Journal of Curriculum Studies

Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/tcus20

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Published online: 15 May 2012.

To cite this article: Ilse Ruys, Hilde Van Keer & Antonia Aelterman (2012): Examining pre-service teacher competence in lesson planning pertaining to collaborative learning, Journal of Curriculum Studies, 44:3, 349-379

To link to this article: http://dx.doi.org/10.1080/00220272.2012.675355

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Examining pre-service teacher competence in lesson planning pertaining to collaborative learning

ILSE RUYS, HILDE VAN KEER and ANTONIA AELTERMAN

Taking into account the merits of anticipatory reflection, instructional planning is perceived as an important process in the professionalization of teachers. When implementing a complex instructional strategy such as collaborative learning (CL), a thorough preparation becomes even more important. The purpose of the present study was to investigate the quality of lesson plans focusing on CL implementation. Based on the literature, a scoring rubric with 17 criteria in three domains (instruction, organization and evaluation) was developed and applied to analyse 323 lesson plans of second-year pre-service teachers. The results reveal both strengths (e.g. designing appropriate learning tasks, developing adequate learning materials) and weaknesses (e.g. including social objectives, rules and agreements for collaborative work) in the lesson plans. The rubric proves to be a useful instrument both for research and practice-oriented reflection. The findings provide significant insights for teacher training with regard to CL implementation.

Keywords: instructional planning; anticipatory reflection; pre-service teacher education; collaborative learning; rubric

Introduction

This study concerns the investigation of pre-service teacher competence pertaining to collaborative learning (CL) implementation through the analysis of lesson plans including the use of this teaching strategy. In the last decades, CL has been increasingly recommended by researchers since a large number of studies have pointed at its effectiveness: CL appears to promote cognitive learning processes (Slavin 1996, Fawcett and Garton 2005), social-emotional functioning (Johnson et al. 2001, Marzano et al. 2001) and psychological development (Slavin 1996, Johnson and Johnson 1999, Marzano et al. 2001) of pupils in primary schools. However, teachers' pedagogical behaviour is surely crucial to guarantee these promis-
ing results (Meloth and Deering 1999, Gillies 2006, Gillies and Boyle 2008, Hornby 2009). Consequently, this creates a challenge for teacher education, which has the responsibility to familiarize student teachers with the background of CL as a teaching strategy and the actual implementation of it in practice (Veenman et al. 2002, Cohen et al. 2004). This acknowledgement coincides with (a) an increasing number of professional development initiatives organized to improve teaching competences regarding CL, predominantly in in-service teacher education (e.g. Ishler et al. 1998) and (b) the growing attention to the assessment of teaching competences with regard to CL implementation (e.g. Hornby 2009, Ruys et al. 2010a).

Given the main focus in the literature so far on in-service training, the present study will focus on pre-service teacher education since in this context the foundation for CL implementation should be laid. With regard to the assessment issue, Nijveldt (2007) and Stronge and Tucker (2003) emphasize the significance of combining different sources of assessment in order to acquire a comprehensive and accurate view of teaching competence. Qualitative materials like lesson plans, videotaped lessons or written reflections can enrich the judgement of teacher competences. To date, however, none of these qualitative materials were already taken into account to analyse teacher competence regarding CL implementation. Therefore, the present study aims to contribute to the plea for taking new sources of assessment into account when investigating teacher competence. We more specifically focus on the analysis of lesson plans to reveal student teachers’ competences for several reasons: (a) Tillema (2009) emphasizes that the analysis of lesson plans is a suitable approach of gaining insight into teacher competence, (b) instructional planning is in general perceived as an important process in the professionalization of teachers (Kitsantas and Baylor 2001, Baylor 2002, Yildirim 2003), (c) Gillies and Boyle (2010) recently stressed the importance of instructional planning in the context of CL implementation in particular, and (d) previous studies have provided evidence for the relationship between lesson planning and teaching quality in terms of student achievement and instructional behaviour (e.g. Naafs et al. 2002, Meyen and Greer 2009).

To achieve the main goal of the paper, we first introduce a theoretical framework regarding collaborative learning to clarify this central concept. Then, we discuss the importance of anticipatory reflection in teacher education and in CL implementation in particular. In the empirical part of the study, we first elaborate on the development of an adequate instrument for analysing lesson plans containing a collaborative activity. The results section further presents insight into the strengths and weaknesses in student teachers’ competence pertaining to the preparation of CL implementation.

**Collaborative learning**

Collaborative learning refers to any instructional method in which students work together toward a common goal, emphasizing interaction and group processes. Dillenbourg (1999: 1) argues that collaborative
learning is ‘a situation in which two or more people learn or attempt to learn something together’. During this collaborative process, learners depend on and are accountable for their own and one another’s active learning process (Dillenbourg 1999). ‘The aim is to work towards a shared meaning as a result of the negotiation process and towards a common learning result, a result that also serves as the basis for individual understanding, a personal viewpoint and identity’ (Van der Linden et al. 2000: 39).

A large variety of group learning approaches is called ‘collaborative learning’, although some of these approaches are often called ‘co-operative learning’ as well. Co-operative learning is based on the systematic application of group learning structures, which involves a series of proscribed behaviour where students pursue common goals while being assessed individually (Millis and Cottell 1998). The most well-known model of co-operative learning is the ‘Learning Together’ model of Johnson and Johnson (1999), which incorporates five specific tenets, which are positive interdependence, individual accountability, direct interaction, promotion of social skills, and evaluation of the group process. Other important co-operative learning models are for example the ‘Structural Approach’ of Kagan (1994), Sharan’s (1994) ‘Group Investigation’, or the ‘Student Team Learning method’ of Slavin (1996). All co-operative models have in common a focus on co-operative incentives rather than competition to promote learning. These structures can be applied to almost any subject matter.

Resta and Laferrière (2007: 66) argue:

> There is no universally adopted meaning of the terms collaborative and co-operative learning or agreement on precisely what their differences or communalities are. This may result from the fact that educational researchers often have had different purposes, goals, and perspectives, which prohibit a clear distinction between these two approaches.

Some authors distinguish between co-operative and collaborative learning as having distinct historical and philosophical roots (e.g. Bruffee 1995, Panitz 1997) or having a different nature of the task structure and level of pre-structuring (e.g. Curtis and Lawson 2001). Dillenbourg (1999: 8) defines the difference roughly as follows: ‘In co-operation, partners split the work, solve sub-tasks individually and then assemble the partial results into the final output. In collaboration, partners do the work together’. Other authors, however, state that collaborative learning can be seen as covering all peer collaboration methods, including for example co-operative learning (Millis and Cottell 1998, Meloth and Deering 1999). Collaborative learning strategies are less specific and not easy to define (Rose 2004). In this view, both approaches lie on a continuum, ‘with collaborative learning being the least structured and co-operative learning the most structured’ (Millis and Cottell 1998: 7; see also Flynn and Klein 2001). As such, co-operative learning can be regarded as a ‘more-structured, hence more-focused, form of collaborative learning’ (Millis and Cottell 1998: 4).
In the present study, we opt for the use of ‘collaborative learning’ (CL) as a broad, more general concept covering multiple peer collaboration approaches, amongst which are for example co-operative learning, peer tutoring, discussion groups, etcetera (Millis and Cottell 1998, Dillenbourg 1999, Meloth and Deering 1999), since this variety fits best the reality of peer collaboration in Flemish primary school classes.

