



UvA-DARE (Digital Academic Repository)

Communities of learners for vocational orientation

Optimising student learning and engagement in initial vocational education

Boersma, A.M.E.

Publication date

2017

Document Version

Other version

License

Other

[Link to publication](#)

Citation for published version (APA):

Boersma, A. M. E. (2017). *Communities of learners for vocational orientation: Optimising student learning and engagement in initial vocational education*. [Thesis, fully internal, Universiteit van Amsterdam].

General rights

It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations

If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: <https://uba.uva.nl/en/contact>, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.

Chapter 6

JOINT DESIGN RESEARCH BY TEACHERS AND RESEARCHERS ON COMMUNITIES OF LEARNERS FOR VOCATIONAL ORIENTATION⁶

This chapter presents the results of an investigation into the use of communities of learners in pre-vocational secondary education via design research. We aimed to translate theoretical notions about communities of learners into educational practice during two years of joint design by teachers and researchers—a process supported by one of the school’s middle managers. We expected communities of learners to enhance students’ quality of and engagement in learning. In this chapter, we provide a detailed review of the first year of our study at one of the schools where we developed and evaluated two curriculum units. We focus on how the teachers collaborated with the school middle manager and the researchers to develop curriculum units that would foster communities of learners and how (developing and implementing) the curriculum units affected student learning. Data were collected through observations of all the meetings of the development team, all the lessons of the implemented units and interviews with the teachers and the students. The results show that the teachers’ focus was mainly on designing engaging activities for their students. The concept of a community of learners did not seem to become meaningful for them, and there was little reflection on the concept’s relationship to the school’s vision regarding teaching and learning. The second curriculum unit fared better at promoting student learning in the intended way—the units became part of the regular curriculum, and similar units were developed later on.

1. INTRODUCTION

The concept of a community of learners has become increasingly popular in educational discourse. It evokes images of harmonious collaboration, vivid dialogue and highly motivated students who actively participate in deep and meaningful learning. Nevertheless, communities of learners have only minimally emerged in actual classroom practice. For many teachers, organising a community of learners entails considerable effort, with an unclear outcome at best. For teachers to realise the potential of communities of learners, they must first understand their practical value.

The design research study reported in this chapter aimed *to elaborate the concept of a community of learners for use in pre-vocational secondary education*. For two

⁶ Boersma, A., Krol, K., Ten Dam, D., Wardekker, W., & Volman, M. (2013). A design research study on communities of learners for students in pre-vocational secondary education. In T. Plomp, & N. Nieveen (Eds.), *Educational Design Research: Introduction and illustrative cases* (pp. 449 - 467), Enschede: SLO.

years, a team of researchers and teachers jointly designed, developed and evaluated curriculum units for the ninth-grade vocational subject Care & Welfare, which would foster communities of learners in the classroom, to enhance the students' quality of and engagement in learning. At the two participating schools, a school middle manager supported the teachers to ensure that their efforts would be linked to the school's overall development. In addition to developing an innovative intervention, we aimed to identify and refine a number of heuristics that might help others put communities of learners into practice. The second aim of the study was *to provide insight into the curriculum unit development process by the teachers in collaboration with the school middle manager and researchers*, as we assumed that collaboration would affect the development of curriculum units that foster a community of learners for vocational orientation.

Our design research study entailed three phases: 1) a preliminary phase, which included analysing the context and problems of pre-vocational teaching and learning and developing a conceptual framework of communities of learners for students in pre-vocational secondary education; 2) a descriptive phase, in which the conceptual framework was checked against the educational practices of the two participating schools to validate the usefulness of the framework and determine the state of teaching-learning processes at the schools; 3) a dual and cyclical development and evaluation phase consisting of a) the first year, in which, at each school, two curriculum units were designed, carried out and formatively evaluated with regards to design heuristics and students' quality of and engagement in learning and b) the second year, in which the first year's units were optimised and carried out, followed by a formative and summative evaluation that focused on design heuristics and the students' quality of and engagement in learning.

This chapter begins with a brief outline of Dutch pre-vocational secondary education, which is the context of our study. Next, our conceptual framework is described and research questions are formulated, followed by an overview of how we set up our design research study. In the Results section, we narrow our focus to the design process and the resulting curriculum units at one school in the first year of the study i.e. phase 3a, which clearly illustrates our design research approach. In conclusion, we describe both the practical and scientific yield of our community of learners project in a discussion of the results, and we reflect on our design research approach.

