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A model of teacher agency in professional development and school reform

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ABSTRACT
In research on teacher professional development and school reform attention for the role of teacher agency has been growing significantly during the last decade. The objective of this study is to create a model with the potential to view professional development and school reform from a teacher agency perspective at multiple levels.

The model of teacher agency in professional development and school reform is built on five characteristics; it (1) presents the teacher as an actor, (2) depicts dynamic relationships, (3) treats professional development and school reform as inherently contextualized, including multiple levels, (4) includes the professional development and school reform content as variable and (5) considers outcomes as part of a continuing cycle.

To illustrate the usefulness of the model as an analytical tool 36 research articles on professional development and school reform were selected. These articles shared a focus on teacher agency. The analysis showed that research on teacher agency varies in how these five characteristics are elaborated. Moreover, the model demonstrated to be a promising tool to research multilevel complexity by integrating theoretical insights in, and empirical research results of school reform and professional development.

KEYWORDS
Teacher agency; model; professional development; school reform

1. Introduction
In research on teacher professional development and school reform attention for the role of teacher agency has been growing significantly during the last decade. In this period a considerable body of empirical research literature has been published on this topic (Appendix 1). Besides, articles on teacher agency have been published with a focus on development of the concept (Biesta, Priestley, & Robinson, 2015; Eteläpelto, Vähäsantanen, Hökkä, & Paloniemi, 2013; Priestly, Edwards, Priestly, & Miller, 2012).

At least three reasons can be identified for this focus on teacher agency. Firstly, there is the awareness of the active and agentic role of teachers as change agents in professional development, school reform and school improvement. Secondly, the specific problem of sustained change in professional and school development urges for the illumination of the agentic role of teachers in professional development and school reform, as agentic action is related to important topics like professional identity and change capacity of schools (Eteläpelto et al., 2013; Priestly et al., 2012). Finally, attention is growing for the role of teachers’ work environment in professional development and school reform (Hoekstra, Korthagen, Brekelmans, Beijaard, & Imants, 2009; Meirink, Imants, Meijer, & Verloop, 2010; Imants, Wubbels, &
Teacher learning for professional and school development is embedded within teachers’ daily work environments. For this reason, recently developed insights in the role of agency in work environments can help to understand the processes and outcomes of professional development and school reform (Billett, 2008; Evans, 2017).

Two approaches of agency can be distinguished in the literature (Goller & Paloniemi, 2017). In one approach agency is understood as an individual characteristic (‘capacity’). Bandura (2001, p.1) defines agency as ‘the capacity to exercise control over the nature and quality of one’s life’ (Bandura, 2001, p.1). Another approach to agency is directly associated with action, that is things that individuals or collectives actually do while affecting their work and professional identity. According to Eteläpelto et al. (2013) ‘professional agency is practiced when teachers and/or communities in schools influence, make choices, and take stances in ways that affect their work and their professional identity’ (p. 61). In both meanings, agency is associated with individuals who, alone or in groups, in a given situation, make decisions, take initiatives, act proactively rather than reactively, and deliberately strive and function to reach a certain end. This implies that agency is about individuals or collectives who are interacting with and within specific contexts. In this article, the specific contexts that will be explored are professional development and school reform.

Professional development can be defined as those processes and activities designed to enhance the professional knowledge, skills and attitudes of teachers on an individual level so that they might, in turn, improve the learning of students (Guskey, 2002). The focus of school improvement lies on improving instructional practices and outcomes at school level, whereas school reform more comprehensively focuses on schools reinventing, reorganizing and revitalizing entire schools into equitable and educationally excellent places (Borman, Hewes, Overman, & Brown, 2003). Regarding professional development, school improvement and school reform programs, teachers play a central role: they interact with the content of these programs, as well as with the school and classroom work environments in which these programs are assumed to be effectively introduced. In those cases, teachers’ agency is embedded in multi-faceted and multi-level work environments. To study the central role of teacher agency in professional development and school reform, a model needs to embody this interactive and multi-level character, including any level of change from individual level to team, school and above school level.

In research and theory on professional development and school reform, the interactive concept of teacher agency is vulnerable for two biases. One bias is that the opportunities for agentic action are overestimated in case of a ‘voluntarian’ individual approach. The other bias is that these opportunities are neglected or perceived as restricted in line with a ‘deterministic’ systems approach (Priestly et al., 2012). In order to get some grip on these two biases, a model needs to balance individual and systems approaches of teacher agency in professional development and school reform.