**Anticipating CL implementation during instructional planning**

Given the complex nature of CL, professionalization with regard to the implementation of this teaching strategy is indispensable (Gillies and Boyle 2010, Ruys et al. 2010a). In general, teacher education has often emphasized instructional planning (Kitsantas and Baylor 2001, Baylor 2002, Yildirim 2003) because student teachers can gain experience in thinking through what to teach, how to teach it, and how to evaluate it. They anticipate and solve potential difficulties (Blumenfeld et al. 1996).

In the context of CL implementation, the importance of careful lesson preparations is recently emphasized (Gillies and Boyle 2010), for the implementation of CL ‘is not simply placing pupils in groups and telling them to work together’ (Veenman et al. 2000: 293). Underneath, we respectively discuss the place of instructional planning in teacher education and the importance of instructional planning pertaining to CL implementation in more detail.

**Anticipatory reflection in teacher education**

Internationally, many researchers have pointed to the importance of reflection as a standard professional disposition of teachers (Schön 1983, Van Manen 1995, Freese 2006). As a consequence, teacher education has moved during the last decades towards developing reflective practitioners (Conway 2001), i.e. teachers reinterpreting and reframing their experiences from a different perspective in order to make sense of the complexities of teaching. Loughran (1996) distinguishes between reflection during planning (anticipatory reflection), reflection during actual teaching of the lesson (contemporaneous reflection) and reflection after the lesson (retrospective reflection). Reflective activities in teacher education are primarily interpreted in terms of contemporaneous or retrospective reflection (Conway 2001). In the context of the present study, however, we are particularly interested in the role of reflection-before-action, or prospective or anticipatory reflection (Schön 1983, Van Manen 1991). During anticipatory reflection, teachers think about how to prepare for teaching; they organize and prepare content and materials, select teaching strategies, and consider how to tailor instruction to the unique level of the learners (Pinsky and Irby 1997). Emphasizing the potential benefits of a more explicit and expansive focus on prospective reflection, Conway (2001: 90) states: ‘Looking toward the future with knowledge of the past from the viewpoint of the present (…), is a particularly salient aspect of novice teachers’ everyday experience’.
Anticipatory reflection and instructional planning are in general perceived as the key to successful lessons (Frudden 2001, Halpern 2002). The work of several authors provides clear evidence for this statement. Teachers were found to attribute teaching failure (Pinsky and Irby 1997) as well as teaching success (Pinsky et al. 1998) to causes in the planning phase. Dunn and Shriner (1999) also revealed that teachers considered (written and mental) planning activities as more relevant than other activities for improving their teaching effectiveness. Further, Naafs et al. (2002) and Carnahan (in Frudden 2001) found a positive relationship between elaborate lesson plans and final student achievement, since a thorough preparation seemed to provide more time-on-task for the students and consequently more learning opportunities. In addition, a positive effect of planning was found on the quality of teachers’ instructional behaviour (Byra and Coulon 1994, Meyen and Greer 2009).

**Instructional planning with regard to CL implementation**

The most important challenge in preparing lessons including CL is to ensure the presence of the five key principles of CL: positive interdependence, individual accountability, direct interaction, promotion of social skills, and evaluation of the process (Johnson and Johnson 1999). Although these principles are delineated in the context of ‘co-operative learning’ research, they are often emphasized within ‘collaborative’ learning studies as well (Dillenbourg 1999).

Positive interdependence refers to a situation when one student’s success positively influences the chances of group members’ successes: students know that they can only succeed when the others of the group succeed. Individual accountability ensures that each group member has responsibility for his own learning as well as for helping other group members to learn. Both aspects can be realized by e.g. integrating roles during the collaborative work or developing an appropriate CL learning task, referring to the assignment the teacher develops for pupils to work on during the collaborative activity (Jacobs et al. 2002, Gillies et al. 2007, Gillies and Boyle 2010). Thirdly, successful CL requires an environment where students can interact efficiently face-to-face with each other (Johnson and Johnson 1999). Therefore, the classroom often needs some re-arrangement. Ideally, a teacher thinks this through in advance, in order to shorten the time spent to this re-arrangement, resulting in more time-on-task for pupils (Frudden 2001, Naafs et al. 2002). In addition, also a deliberate group composition may promote students’ interaction (Jacques 2004). Fourthly, CL not only aims at cognitive performance, but also social skills are explicitly part of the learning process and output. Group processes are therefore emphasized in the learning objectives. In addition, it is important that teachers discuss strategies for effective collaboration, since the research of Gillies (2000) and Gillies (2006) revealed that students cannot work efficiently together without explicitly teaching them how to actualize this. Finally, evaluation of the CL activity should not be forgotten in the instructional planning, although teachers can collect a lot
of information concerning students’ learning processes by guiding the collaborative process. Goal achievement in CL is perceived in terms of subject-matter related as well as social objectives (Johnson and Johnson 1999). Therefore, a lesson plan should ideally discuss how the teacher will evaluate the learning process as well as the learning product (Meloth and Deering 1999, Jacobs et al. 2002, Gillies et al. 2007). The learning product refers to the outcome/results (cognitive, emotional, or behavioural) of the collaborative process.

In addition to the key principles of CL distinguished by Johnson and Johnson (1999), other important aspects of CL implementation can be taken into account during instructional planning as well: planning the use of time during the lesson, or a clear and complete instruction from the teacher in order to avoid many whole-class interventions to clarify the expectations (Johnson et al. 1991, Jacobs et al. 2002, Gillies and Boyle 2010). Finally, teachers have to reflect in advance on their own behaviour and role during students’ collaborative activities (Delievre et al. 2006, Gillies et al. 2007).

**Method**

**Aim of the study**

Notwithstanding the fact that the effectiveness of CL largely depends on the pedagogical behaviour of the teacher (Gillies and Boyle 2008) and instructional planning plays an important role in the context of CL implementation (Gillies and Boyle 2010), so far little attention is paid to teachers’ actual anticipatory reflection and lesson plans for the use of CL as an instructional strategy in the classroom. This study more specifically aims to gain insight into the strengths and weaknesses of pre-service teachers’ lesson plans with regard to CL implementation. Given the limited attention in the literature for the planning of CL, an adequate instrument for analysing teachers’ instructional plans of lessons including CL was not yet available and was, therefore, developed in the present study.

**Participants**

Participants were 100 white, predominantly middle-class, primary school student teachers (86 women and 14 men) from four teacher training colleges in Flanders (Belgium). Student teachers’ mean age was 20.5 years. All participating pre-service teachers successfully completed the first year of a 3-year bachelor programme for teacher education, including a mandatory training period. During their second year of teacher education, a sample of 323 lesson plans including the preparation of a collaborative learning activity was collected.

At the beginning of their second year of teacher education, some background information about the participants was collected (for more details, see Ruys et al. 2011). In general, the student teachers had a
moderate feeling of self-efficacy with regard to CL implementation. However, most of them had only limited experience with the use of CL in classroom teaching. During their own school career, about half of the students experienced the use of peer collaboration forms by their secondary school teachers as well as by their teacher educators positively. The participants’ beliefs about the value, cost, and expectations of CL for primary school children were generally positive.

Procedure

Previous research revealed that CL has not yet received a profound place in the curriculum of Flemish teacher education (Ruys et al. 2010b). A previous study regarding the pedagogical knowledge of student teachers about CL (Ruys et al. 2010a), with the same participants as the present study, indicated that their knowledge about CL is rather limited and superficial. Therefore, the participants of the present study had the opportunity to attend four 2-hour workshops on CL conducted by the first researcher of this study prior to their apprenticeship. The workshops were a formal part of the curriculum. The first workshop was focused on the nature of CL, including theoretical and empirical underpinnings. The following workshops dealt respectively with pre-implementation concerns, points of interest during implementation, and closing situations. During the second workshop, student teachers critically discussed examples of lesson plans including CL activities. Besides the training workshops, CL was not further addressed and discussed in the lessons.

