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Impacts of school development strategies and professional learning communities

ICSEI Conference 2013,
Santiago de Chile (Chile) January 03th – 06h, 2013
1. Theoretical framework and project structure
Project structure

• International common project connected with TIMSS 2007:
  – Seven participating countries, data collection in six countries
  – Common design of the contents and analysis in all participating countries
  – Use of common instruments

• Own projects in every participating country
  – In-depth research of certain aspects from the common project
  – Own questions with connection to the common project but additional instruments and analyses

• Financial support by ESF and research funding organisations in each country; the German project is financed by
Goals of the common project

– Further development of the *Dynamic Model of Educational Effectiveness* (Creemers & Kyriakides, 2008)
– Creation of a theory-based and empirical funded framework for educational decisions in the context of teaching development and evaluation
– Review of the influence of predictors on system, school and classroom level on teaching practice and on pupils’ achievements on fourth grade
– Analysis and explanation of achievement differences between participating countries resp. between schools in the participating countries
– Conclusions for school policy and research
Theoretical framework: Assumptions based on research findings

- Professional and collaborative work in teams is the base and a crucial condition for organisational learning.
- Institutionalized teams enables teachers for professional cooperation with goal orientated acting, intensive exchange, shared decision making, planning and problem-solving (according to Rosenholtz 1991).
- Professional collaboration in teams provides opportunities and supportive environments for individual and organisational learning and for building capacity of change and school development (according to Seashore Louis/Kruse 1995; Leithwood 2000).
- Teacher collaboration in institutionalized teams with characteristics of professional learning communities contributes to teaching improvement and quality of teaching practice (Holtappels et.al. 2008).
Theoretical framework: Assumptions based on research findings

- Goal oriented and professional teamwork with focus on student learning can contribute to added value on student`s achievements.

- Leadership patterns with focus on teaching practice and improvement support quality of teaching and quality of school learning environment (Hallinger & Heck 2010; Holtappels et.al. 2008).

- Readiness for innovation and leadership activities in a way of “leadership for learning” (MacBeath & Townsend 2012; Murphy et.al. 2007) will have impacts on systematic school development efforts and initiate a goal oriented school policy on teaching.

- Schools with systematical and goal oriented development procedures (school program work, self-evaluation, teacher trainings etc.) are able to enhance teaching quality over time (Holtappels 2004).
Architecture of school as a learning organization

Visions + Motivation

- requirements + beliefs
- goals, mission statements, standards
- individual + collective self-efficacy
- transfer of knowledge, further education, trainings

Infrastructure of Innovation

- innovative climate + readiness for innovation
- acceptance by the staff
- innovative climate + readiness for innovation
- innovation-oriented/leadership
- process steering
- institutionalized team building/professional learning communities
- activation + participation of the staff

Strategies and procedures of innovation

- external counseling/support
- networks
- external Evaluation
- data driven school development
- organizational/teaching/personnel development
- school concept/school program work
- internal evaluation as self-evaluation

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2. Research questions and methods
Research questions

1) What kind of school-based strategies on school and teaching development can we find in German primary schools?

2) Can we identify relationships between teacher collaboration as professional learning communities and teaching practice and student’s achievements?

3) How do the school support the establishment of a conducive learning environment? Do predictors of the organisational culture (readiness for innovation, leadership, teacher collaboration) influence school development efforts and teaching practice?

4) Is there an interplay between factors of the organisational culture and process factors of school policy on improvement?
Data base and instruments

• Sample: Each participating country 50 up to 60 primary schools with about 1,000 - 2,500 pupils and all teachers (concerning tested classrooms) in year 2011
• Germany:
  - Headmaster data based on questionnaire in 54 primary schools with regard to school organisation, school policy and school development.
  - Student data (n= 1,228) based on achievement tests in mathematics and science (based on TIMSS-2007-Items) and questionnaire with regard to learning environment, teaching patterns and individual learning behavior (two measure points).
  - Teacher data (n=363) based on questionnaires about teaching practice, teacher cooperation and acting in teams, leadership competencies and school development strategies.
Measurements: School Factors

1) Culture of organisation

- readiness for innovation within the staff
- leadership competencies of headmasters (goal oriented leadership, leadership related to teaching practice, management competencies)
- intensity of teacher cooperation
- involvement of teachers in institutionalised teams
- teacher collaboration on level of professional learning communities (PLC)

2) School development work/ school policy for improvement

- involvement of teachers in school development activities
- school policy on teaching (teaching quantity, teaching quality, provision of learning opportunities)
- school policy on school learning environment (SLE)
- school policy on evaluation
Measurements: Teaching factors on classroom level