Several general models for professional development (Clarke & Hollingsworth, 2002; Desimone, 2009; Guskey, 2002; Shulman & Shulman, 2004) and school reform (Creemers & Kyriakides, 2008; Leithwood, Louis, Anderson, & Wahlstrom, 2004; Louis, Leithwood, Wahlstrom, & Anderson, 2010) that were published in the last decades capture complexities of professional development and school reform. These models build on general theoretical scopes, as opposed to models that underline specific research projects. The models present useful building blocks or characteristics for a comprehensive model for the analysis of the role of teacher agency in professional development and school reform. This especially holds for the model of professional growth (Clarke & Hollingsworth, 2002) and the model of leadership and school improvement by Louis et al. (2010). In addition, a dynamic model of teacher agency is developed by Biesta et al. (2015). This model helps to explain teacher agency as such, but it does not position teacher agency in the context of professional development and school reform. None of these models completely grasp the complexity of the phenomenon, as we will argue in section 2.

This article aims to (1) create a model for analysing the role of teacher agency in professional development and school reform that balances the individual teacher level and school system level. To do so, the model will pay specific attention to content of school reform and professional development and school reform that balances the individual teacher level and school system level.
development programs, and outcomes of these programs. Furthermore, (2) the proposed model needs to be helpful in getting a grip on the interactive and multi-level character of complex interrelationships and dynamics between professional development and school reform processes.

From a scholarly perspective, the teacher agency model might serve as a bridge between professional development and school reform research and theory, where both fields mostly study teacher change in their separate traditions. As such, the model can show methodological implications for research that aims to grasp the complexities of professional development and school reform.

The following section discusses teacher agency in the contexts of (1) professional development and school reform, and (2) teachers’ work environment in schools. Based on these insights the model of teacher agency in professional development and school reform will be presented in section 3. In section 4 the analytical function of the model will be explored by using it as an instrument to identify strengths and limitations in existing research on professional development, school reform and teacher agency.

2. Theoretical background

This section starts with the discussion of some characteristics of teachers’ agency and their work context related to professional development and school reform. Next, two models for professional development and school improvement are analysed on the role of the characteristics in these models.

2.1. Teacher agency, professional development and school reform

Within the discourse of agency, teacher agency is considered a specific form of professional agency—their active contribution to shaping their work and its conditions is assumed to be an indispensable element of good and meaningful education (Biesta et al., 2015). The socio-cultural perspective on agency (Giddens, 1984) gives ample opportunity to understand the role of teacher agency in professional development and school reform: in this perspective, interdependence between the individual and the social context is central. Teacher agency is realized within socio-cultural constraints, for example, national and school curriculum, professional and power relationships with colleagues and management, and dominant culture in the school. At the same time, teachers’ agency is bounded by available resources, like classroom equipment, instructional methods, ICT devices. However, these constraints and boundaries are not completely out of control for teachers. Depending on the teachers’ interpretation of these contextual constrains and boundaries, and depending on their agency, teachers enact the environments within their school and outside the school. Building on these insights, Eteläpelto et al. (2013) conceptualize teacher agency from a subject-centred socio-cultural perspective, taking individual agency and social context to be analytically separate but mutually constitutive, and in complex ways highly interdependent. Moreover, traditionally teacher autonomy is significant in matters of pedagogics within their classrooms.

According to Biesta et al. (2015) teacher agency encompasses the quality of actors’ engagement with contexts-for-action, and the quality of how actors enact these contexts. Teachers’ enactment concerns the active role that teachers as organizational members of the school play in (re)inventing the context within which they work, and which in turn imposes constraints and boundaries on teachers (Weick, 2001). How organizations and organizational members generate self-validating knowledge of their environments starts from the inventions of these environments by these actors, even though parsing and enactment of these environments are constrained by past experience. The implication is that teachers’ enactment of their work environment is a source of potential variation, possibly resulting in change or continuation within this work environment (Weick, 1979).

Enactment of the work environment (reinvention) by teachers is followed by experiencing and understanding the work environment in and around the school in a specific way (reinterpretation), including potential variations and continuities that were enacted. This interaction between
reinvention and reinterpretation creates opportunities for change in the work environment (Weick, 1995). This change may, or may not, be established. Possibly these opportunities are denied as threatening the institutionalized practices and routines.

