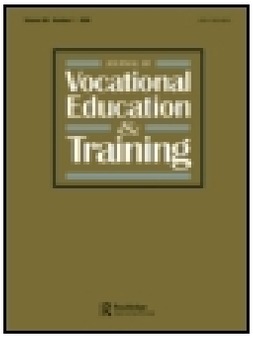

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Vocational teachers` professional development in assessment for learning

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ABSTRACT
Formative assessment, including vocational education and training (VET), has been included in the assessment regulations in Norway since 2006. This study examines how a continuing education course entitled *Assessment for learning in vocational education* (15 credits) might contribute to vocational teachers' professional development related to assessment for learning. Qualitative data was collected in two stages from vocational teachers participating on the course. The findings reveal that perceptions of assessment for learning and vocational formative assessment practice are developed through the lens of the general study programmes and are dominated by academic subjects in upper secondary schools. However, assessment for learning is embedded in vocational learning and teaching and needs to be voiced in the educational discourse in schools related to formative assessment. Vocational teachers' professional development in assessment for learning should be based on the characteristics and attributes of vocational learning.

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KEYWORDS
Vocational teachers; professional development; assessment for learning

Introduction

Background

This article is based on a study of Norwegian vocational teachers' professional development related to formative assessment. This element of professional development was achieved through participation in a continuing education course (15 credits) entitled *Assessment for learning in vocational education*. Assessment as a basis for learning builds on an understanding of assessment as a process involving feedback to the learner from the teacher and providing information to support and enhance the learning process (Black and Wiliam 1998; Hattie and Timperley 2007; Wiliam 2011). Ramaprasad (1983) claims that the purpose of assessment is to reduce the gap between the present state of knowledge and skills, and the desired level of competency. Feedback during the learning process is therefore key to learning (Black and Wiliam 1998; Hattie and

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Timperley 2007), as well as the learner's understanding of the feedback and ability to act upon the feedback (Black and Wiliam 2009; Gamlem and Smith 2013). The substantial research into formative assessment and assessment for learning has shown promising results regarding students' learning (Black and Wiliam 1998, 2009; Hattie and Timperley 2007; Hattie 2009). However, in recent discussions, several researchers have highlighted the fact that the concept of formative assessment is not a well-defined concept with definitions that reflect a specific practice (Bennett 2011; Tveit 2014; Stobart and Hopfenbeck 2014; Baird et al. 2017). Several studies also show that quality feedback from teachers is rarely given in the classroom (see, e.g., Engelsen and Smith 2010; Voerman et al. 2012; Rønsen 2013). Implementation of formative assessment in classrooms relies on teachers' interpretations of the concepts and their belief in the purpose of feedback (Opfer and Pedder 2011; Baird et al. 2014; Gamlem 2015). Initial beliefs can function as constraints to changing assessment practice, and it is therefore important to challenge teachers' understanding of and belief in feedback in order to change assessment practice in schools (Gamlem 2015; Jónsson, Smith, and Geirsdóttir 2018).

In the wake of research into formative assessment, educational authorities in many countries, including Norway, have put considerable effort into implementing formative assessment as an approach to learning and teaching in schools (Stobart and Hopfenbeck 2014; Hopfenbeck, Petour, and Tolo 2015). In Norway, the national educational authorities have established by law students' right to formative assessment during the school year throughout primary, lower and upper secondary school,[1] as part of the curricula reform in 2006 (Hopfenbeck, Petour, and Tolo 2015; Ministry of Education and Research 2006, 2020). Primary and upper secondary education, including all vocational programmes, also shares the same core curricula (Ministry of Education and Research 2015a). The background for implementing formative assessment in schools is manifold. Evaluations of the curricula reform in 1997 argue for the need to strengthen teachers' quality feedback on students' achievements, i.e. discussing aims and criteria with students, providing feedback during the learning processes and engaging students in formative assessment (Klette 2003; Dale and Wærness 2006; OECD 2008; Vibe, Aamodt, and Carlsten 2009). In addition, the disappointing results of the PISA test in 2000 provided a strong incentive for the curricula and assessment reforms in 2006 (Ministry of Education and Research 2007; Bergesen 2006). OECD (2011) and the Norwegian educational authorities recommended improving formative assessment practices, in particular providing feedback to students (Tveit 2014; OECD 2011). OECD (2011) also recommended that the educational authorities should take responsibility for teachers' professional development, including assessment literacy. These changes are therefore both a response to the different advice concerning formative assessment, as well as research into formative assessment, as explained (i.e. Hattie and Timperley 2007; Wiliam 2011). These

changes are also proceeded in the renewal of the curricula in 2020 (Meld. St. 28, 2015a).

