

A theory of improvement for teacher professional development in assessment for learning

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Abstract

To strengthen the practice of Competence-based Education (CBE) it's needed to realise the potential of Assessment for Learning (AfL). However, teachers are usually not trained in designing assessment practices in CBE and professionalization in AfL is complicated. It's needed to design a *Theory of Improvement* in which is described what professionalization activities are needed and how those characteristics contribute to teachers' learning.

A description of the characteristics of the 'Theory of Improvement' for teacher professionalization in AfL is the result of this literature study. Characteristics are: Conceptions on assessment and assessment practice which are challenged in a personal enquiry and congruent professional development of teachers and middle management.

This Theory of improvement leads to the most suitable approach for this professional development in a Professional Learning Community (PLC). A PLC is closely related to the concept of collaborative learning communities.

Outline paper

This paper starts with a theoretical introduction. The Theory of Improvement to professionalize teachers in AfL in CBE is described in the results section of this paper. The design of the Theory of Improvement leads to an approach for the professional development. This approach is also described in this paper. Furthermore, some characteristics which account for teachers' professional development broader than assessment, are mentioned. The design of the literature search to design the Theory of Improvement is described in the methodology section.

The professionalization approach and the Theory of Improvement are applied in the context of the educational reform project 'Kracht van beoordelen' (Power of assessing) in which teachers and middle management of Groenhorst College (GHC) are professionalized in AfL. GHC is a Dutch institute for Agricultural Vocational Education and Training (AVET). The project period of the reform project runs from September 2011 to June 2014.

Introduction

Vocational education in The Netherlands is engaged in the introduction of competence-based education (CBE) (De Bruijn & Leeman, 2011). To strengthen the practice of this constructivist-based teaching approach (Simons, Bolhuis & Onstenk, 2000), it's needed to focus on assessment as a tool for learning (Dochy & McDowell, 1997). However, teachers are usually not trained in designing assessment practices in CBE (Popam, 2001; Birenbaum, 2003).

Specifically the potential of Assessment for Learning has so far been insufficiently realized (Birenbaum, Kimron & Shilton, 2011) and there has been a stress on Assessment of Learning (Segers & Tillema, 2011). The distinction between these two assessment approaches refers to the purpose for which the assessment is carried out (William, 2011). In Assessment of Learning (AoL), the students' performance is reported for accountability purposes where the first priority of Assessment for Learning (AfL) is to serve the purpose of promoting students' learning (William, 2011; Gardner, Harlen, Hayward, Stobart, & Montgomery, 2010). AfL revolves strategies such as: wait time, clarifying

and sharing learning intentions and criteria for success, comment-only marking, providing timely feedback and peer and self-assessment (Cooper & Cowie, 2009).

The ultimate goal of AfL is the advancement of students' self-regulated learning (Birenbaum, 2011). Self-regulated learning is described by Pintrich and Zusho (2002) as an active constructive process whereby learners set goals for their learning and monitor, regulate, and control their cognition, motivation and behavior, guided and constrained by their goals and the contextual features of the environment. The concept of self-regulated learning finds its origins in the cognitive-motivational literature on learning (Zimmerman, 2002) and has become basic for both school and work (Van Grinsven & Tillema, 2006) to maintain and develop their competences (Vermunt, 2000).

Professionalization is needed to help teachers implement AfL in their practice. However, this is complicated because it requires conceptual shifts for all stakeholders (Cooper & Cowie, 2010) and there is not a one-size-fits-all recipe for professional development in AfL (Smith, 2011). It's therefore crucial to distinguish features of successful professional development in assessment. And it is powerful to explicit in a Theory of Improvement how the characteristics of the professionalization program contribute to teachers' learning. Because of the experienced difficulties in professionalizing teachers in AfL (Birenbaum, 2011; Smith, 2011; Segers and Tillema, 2011), a Theory of Improvement is critical in successful professionalization in AfL. However, such a Theory of Improvement is often lacking in educational reform (Van Veen, Zwart, Meirink & Verloop, 2010).