The process of enactment allows teachers to negotiate their personal pathways when their work organizations undergo fundamental changes (Vähäsantanen & Eteläpelto, 2011). In this self-positioning teachers adopt a personal pathway to engage in change with varying degrees of continuity and transformation. Related to these varying personal pathways, four types of teachers’ search for meaning of reform were identified by Luttenberg, Van Veen, & Imants (2013). These authors explicitly include the content of the reform program in their analysis of how teachers enact change. They assume that teachers are looking for cohesion between (a) the content of the reform, (b) the work conditions in the school and (c) their personal autonomy within their work environment. This not only results in diverging engagement towards change but it also results in diverging enactments of the reform content.  

Although associated with promoting creativity, motivation, autonomy and self-fulfilment, agency can result in continuity as well as change (Eteläpelto et al., 2013; Goller & Paloniemi, 2017; Bandura, 2001). For example, past patterns of thought and action based on routines can be reactivated through agency, contributing to stability and order in the school (Biesta et al., 2015; Priestly et al., 2012). Simultaneously, specifically in the context of school reform and teacher professional development, agency can also take the form of resistance to change and a critical stance toward aspects of organizational structure (Vähäsantanen & Eteläpelto, 2011). Agency for that reason should not be treated a priori as a positive factor for reform and development. Agency is a significant factor, but its effects and extent depend on teachers’ enactments of structural entities, and teachers’ interpretations of the outcomes of these actions. These effects do not necessarily mean improvements in performance in the eyes of an external observer. They can also involve the (re)invention of what the external assessor would consider inadequate teaching practices or beliefs about teaching (Hoekstra et al., 2009).

2.2. Teacher agency and their work environment

In contexts of professional development or school reform programs teachers are assumed to contribute to the implementation of improvements in their classroom and school practices. To realize aspired changes, programs for professional development and school reform try to engage teachers in the development of knowledge and skills for new work practices, individual or as a team.

According to insights in dual participation (Billett, 2004), schools as workplaces afford opportunities for teachers to change their practices in specific ways. Simultaneously, teachers elect if and how they engage in classroom and school activities with the support and guidance provided by the opportunities in the work environment. Active engagement with, and enactment of these opportunities is seen as a core component of teacher change in the work context (Tynjälä, 2013). Lee and Roth (2007) describe the relationship between the individual and the organization as a mutual relation: ‘learning individuals make learning organizations what they are while the latter simultaneously provide necessary affordances or action possibilities for its members to develop’ (p. 93). How teachers enact professional development and school reform cannot be understood without taking teachers’ interactions with their work environments into consideration.

Colleagues, students and school leaders are inherent part of teachers’ work environment. The largest part of their working day, teachers work individually with (a) group(s) of students, rather isolated from their colleagues. The most meaningful work experiences will therefore be gained in the work with students, in the student related work with colleagues, and in the interactions with the workplace conditions that are closely linked to the work with students and colleagues. As a result, teachers’ enactment of the structural aspects of the school is first and foremost a process of micro-interaction.
School conditions and processes that are located at the general school level, or in the administrators’ sphere (Hanson, 2003) can be assumed to affect teacher learning processes and results in an indirect way, more specifically, as mediated by processes of reinvention and reinterpretation by teachers in their own sphere (Imants & Van Veen, 2010; Luttenberg, Imants, & Van Veen, 2013). Opposed to that, in mainstream research on school reform and professional development, school conditions often are treated as conditions for change, separate from teachers’ actions, rather than affordances in the work environment that are enacted by teachers. Teachers’ enactments of their work environment in the context of professional development and school reform primarily are located in the teachers’ own sphere of influence, this is in the interactions where they practice their agency. Besides, general school conditions will affect teachers’ action in their own spheres mediated by teachers’ interpretations.

2.3. Characteristics of teacher agency in professional development and school reform

The preceding discussion of teacher agency and work environment in the context of school reform and professional development described five characteristics for the analysis of current models and the construction of a model of teacher agency in professional development and school reform. First, three general characteristics of an agency approach of teachers’ work and learning to follow from the discussed theoretical perspectives above.