Formative assessment (in Norwegian: underveisvurdering) is defined in the assessment legislation as all assessment activities during the school year prior to the final summative assessment. Formative assessment also comprises summative assessment activities during the school year, such as mid-term assessments and grading of tests, which indicates formative use of summative assessment activities (DET 2018). DET has established four principles for effective formative feedback with corresponding articles in the assessment regulations, in line with research into assessment for learning (Black and Wiliam 1998, 2009):

In the formative assessment in school subjects, students and apprentices shall

(1) Take an active part in the assessment of their own schoolwork and reflections on learning and progression (§3–10a)
(2) Understand learning goals and achievement expectations (§3–10b)

(3) Receive feedback on performance (§-10 c)
(4) Receive feedback promoting further learning (§3–10d) (Author's translation).

(Ministry of Education and Research 2020).

The assessment regulations and curricula reform in 2006 and renewal reform in 2020 required teachers to change their assessment and teaching practice in classrooms (Black and Wiliam 1998, 2018; Smith 2011; Gamlem 2015; Anderson and Palm 2018; DET 2018) and promote responsive pedagogy (Smith et al. 2016; Vattøy 2020). However, there is a tension between the somewhat detailed national regulations on formative assessment and teachers' professional autonomy and expertise in teaching and assessment (Smith 2011, 2013; Sandal, Smith, and Wangensteen 2014). The interpretation and implementation of assessment regulations are defined as the teachers' responsibility at school level (DET 2018), which has resulted in diversity in assessment practices between schools and education programmes within schools (Sandvik and Buland 2013, 2014; Havnes et al. 2012; DET 2018). Schools shall also develop local curricula based on the national curricula, in line with the regulations regarding adapted education. Consequently, while the emphasis has been on implementing formative feedback in the curricula and legislation in Norway, formative assessment has not been fully implemented in upper secondary schools (Havnes et al. 2012; Nydal 2015; Sandvik and Buland 2014; DET 2018). However, compared to academic subjects, both students and teachers in vocational programmes report more quality feedback, student engagement in feedback and use of the four principles of effective feedback (Havnes et al. 2012). Following the reform in 2006, teachers of academic subjects tend to emphasise summative assessment throughout the school year, while teachers of vocational subjects interpret

formative assessment as a relevant approach in vocational learning (Havnes et al. 2012; Kårhus 2018). Some of the basic elements in formative assessment, i.e. the four principles (Ministry of Education and Research 2020), are, to some extent, embedded in learning methods and learning processes, especially in practical tasks in vocational education. Learning cultures in vocational programmes often practise feedback during work tasks, clarifying aims and criteria together with the students and involving students in assessment for learning (Kårhus 2018; Sandal, Smith, and Wangensteen 2014; Havnes et al. 2012; Billett 2004; Tanggaard 2004).

Hence, since the implementation of formative assessment in curricula and legislation in 2006, there has been extensive investment in post-qualification and continuing education courses for teachers in primary and secondary schools, relating particularly to professional development in assessment[2] (The Norwegian Directorate for Education and Training 2018). However, vocational teachers have traditionally had limited access to post-qualification education and courses, either as part of national programmes, or as part of local school authorities' initiatives (Lloyd and Payne 2012; Ministry of Education and Research 2015b). Most investments and efforts regarding post-qualification programmes have been invested in teaching in general, and academic subjects in primary and secondary schools.

For this reason, DET established a programme for professional development exclusively for vocational teachers in 2016, called 'Yrkesfaglærerløftet (YFL)' (Ministry of Education and Research (2015b). The overall aim of the YFL programme is to enhance vocational teachers' professional development (Ministry of Education and Research 2015b). The programme consists of several initiatives with a multitude of aims, including several continuing education courses. The courses have been designed by teacher training institutions in cooperation with county educational authorities in different regions in Norway, while the implementation of the courses is delegated to teacher training institutions and funded by DET, including funding for replacement teachers in schools. As a result, there is a variety of different continuing education courses for vocational teachers at a national level, all with the aim of providing vocational teachers with professional development specifically designed for vocational teachers (Sekkingstad and Syse 2019).

The aim of this study is to examine how a continuing education course in assessment for learning, as part of the YFL programme, might contribute to vocational teachers' professional development related to assessment for learning, with the research question: *How can a continuing education course in assessment for learning for vocational teachers contribute to professional development in formative assessment?* The research question is followed by two sub-questions:

(1) What characterises vocational teachers' understanding of and belief in assessment for learning in their teaching practice?
(2) What characterises vocational teachers' perceptions of assessment for learning following a continuing education course in assessment for learning?

There is a variety of definitions of the concept of assessment for learning, and Wiliam (2011) states that the concept of assessment for learning can be related to the purpose of assessment, while formative assessment relates to the function of assessment. In the following, the concepts of assessment for learning and formative assessment are used synonymously (Black and Wiliam 2009; Baird et al. 2014).