• **Teacher practices and teaching patterns**
  – adaptive teaching
  – supporting self-regulated learning
  – effective classroom management
  – differentiated teaching practice within staff

• **Quality and quantity of teaching**
  – modeling
  – structuring
  – application
  – questioning
  – teacher-student-interaction
  – management of time
  – dealing with misbehaviour
3. Empirical results in German primary schools
Quality of leadership competencies of headmasters (assessment by teachers)

PLC-Scales

- management competencies: mean (n=363) = 3.37
- leadership with focus on moderation: mean = 3.28
- leadership with focus on teaching quality: mean = 2.90
- overarching leadership competencies: mean = 3.27

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Operationalization: Activities of cooperation and characteristics of teamwork in PLCs
(dimensions and indicators)*

• **shared goal orientation of teamwork** (for ex.: shared goals and beliefs, stakeholding for goals, carrying out plans, aims for learning success)

• **common analysis, diagnosis and evaluation** (analysis of learning situation, coordination of student monitoring, analysis of data feedback, reflexion and analysis of teaching process)

• **deprivatization** (for ex.: reflexion of problems within team, mutual visit and hospitation of lessons)

• **enhancing effectiveness of teaching** (for ex.: reflexion of quality indicators, common planning of lesson units and projects, development of learning material, development of teaching patterns and effective classroom management)

• **focus on student‘s learning** (for ex.: strategies for enhancing achievements, reflexion of student‘s needs and problems, common diagnosis, focus on support for learning)

* according to Newman 1996; Bonsen & Rolff 2006; Holtappels 2008
### Indicators of Characteristics of cooperation in Professional Learning Communities

<table>
<thead>
<tr>
<th>Characteristic of PLCs</th>
<th>Indicator (Likert scale)</th>
<th>Cronbach’s Alpha</th>
<th>Mean Value</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>shared goals and values</td>
<td>Goal orientation of teamwork (4 Items)</td>
<td>.75</td>
<td>3,35</td>
<td>0,57</td>
</tr>
<tr>
<td>reflexive dialogue and continuous analysis</td>
<td>common analysis, diagnosis and evaluation (7 Items)</td>
<td>.78</td>
<td>2,22</td>
<td>0,62</td>
</tr>
<tr>
<td>intensive communication about teaching and learning</td>
<td>deprivatization of teaching (3 Items)</td>
<td>.33</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>teacher cooperation for enhancing effectiveness of teaching</td>
<td>enhancing effectiveness of teaching (8 Items)</td>
<td>.86</td>
<td>2,55</td>
<td>0,67</td>
</tr>
<tr>
<td>focus on student`s learning achievements</td>
<td>focusing on student’s learning (6 Items)</td>
<td>.79</td>
<td>3,13</td>
<td>0,54</td>
</tr>
</tbody>
</table>
Quality of cooperation in professional learning communities: Characteristics of collaborative teamwork in PLCs

PLC-Scales

- Goal orientation of teamwork: Mean (n=363) = 3.38
- Common analysis, diagnosis and evaluation process of pupils: Mean = 2.17
- Cooperation for enhancing effectiveness of teaching: Mean = 2.47
- Cooperation focusing on student’s learning: Mean = 3.15
Operationalization: Goal orientation and benefits of teamwork in PLCs (dimensions and indicators)*

- **Reducing of isolation**
  (for ex.: shared responsibility, common management of demands, mutual support,)

- **Opportunities for further learning**
  (for ex.: relief, support in case of problems, impulse and help)

- **Supportive and productive environment**
  (for ex.: widening competencies on teaching methods, self-reflexion through observation and feedback, improvement of diagnosis)

- **Building capacity for development of teacher staff**
  (for ex.: use of knowledge and experience, analysis and diagnosis, extending knowledge and findings, problem-solving)

- **Common efforts for improvement of teaching quality**
  (for ex.: improvement of teaching quality, development of teaching patterns, common efforts in pedagogical all-day work)

* according to Hall & Hord 2001
# Indicators of goal orientation and benefits in Professional Learning Communities