(1) The role of individuals (active or passive); a direct implication of the agency approach is that teachers, as well as other individuals (students, school leaders, parents), are positioned as active participants in professional development and school reform, not as passive variable entities; in the agency approach teachers are actors, not factors.

(2) The character of the relationships in the model (dynamic or linear); the continuous interaction between agency and structure, as well as the continuous interaction in teachers’ change efforts between ‘doing’ and ‘thinking about doing’ (Fullan, 2007) imply that relationships are dynamic, not one-sided or linear.

(3) The complexity of levels in the work context (single-level or multi-level); although a single study can mainly focus on a single level (teacher, school, or district/nation), in the study of teacher agency, attention for two or more levels and the systemic interaction between these levels will be necessary, because of the interaction between individual and context. The focus should be on characteristics of the direct work environment of teachers. Aspects of school policy, managerial decision making, general school culture, and national policy will play a more indirect role in this interaction.

Furthermore, the fourth and the fifth characteristic are related to the first three characteristics, but these focus specifically on the analysis of the role of agency in school reform and professional development.

(1) The position of the content of professional development and school reform (inclusion or exclusion); the goals, intentions, objectives, and also methods and strategies on how these shall to be reached, make up the content of professional development and school reform. Content can be considered as a variable entity that can, and probably will, change in the course of the process. In case of inclusion, the content of professional development or reform is a variable entity because it is subject of teachers’ enactment, and, as a result of that it changes throughout the process as a result of this enactment. Content then is redefined by teachers and therefore viewed in interaction with teachers’ enactment within their work environment. In case of exclusion, content is treated as an external and fixed characteristic. Often, the content serves as an external criterion to evaluate the fidelity of the outcomes and effectiveness of the process. In school reform and development research,
content is frequently treated as a given and constant input for the process, and adaptations are treated only as deviations from the original concept.

(2) The role of outcomes of professional development and school reform (end results or events in a continuing cycle); in a dynamic model, the outcomes of professional development or reform are events in a continuing cycle, not the final result of a linear step by step plan. Teachers often assess the merit of the innovation in terms of experienced gains in efficiency of work and direct improvements in student learning activities and results. It can be assumed that feedback, formal and informal, of information about these results and gains will affect strength and direction of teachers’ continued enactment of the reform and development programs. This implies that outcomes of reform and professional development in schools in terms of changes in teacher practices that affect students’ learning results should be regarded as temporal events in a cycle of change, instead of concluding results. Moreover, as teachers’ interpretations of the content of reform and professional development can change in the course of a change process, this also holds for the specification of valid outcomes of the process by teachers. As a result, a discrepancy can arise between teachers’ specifications of valid outcomes and the original project specifications that guide evaluation studies by researchers, developers, and policymakers. The implication is that the outcomes at a certain point in time of school reform and professional development should not only be treated as results, as is the case in many research on reform and development. The outcomes should also be treated as input for the continuing process of teachers enacting school reform and professional development content. This is illustrated by data-inspired decision-making in schools, in which student learning results (product) are used as feedback (input) for continuous improvement efforts (Earl & Katz, 2006; Schildkamp & Lai, 2013).

2.4 Models on professional development of teachers and school reform

In the introduction, seven models for professional development and school improvement were shortly introduced, of which four models related to professional development: teacher change (Guskey, 2002), professional development (Desimone, 2009), teacher learning (Shulman & Shulman, 2004), and professional growth (Clarke & Hollingsworth, 2002). Three models related to school improvement: leadership and school improvement (Leithwood et al., 2004; Louis et al., 2010), and school improvement and effective instruction (Creemers & Kyriakides, 2008). Based on the five characteristics following from the theoretical exploration, we found that of these seven models, only two models showed several of the five characteristics.

The Louis et al. (2010) model depicts influences of leadership and school improvement on student learning. The model posits teachers in interaction with school conditions, classroom conditions and school leadership. As a result, a substantial part of the relationships is interactive, and multiple levels are represented in the model. However, the relation between school improvement and the outcomes in terms of student learning are linear and unilateral. Moreover, teachers in this model do not enact national (state) and district policies and practices directly, because the school leader is always in between the teacher and policy agents.