Assessment for learning

The concept of *assessment for learning* is typically used to describe assessment that supports students' learning, and assessment that is used both by students and teachers to improve learning and teaching (Sadler 1989; Nicol and Macfarlane-Dick 2006; Black and Wiliam 2009; Wiliam 2011). Feedback as part of assessment for learning has a strong influence on students' performance and should be an integrated part of teaching and learning activities (Hattie and Timperley 2007). Teachers' responsiveness to students' efforts is crucial for assessment to become a basis for learning, as well as students seeking feedback (Hattie and Timperley 2007; Boud and Molloy 2013). Assessment for learning (Afl) can be perceived as seeking information about the learning process, to be used in deciding on next steps in the learning process by both students and teachers (Black and Wiliam 2009). Students should be provided with the skills to act upon the feedback, and teachers' responsiveness to students' efforts is crucial for assessment to become a basis for learning (Boud 2000; Hattie and Timperley 2007; Voerman et al. 2012; Boud and Molloy 2013; Gamlem 2015). Students seeking feedback and the interpretation of the feedback from teachers are also related to the classroom climate and stimulation of reciprocal assessment dialogues between students and teachers (Black and Wiliam 2009; Gamlem and Smith 2013; Carvalho et al. 2014).

Wiliam and Thompson (2007) refer to Ramaprasad (1983) and three key processes in learning and teaching when examining formative assessment: understanding present learning and aims, understanding the direction of the learning process, and understanding what the students need to do to achieve their goals. Another assumption for assessment to support learning is helping students to understand the learning goals and criteria, and engaging students in dialogues about their learning – assessment dialogues (Hattie and Timperley 2007; Shute 2008; Engelsen and Smith 2010). As part of effective formative assessment, students shall be involved in their own learning through self-

assessment. Self-assessment is a self-regulating activity in that students must understand the goals and the criteria, monitor their own learning, and engage in reflections about their learning (Nicol and Macfarlane-Dick 2006; Black and Wiliam 2009; Smith et al. 2016).

Vocational teachers' professional development

One aim for teachers' professional development is often to become a better teacher and enhance students' learning (Guskey 2002). Guskey (2002) proposes a model for understanding professional development, stressing that a professional development programme aims to enhance changes in the teachers' classroom practices and students' learning outcomes. Desimone (2009) suggests a core theory of action for professional development. Firstly, teachers' experience of effective professional development increases their own knowledge and skills and/or changes their attitudes and beliefs. Furthermore, they use the knowledge and skills to improve their teaching, and this results in increased student learning (Desimone 2009, 184). This linear approach to professional development has been criticised (Clarke and Hollingsworth 2002: Timperley et al. 2007), and has led to a shift in approaches to teachers' professional development, aiming to anchor professional development in teachers' practice (Timperley et al. 2007; Andersson and Palm 2018; McChesney and Aldridge 2018). Guskey (2002) therefore states that '(. . .) significant changes in teachers' attitudes and beliefs occur primarily after they gain evidence of improvements in student learning'. Darling-Hammond and McLaughlin (2011) define professional development as an ongoing process that should be participant-driven and include both experimentation and reflection, based on the teachers' own teaching experiences. This leads to an understanding of professional development as a process emerging from teachers' individual learning needs, and a bottom-up approach to professional development. Clarke and Hollingsworth (2002) argue that professional development must be based on teachers as active agents and not recipients of change. And Smith (2011) states that

> Professional development does not easily occur because of external regulations, it depends more on the extent to which the individual teacher experiences a need for change. It is the teacher who has to engage in the professional development process (Smith 2011, 56).

Teachers' motivation and commitment are therefore at the core of professional development, as well as gaining experiential evidence of effects on students' learning (Guskey 2002; Smith 2011). Along with personal learning, teacher communities of practice are both a source and a force for professional development (Shulman 2004; Helleve 2010; Smith 2011). Helleve (2010) points to the importance of continuing professional development as activities realised in teacher communities of practice, enhancing critical reflections of practice. The

teachers are agents in communities of practice and engage in co-construction of their professional knowledge and skills (Schön 1983; Lave and Wenger 1991).

Vocational teachers have a dual professional identity: as skilled workers in a trade, and as teachers in upper secondary school vocational programmes. Professional development for vocational teachers should be related to being a teacher and colleague in upper secondary school as well as a being skilled worker in a vocational profession since both identities constitute vocational teachers' knowledge and competence related to teaching VET-students (Saunders 2012; Broad 2016). Research in vocational education and training in recent years argues for building competence relevant for future work and discusses how this challenges vocational education (Bound 2011; Lloyd and Payne 2012; Herrara 2016). Research into practitioner-driven changes to teaching and learning shows that development in vocational teaching comes from teachers' need to change (Figgis 2009). Figgis (2009) also emphasises that change needs to be supported locally and is underpinned by mentoring and networks. These approaches to professional development formed the basis for the course design.