<table>
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<tr>
<th>Characteristic of PLCs</th>
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</tr>
</thead>
<tbody>
<tr>
<td>reducing of isolation through intensive communication</td>
<td>reducing of isolation through common responsibility (3 Items)</td>
<td>.82</td>
<td>3.32</td>
<td>0.57</td>
</tr>
<tr>
<td>opportunities for further learning</td>
<td>opportunities for further learning (2 Items)</td>
<td>.76</td>
<td>2.95</td>
<td>0.66</td>
</tr>
<tr>
<td>creating a supportive and productive environment for teachers</td>
<td>supportive and productive environment (3 Items)</td>
<td>.91</td>
<td>3.45</td>
<td>0.57</td>
</tr>
<tr>
<td>enhancing capacity for development within staff</td>
<td>building capacity for teaching development (4 Items)</td>
<td>.81</td>
<td>3.04</td>
<td>0.57</td>
</tr>
<tr>
<td>common efforts for quality improvement</td>
<td>common efforts for improvement of teaching quality (3 Items)</td>
<td>.76</td>
<td>3.17</td>
<td>0.56</td>
</tr>
</tbody>
</table>
Quality of perceived effects of collaboration as professional learning communities: reached goals and benefits

<table>
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>reducing of isolation through common responsibility</td>
<td>3.28</td>
</tr>
<tr>
<td>opportunities for further learning</td>
<td>3.07</td>
</tr>
<tr>
<td>supportive and productive environment</td>
<td>3.44</td>
</tr>
<tr>
<td>enhancing capacity for teaching development</td>
<td>3.05</td>
</tr>
<tr>
<td>common efforts for improvement of teaching</td>
<td>3.18</td>
</tr>
</tbody>
</table>
School improvement efforts and use of school development strategies and procedures

PLC-Scales

- School policy on teaching (overarch.factor) mean (n=363)
- School policy on school learning environment (overarch.factor)
- School policy on evaluation (overarch.factor)
- Use of systematic school development strategies and procedures
- Perceived effectiveness of school program work
- Intensity of internal evaluation
- Perceived effectiveness of internal evaluation

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Relationships between organisational culture and learning culture:
Impacts of school factors on teaching development and teaching practices
Impacts of school factors on teaching practice

SEM with aggregated data on school level (n=45)

Chi² = 1.321, df = 1, p = 0.2504
CFI = 0.995
RMSEA = 0.079
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**Readiness for Innovation within the Staff**

- **Leadership for Learning**
  - Characteristics of Teacher Collaboration
    - Acting like PLC: Reached Goals and Benefits for Teachers
      - Teacher Involvement in Systematic School Development Strategies
  - Differentiated Teaching Practice within Staff

**SEM with aggregated data on school level (n=45)**

- Chi2 = 8.025, df = 6, p = 0.2363
- CFI = 0.983
- RMSEA = 0.081

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readiness for innovation within the staff
leadership for learning

acting like PLC: characteristics of teacher collaboration
acting like PLC: reached goals and benefits for teachers

school policy on teaching: provision of learning opportunities

quality of teaching (overarching factor) rated by student
teacher involvement in systematic school development strategies

SEM with aggregated data on school level (n=45)
Chi2 = 12.745, df = 7, p = 0.0786
CFI = 0.924
RMSEA = 0.126
Relationships between organisational culture, development process factors and teaching practice

SEM with aggregated data on school level (n=45)
Chi² = 2.280, df = 2, p = 0.3199
CFI = 0.997
RMSEA = 0.052
Intercept as Outcome-Model: math achievement

**Individual level n= 702**
- Math achiev T2
- SES / Books ($\gamma = -2.77$)
- Math achiev T1 ($\gamma = 0.63$)

**School level n= 35**
- Leadership overarch.factor ($\gamma = 5.08$)
- PLC-Teamwork with focus on stud Learning ($\gamma = 6.67$)
- PLC: supportive and productive Environm ($\gamma = 10.93$)
- PLC: Reducing isolation of teachers ($\gamma = 13.12$)
- Support students understanding (S) ($\gamma = 10.57$)
- Adaptive teaching (S) ($\gamma = 13.56$)

**Math achiev T1 classroom**
($\gamma = 0.73$)

Reference: Pfeifer & Holtappels 2012
Conclusion

• Leadership for learning and readiness for innovation within the staff are closely related to teacher collaboration as a professional learning community.

• In German primary schools institutionalized teams have gained a high score on acting like a PLC. At the same time teacher teams show a strong goal orientation on professional teamwork and most of the teachers report benefits on all dimensions concerning mutual support, improvement of teaching practice and student’s learning.

• We can identify an interplay of factors of the organisational culture and school development process factors with importance for enhancing quality of teaching.

• But we cannot identify short term effects of school improvement strategies and procedures on quality of teaching. Indirect impacts on student’s achievement can be identified but they are low.

• Especially leadership-for-learning competencies and collaborative work on a level of PLC are able to enhance quality of teaching and induce systematic efforts for school improvement and teaching development.
Thank you for your attention!

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