Student teachers were required to create lesson plans including collaborative learning activities, intended to actually teach these lessons during their apprenticeship in primary schools. The student teachers employed the lesson plan format of their own training institute since they were familiar with the use of it. The formats all included the same components such as objectives, timing, materials, procedure, and evaluation. No further detailed guidelines were provided: students were free to choose the subject of their lesson and the specific type of CL. No further sampling methods were used: all lesson plans that were developed prior to the participants’ apprenticeships were included in the study. Table 1 represents the occurrence of different lesson subjects in the lesson plans. As can be seen in Table 1, it is notable that the majority of the pre-service teachers prefer the subject ‘Social studies and science’ for implementing CL. Based on the findings of a recent interview study (Ruys et al. 2012), this preference is referred to as due to the ‘open’ character of this subject. Textbook series for this subject are perceived as less prescribing and the content-related pressure is perceived as less influential, which make teachers more keen to opt for CL as an instructional strategy in ‘Social studies and science’, rather than in e.g. mathematics or (second) language lessons.

A draft version of the lesson plans was submitted to the mentor teachers in order to receive interim feedback. Afterwards, it was passed to the researchers of this study.
Given the limited attention in the literature for the planning of CL, an adequate instrument to analyse the quality of lesson plans with CL was not available. However, a few recent studies addressed the assessment of lesson plans of (student) teachers in general by means of a scoring rubric (e.g. Campbell and Evans 2000, Baylor 2002, Spooner et al. 2007, Ozo-gul et al. 2008), valuing its usefulness for rating authentic student work (Jonsson and Svingby 2007). The present study builds on these experiences by developing a rubric for the analysis and evaluation of lesson plans including CL.

Three phases can be separated in the development and validation process of this rubric. First, based on an in-depth analysis of the literature about collaborative learning implementation and the instructional planning phase that goes with it (see table 2), aspects influencing the efficiency and effectiveness in terms of success/failure of CL implementation were delineated. This framework provided the components of the rubric. The relevance and level of specificity of these components and the structure of the rubric were reviewed for content validity by an expert panel in a second phase, then revised into its final form based on their feedback. Five researchers with expertise in collaborative learning and/or teacher training were involved, as well as four teacher educators, one senior primary school teacher, and two primary school student teachers that previously used CL as an instructional method. Based on their feedback, the rubric was revised to its nearly final form. Some adaptations in the formulation of the rubric cells were made. In addition, two initial criteria were removed from the rubric: (a) ‘anticipating unexpected events’ (e.g. groups finishing early) had an overlap with the criterion ‘differentiated instruction’ and was therefore removed; and (b) ‘focus on improvement’ dealt with feedback both on product and process, but this was assumed to be part of the product and process evaluation. In the third phase, the final version was used by two researchers for analysing a pilot of 20 lesson plans, discussing their

Table 1. Occurrence of different lesson subjects in the lesson plans (n = 323).

<table>
<thead>
<tr>
<th>Subject</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics</td>
<td>27</td>
<td>8.4%</td>
</tr>
<tr>
<td>Dutch (mother tongue)</td>
<td>51</td>
<td>15.8%</td>
</tr>
<tr>
<td>Social studies and science*</td>
<td>183</td>
<td>56.7%</td>
</tr>
<tr>
<td>Religious/moral education</td>
<td>18</td>
<td>5.6%</td>
</tr>
<tr>
<td>Physical education</td>
<td>3</td>
<td>0.9%</td>
</tr>
<tr>
<td>Music/art</td>
<td>26</td>
<td>8.0%</td>
</tr>
<tr>
<td>French (second language)</td>
<td>2</td>
<td>0.6%</td>
</tr>
<tr>
<td>Cross-curricular**</td>
<td>13</td>
<td>4.0%</td>
</tr>
</tbody>
</table>

* In the Flemish educational system, ‘social studies and science’ is an interdisciplinary subject integrating six domains: nature, technology, psychology, sociology, history, and geography.

** In cross-curricular lessons, a teacher combines and/or integrates the content of different subjects. In the context of the present study, pupils predominantly worked collaboratively in corners (each corner was dedicated to a particular subject).
### Table 2. Theoretical background of the scoring rubric.

<table>
<thead>
<tr>
<th>Domain</th>
<th>Rubric criterion</th>
<th>Description of the criterion</th>
<th>Theoretical background</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instruction</td>
<td>Positive interdependence</td>
<td>How does the teacher structure positive interdependence in his lesson, i.e. how does he guarantee that students can only succeed when their group member succeed?</td>
<td>Dillenbourg (1999), Jacobs et al. (2002), Johnson and Johnson (1999), Kagan (1994), Slavin (1996)</td>
</tr>
<tr>
<td>Individual accountability</td>
<td></td>
<td>How does the teacher structure individual accountability in his lesson, i.e. how does he guarantee that each group member takes the responsibility for his own learning as well as for helping other group members to learn?</td>
<td>Dillenbourg (1999), Jacobs et al. (2002), Johnson and Johnson (1999), Kagan (1994), Slavin (1996)</td>
</tr>
<tr>
<td>Social goals and objectives</td>
<td></td>
<td>Does the teacher strive for social goals and lesson objectives in addition to content-related lesson objectives?</td>
<td>Jacobs et al. (2002), Johnson and Johnson (1999)</td>
</tr>
<tr>
<td>Type of CL</td>
<td></td>
<td>Does the teacher have a clear view on the type of CL he will use in his lesson?</td>
<td>Johnson and Johnson (1999), Kagan (1994), Slavin (1996)</td>
</tr>
<tr>
<td>Learning task/assignment</td>
<td></td>
<td>Does the teacher use an adequate collaborative learning task that is adjusted to the developmental level of the students and the lesson objectives?</td>
<td>Gillies et al. (2007), Gillies and Boyle (2010), Jacobs et al. (2002), Slavin (1996)</td>
</tr>
<tr>
<td>Materials and resources</td>
<td></td>
<td>Does the teacher use adequate materials and resources that are compatible with the lesson objectives and the type of CL?</td>
<td>Gillies et al. (2007), Gillies and Boyle (2010), Jacobs et al. (2002)</td>
</tr>
<tr>
<td>Opening instruction</td>
<td></td>
<td>Does the lesson plan contain adequate information for the opening instruction of the teacher?</td>
<td>Ebbens et al. (1997)</td>
</tr>
<tr>
<td>Strategies for developing collaborative skills</td>
<td></td>
<td>How will the teacher help the students to collaborate in an effective and efficient way?</td>
<td>Blatchford et al. (2003), Gillies (2000), Gillies (2006), Johnson and Johnson (2003), Slavin (1996)</td>
</tr>
<tr>
<td>Teacher as a guide</td>
<td></td>
<td>How will the teacher guide the collaborative learning process?</td>
<td>Delièvre et al. (2006), Gillies et al. (2007), Reiser and Dick (1996)</td>
</tr>
<tr>
<td>Differentiated instruction</td>
<td></td>
<td>How will the teacher deal with differences between students and/or groups during collaborative learning?</td>
<td>Jacques (2004), Reiser and Dick (1996)</td>
</tr>
</tbody>
</table>

(Continued)
scores and the process of scoring as well. Small adaptations in the formulation of the rubric cells were made in this last phase, making them more specific (e.g. with regard to the criterion ‘teacher as a guide’, we named the aspects of guiding explicitly instead of only including the number of aspects in the rubric cells, see Appendix 1).