Methodology

A literature study has been conducted in the databases of Educational Resources Information Centre (ERIC), Google and Google Scholar on the keywords 'Assessment', 'Assessment in competence-based education', 'Teacher professionalization', 'Professional learning communities' and on all combinations of the keywords. Furthermore, citations in the selected publications which seemed to be relevant were selected as well. The time span of search was limited to 1999-2011 to secure an overview of the most recent literature. The search resulted in expanding the used keywords with the keywords: formative assessment, assessment for learning, teachers' learning, teacher development, teacher professionalization, and professionalization in assessment.

This search resulted in dozens of recent studies in journals, dissertations and books on the chosen keywords. The title, abstract and concluding remarks of the articles and dissertations were screened for relevancy. If that didn't provide enough information about its relevancy, the full text was scanned to determine whether the text was relevant. Of the books, title, summary and the table of contents were checked and the available reviews on the internet. Relevant publications were added to the selection. Also included in the selection were research reports based on peer-reviewed literature and government initiated quality-guidance reports. The selected publications are in Dutch or English because of the authors' grasp of those two languages.

Out of the selected studies, effective interventions in professional development of teachers (in assessment) and characteristics of assessment were distracted. Using literature on learning processes, it was analysed how these characteristics could have an effect on teachers' and students' learning. This resulted in the below described Theory of improvement in which is described 'how' and 'why' specific interventions have an effect on teachers' and students' learning.

Results

Theory of Improvement

In a Theory of Improvement is described how characteristics of a professional development program contribute to teachers' learning. In this Theory of Improvement, the characteristic elements

of the professional development in AfL will be mentioned and explained and it will be justified how the elements contribute to teachers' learning. This Theory of Improvement leads to the most suitable approach for this specific professional development. The Theory of Improvement is applied in the project 'Kracht van beoordelen'.

1. Conceptions on assessment

Conceptions are mental representations of phenomena in reality and are a product of educational experiences (Brown & Hirschfeld, 2008). Conceptions on assessment reflect how teachers think about assessment (Brown, Kennedy, Kwan Fok, Kin Sang Chan & Ming Yu, 2009) and influence how teachers deal with assessment in their practice (Ho, Watkins & Kelly, 2001; Segers & Tillema, 2011). Teachers' conceptions and practice are strongly related. It's thus critical to focus in professional development activities on those conceptions (Fishman et al, 2003) and to explicit and make visible prior values and beliefs (Brown, 2004, 2006; Brown & Hirschfeld, 2008; Brown et al, 2009; Desimone, 2009; Avalos, 2011). In teachers' professional development activities in improving assessment practices of students in competence-based education, it is therefore relevant to measure teachers' conceptions as a starting point (Segers & Tillema, 2011). Those conceptions are challenged in teachers' assessment practice and puts the teachers in an inquiry of their own conceptions and practice which can result in what Segers and Tillema (2011) called the paradigm shift from assessment of learning to assessment for learning. A prerequisite for this paradigm shift is understanding. People namely generally accept innovations more readily if they understand them, regard them as relevant to their particular situation and also helps to plan them. By challenging teachers' conceptions on assessment, understanding and ownership will be improved. Ownership by those who must adopt an innovation is widely considered as being conditional for adopting the innovation (Gardner et al, 2010).

2. Assessment practice

In educational reform to AfL, importance should be given to external support, involvement and input, shared teacher knowledge and beliefs, professional experimentation and shared reflection (Cooper & Cowie, 2009). The input should be given to engage participants in developing a shared understanding about AfL (Gardner et al, 2010). Teacher understanding and valuing of the underlying principles of an educational reform is essential to sustain changes in teachers' practice (Cooper & Cowie, 2009). Starting the professional development program with the actual state of own practice makes it the starting point of the learning (Sato, Chung, & Darling-Hammond, 2008) and stimulates active learning (Van Veen et al, 2010). Active learning engages the learner in reflecting, observing, feedback, knowledge building and innovative behavior (Runhaar, Sanders & Slegers, 2009) and stimulates the teachers to challenge their practice and to take control of their own learning. In keeping the focus on the assessment practice at the school (Birenbaum et al, 2011) the intrinsic motivation of the teachers can be stimulated which is described in the Self-Determination Theory of Deci & Ryan (2000) as important for human development.