1.1 Context and problems of pre-vocational secondary education

In the Dutch secondary education system, pre-vocational secondary education complements general secondary education (Figure 1). At age 12, the students engage in one of the two types of education programmes. Almost half of the students enrol in pre-vocational education. The central aim of pre-vocational education is to further develop the students' general competencies (e.g. language, mathematics) and to prepare them for senior secondary vocational education. As such, vocational orientation is a crucial aspect of pre-vocational learning. Students complete a core curriculum in the first two years; afterwards, students from age 14 years and above continue their education in one of four vocationally contextualised sectors—Engineering & Technology, Care & Welfare, Business and Agriculture.

In these sectors, teaching and learning are mainly organised in (simulated) workplaces inside and outside the school to allow students to experience working in a particular vocational area. An analysis of the pre-vocational teaching and learning context in these sectors revealed several problems (Phase 1). In the simulations, the students are often not introduced to the social and cultural aspects of the workplace, and the exigencies at most real workplaces leave students with little opportunity to retreat and reflect. Moreover, although schools providing pre-vocational education aim to prepare students for their futures, many students do not appreciate the value of school-based learning.

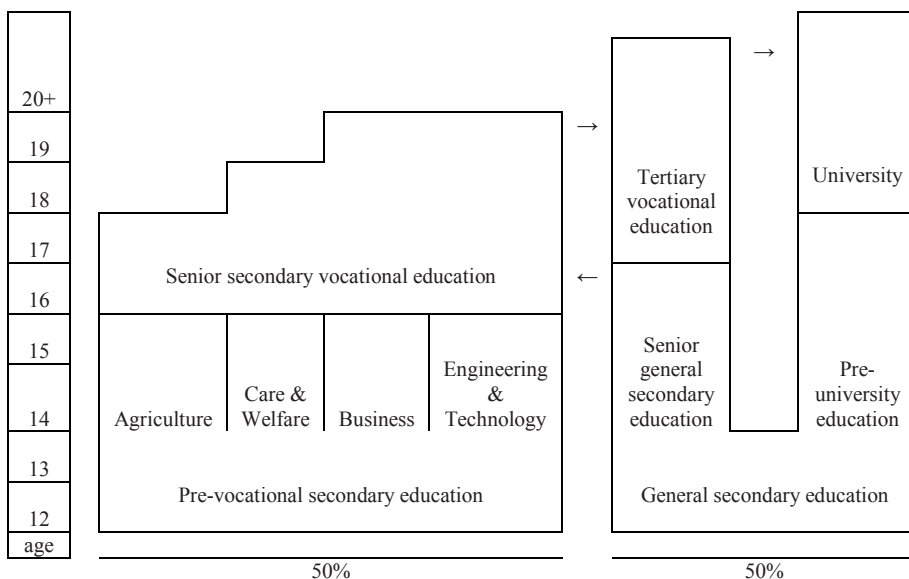


Figure 1. Overview of the Dutch system of regular secondary and tertiary education (adapted from Boersma, Ten Dam, Volman, & Wardekker, 2010)

1.2 Conceptual framework

We argue that to facilitate vocational orientation and student engagement, school and work should be integrated as contexts for learning. Students should have the opportunity to participate in vocational activities that are designed to offer space and intellectual instruments for critical reflection on associated vocational practices and the students' abilities and affinities regarding these practices. Based on the literature about 'communities of learners' (Brown & Campione, 1994) and 'communities of practice' (Wenger, 1998), we distinguished four interrelated parameters to define a 'community of learners for vocational orientation' in the first phase of the study—shared learning, meaningful learning, reflective learning and learning for transfer. The four parameters are elaborated in Boersma, Ten Dam, Volman and Wardekker (2010, p. 9) as follows:

Shared learning refers to a learning environment in which students jointly strive to reach a shared goal. In a community of learners for vocational orientation,

students and teachers ideally work co-operatively, like colleagues working at an institution or company helping clients. The students are regarded as peripheral but legitimate members, and the teachers and professionals are considered experienced members of the community (Lave & Wenger, 1991; Rogoff, Goodman-Turkianis, & Bartlett, 2001). All the community members interact and share knowledge to attain their goal, thereby acquiring new knowledge, skills and attitudes, both individually and as a group.

Meaningful learning refers to the use of learnt information that can benefit society by working in society in the future and that can benefit the students personally. Although school is meant to help students develop competencies that are indispensable to society, the students do not always understand the importance of developing these competencies in line with their personal goals and lives. In our envisioned community of learners for vocational orientation, students participate in authentic vocational practices. They then frequently experience an inability to participate fully in these practices because of faulty or missing competencies. The assumption is that this experience and the students' wish to be part of the community of that vocational practice will make them realise that the competencies our society requires are in fact competencies that they themselves need.