The Clarke and Hollingsworth (2002) model of professional growth is dynamic in character, and expresses teachers in agentic roles. However, this model has a one-sided focus on the individual teacher, and the context of teacher growth is only scarcely elaborated. This holds for the direct work environment of the teacher as well as for school and national reform and development policies and practices. Nevertheless, in terms of the dynamics in this model, it serves as a starting point for the construction of the model of teacher agency in professional development and school reform.

3. A model of teacher agency in professional development and school reform

To understand the complexity of, and dynamic processes between professional development and school reform, our objective is to create a model with the potential to view professional
development and school reform from an individual teacher agency perspective, from the school level, and from the above school level, for example, district or school board. The model of teacher agency in professional development and school reform takes explicit position regarding the five characteristics discussed in section 2.3: the model (1) presents the teacher as an actor, (2) depicts dynamic relationships, (3) treats professional development and school reform as inherently contextualized, including multiple levels, (4) includes content of professional development and reform as variable(s) and (5) considers the outcomes as parts of a continuing cycle. The dynamic relationship between individual teacher agentic practice and the structural component of teachers’ work environment as context for teacher practice (perceived work context) is central in the model. It is assumed that teacher agency results from this interaction between individual practice and perceived work context (Figure 1). As such, we follow the approach by which agency is understood as an activity, not as an individual characteristic.

Outcomes of professional development and school reform are specified as individual, group and organizational results. Outcomes are the result of, or affected by, the interactions between individual practice and perceived work context, as is depicted in Figure 1 by the arrow that runs from agency towards the outcomes. Besides, these outcomes affect the perceived work context. To ensure the effectiveness of the outcomes in daily classroom and school practices, these improved practices have to be aligned with the characteristics of, and the processes in the work context. Moreover, the outcomes affect the individual practices of teachers by means of the stream of formal and informal feedback that teachers receive about the effectiveness and the practicality of the outcomes in student learning and in their working conditions. Figure 1 shows these two relations by the two diagonal arrows from outcomes towards individual practice and towards perceived work context.

The position of the concepts of professional development and school reform, including the strategies, follows the agency and work environment insights as discussed in section 2. Firstly, professional development and school reform have an impact on individual practice, which can take many forms. Besides, these concepts and strategies will affect the work context and how the teacher will position her-/himself in this work context. This depends on how the teacher enacts the work context while making sense of the reform or the professional development in the context of their autonomy and identity, and on the teacher’s need to align the changing practices and the actual work context.

An essential part of the model is the impact of the interaction between individual teacher and work environment on the content of professional development and school reform (the arrow from agency towards the reform box). This impact represents that the actual reform and professional

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**Figure 1.** The model of teacher agency in school reform and professional development.
development or reform, when analysed from the viewpoint of teachers’ agency in their work environment, are reinvented and reinterpreted by teachers while enacting the reform or professional development.

4. Teacher agency in professional development and school reform research

The analytical function of the model will be explored by using it to identify strengths and limitations in existing research on professional development and school reform with an explicit focus on teacher agency. More specifically, the model will be used to explore how and in which frequency the five essential characteristics of the model occur in published research on professional development and school reform. With this analysis, it is not our intention to perform a systematic literature review, but an analytical test for the constructed model.

4.1 Selection of research articles

Quantitative and qualitative research articles with an explicit reference to teacher agency were selected and analysed on the occurrence or absence of the five characteristics in that research. Research articles were selected by three searches in Web of Science using the keywords: ‘teacher agency AND professional development’, ‘teacher agency AND school improvement, and ‘teacher agency AND school reform’. The search was limited to articles published between (and including) 1999 and 2015. This resulted in 79 hits (counting articles that were identified in two searches as one hit). Articles were excluded if agency referred to an organization, company or an institute (e.g. consultation agency). Inspection of the abstracts resulted in 44 articles for final analysis (professional development, 27; school improvement, 3; school reform, 14; articles that were identified in both professional development and school improvement/reform are included in the professional development file). Only those articles were selected that focused on foundational education for students (primary, secondary and initial vocational education). Besides, articles should report on empirical (quantitative and qualitative) research as a primary source. Meta-studies, reviews, secondary analysis or position papers were excluded. Articles with unclear methods or definitions, and articles with a purely incidental discussion of agency were excluded. Incidental discussion is the case when the word agency is used once or a few times in the article, without treating agency as a variable in the research. This resulted in a final selection of 36 articles for our analysis (Appendix 1).