The final scoring rubric consists of 17 criteria organized in three domains: (a) instruction, (b) organization, and (c) assessment (Freiberg 2002). The complete scoring rubric is included in Appendix 1. A description of each criterion is included in table 2. The rubric is based on the presence or absence of criteria and the clearness of the description of each component (Stronge and Tucker 2003). Each criterion can therefore be rated on a scale from 0–4 (0 = absent; 1 = unsatisfactory; 2 = needs improvement; 3 = adequate/meets expectations; 4 = exceeds expectations).

**Data analysis**

All 323 lesson plans were scored according to the developed rubric. Appendix 2 illustrates how the scoring procedure was carried out for a particular (translated) lesson plan.

In order to calculate inter-rater reliability, 89 lesson plans (27.6%) were randomly selected and double coded by the first author and an independent...
trained researcher using the rubric. Landis and Koch (1977) characterize kappa values lower than 0 as indicating no agreement, 0–0.20 as slight, 0.21–0.40 as fair, 0.41–0.60 as moderate, 0.61–0.80 as substantial, and 0.81–1 as almost perfect agreement. According to these criteria, the overall inter-rater reliability between both coders was good (percentage of exact agreement 90.27% and Cohen’s $\kappa = 0.872$) in the present study, although there were differences between the criteria (percentage of exact agreement between 74.16% (criterion A7) and 97.75% (criterion C1 and C2), while $\kappa_{(A1)} = 0.852$; $\kappa_{(A2)} = 0.881$; $\kappa_{(A3)} = 0.813$; $\kappa_{(A4)} = 0.749$; $\kappa_{(A5)} = 0.712$; $\kappa_{(A6)} = 0.723$; $\kappa_{(A7)} = 0.632$; $\kappa_{(A8)} = 0.888$; $\kappa_{(A9)} = 0.919$; $\kappa_{(A10)} = 0.876$; $\kappa_{(B1)} = 0.949$; $\kappa_{(B2)} = 0.892$; $\kappa_{(B3)} = 0.843$; $\kappa_{(B4)} = 0.888$; $\kappa_{(C1)} = 0.919$; $\kappa_{(C2)} = 0.949$; $\kappa_{(C3)} = 0.816$). The remainder of the lesson plans were then scored by the first author using the rubric.

**Results**

The analysis of all 323 lesson plans by means of the developed scoring rubric resulted in a picture of the quality of the instructional planning in terms of strengths and weaknesses. Table 3 provides an overview of the scoring results for the different criteria included in the rubric. Below we discuss the strengths and weaknesses in the findings more in detail. Criteria were seen as ‘strengths’ when more than or exactly 50% of the lesson plans received a scoring that was at least ‘adequate’, whereas ‘weaknesses’ were defined when more than or exactly 50% of the lesson plans scored ‘unsatisfactory’ or ‘absent’.

**Strengths in student teachers’ lesson plans with CL**

The three most striking strengths in student teachers’ lesson plans predominantly relate to teaching competences that are not specifically related to a specific teaching strategy. First, their lesson plans include a well-designed learning task (74.3% is at least adequate) in accordance with the lesson objectives and the developmental level of the pupils. Nearly 20% of the learning tasks exceed the expectations because they are very attractive for students. Secondly, they choose or develop adequate materials and resources (90.1% is at least adequate). Thirdly, they pay explicit attention to the (in)formal evaluation of the product of CL (65.9% is at least adequate). They plan to discuss the learning result of the collaboration, mostly at the end of the lesson or collaborative lesson phase. However, pre-service teachers do not always perceive evaluation as an inherent part of their lessons. For example: ‘If there is time left, I will organize a whole-class conversation about the collaborative process (…)' (#18).

In sum, most second-year pre-service teachers appear to be able to produce a good or excellent basis for teaching and learning as they were already trained in developing adequate learning tasks and materials, as well as in evaluating learning output, during the first year of teacher education.

In addition to these general teaching competences, the analyses of the lesson plans indicate also strengths that are directly concerned with CL
Table 3. Frequencies of the scoring results for each rubric criterion (*n* = 323).

<table>
<thead>
<tr>
<th>Rubric Criterion</th>
<th>Exceeds expectations</th>
<th>Adequate</th>
<th>Needs improvement</th>
<th>Unsatisfactory</th>
<th>Absent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key Components – Positive Interdependence</td>
<td>36 (11.1%)</td>
<td>134 (41.5%)</td>
<td>63 (19.5%)</td>
<td>54 (16.7%)</td>
<td>36 (11.1%)</td>
</tr>
<tr>
<td>Key Components – Individual accountability</td>
<td>41 (12.7%)</td>
<td>125 (38.7%)</td>
<td>29 (9.0%)</td>
<td>77 (23.8%)</td>
<td>51 (15.8%)</td>
</tr>
<tr>
<td>Social goals and objectives</td>
<td>8 (2.5%)</td>
<td>96 (29.7%)</td>
<td>21 (6.5%)</td>
<td>76 (23.5%)</td>
<td>122 (37.8%)</td>
</tr>
<tr>
<td>Type of CL</td>
<td>18 (5.6%)</td>
<td>108 (33.4%)</td>
<td>146 (45.2%)</td>
<td>50 (15.5%)</td>
<td>1 (0.3%)</td>
</tr>
<tr>
<td>Learning task</td>
<td>63 (19.5%)</td>
<td>177 (54.8%)</td>
<td>74 (22.9%)</td>
<td>8 (2.5%)</td>
<td>1 (0.3%)</td>
</tr>
<tr>
<td>Materials and resources*</td>
<td>86 (26.6%)</td>
<td>205 (63.5%)</td>
<td>13 (4.0%)</td>
<td>4 (1.2%)</td>
<td>3 (0.9%)</td>
</tr>
<tr>
<td>Opening instruction</td>
<td>25 (7.7%)</td>
<td>105 (32.5%)</td>
<td>102 (31.6%)</td>
<td>81 (25.1%)</td>
<td>10 (3.1%)</td>
</tr>
<tr>
<td>Strategies for developing collaboration skills</td>
<td>4 (1.2%)</td>
<td>51 (15.8%)</td>
<td>21 (6.5%)</td>
<td>17 (5.3%)</td>
<td>139 (43.0%)</td>
</tr>
<tr>
<td>Teacher as a guide</td>
<td>0 (0.0%)</td>
<td>9 (2.8%)</td>
<td>40 (12.4%)</td>
<td>86 (26.6%)</td>
<td>188 (58.2%)</td>
</tr>
<tr>
<td>Differentiated instruction</td>
<td>0 (0.0%)</td>
<td>56 (17.3%)</td>
<td>6 (1.9%)</td>
<td>3 (0.9%)</td>
<td>258 (79.8%)</td>
</tr>
<tr>
<td>Classroom arrangement*</td>
<td>0 (0.0%)</td>
<td>136 (42.1%)</td>
<td>57 (17.6%)</td>
<td>29 (9.0%)</td>
<td>98 (30.3%)</td>
</tr>
<tr>
<td>Rules and agreements</td>
<td>19 (5.9%)</td>
<td>44 (14.6%)</td>
<td>12 (3.7%)</td>
<td>34 (10.5%)</td>
<td>214 (66.2%)</td>
</tr>
<tr>
<td>Timing</td>
<td>59 (18.3%)</td>
<td>58 (18.0%)</td>
<td>125 (38.7%)</td>
<td>26 (8.0%)</td>
<td>65 (20.1%)</td>
</tr>
<tr>
<td>Group composition</td>
<td>46 (14.2%)</td>
<td>37 (11.5%)</td>
<td>103 (31.9%)</td>
<td>109 (33.7%)</td>
<td>28 (8.7%)</td>
</tr>
<tr>
<td>Monitoring group processes</td>
<td>0 (0.0%)</td>
<td>1 (0.3%)</td>
<td>4 (1.2%)</td>
<td>24 (7.4%)</td>
<td>294 (91.0%)</td>
</tr>
<tr>
<td>Evaluating process</td>
<td>43 (13.3%)</td>
<td>11 (3.4%)</td>
<td>7 (2.1%)</td>
<td>22 (6.8%)</td>
<td>240 (74.3%)</td>
</tr>
<tr>
<td>Evaluating product</td>
<td>62 (19.2%)</td>
<td>151 (46.7%)</td>
<td>45 (13.9%)</td>
<td>26 (8.0%)</td>
<td>39 (12.1%)</td>
</tr>
</tbody>
</table>