The continuing education course in Assessment for Learning

The course design (Figure 1) created a framework for professional development through communities of practice, enhancing critical reflections of the teachers' practice. The courses are based on research in formative assessment (Hattie and Timperley 2007; Wiliam 2011) and professional development (Figgis 2009; Bound 2011; Lloyd and Payne 2012; Herrara 2016; Tigelaar and Sins 2020). To involve the teachers, the course design was open and flexible, and gave the teachers opportunities to analyse and define their learning needs (Lloyd and Payne 2012). During the course, the content and learning activities were adjusted and adapted to meet the teachers' needs for assessment competence, in cooperation with the teachers on the course. The course was organised as three two-day sessions over one term, managed by teacher educators. The teachers worked on key concepts related to Afl, such as aims and criteria, self-assessment, assessment dialogues, feedback models and engaging students in Afl (Sadler 1989; Hattie and Timperley 2007; Black and Wiliam 2009; Wiliam 2011). The sessions included a variety of learning activities when introducing Afl concepts, and the distinctive features of vocational learning and vocational skills and knowledge, exploring different approaches to Afl in VET. Critical reflection on assessment practice was a core activity during the sessions. Between the two-day sessions, the teachers did intermediary work focusing on trying out various aspects of Afl in accordance with their self-defined learning goals. The teachers also established network groups in their schools. They organised between one and three meetings in the network groups between the sessions, reflecting and sharing experiences

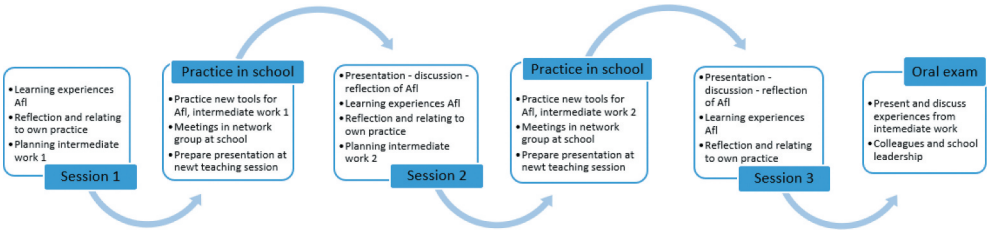

Figure 1. Course design.

from their intermediate work. Final grading was by means of an oral examination in groups in the vocational teachers' schools, with colleagues and school leaders as the audience. During the oral examination, the VET teachers presented their experiences from practising different aspects of Afl, and discussed further development in schools with the audience, as co-construction of knowledge.

Method

The study used a qualitative approach to explore and understand vocational teachers' professional development related to Afl (Creswell 2007; Kvale and Brinkmann 2009). Data was collected from teachers attending the course over one term, and all those supplying the data were employed in upper secondary school vocational programmes. The teachers received written information about the study and written consent was obtained from each teacher. The research project follows the ethical guidelines established by The National Committee for research Ethics in the Social Sciences and the Humanities (NESH (The National Commitee for Research Ethics in the Social Sciences and the Humanities) 2018) and is approved by the Norwegian Centre for Research Data relating to ethics. Data was collected and established in two stages. Firstly, all teachers attending the course (N = 28) participated in roundtable discussions at the end of the course, divided in five groups. Roundtable discussions give the informants opportunities to share and discuss experiences from the course and produce transcripts from the discussion. Each group comprised teachers from vocational programmes in different schools. The discussions considered learning experiences throughout the course, intermediate work, concepts related to Afl, and the teachers' assessment practice. These topics were chosen because they are related to the learning outcomes in the continuing education course and are relevant to the research questions; *What characterises vocational teachers' understanding of and belief in assessment for learning in their teaching practice?* and *What characterises vocational teachers' perceptions of assessment for learning following a continuing education course in assessment for learning?* The discussions were summed up in comprehensive written transcripts from

each group, steered by the VET teachers. The transcripts were analysed using meaning condensation (Kvale and Brinkmann 2009), reducing sentences and comments in the transcripts into shorter meaning units and texts. The condensation process included a recursive thorough reading and rewriting of the content in the initial written transcripts (Kvale and Brinkmann 2009; Giorgi, Giorgi, and Morley 2017) and formed the basis for the categories of

- feedback practice
- teachers' and students' use of feedback
- student involvement in assessment
- quality of the continuing education course related to the vocational teachers' need for competence and sharing of knowledge.

Secondly, the categories established from the roundtable discussions formed the basis for topics in focus group interviews (Liamputtong 2011) with three groups of teachers (N = 8). The dialogue in focus group interview provided opportunities to establish data based on dynamic interaction between the focus group members. The focus groups were recruited voluntarily and consisted of teachers attending the course from three vocational schools. The focus group interviews were conducted four weeks after the course. The interviews were recorded, and Nvivo software (QSR International 2019) was used as a tool for transcription and analysis of both the roundtable discussions and the focus group interviews.

An initial coding of the focus group interviews gave an overview of the data and was helped by asking questions about the material (for example: what characterises the teachers' perceptions of formative feedback, and their reasoning and arguments for the perceptions, when is formative feedback happening, who is involved). The initial coding process identified and classified meaning units, followed by abstracting the content in the meaning units and defining code labels on the meaning units. Several meaning units were organised using more than one code (see example in Figure 2).