4.2 Framework and procedure for analysis

Based on the essential characteristics in the model, a framework for analysis was constructed (Table 1): the role of individuals (active or passive), character of relationships (linear or dynamic), levels of analysis (multiple or single), the role of outcomes, and position of content of professional development and school reform. Complexity of levels is elaborated in the framework as Primary unit of analysis and Affected unit of analysis. The reason for making a distinction between primary unit for analysis and affected unit of analysis is that both can vary in single research. In a school reform study in which the school is the primary unit of analysis, the school as well as teachers in the school can be studied as being affected by the reform. And in a professional development study, in which teachers are the primary units of analysis, outcomes at the school level can be included. In general, this makes studies in school reform and professional development quite complex to analyse.

All 36 articles were analysed according to this framework by completing Table 1 (filling in the columns Article 1, Article 2, etc.). Entries in the cells were scores expressed in numbers. Each possible alternative received a number (1, 2, etc.). For example, place outcomes in cycle is scored 1 when the outcome is analysed as part of a cycle in this research, and 2 when the outcome is analysed as an end result. In some articles, not all characteristics from the integrated model have
been identified. This was related to specific foci of research that was reported in the articles. In such cases, a cell remained empty, for example, when the article only presents the analysis of a process as it relates to input, but does not report about outcomes.

The analysis of the articles has been executed by the two authors of this article. As a first step, both of the authors analysed the same three articles that were randomly selected from the three groups of articles (professional development, school reform and school improvement). Next, the results of this analysis were discussed, until agreement was reached about the meaning of the categories in the framework. Consequently, each author analysed half of the remaining articles according to the five essential characteristics of the model in Table 1.

### 4.3. Results

An overview of the primary units of analysis and the affected units in research is presented in Table 2. In almost all articles the individual teacher (20) or the school (14) are the primary unit of analysis. This result is in line with the proportion of articles that were identified as professional development articles, or school reform and school improvement articles. The two articles that had a different focus, concerned a publication on a national educational reform, and a paper that combined the individual perspective and the level of school organization. More variety was found regarding the affected unit by the described change or development: we found articles that describe the individual teacher (18), the school (9), and both individual and school (5) as the affected unit of analysis. Table 2 shows that we found four articles that also focus on effects at the national level.

The scores for the five essential characteristics of the model integrating professional development and school reform from an agency perspective from section 2.2. are summarized in Table 3. Given the criteria for selection of articles (‘agency AND . . . ’) it can be expected that teachers play an active role in this research. Indeed, in 32 of 36 research articles teachers (and other actors) play active, agentic roles. In research where teachers are positioned as passive factors, agency is treated as a personal characteristic that is measured by means of a questionnaire, rating or observation. For the quality of the relations in the research (dynamic or linear), the same results are found. Most of the articles analyse teachers as active and relationships as dynamic.
Table 2. Primary units of analysis and affected units of analysis in 36 articles. Primary units of analysis refer to the main focal unit as described in the article; Affected unit of analysis refers to the secondary, impacted party as described in the article.

<table>
<thead>
<tr>
<th>Affected Unit of Analysis</th>
<th>Primary Unit of Analysis</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Individual</td>
<td>School</td>
</tr>
<tr>
<td>Individual</td>
<td>12</td>
<td>5</td>
</tr>
<tr>
<td>School</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Individual and school</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Individual and national education system</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>School and national education system</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Individual, school, and national education system</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>14</td>
</tr>
</tbody>
</table>

Table 3. Results of the analysis of five essential characteristics of agency in professional development and school reform. The five main characteristics central to studying professional development or school reform.

<table>
<thead>
<tr>
<th>Characteristic scored +</th>
<th>Characteristic scored -</th>
<th>Not clear</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actor: active (+) or passive (-)</td>
<td>32</td>
<td>4 (1 both)</td>
</tr>
<tr>
<td>Relations: dynamic (+) or linear (-)</td>
<td>32</td>
<td>4 (1 both)</td>
</tr>
<tr>
<td>Place of content: included (+) or excluded (-)</td>
<td>23</td>
<td>10</td>
</tr>
<tr>
<td>Outcomes: in cycle (+) or end result (-)</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Multiple levels (+) or single level (-)</td>
<td>17</td>
<td>19</td>
</tr>
</tbody>
</table>

Table 4 shows that in the majority of cases where content is excluded as a variable in the reform, the outcomes of the reform or professional development are treated as end result of a change process (8 out of 10). Reversely, in only half of the cases where outcomes are treated as the end result, content is excluded as a variable (8 out of 15). This indicates that there seems to be a connection between the outcomes as an end result and the inclusion or exclusion of the content as a variable entity. Nonetheless, the results from this analysis seem to point out that in particular, the exclusion of content as a variable is indicative for the way outcomes are considered.