* With regard to the rubric criterion ‘materials and resources’, 12 lesson plans were not scored since no materials or resources were needed in the CL lesson. Three lesson plans were not scored on the criterion ‘classroom arrangement’ since the lesson took place in the gymnasium.
implementation. Positive interdependence and individual accountability are generally seen in the literature as the most crucial components for realizing CL in an effective way (Johnson and Johnson 1999). About half of the student teachers in this study describe in their lesson plan at least one specific way of realizing and guaranteeing positive interdependence and individual accountability. In most cases, students define roles for the pupils, or make them dependent on each other by sharing materials and resources. For example:

each pupil in the group has his role: a timekeeper, a reporter, or a silence agent. Each pupil in the group gets a different brochure about ‘Jeugdboekenweek’ [a yearly thematic campaign about reading juvenile books]. They have to tell each other about the content of the brochure in order to solve the assignment questions. (#160)

Mixed pattern results: Strength for some students, weakness for others

Some student teachers’ lesson plans meet or exceed the expectations for particular criteria, whereas the same criteria are absent or inadequately described in other lesson plans. Therefore, two important issues cannot be seen as obvious strengths or as pure weaknesses with regard to the instructional planning of CL implementation.

First, a great number of pre-service teachers experience difficulties with deciding how to engage students in collaborating efficiently and effectively, whereas others master these processes of instructional decision-making. Thirty-nine per cent of the lesson plans achieve at least an adequate score for the quality of the elaboration on the design of the collaborative activity (‘type of CL’, e.g. peer tutoring, discussion carrousel), but in almost half of the lesson plans some further refinement (45.2%) or crucial adaptations (15.5%) are needed. The introduction of CL to the students is at least adequately described in 40% of the lesson plans, but the other student teachers include only a limited or vague elaboration of the introduction of CL. Although all participating pre-service teachers attempt to include a collaborative learning environment, further refinement and elaboration on how collaborative learning processes will be organized and introduced to the students is needed in almost half of the lesson plans. In addition, it is notable that 50 lesson plans (15.5%) refer to a specific type of CL when there is no clear added value of this instructional strategy taking into account the intended learning task or the lesson objectives. In the example: ‘Look at pages 79 and 80 in your work books. You have to make the exercises 1 to 5. You can work together with three persons’ (# 33), pupils are allowed to work together but they do not need each other to do the assignment. Finally, it appears that most pre-service teachers pay limited attention in their lesson plans to how they will help students to work together, although many researchers have emphasized the importance of it (e.g. Gillies 2006). The results of the present study indicate that 43% of the lesson plans contains no reference to strategies the teachers will use in order to develop the collaboration skills of the students, although 17% of the student teachers achieve at least an adequate score for this criterion.
Secondly, the results with regard to organizational aspects of CL implementation show a mixed pattern. At least a quarter to half of the lesson plans achieve an adequate score with regard to classroom arrangement, group composition, and timing. For example, 42.1% of the lesson plan grasps an adequate (re-)arrangement of the classroom, allowing direct interaction within the separate groups. However, further improvements in anticipatory reflection are needed in one third of the lesson plans, since they contain no reference regarding classroom arrangement at all. Given the often traditional organization of the classroom in frontal rows, there can be doubts cast on this result. Further, the group composition is not always exhaustively considered: a great number of lesson plans includes only information about the number of groups that will be composed, without any information about criteria underlying the composing process. Finally, the timing in CL can be more efficient. In 36.2% of the lesson plans, student teachers’ describe a (more than) adequate time scheme for their lesson, and they express the intention of communicating this to the students; 38.7% of the plans include adequate timing, but no reference about communicating this to the students is made, implying they receive the code ‘needs improvement’. This means that 28.2% of the lesson plans do not include an (adequate) time scheme for collaborative work. However, during CL students are working more independently from the teacher. As a consequence, they are only able to plan how long they can work on each part of the learning task when an adequate timing of the lesson is clearly communicated to them.

Weaknesses in student teachers’ lesson plans with CL

Four (clusters of) weaknesses emerge from the analysis of the lesson plans. First, it is striking that pre-service teachers do not explicitly reflect on their own behaviour during the lesson. In 84.8% of the lesson plans, no or only vague references are made to what they will do during the collaborative work of the students. In addition, student teachers only seldom and vaguely (91.0%) define how they will monitor group processes in function of evaluation.

Further, more than one third (37.8%) of pre-service teachers’ lesson plans do not include social goals and objectives. As stated before, student teachers also include only a few strategies for helping the pupils to work efficiently and effectively together. Combined with the limited attention to social skills in the lesson objectives, improving social skills as one of the key components of CL appears to be insufficiently addressed in the lesson plans. This is reflected in the restricted ongoing evaluation of the group processes as well. In 74.3% of the lesson plans, this is not explicitly inserted, whereas the (in)formal evaluation of the product of CL was at least adequate in 65.9% of the cases.

Thirdly, more than half of the pre-service teachers do not explicitly plan rules and agreements for the collaborative work (66.2%), while others think this through at least adequately (20.5%) before the lesson implementation.
Finally, differentiated instruction appears to be nearly absent in the lesson plans with CL, which can be regarded as problematic. Although CL offers many opportunities to anticipate differences between students and between groups, student teachers describe related aspects in one fifth of their lesson plans adequately (17.3%).

**Discussion**

The present study reports on (a) the development of a measurement instrument (scoring rubric) to analyse the quality of lesson plans implementing CL, and (b) the strengths and weaknesses in 323 lesson plans with CL of pre-service teachers. In this discussion section, we will provide different perspectives to interpret the research findings. Implications for teacher education practice and suggestions for future research, taking into account the limitations of the present study, are also addressed for each research question separately.

*Development of a scoring rubric for analysing the quality of lesson plans with CL*

In this study, we developed a scoring rubric for analysing the quality of student teachers’ lesson plans with CL. This measurement instrument has shown its reliability merits in the analyses due to the fact that the expectations for each score were clearly described. The content validity of the rubric was guaranteed since it was based on the literature about the implementation of CL and since the instrument was presented to and reviewed by an expert panel. We suggest that other types of validity are further unravelled in future research. In view of this validity issue, we want to stress that the analysis of lesson plans by means of the rubric requires these plans to have a reasonable amount of detailedness/elaboration. In brief and very general lesson plans or ‘planbook plans’ (Jacobs et al. 2008), none of the rubrics’ criteria can be observed. Moreover, we believe that elaborating the lesson plans also fosters the learning process of student teachers with regard to instructional planning, as Frudden (2001) suggests that thinking through what to teach, how to teach, and how to assess is the strength of instructional planning for teachers’ professional development.