Reflective learning refers to the need for students to reflect on the content of what they are learning and the processes through which that learning takes place. 'Learning through participation' is not just a matter of participating; if students are to develop competencies and a professional identity, the quality of participation should be improved through reflection. A community of learners for vocational orientation ideally prompts reflection at three levels: First, students are encouraged to reflect on the way they function and develop as early professionals in a particular work sphere. Second, students are encouraged to think critically about the importance of the profession to society. Third, students are encouraged to realise what being a professional within the work sphere means to them.

Learning for transfer is the last parameter. Students should be made aware that the concepts and processes they are introduced to are generative and useful across many settings (Campione, Shapiro, & Brown, 1995). In a community of learners for vocational orientation, students ideally acquire competencies in the context of their intended use i.e. a certain vocational practice. Students construct new knowledge, identities, ways of knowing and positions in the world. They become different people (Beach, 1999). When they become aware of these changes, they are able to use their new identities in other contexts. They themselves are then the bridges between different settings. The implication is that students should be encouraged to reflect on *why* they need to learn certain concepts or ways of doing things and *how* this learning relates to their lives as future professionals.

In Phase 2 of the study, we used the parameters of our conceptual framework of a community of learners for vocational orientation to analyse whether and how these parameters were already manifest in the teaching-learning processes in the ninth-grade Care & Welfare classes in the two schools participating in our study (Figure 2). At both schools, the learning environment for this vocational subject largely consisted of simulated workplaces. Students between 14 and 15 years of age learnt in small groups based on theoretical and work-related practical assignments associated with each of the simulated workplaces (i.e. Welfare, Housekeeping, General Services, Care Assistance, Beauty Care and Workplace Assistance). The

practical assignments were rather prescriptive, focusing on technical aspects (for example, learning to bathe a baby was guided by a worksheet with step-by-step instructions regarding how to check the water temperature and how to lift the baby) rather than the wide array of vocational practice aspects (for example, the Western cultural value of intentionally stimulating a baby's development by interacting with the baby during bathing). Moreover, the tasks were isolated from related tasks within the vocational practice (for example, informing parents about their baby's diarrhoea), which limits students' insight into the task's purpose. The practical assignments aimed to complement the theoretical assignments, but the students were not explicitly encouraged to relate their practical experience to theoretical knowledge, and vice versa. From our analysis, we concluded that shared learning and meaningful learning were only partially manifested. Little evidence was found of reflective learning and learning for transfer. The dialogue with the teachers concerning these findings enabled us to identify starting points (tentative heuristics) for designing curriculum units i.e. series of lessons that foster communities of learners for vocational orientation (for further results from the preliminary and descriptive phases, see Boersma et al., 2010).

In this chapter, we focus on Phase 3 of our study, specifically the design process and the resulting curriculum units at one school during the first year of development and evaluation. This first year clearly illustrates our design research approach, in which experienced teachers, who were motivated to participate in the study, were invited to collaborate with the school middle manager and researchers on equal terms (see *Research Design* below). We used this approach to support the development of curriculum units that foster a community of learners for vocational orientation. We address the following research questions:

1. How did the teachers collaborate with the school middle manager and researchers during the process of developing curriculum units that would foster communities of learners for vocational orientation?
2. Did the implemented curriculum units promote student learning in the intended shared, meaningful, reflective and transfer-oriented way?

The answers to the first research question will contribute to our aim of providing insight into the process of developing curriculum units. The answer to the second research question will contribute to our aim of investigating the potential of the concept of communities of learners for use in pre-vocational secondary education.

2. RESEARCH DESIGN

To understand the nature of our design research study, some ideas that underlie our approach need to be explained. The school teachers, middle managers and the researchers were equally in charge of the joint endeavour of designing curriculum units that foster communities of learners for students. In addition to the theoretical input provided by the researchers, the teachers' practical knowledge was valued in accounting for the contextual factors that affect teaching and learning. This practical knowledge, it was believed, would contribute to the realisation of ecologically valid curriculum units and the implementation of the units as intended. These aspects are essential for allowing the researchers to draw valid conclusions about the curriculum

units' influence on the students' learning. Thus, the design process was not pre-determined by the researchers but shaped along with the teachers and school middle managers. We expected our approach to help teachers and school middle managers develop ownership of the designed curriculum units. To guarantee that the designed curriculum units would be closely related to the school's vision regarding teaching and learning, the school middle managers were involved in the study.