The established codes formed the basis for an axial coding of data from the roundtable discussions and focus group interviews (Saldaña 2009; Liamputtong 2011; Malterud 2012). In this stage of the analysis, initial codes from focus group interviews and categories from the roundtable discussions were grouped together and differentiated by levels of abstraction in the interpretation of the transcripts and re-labelled into new categories (Kvale and Brinkmann 2009). For example, teachers' different descriptions of their assessment practice were defined as codes at a low level of abstraction, whereas interpretations of teachers' descriptions constitute higher levels of abstraction. The result of the axial coding was new categories (aims and criteria, assessment tools, self-assessment, tests and assessment dialogues), which provided a comprehensive body of data and formed the basis for the findings. The

intention of using data from roundtable discussions and focus group interviews in the current study was to obtain detailed information and understanding of the teachers' varied experiences of the continuing education course. Focus groups allow the informants to reflect as a group and exhibit essential data. The findings are presented as phenomena and not as individual experiences, and quotes are added as illustrations and examples of the phenomena emerging from the data.

The roundtable discussions were arranged by a lecturer and course coordinator, while the subsequent stages in the research process were accomplished by the author, also a lecturer at the course. The relationship between the researcher and the informants can be a potential ethical dilemma and requires a critical analysis of the role as a researcher both during the interviews and throughout the analysis and discussion of the findings. The researcher`s prior understanding might influence the research questions and data analysis, and demand a thorough insight in the research field and theoretical concepts addressed in the study. The informants may respond related to what they believe to be the researcher`s expectations of the interview, and it is especially important to present a participation in the study as fully voluntary. Simultaneously, the researcher`s insight in the research topic (in this case: teacher professional development and assessment for learning in VET) can be considered as a resource in designing the study and analysing the data. An already established relation to the informants also lay the groundwork for explorative interviews (Silvermann 2005).

Findings

The vocational teachers (henceforth referred to as teachers) were explicit in their descriptions of their learning experiences with Afl during the course, and they also mirrored their attempts during the course with prior assessment practice in their schools. The teachers' self-reported perceived learning outcomes are interpreted in the light of the different learning activities and try outs during the course as reflections on Afl, and not as evidence of changes in actions. The findings – aims and criteria, assessment tools, self-assessment, tests and assessment dialogues – are presented in the following sections and form the basis for the subsequent discussion section.

Aims and Criteria

In all the teachers' schools, the national curricula have been interpreted and operationalised into local vocational curricula and lesson plans, and this has been a priority in all schools since 2006. Based on this, the teachers have defined aims and criteria for students' learning and achievement, and present these to the students in study plans. However, after the course, most teachers began

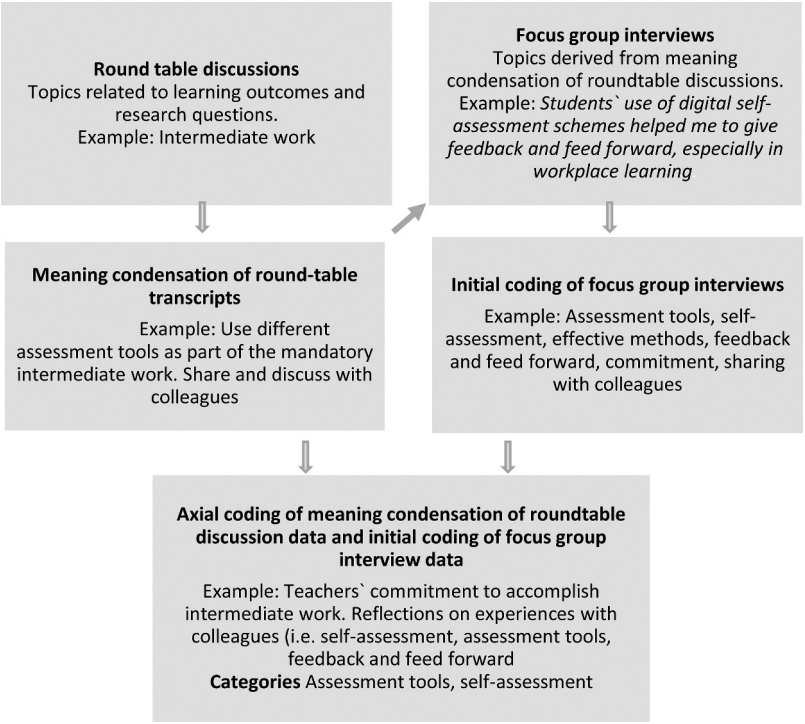

Figure 2. Example Coding process.

revising the lesson plans, based on an in-depth interpretation of aims in the national curricula, including deciding on assessment criteria. Some of the teachers report that they involve students to a greater extent than before the course in interpreting learning in depth on how to involve students in defining learning goals, the teachers became aware of the importance of setting goals together with the students, and as a basis for monitoring leaning processes. One teacher tells that 'We have to put more effort in describing learning goals, what they are going to learn, and make sure students understand them'. The teachers also describe their interpretation of aims and criteria together with colleagues in their schools as 'most suited to the common core subjects and academic subjects', as one teacher says. They talk about local curricula in vocational programmes being established on the same framework as the local curricula for general subjects, but not using the local vocational curricula as a basis for teaching.