Starting the reform with actual assessment practice and realizing change out of understanding and ownership means a bottom-up approach in reform. This is a different approach than the top-down-approach in which teachers are told what to do and how to change. This top-down approach has proven to have limited effect on changed practice (Smith, 2011). Classroom practice is the change context and that makes the classroom teachers, the most obvious bottom-up agent. In the majority of the initiatives aiming at change in assessment, awareness-raising forms a major part of the initial stages (Gardner et al, 2010). The understanding enables the participants to not just make a superficial change in assessment techniques but to sustain a change in the spirit of AfL (William, 2011). On top of this argument of understanding, there is also the argument that actively implementing changes in own practice parallels the active role that students have in learning (Gardner et al, 2010).

The assessment practice should be challenged by providing the opportunity for teachers to visit each other's classroom or to show videos of their assessment practice. Giving feedback on actual practice has namely been found effective in enhancing teachers' learning (Gardner et al, 2010). The observation and feedback has a double benefit because it gives the opportunity for individual reflection on one's own practice, and gives the chance to share reflections with colleagues through dialogue. These aspects are considered to be effective mechanisms for professional development (Byrne, Brown & Challen, 2010).

3. Personal inquiry

Conceptions on assessment and assessment practice change accordingly. Teachers' conceptions are challenged in teachers' assessment practice and puts the teachers in an inquiry of own conceptions and practice. A constant inquiry to improve practice (Birenbaum et al, 2011) and in which a trial and error approach in developing a personal practice theory in the context of AfL can be applied (Smith, 2011). In this process, the personal inquiry approach of developing teacher assessment can take place (Gardner et al, 2010).

An inquiry is regarded by Birenbaum and colleagues (2011) as a cycle with five phases. Planning (setting goals, defining objectives and intended outcomes, and planning action strategies); Evidence collection; Interpretation (estimating gaps between intended and obtained outcomes); Utilization (implementing interventions to close the gaps) and Evaluation (assessing the effectiveness of the interventions in closing the gaps).

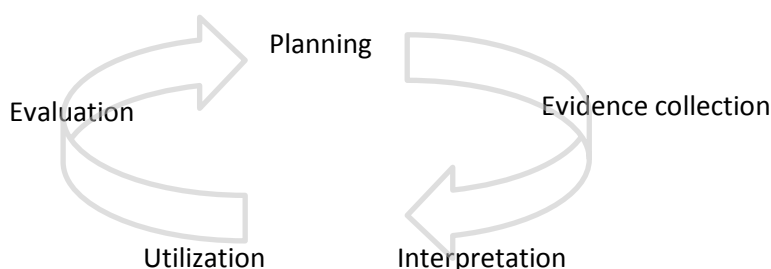


Figure 1: Inquiry cycle

In sharing the personal inquiry with colleagues to assist in challenging the assessment practices, makes the personal inquiry a collaborative one. Such collaborative enquiry contributes to learning because it may result in a dynamic co-construction of knowledge (Nonaka & Takeuchi, 1994; Bereiter, 2002). Transformation is perceived to be most likely to emerge through communities working together to create new knowledge. Evidence suggests that this transformative approach had widespread impact on practice, particularly in AfL (Gardner et al, 2010).

Crucial in this expansive learning process is the triggering action of conflictual questioning of the existing standard practice (Engeström, 2001) which gives the participants the opportunity to restructure their professional knowledge and perceptions to be able to revise their practice (Butler, Lauscher, Jarvis-Selinger, & Beckingham, 2004). This jointly build knowledge is triggered in collaborative inquiry.