Although the rubric is a suitable instrument for the analysis of lesson plans, it is only a first step in obtaining a comprehensive view of teacher competence. Nijveldt (2007) suggests combining multiple sources of evidence in future studies, since lesson plans do not provide information about, for example, student teachers’ actual performance during implementation. It is possible that student teachers do not describe some pedagogical choices in their lesson plans (e.g. their own guiding behaviour during pupils’ collaborative work), but that they rely on their routines to bring them into practice. In this respect, it is not yet clear whether differences in CL implementation performance can be (partially) attributed to the developed lesson plans. Given the large differences in the quality of the lesson
plans, it can be hypothesized that a lesson plan is at least a useful, important start for a successful lesson, although we cannot demonstrate that student teachers with high-quality lesson plans will succeed in more effective and efficient CL implementation than student teachers with poorly developed lesson plans. Further research is therefore necessary to investigate the relationship between lesson plan quality and teaching performance regarding the use of CL. In this respect, also, other factors that might influence this relationship, such as student characteristics, teaching repertoire, context factors, etcetera, should be taken into account.

Following Van Velzen and Volman (2009), we also suggest that student teachers discuss their lesson plans extensively with peers, teacher educators, and mentor teachers in order to reveal their implicit pedagogical knowledge. As Conway (2001) states, teacher education favours reflecting on the distant past (the apprenticeship of observation) or the more immediate past (e.g. lesson). However, prospective teachers' imagination in learning to teach and anticipatory reflection are at least even important. In this respect, the scoring rubric can not only be used as an evaluative instrument, but also as a guiding instrument for reflection on strengths and weaknesses with regard to CL implementation. Discussing one's own lesson plans creates opportunities for pre-service teachers to consider the adequateness of the instructional decisions and to think through the link between their lesson plan and classroom practice. Such reflections will be largely in-depth when the ‘why’ of these decisions is interpreted, since more practical pedagogical knowledge will be made explicit. In this respect, we acknowledge that the current study only provides insights into the product of instructional planning, in this case the written lesson plan including a collaborative learning activity. It may be useful to direct further research on this topic to the process of writing these lesson plans, in order to discover underlying pedagogical decisions, obstacles encountered, etc.

In the present study, we only used one source of assessing student teachers' competences, whereas Nijveldt (2007) and Stronge and Tucker (2003) recommended a combination of sources. The research instrument we developed in the present study, however, can be used as an adequate tool in the achievement of that purpose. Therefore, it will be interesting for future research to explore the relationship between lesson plan scores and lesson implementation quality by using a comparable measurement. In a next phase, it will be useful to explore the impact of discussing the lesson plans in relation to the classroom implementation.

Strengths and weaknesses in pre-service teachers' lesson plans with CL

The strengths and weaknesses in lesson plans with CL are related to the three rubric domains, namely instruction, organization, and assessment (Freiberg 2002).

With regard to ‘instruction-related’ criteria, the findings indicate that the basis for effective group work is adequately described in student teachers’ lesson plans. As experienced teachers mention the importance of
a well-constructed task for CL (Gillies and Boyle 2010), most participating student teachers succeed in developing such tasks, taking into account the realization of positive interdependence and individual accountability as the most prominent key components of CL (Johnson and Johnson 1999).

Further, student teachers score on average rather poorly on organizational aspects of CL implementation, such as defining rules, the arrangement of the classroom, group composition, and timing. This confirms the general instructional planning decisions of senior teachers, who do not express these aspects to occur typically in their lesson plans (Young et al. 1998). However, the study of Gillies and Boyle (2010) addresses the grade of instructional challenge of CL, including the management and determination of organizational aspects. Therefore, teacher educators should alert student teachers to the importance of these aspects for the classroom management and the effectiveness of the learning process.

With regard to the assessment criteria of the rubric, it became apparent that student teachers focus predominantly on the learning product in CL, mostly at the end of the lesson. Monitoring and evaluating the learning processes is largely absent in the lesson plans. It demonstrates the objectivist perspective of student teachers on evaluation, even when they use teaching strategies that fit better with a constructivist approach on teaching and learning.

Although student teachers in the present study were acquainted with the theoretical and empirical background of CL, it seems that instructing them about the implementation of CL is not sufficient to reach an overall adequate quality of the lesson plans. Based on these findings, suggestions for teacher education can be formulated regarding instructional planning in general and CL in particular.

With regard to curriculum implementation, thorough considerations about the importance of instructional planning are needed. Every teacher has the responsibility to implement the curriculum to meet the officially prescribed attainment targets, although he has some freedom to translate the curriculum into concrete lessons. However, the study of Yildirim (2003) emphasizes the dominant influence of course textbooks: teachers largely tend to deliver the prescribed knowledge and skills in the way that is suggested by textbook series. Coulby (2000: 19) refers in this respect to teachers as the ‘aparatchicks of the textbook curriculum’. Their behaviour of ‘curriculum consumption’ leads to deprofessionalization and deskilling. Consequently, it is important to develop teachers’ competence in lesson plans to make them more independent of the course textbooks. Given that the Flemish prescribed attainment targets for primary school children (Flemish Government 2010) include reference to collaborative skills and attitudes, the competence in lesson planning for CL implementation is even more crucial since course textbooks in Flanders scarcely refer to collaborative learning. Since the present study revealed that pre-service teachers predominantly link the use of CL to teaching ‘social studies and science’, it may be important to develop lesson planning competences pertaining the use of CL in a wide variation of teaching subjects in order to break through this implicit relationship.
Further, the findings provide new input for the discussion about how student teachers may best learn to plan their lessons, especially with the focus on CL. Traditionally, student teachers have often been asked in teacher education to develop lesson plans following the Tyler (1950) model or the similar model of Reiser and Dick (1996), starting the planning procedure with selecting objectives. Although both models are often criticized being too linear (May 1986, Blumenfeld et al. 1996, Freiberg 2002, Yildirim 2003), they are still dominant in the literature and practice on instructional planning in teacher education (e.g. May 1986, Lim and Chai 2008). In the present study, student teachers used a standard format for instructional planning of their teacher education college, in which such a linear model was reflected (cf. Appendix 2). However, based on Bullough (1987, in Young et al. 1998), who states that teachers often start their instructional planning by thinking about the instructional activities they will employ, we asked student teachers to develop a lesson plan with CL, focusing first of all on the teaching strategy rather than on the lesson objectives. The findings illustrate that student teachers succeed generally very well in developing adequate collaborative learning tasks. Their lesson objectives and assessment focus were, however, not consistent with a focus on pupils learning from and to each other. In addition, CL was sometimes used without a clear added value, providing evidence for Klafki’s (2000) model in which the importance of a preliminary reflection on the lesson content is stressed in instructional planning before thinking about how to address this content (i.e. choosing methods or teaching strategies). Anyhow, the lack of co-ordination between the different elements of the lesson plan raises questions about the ideal sequence of student teachers’ thinking process in instructional planning. It appears that the student teachers need to have a holistic rather than a linear perspective on instructional planning in order to fit the different components of a lesson plan into a coherent view. ‘It may be that a dialogical model of lesson planning where problem-level processes are emphasized may prove to be a better way forward’ (John 2006: 491). Such a dialogical model will help student teachers to better understand the connection between different aspects of the planning process, since the model requires an iterative pattern of exploring and reframing the context of the planning problem in order to the construction of a lesson plan. Future research should go further into this instructional planning discussion.