Another teacher says:

> We are certainly not finished with this work, of course. However, I was really alarmed to realise that the work we had been doing in our school, the operationalisation of the national curricula into lesson plans, is only a construction. We have not used the lesson plans properly, and they are not really in accordance with what we are doing with the students, which is teaching them vocational skills and knowledge.

These findings show an absence of a vocational framework for the interpretation and implementation of curricula and assessment regulations grounded in vocational knowledge and teaching methods.

Assessment tools

All the teachers used schemes and rubrics in the formative assessment of students. The schemes and rubrics are also used by the students as a tool for self-assessment in some of the schools. As indicated in the category 'Aims and tools', the assessment tools in vocational programme are copied from those used for general subjects in the teachers' schools. The teachers were hesitant about relating to this practice and expressed concern about the efficiency of the tools related to assessing vocational skills and knowledge, i.e. assessment rubrics. Some of the teachers perceived the rubrics as being instrumental, and not as a tool for learning. They discussed this in relation to the balance between devising simple, effective forms with checkboxes for the teachers fill in, supplemented with written comments, and how the forms might function for the students as a resource for learning by elaborating on the written feedback provided. One teacher says 'There is a limit to the value of forms: if the students see them as routine and do not understand them, they are no use. Why use them?' Another teacher says: 'We often comment on the same thing again and again; the students do not know how to use the feedback derived from the schemes'. The overall impression from the teachers was, as the quotes show, a deep concern and hesitancy about using standard rubrics and schemes in formative assessment.

Self-assessment

Some teachers reported that students` self-assessment has just been implemented in their school, even though self-assessment had been part of the assessment legislation since 2006. They have become more confident in implementing self-assessment since the course, although they still are looking for models for implementing students' self-assessment in their classes. One teacher says:

> I believe we will save time if we introduce self-assessment. And maybe it will be easier to adapt the teaching to the different students since I now have more information about their knowledge and skills through their participation in assessment. And I want to include students' self-assessment in the meetings with parents; maybe it will be easier to involve both students and parents in this way.

Nevertheless, in many classrooms, the students are assessing themselves as part of evaluating their work. Students' self-assessment is also used as basis for dialogues about learning with the students and planning the next task.

However, when the teachers use standard forms for self-assessment, they find it difficult to make the forms a tool for reflection together with the students, especially when a piece of work is completed. 'When the students have finished a work task and assessed themselves, they are not very interested in going through it once again with me', one teacher comments.

During the course, the teachers were challenged to develop a design for feedback and feedback loops in accordance with work tasks in the vocational trades, using forms as a tool. To make the forms a tool for students' learning, the teachers used final inspection forms from the relevant specific vocational trade, instead of what they called 'school-based' assessment rubrics. The students were involved in setting the correct standards for final control of work tasks and they used the final inspection forms as a basis for deciding criteria. The final inspection forms were also used as basis for reflections about the reasons for mistakes and for making the students accountable and aware of their work, and to document their work in accordance with the trade standards. One of these teachers said:

> We teach them to evaluate their own work in a practical context, without measurements and grades. This stimulates students' reflections and help them to reflect upon what went wrong, how to find the error.

Some of the teachers relate students' self-assessment as a key vocational competence, and one teacher says:

> When using final inspection forms, we teach them to make conscious choices about their actions, and this is highly relevant for their future vocation, and it is about safety in the work they are doing.

Another teacher shares this reflection:

> To be able to assess your own work is very important in the workplace in any trade. As part of the job, you must objectively evaluate your work and decide whether it is good enough to complete and hand over to a customer. And if not, it can be very critical, you know, if you are careless in your attitude to the work. So, vocational learning is as much about knowledge and skills as it is about the attitudes and values you hold.

The try outs using final inspection schemes as tools for students' self-assessment were meaningful and relevant for vocational education.

Tests

Several of the teachers reported a change to the use of tests after the course. They expressed a deep concern about the pressure put on vocational students by frequent written tests in school. The teachers also expressed their uncertainty about what they felt as pressure from the tradition among academic subjects in school of using tests as evidence of students' learning and achievements. 'I don't want to keep up the school pressure on them. The tests are

mostly for documentation, not for learning', one of the teachers said. Another teacher says:

> As the mid-term assessment, I usually set a written test to document their skills in automation after their practical learning. Why can't I set a practical test, or just walk around and have a chat with them during their work? I can easily observe what they can and what they cannot do. Instead, I follow the school tradition and set a written test to document their achievements.

During and after the course, several teachers developed and tried out practical tests and used tests diagnostically before a new work task. Many of the teachers explicitly express relief when discussing the use of tests with a formative purpose. One teacher says:

> This pressure on tests all the time, I always felt this is a wrong thing to do, it's a shortcoming. It does more wrong than good for the students. Therefore, it was a relief to discuss this on the course and I could breathe a sigh of relief when I saw all the other opportunities for documenting students' learning.

The teachers also tried out assessing students by means oral or written approval of achievements instead of using numerical grades, as part of their intermediate work between the sessions. Although they still used some written feedback, they were relieved not to have to use grades but to focus on feed forward instead. One teacher says:

> By removing the attention on grades and instead use the word approved, I can use my time to explain them why their work is approved or not. It feels better to explain the next step and feed forward.