Knowing the importance of inquiry in the transforming process. There is a striking similarity between the process of inquiry and the AfL process. Contemporary writings conceptualize assessment also as an inquiry (Birenbaum et al, 2011). Optimal AfL practice is an inquiry cycle with six phases: Planning (setting goals, defining objectives); Designing tools to elicit learners' understanding; evidence collection (including provision of accommodations when needed), Interpretation (estimating the gaps between intended and obtained outcomes and generating feedback to the learners and the teacher); Utilization (taking measures, where needed, to close the gaps) and Evaluation (assessing the effectiveness of those measures in closing the gaps) (Birenbaum, 2009; Birenbaum et al, 2011).

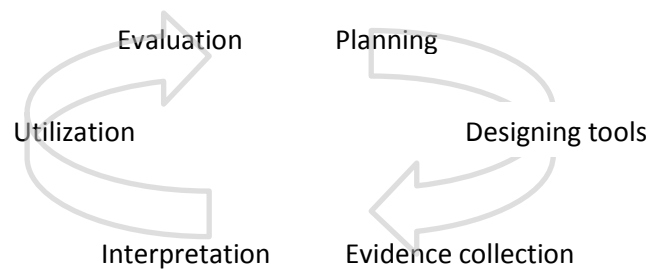


Figure 2: AfL cycle

The AfL cycle and the inquiry cycle can thus be linked on theoretical grounds. Both processes also share the same goal; advancement of self-regulated learning. The essential self-regulated learning capacity is thus stimulated by teachers' inquiry. Furthermore, teachers can function as an example for their students in self-regulated learning capacity.

Approach in professional development

The afore mentioned elements of the Theory of Improvement are strongly linked. Applying the elements to an approach for optimal professional development, it's essential to facilitate the challenging of the conceptions on assessment and assessment practice in the personal inquiry.

Van Veen and colleagues (2010) report in their literature review on teacher professionalization of good practices of teachers working on tasks collaboratively and having dialogues of their experiences in practice. A more on the workplace situated approach in professionalization prevents the often experienced problems in transferring professional growth to the workplace (Imants & Van Veen, 2010), stimulates a teacher culture that encourages collaborative learning (Avalos, 2011) and stimulates reflection with colleagues on their actual practice as an effective element of professional development (Byrne et al, 2010).

These advantages can be realised when teachers are professionalized in a professional learning community (PLC) in which a group of people share an interest, issue or passion for a certain subject and deepen their expertise and knowledge in that subject by continuous interaction (Bruining & Uytendaal, 2010). A conceptual similar concept as the collaborative learning communities (Cobb, McClain, De Silva Lamberg & Dean, 2003) and communities of inquiry (Engeström, 1994) in which professionals discuss, study and construct conceptual principles and ideas, generate and enact new strategies for their work environment and share insights on what they have learned. However, there is no empirical evidence for the effectiveness of this kind of professionalization in comparison to the more classical and still dominant classic professionalization programs of not on the workplace situated courses and training (Van Veen et al, 2010). Nevertheless, the results of studies on these forms of collaborative enquiry in professional development show a positive effect on teachers' professional growth and are expected to result in meaningful shifts in teacher practice (Tillema & Van der Westhuizen, 2007).

The expected positive outcomes and the inquiry which is the core of the PLC, underpin the in the project 'Kracht van beoordelen' chosen professional development approach of a PLC.

4. Congruent professional development of teachers and middle management

Knowing the first three elements of the Theory of Improvement and the approach in the professional development, the fourth element of the Theory of Improvement is congruent professional development of teachers and middle management.

Teachers and middle management, e.g. team leaders, are professionalized at the same moment and in the same community. Teachers are professionalized in AfL and team leaders in applying HRD techniques to stimulate the teachers' development in AfL practice. The motivation for this mutual professionalization is that the HRD process forms a cycle of observation, planning, action and review to improve individual performance (Gibb, 2008). This is a comparable inquiry cycle with

the sharing of the same goal as the AfL process. Because of this theoretical similarity, it's logical to align the development of teachers' conceptions of AfL practice and HRD practice by professionalising teachers and team leaders at the same time in the PLC.