Conclusion

In the present study, a rubric was developed and thereafter used for the analysis of student teachers’ lesson plans pertaining to the implementation of CL. The rubric may be also useful as a guiding instrument for reflection in teacher education on strengths and weaknesses with regard to CL implementation. Additional interesting insights and suggestions for teacher education arose from the findings. Student teachers appear to be already fairly competent in developing well-designed learning tasks and adequate materials. Evaluating the product/outcome of CL is also an
apparent strength. Weaknesses and mixed pattern results provide interesting input for the design of the teacher education programme related to CL. We more specifically refer to three points of interest. First, more attention is needed for organizational elements during CL implementation? Second, process evaluation needs increased attention given that CL is a pre-eminently instructional strategy to observe, evaluate, and reflect on collaborative processes. Thirdly, student teachers have to be stimulated to implement CL also in subjects different from social studies and science. Further, general issues on instructional planning and curriculum implementation came about in our study. It appears to be challenging for teacher education to come apart from text books and linear instructional planning.

References


Appendix 1: Scoring rubric for lesson plans with CL

<table>
<thead>
<tr>
<th>Domain: Instruction</th>
<th>Exceeds Expectations</th>
<th>Adequate/Meets Expectations*</th>
<th>Needs Improvement</th>
<th>Unsatisfactory</th>
<th>Absent</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-1 Key Components – Positive Interdependence</td>
<td>The teacher clearly describes more than one adequate way of realizing and guaranteeing positive interdependence in the lesson plan.</td>
<td>The teacher clearly describes at least one adequate way of realizing and guaranteeing positive interdependence in the lesson.</td>
<td>The teacher refers to one or more ways of realizing positive interdependence in the lesson, but the elaboration is restricted, incomplete, and/or vague.</td>
<td>The lesson plan grasps the realization of positive interdependence during CL only implicitly or the proposed way of realizing positive interdependence is inadequate.</td>
<td>There is no indication in the lesson plan that positive interdependence is pre-structured.</td>
</tr>
<tr>
<td>A-2 Key Components – Individual accountability</td>
<td>The teacher clearly describes more than one adequate way of realizing and guaranteeing individual accountability in the lesson plan.</td>
<td>The teacher clearly describes at least one adequate way of realizing and guaranteeing individual accountability in the lesson.</td>
<td>The teacher refers to one or more ways of realizing individual accountability in the lesson, but the elaboration is restricted, incomplete, and/or vague.</td>
<td>The lesson plan grasps the realization of individual accountability during CL only implicitly or the proposed way of realizing individual accountability is inadequate.</td>
<td>There is no indication in the lesson plan that individual accountability is pre-structured.</td>
</tr>
<tr>
<td>A-3 Social goals and objectives</td>
<td>The teacher strives for clearly-defined social goals and objectives, and communicates about this to the students.</td>
<td>The teacher strives for clearly-defined social goals and objectives.</td>
<td>The teacher strives for social goals and objectives, but they are formulated vaguely or in general terms.</td>
<td>The teacher sets clearly-defined social goals and objectives, but the lesson plan provides little evidence for striving for those objectives.</td>
<td>The teacher sets no social goals and objectives.</td>
</tr>
</tbody>
</table>

(Continued)
## Appendix (Continued)

<table>
<thead>
<tr>
<th></th>
<th>Exceeds Expectations</th>
<th>Adequate/Meets Expectations*</th>
<th>Needs Improvement</th>
<th>Unsatisfactory</th>
<th>Absent</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-4</td>
<td>Type of CL</td>
<td>A clear step-by-step description of the type of CL is visually provided to the students.</td>
<td>A clear step-by-step description of the type of CL is included in the lesson plan.</td>
<td>The lesson plan includes an adequate choice of a specific type of CL, but the elaboration in the lesson plan is rather vague or incomplete.</td>
<td>The teacher refers to (a specific type of) CL, but this pedagogical choice is unsuitable/unnecessary for solving the learning task and/or reaching the intended goals and objectives.</td>
</tr>
<tr>
<td>A-5</td>
<td>Learning task</td>
<td>The teacher clearly describes an adequate CL task that is adjusted to the developmental level of the students and the objectives of the lesson. There are clear indications (e.g. matching student’s interests/experiences, eliciting students’ activity and involvement) for the attractiveness of the learning task for the students.</td>
<td>The teacher clearly describes an adequate CL task that is adjusted to the developmental level of the students and the objectives of the lesson.</td>
<td>The learning task in the CL environment is adapted to the developmental level of the students and/or the lesson objectives, but adaptations should be made in view of its adequateness for CL.</td>
<td>The learning task in the CL environment is not adapted to the developmental level of the students and/or the lesson objectives.</td>
</tr>
<tr>
<td>A-6</td>
<td>Materials and resources</td>
<td>The teacher develops adequate materials and resources compatible with the lesson objectives and the structure of CL.</td>
<td>The teacher uses/ selects adequate materials and resources compatible with the lesson objectives and the structure of CL.</td>
<td>The teacher uses/ selects materials and resources compatible with the lesson objectives and the structure of CL, but adaptations should be made in view of their adequateness for CL.</td>
<td>The teacher uses/ selects inappropriate materials and resources to support CL.</td>
</tr>
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</tr>
<tr>
<td>A-7</td>
<td>Opening instruction</td>
<td>The lesson plan lists all aspects that the teachers plans to address in the opening instruction of CL.</td>
<td>The lesson plan contains adequate information for the opening instruction of the teacher.</td>
<td>The lesson plan refers to some elements of introducing CL to the pupils, but some essential components are lacking.</td>
<td>The lesson plan includes only vague information about the introduction of CL to the students.</td>
</tr>
<tr>
<td>A-8</td>
<td>Strategies for developing collaboration skills</td>
<td>The lesson plan includes explicit strategies the teacher will use to help the students collaborate in an effective and efficient way. There is clear evidence that the teacher will model and/or visualize these strategies.</td>
<td>The lesson plan includes explicit strategies the teacher will use to help the students collaborate in an effective and efficient way.</td>
<td>The lesson plan includes only vague information about the strategies for students to collaborate in an effective and efficient way.</td>
<td>The teacher refers to strategies for collaborating that are not directly related to the social and/or communicative objectives of this lesson.</td>
</tr>
<tr>
<td>Appendix (Continued)</td>
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<tr>
<td><strong>A-9 Teacher as a guide</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Exceeds Expectations</strong></td>
<td>The lesson plan includes information about the teachers' (meta)cognitive, socio-affective, and organizational guiding behaviour during CL.</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
| **Adequate/Meets Expectations** | The teacher describes his own guiding behaviour on a minimum of two of the following aspects:  
• (Meta) cognitive guiding,  
• Socio-affective guiding,  
• Organizational guiding. |
| **Needs Improvement** | The teacher describes his own guiding behaviour on one of the following aspects:  
• (Meta) cognitive guiding,  
• Socio-affective guiding,  
• Organizational guiding. |
| **Unsatisfactory** | The teacher describes his own behaviour and/or actions during the collaborative process of the students only vaguely and/or restrictedly. |
| **Absent** | The lesson plan does not contain any references to the pedagogical behaviour of the teacher during the collaborative process. |