Assessment dialogues

The teachers have stressed assessment dialogues with their students and enhanced assessment as sources for learning, both during and after the course. According to the teachers, it is important to organise teaching sessions to enhance dialogue in the classroom. 'I have to create another framework for my teaching, open up and make room for immediate dialogue with students during their work', one teacher says. They also relate this to different modes of communication with students. One teacher comment: 'I learnt to use positive-loaded words and not point out the errors all the time'. Another says: 'I have become more conscious of my communication with the students and what kind of words I use'. A third teacher reflects:

> It is also about understanding oneself, both the students and me as a teacher, that my input is important, that my words and behaviour might have an effect on the students. Maybe I am becoming more self- confident and relying on myself?

Professional development in assessment for learning

> "The course was a kick-starter!" This quote from a teacher expresses what many of the teachers refer to as an awakening. The teachers are explicit in their descriptions of being more confident in practising Afl after the course. They explain this as a result of the intermediate work in their schools, and their new experiences of Afl in a vocational context. One teacher says "Afl fits well in with the teaching and the learning methods we use." Another teacher comments that

> I discovered that our constant dialogues with the students during a task and the production process, where we give feedback on their performances and technical skills and discuss the next step in the production, well, that **is** assessment for learning, isn't it?

> During the course, three different professional learning communities have been important for sharing experiences of practice, both within a vocational trade and between vocational trades. The professional communities are defined as i) communities with fellow student teachers at the course sessions, ii) communities with teachers from the same vocational trade across schools during the course sessions, and iii) network groups in the students' schools with fellow teachers from different vocational programmes attending the course. In particular, they draw attention to the learning community at their schools, established during the course, as being important to continue to practise assessment for learning and for supporting each other as colleagues. One teacher says:

> This makes it easier to both continue our development related to assessment for learning, and to share our experiences with the colleagues who have not taken the course. I can discuss with my colleagues and I have arguments that enable me to sometimes disagree with their interpretations of the assessment legislation.

The oral group examination is especially important for the teachers' learning, as well as increasing self-confidence as a teacher. During the examination, they were engaged in discussions with colleagues, and one teacher states that 'It was very inspiring that my colleagues were interested in my assessment practice and they wanted to learn. I felt proud'. However, another teacher says:

> After the oral exam and the discussions in the following days, things have gone quiet. We are enthusiastic and continue practising our recently acquired knowledge, but our colleagues carry on as before, and this is problematic.

This teacher points to a crucial element in continuing professional development which most of the teachers raise as a concern in the interviews. They want to be able to continue practising Afl, as they did during the course, and not 'revert to what we did before', as one teacher says.

The findings reveal changes in teachers' understanding and beliefs of the concept of assessment for learning after attending the course. The changes are enhanced by their own experiences with intermediate work and reflections with fellow students on the course. The findings also indicate a significant

uncertainty and hesitancy among vocational teachers related to the interpretation and accomplishment of formative assessment in vocational programmes.

Discussion

All the vocational teachers in this study report having done considerable work with Afl in their schools prior to the course, following the national guidelines and the schools' collective interpretation of the national curricula and the formal regulations for formative assessment. However, the teachers tell stories about the implementation of formative assessment regulations, interpreted through the lens of academic subjects and traditions in school. The teachers describe tools for assessment (i.e. forms), the use of tests and assessment activities (i.e. written feedback, self-assessment) as instrumental and loosely connected to their vocational subject. The intentions in assessment regulations regarding formative assessment do not seem to be fully embedded in vocational learning and teaching traditions in the different vocational trades in their schools. They struggle to develop an Afl practice designed for vocational teaching and learning and find it difficult to follow the schools' local arrangements for formative assessment. Nevertheless, the teachers' learning experiences during the course allowed for an approach to Afl in VET that coincides with some of the typical learning methods in VET, and which many of the teachers in the study refer to as 'a relief'. These approaches to learning build on the concepts of Lave and Wenger (1991), describing situated learning and interactions in communities of practice. Vocational teaching is characterised by formative assessment as an integrated part of teaching and instruction during students' learning processes, and learning is guided by the natural processes and stages in a task or production process. Learning and formative assessment in vocational education

> (. . .) does not focus on conventional assessment means to collect and interpret information about students, but it is consistent with the purposes of sound educational assessment: it supports instructional decisions based on inferences made about students (Ruiz-Primo 2011, 16).

Students' and teachers' responsiveness towards each other, as well as 'moments of contingency' (Wiliam and Leahy 2007) providing learning experiences that cannot be planned for in detail, are core activities in vocational education and should be reflected in formative assessment in vocational education and training (Sandal, Smith, and Wangensteen 2014). 'Good assessment is using these spontaneous teaching rich moments to collect information about learning' (Smith 2013, 229).

