84$) consider it significantly more important to give their opinions on lessons to their teachers than students at a lower school level ($N = 81$, $M = 2.99$, $SD = 0.92$; $p = .038$). Students at a lower school level also seem to have greater difficulty in completing questionnaires as a feedback instrument (Wyss et al., 2019). It should be noted that the different sample sizes may limit the interpretation of these results.

3.2.4 Summary

With respect to tangible results regarding the contribution of student feedback to the promotion of teaching reflection, the evaluation of the pre-service teachers' reflective journal entries shows that they predominantly evaluate their own lessons positively (Wyss et al., 2020). It is noticeable that they primarily mention aspects that can be easily observed from the outside and can therefore be positioned on the surface structure of the lesson. However, aspects that concern the deep structure of the lessons are rarely addressed. The pre-service teachers also report that the majority of the students perceive the lessons positively. When pre-service teachers were asked to compare the different perspectives, some mentioned that the perceptions were very similar whereas others noticed differences. For perceived commonality of ratings, they explain that they feel relieved that the majority of students adopted a positive attitude towards their lessons and that their self-perception is confirmed. Differences in perception are mainly attributed to different roles and interests and are thus perceived as inherent to the subject matter of teaching and to a lower extent as changeable features within lessons.

4 Discussion and Conclusions

The reported studies reveal a positive estimation of pre-service teachers towards the use of student feedback. The results support the assumption that student feedback in teacher training may be helpful to engage reflection on teaching and professional development of pre-service teachers (Tulgar, 2019). Furthermore, studies show that student feedback is evaluated positively by respective students (Porter, 1942) and may have a positive impact on teacher–student relationships (Genoud, 2006). However, pre-service teachers report that student feedback is perceived as heterogeneous (Neuber & Göbel, 2020; Snead & Freiberg, 2019; Wyss et al., 2019) and not yet treated as a valid source for the measurement of change in teaching quality

(Holtz & Gnambs, 2017; Lauroesch et al., 1969). Therefore, a need for development of students' feedback competence is articulated by different authors.

The studies on student feedback in teacher education discussed in the first two sections of this chapter mostly have an exploratory design and do not address the reflection process in an explicit way. In contrast, the ScRiPS-study and the *SelfReflex*-study provide more information on different reflection settings and on the yield of student feedback for teaching reflection of pre-service teachers. In both, the German and the Swiss study, pre-service teachers positive attitudes towards the use of student feedback and towards reflection on teaching in general (Göbel & Neuber, 2017). The use of student feedback itself as well as collegial and written reflection formats are also positively evaluated (Neuber & Göbel, 2020; Raaflaub et al., 2019). The implemented collegial reflection settings and reflective journal entries seem to offer support for the reflection process. For an effective implementation of student feedback on teaching, it seems necessary that all participants (pre-service teachers and students) agree on the reflection formats to be used. Positive attitudes, motivation and volition of pre-service teachers are important for an effective implementation of student feedback. The results further point to the relevance of professional experience (in-service vs. pre-service teachers in ScRiPS) as well as gender (in *SelfReflex*). In the German sample pre-service teachers show more positive attitudes towards collegial reflection formats than in-service teachers; in the Swiss sample collegial reflection formats are more strongly preferred by female than by male pre-service teachers (Göbel & Neuber, 2020; Wyss et al., 2020).

Summing up the different findings, the use of student feedback in teacher education requires further investigation including the development of feedback instruments for different classes and school levels and furthermore concepts for reflection and time resources. For the development of pre-service teachers' reflection on student feedback, discussions between teachers and students on feedback results seem particularly promising. In these discussions open questions concerning the student feedback results can be clarified, alternative courses of action for teaching can be developed and students may get a feeling of participation and appreciation. It is important to consider that in general, both pre-service teachers and their students, might have little experience in giving and receiving feedback on teaching. Furthermore, pre-service teachers should be systematically trained and supported in the reception and reflection of student feedback while students should be trained in using the survey instruments adequately to provide helpful feedback on teaching. In the light of possible restrictions of students when giving feedback, their training of feedback competence could be a focus for further research. For future implementation of student feedback in teacher education, it is important to generate more evidence to understand better which personal prerequisites and which institutional conditions are important for a constructive use of student feedback. Furthermore, reflection on student feedback is unlikely to have an impact on classroom changes without additional support as insights gained by student feedback might not directly be translatable into teaching development. Therefore, further research is needed on different reflection concepts and settings to identify those conducive to the reflection process for pre-service teachers and their respective students.

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