| **A-10 Differentiated instruction** |
| **Exceeds Expectations** | The lesson plan includes information about how the teacher will adequately deal with differences between students AND groups. |
| **Adequate/Meets Expectations** | The lesson plan includes only vague information about anticipating differences between students and/or groups. |
| **Needs Improvement** | The lesson plan includes information about anticipating differences between students and/or groups, but the proposed approach is rather inadequate for the learning process and/or classroom management. |
| **Unsatisfactory** | The lesson plan does not include any reference to differentiated instruction. |
| **Absent** | The lesson plan does not include any reference to differentiated instruction. |
**Domain: Organization**

| B-1 Classroom arrangement | The teacher involves the students in the classroom organization, keeping guard over adequate learning environment for group work with possibilities to realize the CL key component ‘direct interaction’. The teacher organizes the classroom to ensure an adequate learning environment for group work, guaranteeing possibilities to realize the CL key component ‘direct interaction’. The lesson plan includes an adequate classroom arrangement description that guarantees possibilities to realize the CL key component ‘direct interaction’. However, there are clear indications that the rearrangement of the classroom will be rather inefficient (loss of time, not structured, …). The classroom arrangement described in the lesson plan is unsuitable for collaborative group work. | The lesson plan does not contain any information about the arrangement of the classroom during CL. |

<p>| B-2 Rules and agreements | The teacher develops adequate, specific, and diverse rules and agreements for collaborative group work by mutual agreement with the students. The teacher introduces adequate, specific, and diverse rules and agreements for CL. The lesson plan refers to adequate rules and agreements, but variety and specificity is lacking. The teacher minimally includes rules and agreements for CL. | The lesson plan does not include any reference to rules and agreements during CL. |</p>
<table>
<thead>
<tr>
<th>Appendix (Continued).</th>
<th>Exceeds Expectations</th>
<th>Adequate/Meets Expectations*</th>
<th>Needs Improvement</th>
<th>Unsatisfactory</th>
<th>Absent</th>
</tr>
</thead>
<tbody>
<tr>
<td>B-3</td>
<td>Timing</td>
<td>The step-by-step timing of the CL process is adequate, and is also clearly communicated to the students.</td>
<td>The general timing of the CL process is adequate, and is also clearly communicated to the students.</td>
<td>The teacher describes an adequate timing of the lesson, but does not include references about communicating this timing to the students OR the planned time scheme is inadequate but communicated to the students.</td>
<td>The lesson plan includes a time scheme, which is inadequate for using CL in the proposed way. In addition, the teacher does not include references to communicating the timing to the students.</td>
</tr>
<tr>
<td>B-4</td>
<td>Group composition</td>
<td>The teacher describes clearly how groups will be composed and how this composition will be communicated to the students. The lesson plan provides evidence that this group composition promotes efficient and effective collaborative group work.</td>
<td>The teacher describes clearly how groups will be composed. The lesson plan provides evidence that this group composition promotes efficient and effective collaborative group work.</td>
<td>The teacher describes clearly how groups will be composed, but there is no clear indication that this group composition promotes efficient and effective collaborative group work.</td>
<td>The lesson plan includes only vague information about the composition of groups prior to CL.</td>
</tr>
</tbody>
</table>

(Continued)
### Domain: Assessment

<table>
<thead>
<tr>
<th>C-1</th>
<th>Monitoring group processes</th>
<th>The teacher clearly describes an adequate and systematic way of observing the approach and progress in individual students and/or groups.</th>
<th>The teacher clearly describes an adequate way of observing the approach and progress in individual students and/or groups.</th>
<th>The teacher clearly describes an adequate way of observing the approach and progress in individual students and/or groups, but some adaptations should be made in view of adequateness.</th>
<th>The lesson plan only includes vague references to ways of observing the approach and progress in individual students and/or groups.</th>
<th>The lesson plan does not include references to ways of observing the approach and progress in individual students and/or groups.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The lesson plan only includes vague references to ways of observing the approach and progress in individual students and/or groups.</td>
<td>The teacher clearly describes an adequate way of observing the approach and progress in individual students and/or groups.</td>
<td>The teacher clearly describes an adequate way of observing the approach and progress in individual students and/or groups, but some adaptations should be made in view of adequateness.</td>
<td>The lesson plan only includes vague references to ways of observing the approach and progress in individual students and/or groups.</td>
<td>The lesson plan does not include references to ways of observing the approach and progress in individual students and/or groups.</td>
<td>The lesson plan does not include any reference to the evaluation of the group process.</td>
</tr>
<tr>
<td>C-2</td>
<td>Evaluating process</td>
<td>The lesson plan provides clear indications for informal and/or formal assessment of the group process, in which both the teacher and the students are involved (not only teacher-centred evaluation).</td>
<td>The lesson plan provides clear indications for informal and/or formal assessment of the group process.</td>
<td>The lesson plan provides clear indications for informal and/or formal assessment of the group process.</td>
<td>There are clear indications that the evaluation of the group process will be brief and superficial OR there is no match with the lesson objectives.</td>
<td>The lesson plan does not include any reference to the evaluation of the group process.</td>
</tr>
</tbody>
</table>
### Appendix (Continued).

<table>
<thead>
<tr>
<th>C-3</th>
<th>Evaluating product</th>
<th>Exceeds Expectations</th>
<th>Adequate/Meets Expectations*</th>
<th>Needs Improvement</th>
<th>Unsatisfactory</th>
<th>Absent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The lesson plan</td>
<td>has clear indications for informal and/or formal assessment of the learning result/product of each student/group, in which both the teacher and the students are involved (not only teacher-centred evaluation).</td>
<td>The lesson plan provides clear indications for informal and/or formal assessment of the learning result/product of each student/group.</td>
<td>The lesson plan provides clear indications for informal and/or formal assessment of the learning result/product, but a systematic approach is lacking.</td>
<td>The teacher plans to go through the solutions/results of the learning task without paying much attention to the underlying thinking process OR without a clear match with the lesson objectives.</td>
<td>The lesson plan does not include any reference to the evaluation of the learning result/product of CL.</td>
</tr>
</tbody>
</table>

* The performance standard is the expectation for satisfactory performance.
Appendix 2: Example of a (translated) lesson plan (# 310) and coding process

### Date: 24/11/2008

**Grade:** 7th grade

**Subject:** Social studies & science

**Lesson topic:** Health education. First aid

**Lesson objective:**
- The pupils can be engaged from each other
- The pupils can communicate clearly
- The pupils can help each other
- The pupils have respect for each other and for what they do
- The pupils help each other when needed
- The pupils can think what EHEC (Veterinary) does in quarantines - first aid
- The pupils can explain concisely which materials are in a first aid box.
- The pupils can explain concisely what they have to do in case of bruises, a bloody nose, a bump, an insect bite, a burn, a goose, an ascended wound, a splinter, a poisoning, a sprain, an object in the throat, a nosebleed, or a small cut in the eye.

### Appendix:

**Reading tests**

**Pictures**

**Team Learning Content**

<table>
<thead>
<tr>
<th>Timing</th>
<th>Learning Content</th>
<th>Method</th>
<th>Materials</th>
</tr>
</thead>
</table>
| 10 min. | Orientation phase | - 4 groups: The blue group, The yellow group, The green group, The yellow group | - 4 white papers (A4 format) | - 4 colored papers (A4 format)
| 15 min. | Lessons phase | 4 show-boxes: -全国各地 | 4 x 2 envelopes: - answers cards - descriptions |
| 3 min. | Evaluation phase | The teacher hangs pictures related to first aid on the chalkboard. The pupils ask some questions. | Images |