This analysis of 36 research articles by means of the model of teacher agency in professional development and school reform leads to the following insights regarding the five characteristics that underlie the model (see: section 2.3).

In most of the studies teachers play an active, agentic role, which means that in a small minority of studies on teacher agency, this active role was not identified (1. The role of individuals). Most of the articles reported that the researched development or reform processes were dynamic instead of linear (2. The character of relationships in the model). More interaction within the same level of analysis was observed,

Table 4. The relationship between the roles of content and outcomes.

<table>
<thead>
<tr>
<th>Content</th>
<th>Not clear</th>
<th>Inclusion</th>
<th>Exclusion</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not clear</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>In cycle</td>
<td>0</td>
<td>13</td>
<td>2</td>
<td>15</td>
</tr>
<tr>
<td>End result</td>
<td>0</td>
<td>7</td>
<td>8</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>3</td>
<td>23</td>
<td>10</td>
<td>36</td>
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</tbody>
</table>
than interaction between levels; studies with an explicit attention for interaction between levels were scarce (3. The complexity of levels in the work context). In a majority of studies (about two out of three) the content of professional development and reform were included as variable (4. The position of the content of professional development and school reform). In half of the studies, outcomes were treated as part of a continuing process; in the other half of the studies outcomes were treated as end results. Moreover, in most of the studies where content was excluded, the outcomes were treated as end results. In some studies where the outcomes were treated as an end result content was treated as a variable aspect in professional development or school reform (5. The role of outcomes of professional development and school reform).

5. Discussion and conclusion

The first aim of this article was to create a model for analysing the role of teacher agency in professional development and school reform from both an individual teacher perspective and a school system perspective. Five essential characteristics of a model for integrating professional development and school reform from an agency perspective were identified: the active role of individuals (as opposed to passive); the dynamic character of the relationships (as opposed to linear); the complexity of multiple levels in the work context (as opposed to one single level); the outcomes of professional development and school reform as events in a continuing cycle (as opposed to end results); the inclusion of the content of professional development and school reform (as opposed to exclusion). Existing models for professional development (four models) and school improvement (three models) were considered, but none of these models showed all five characteristics.

Starting from these five characteristics, a model of the role of teacher agency in professional development and school reform is proposed in the article.

The second aim was to explore whether the proposed model proves to be helpful in getting a grip on complex interrelationships and dynamics within and between professional development and school reform processes. The analysis of 36 research articles from an agency perspective showed that the model is a useful tool to analyse research on teacher agency, professional development and school reform in a comparable way.

Remarkably, the majority of the articles described that the reported process was dynamic in nature, instead of linear. Nonetheless, outcomes were still considered ‘end results’ in half of the articles, and the content of professional development or school reform was not considered a variable in about one-third of the cases. These results are merely an illustration of the analytical possibilities of the model of teacher agency. In order to state claims on the way teachers’ agency is described throughout studies on professional development or school reform would require a more systematic review sample and analysis.

In terms of dynamics and character of relationships, the model of teacher agency presented in this article bears a resemblance with the Clarke and Hollingsworth (2002) model of ‘teacher professional growth’, since it shows dynamic relations and characteristics in a similar way (enactment and feedback or reflection). One difference lies in the theoretical assumptions: agency theory and organizational theory underlie the model of teacher agency, whereas professional growth theory is the basis for the model of professional growth. Related is the second difference in the models: in the professional growth model the focus is on intra-individual processes (micro), and in the agency model the focus is on person-organization interactions (meso). This meso-focus creates the opportunity to combine the analysis of professional development and school reform in the teacher agency model.