Besides this theoretical similarity there are also techniques, f.i. 360degree feedback, that can be applied in both the AfL and HRD process. Teachers learn to apply AfL to stimulate competence development and self-regulated learning capacity of their students and team leaders learn to apply assessment techniques to stimulate teachers to regulate their own professional learning. Furthermore, understanding of what AfL is and what teachers need to do and learn in that process is supportive for the design and practice of the HRD process to support teachers in their competence development in applying AfL.

Conditional for a proper use of the assessment techniques are the conceptions on assessment which are collaboratively challenged and which are (because of the comparable ultimate goal) probably similar for the AfL and HRD process.

Moreover, to make the improvement of AfL practice and HRD practice a joint effort, will probably effect the culture for change at the school location which will impact on the implementation of AfL (Cooper & Cowie, 2010). The involvement of team leaders will probably also increase the chance that the improvement forms part of the total school development, which is important for a sustainable change. The improvement becomes part of an effort to design the school as a place to learn for students, teachers and team leaders (Van Veen et al, 2010). This will stimulate teachers to be learning-oriented in their work which makes them an example in life-long learning for their students.

The Theory of Improvement is summarized in figure 3.

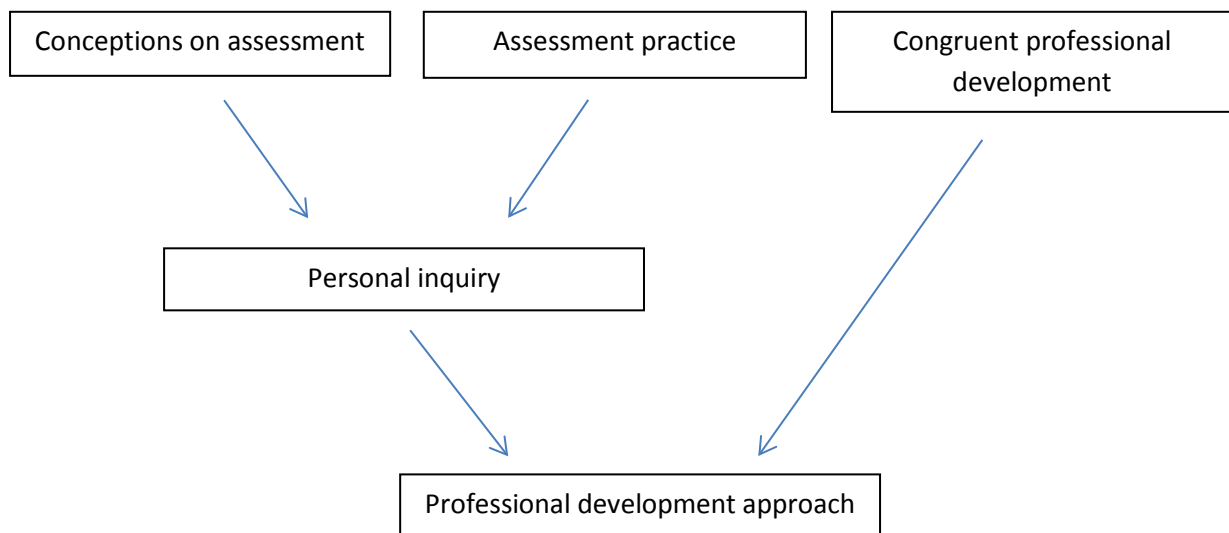


Figure 3: Theory of Improvement

Conditional features

Besides the described elements of the Theory of Improvement which are specifically important for professional development in AfL, there are some features which are conditional for professional development broader than assessment in the chosen approach in professional development. These features are listed below.

- **Dialogue**

Crucial in knowledge construction is conversation and dialogue (Orland-Barak & Tillema, 2006). Dialogue cannot be mistaken with discussion. Dixon (2000) defines dialogue as a joint process

in which individuals create knowledge. Teachers naturally talk to each other, and such a dialogue can easily take on an educational purpose (Avalos, 2011) and results in joint meaning-making, which makes it possible to initiate change. Dialogue is conceptually related to the 'Learning conversation' of Allard, Goldblatt, Kemball, Kendrick, Millen, & Smith (2007) which is an effective element for professional development (Byrne, Brown & Challen, 2010) because it helps to build knowledge in doing the collaborative enquiry.