The teachers report that their perceptions of Afl concepts have changed during the course, demonstrated in their reflections on test traditions in school, timing of feedback and students' self-assessment. The teachers relate these

changes to experiences from their intermediate work. Different perceptions of formative assessment and feedback open the way for a variety of practices, which make research into the effectiveness of assessment for learning on students' achievement complex (Bennett 2011; Smith 2011; Stobart and Hopfenbeck 2014; Andersson and Palm 2018). The need to link formative assessment to pedagogy is an important issue for both the conceptualisation and implementation of assessment for learning in vocational learning contexts (Havnes et al. 2012; Stobart and Hopfenbeck 2014; Baird et al. 2017; Black and Wiliam 2018). The findings reveal that the elaboration of concepts related to assessment for learning and formative assessment are related to general subjects in school. However, to implement formative assessment in school, the assessment concepts should be interpreted and elaborated based on the distinct features, knowledge and skills in different subjects (Hopfenbeck, Petour, and Tolo 2015). Reviews of research in formative assessment reveal few studies of contextualisation of Afl in VET (Baird et al. 2014; Aakre 2013). If school leadership is not aware of the specific challenges and possibilities for Afl in VET, and the research base is premature, this puts vocational teachers in a challenging position as professional practitioners.

The findings in this study show that these vocational teachers had practised Afl before the course in various ways. However, the teachers do not have a well-developed language for describing their Afl practice, nor are they conscious of the strong link between the core concept in Afl and the learning traditions in VET (Lave and Wenger 1991). The intermediate work during the course mediated both affirmation and changes to the teachers' prior beliefs related to Afl (Opfer and Pedder 2011; Gamlem 2015). A key element for gaining confidence and new insight into their own assessment practice, might be the participant-driven try outs and intermediate work, based on the teachers' learning need for professional development in Afl (Clarke and Hollingsworth 2002). Their experiences and reflections on their actions (Schön 1983) showed that it was possible to implement Afl in their teaching through trying out new materials and methods in their own classrooms (Bennett 2011; Tveit 2014; Baird et al. 2017). However, 'change is a process, not an event' (Saunders 2012, 183), and the teachers in this study need support locally to engage in a learning community in their schools (Figgis 2009). Birenbaum et al. 2015) discuss how variation in the quality of Afl practice can be partly explained by how schools do function as a learning organisation. Professional development must be situated in a local context and enhance an assessment culture in school. The teachers in this study are therefore dependent on their school leaders acknowledging and taking responsibility for vocational teachers' professional development. The teachers' positive experiences with different learning communities during the course might be an important source and force for implementation of Afl in VET (Lave and Wenger 1991; Smith 2011).

It can be argued that school leaders must be aware of different prerequisites for the development of formative assessment practice in VET. Firstly, the vocational teachers' dual professional identity should be emphasised as a resource for development in school. The teachers in this study indicates that their vocational competence, which includes various modes of enhancing students' learning through formative feedback during learning processes, has not been expressed in their upper secondary schools. The vocational traditions related to learning and formative assessment therefore deserve to be highlighted when building competence in Afl in upper secondary schools (Lloyd and Payne 2012; Herrara 2016), as the findings in this study indicate. Secondly, relating to the assessment policy in Norway, Birenbaum et al. (2015, 133) comments that

> (. . .) teachers must practice assessment within two competing paradigms, one more explicit – the assessment-for-learning – and one implicit and 'hidden' in the political rhetoric, an increasing testing regime. The backlash effect of the latter presents the many teachers who believe in the 'assessment-for-learning' principles with a professional dilemma, which could and should be avoided.

The analysis show that these two competing paradigms might be the reason for the teachers'

uncertainty and the aversion some of them express towards the frequency of tests within the framework and in the name of formative assessment. The complexity of formative assessment and the variety of definitions, the effort and time it takes to implement in classrooms, and uncertainty related to the management of both formative and summative forms of assessment influence fidelity in research in formative assessment (Smith 2011; Hopfenbeck et al. 2013; Andersson and Palm 2018). Consequently, summative assessment is being used for formative purposes. A binary distinction between formative and summative assessment might result in blurred comprehension of the concepts of formative and summative assessment (Bennett 2011; Tveit 2018), which might be the case with the formative assessment regulations in Norway. The regulations for formative assessment are complex and demand thorough consideration by teachers and schools when put into practice. Based on the findings in this study, it can be argued that vocational education in the teachers' schools needs to develop perceptions and concepts of formative assessment adjusted to the vocational learning communities and promote assessment for learning embedded in the vocational learning and teaching practices.

The findings in this study build on a small sample and therefore have limitations related to interpretation of data and significance for the professional development of vocational teachers in assessment for learning. However, the findings point to interesting discussions related to vocational teachers' dilemma as teachers in a school culture coloured by general study programmes' interpretation of assessment regulations and their practice. Vocational teachers and

vocational education and training might benefit from comprehensive studies of assessment practice in VET, including vocational students as sources of data.

Notes

1. Vocational education is part of the upper secondary school curriculum in the public education system in Norway. The main model comprises two years in school and two years in workplace practice.
2. *Improved Assessment Practice Project* (2007–2009) and *Assessment for Learning (*2010–18).

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