Social cognitive theory on agency distinguishes personal, proxy, and collective agency (Bandura, 2001). Eteläpelto et al. (2013) stress that agency in schools can be practised by teachers and/or communities. The discussion of the model in this article takes teachers’ personal agency as the starting point. However, that does not mean that the model a priori is restricted to personal agency. Future research can explore the value of the model for analysing collective agency besides...
personal agency. Important related concepts, like power relationships and professional identity, are not explicitly discussed in the article. The model analyses agency at an abstract level, and as a result specific important concepts are not explicitly elaborated in the model. Power relationships are assumed to be inherent aspects of the perceived work context (organizational characteristics/processes), and analogous to that, professional identity is regarded as an aspect of individual practice (individual characteristics and/or behaviour). Future research should clarify if these assumptions can withstand empirical and conceptual tests.

Treating outcomes as the end product in a linear way, and treating content of programs as a fixed factor, as was the case in a substantial part of the 36 articles that were analysed, might be artefacts of specific research objectives. Several of the studies that were analysed either ignored or assessed the formal(-ized) outcomes of school reform or professional development programs. The sponsors of these reforms (policymakers, foundations, school boards, etc.) might be especially interested in short-term results that can be associated in a direct, quasi-causal, way with the formal goals, strategy, or content of their programs. Besides, from a theoretical point of view, this treatment of content and outcomes expresses a mechanic research approach of professional development and school reform, based on an ‘input-output’ inspired analysis. The agency model offers opportunities for a dynamic approach, with a focus on processes that connect goals, contents and outcomes as interrelated variables.

Through the analysis, the model of teacher agency shows methodological implications for research that aim to grasp the complexities of professional development and school reform and the role of teacher agency in these processes. The model can serve as a dynamic alternative for the linear models when the aim is to study teachers and other agents as actors, not as factors, and to get a better understanding of the longitudinal dynamics of change processes, for example, to analyse the hardly understood problem of sustained change.

The model can serve as an instrument to integrate detailed results of research on specific aspects of professional development and school reform in a comprehensive and dynamic framework. Results of several related research projects can be combined in a comprehensive overview, including the complexities and paradoxes that come along with such integrated theory of professional development and school reform.

From a practical and policy perspective the model of teacher agency is a tool to identify (potential) complexities in professional development and reform processes before, during and after these projects. It can serve as an alternative for planning models that are mechanical in nature. More specifically, the model can serve as a tool to plan, monitor and evaluate professional development and school reform projects from a dynamic ‘growth’ perspective, for example, in the context of teacher design teams or data teams of teachers (Schildkamp & Poortman, 2015). Within such teams, cyclical processes of reinvention and reinterpretation (Weick, 1995)—of doing and thinking-about-doing (Fullan, 2007)—play central roles. In these processes feedback loops involving teachers play prominent roles, such as feedback about the pros and cons of teachers’ designs in their practices and their students’ learning, and feedback about the progress in student learning that result from data-inspired improvements in instruction. The important role of these feedback loops and the reflection by participants based on the information that is fed back is not always recognized.

Another potential pitfall of such teams is that the teachers who participate in innovative teams are functioning as isolated islands within their schools. This is illustrated by the functioning and yields of teacher networks that operate within schools or at cross-school level, like collaborative design teams or professional learning communities. The aim of these networks is to develop curriculum and pedagogical improvements, in combination with the professional development of the teachers who participate in the networks (Hanraets, Hulsebosch, & De Laat, 2011; Vescio, Ross, & Adams, 2008; Voogt et al., 2015). A potential problem associated with such networks is that their yields are restricted to the professional learning of the direct participants. There is no, or only limited, sharing by the participants with colleagues in their schools (in
departments or teams) of the results. When planning and coaching of such networks starts from the model of teacher agency, this might be helpful in giving the yields of these networks a place in the school system, and in giving the school insights to deal with the risk of losing those gains after a certain period. For sustained change to result from the effort of these teams, the teams need to be integral part of systemic professional and school development programs at the school level.

**Note**

1. The five patterns of personal pathways identified by Vähäsantanen and Eteläpelto (2011) are: (1) empowerment, (2) critical but adaptive, (3) open and expectant, (4) successful transformation and (5) struggling. Luttenberg, Van Veen, & Imants (2013) distinguishes four types of enactment of reform: (1) accommodation, (2) assimilation, (3) toleration, and (4) distantiation (these types partly build on work by Coburn, 2004). Although not identical, these two typologies point in the same direction.

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No potential conflict of interest was reported by the authors.

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