- **Feedback on practice**

In how to give feedback, it's important to take note of Hattie and Timperly (2007) who developed a model in which four forms of feedback are distinguished: feedback about the task, about the processing of the task, about self-regulation and about the self as a person. Feedback on the task is effective when it concerns misinterpretations of the task, and is used to provide students with cues that guide them to a correct interpretation of the task. Feedback about the processing of the task is effective when students are searching for a strategy to solve a certain task. Feedback about self-regulation supports students in their willingness to invest effort and in the attribution of success to internal factors which leads to an increase in self-confidence. Feedback about the self as a person (compliments and praise) in general leads to avoidance of difficult tasks, minimizing effort and an increase in performance anxiety.

- **Safe learning environment**

A safe learning environment in which there is space to reflect on conceptual change is a necessary condition (Runhaar et al, 2009). Such a safe exchange of experiences is regarded as the key to growth (Byrne et al, 2010) and stimulates learning (Birenbaum et al, 2011) of both the individual teacher as the team of teachers (Zwart, Attema-Noordewier, Korthagen, 2011). To strengthen a safe learning environment, it's advocated by Zwart et al (2011) that it is effective to use the qualities, commitment and inspiration that teachers already possess to promote further development. If teachers are encouraged to identify and act on their personal strengths, they will enrich and fulfill the by Deci and Ryan (2000) identified basic needs for autonomy, competence and relatedness. The study of Zwart and colleagues (2011) showed that fulfilling these basic needs will probably result in more autonomous teachers who can develop themselves along self-chosen directions. The quality of the teachers is the most effective factor to stimulate students' learning.

Discussion and concluding remarks

The motivation for this study was the often experienced lack of a Theory of Improvement in teachers' professional development in which is described how characteristics of the professionalization program contribute to teachers' learning (Van Veen et al, 2010). A Theory of Improvement might specifically be relevant for AfL because of the complexity to professionalize teachers in this assessment approach (Birenbaum, 2011; Smith, 2011; Segers and Tillema, 2011). A Theory of Improvement underpins the professional development program and is essential for the effectiveness of the program. A profound theoretical search forms thus the basis for successful professional development.

The search in literature resulted in essential insights in assessment and teacher professional development issues which will probably have a positive effect on the results of the professional development program. This Theory of Improvement' is being applied in the educational reform project Kracht van beoordelen (Power of assessing) which runs from September 2011 to June 2014. The successes and failures of this Theory of Improvement is one of the results of a following study and will contribute to the literature on professionalization in AfL. The Theory of Improvement now functions as a theoretical base for the preparation and evaluation of the PLC sessions. As one of the participants already remarked after the explanation of the design of the professional development

and the function of the Theory of Improvement: "It's nice that it's based on something and that we are not doing just what."

A further strong element of a Theory of Improvement is the realization that teacher professional development should stimulate teachers learning which results in higher student outcomes (Avalos, 2011). An important focus in professionalization should thus be the improvement of students' learning. An element which should not be forgotten in this regard is the need to create a culture for learning at the workplace which is essential to stimulate teachers' and thus students' learning.

Limitation of the literature search in this study is that it does give a certain ground for the professionalization program, but the used databases were too small to get a balanced overview of the available literature. However, the main limitations of the study are the lack of inclusion and exclusion criteria based on literature for the selection of literature and the failure not to develop a clear search strategy. Such a systematic literature review results in a more thorough literature selection and a more thorough 'theory of improvement'.

However, the now designed Theory of Improvement is a good start for a systematic literature search and can function as an example for other Theories of Improvement in professional development programs. This study can thus be considered as a suitable preparatory study which might encourage others to study the process of professional development in AfL and to design a Theory of Improvement for professional development in AfL to stimulate students' learning.

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