The grey part of Figure 2 provides an overview of the first year of development and evaluation at one of the schools. The first year consisted of two cycles of curriculum unit design, implementation and evaluation. The evaluation outcomes of the first design cycle (curriculum unit 1: Coffee Morning unit) were applied in the second design cycle to create a second curriculum unit (unit 2: Activity Morning unit) that would better foster a community of learners for vocational orientation. In the second year, both these curriculum units were optimised, implemented and formatively and summatively evaluated.

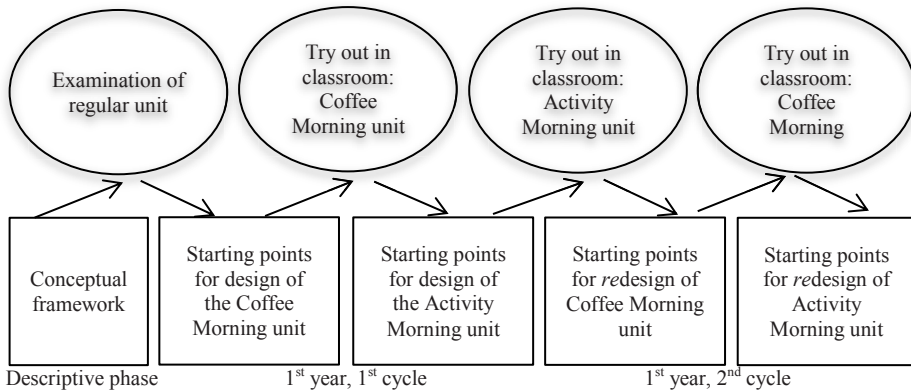


Figure 2. Overview of the first year of development and evaluation (the grey part, phase 3a), as situated between the descriptive phase (phase 2) and the second year of development and evaluation (phase 3b)

Both the design, implementation and evaluation cycles at the school involved two teachers, one school middle manager and two researchers. Table 1 presents the development team's activities during the phases of each cycle.

To answer the first research question (on the curriculum unit development process), we gathered data on all the actions of and interactions among the researchers, school middle manager and teachers during the design process of both cycles. All the *design hours* of the Care & Welfare teachers and the researcher; the *joint meetings* of the teachers, the researchers and the school middle manager and *school-wide occasions*, such as study days, were reported. These reports were submitted to and approved by the teachers and/or the school middle manager. A second researcher acted as the observer during several design hours and all the joint meetings in order to substantiate the researcher's interpretations and provide feedback to the researcher and school middle manager during the design hours.

Using member checks of the written reports and a researcher as an observer, we enhanced the intersubjectivity of this study.

To answer the second research question (on student learning), the reports of the design hours and the resulting lesson materials were gathered to determine how the parameters of a community of learners for vocational orientation had been incorporated into the designs. In addition, all the lessons were video recorded and separately evaluated in the teachers' and students' interviews to determine how the parameters were manifested in the implemented curriculum units. All the evaluations were voice recorded and fully transcribed.

Table 1. Overview of activities during both cycles

	Coffee Morning Unit	
Design (10 weeks) The teachers and researcher spent 16 hours designing the curriculum unit for the students. The teachers, researchers and school middle manager spent three hours in joint meetings.	Implementation (3 weeks) The implemented curriculum unit comprised 15 lessons in total, in which students prepared for, executed and reflected on an event with elderly people.	Evaluation (4 weeks) The researchers and teachers evaluated the design and implementation phases in four three-hour-long meetings.
	Activity Morning Unit	
Design (14 weeks) The teachers and researcher spent 25 hours designing the curriculum unit for the students. The teachers, researchers and school middle manager spent seven hours in joint meetings.	Implementation (4 weeks) The implemented curriculum unit comprised 40 lessons in total, in which the students prepared for, executed and reflected on an event with primary school children.	Evaluation (2 weeks) Researchers and teachers evaluated the design and implementation phases in four three-hour-long meetings.

The written accounts of the design hours and the joint meetings and the transcripts of the evaluations with the teachers were systematically analysed using Miles and Huberman's (1994) matrix-display technique. The analysis consisted of three concurrent flows of activity—data reduction, data display and conclusion drawing/verification. During the data reduction process, the written accounts of the design hours and the transcripts of the evaluations were reduced to their crux. Fragments of the written accounts and transcripts were placed in a two-dimensional matrix with time on the horizontal axis and relevant themes (among which are the parameters of a community of learners) on the vertical axis. The researchers identified categories and patterns based on the condensed matrix and drew conclusions. The researchers verified these conclusions by reviewing the raw data once more. During this process, we actively looked for examples and counterexamples.

3. RESULTS

In this section, for each of the two curriculum units, we first describe the design process and the resulting curriculum unit and then evaluate the collaboration of the teachers with the school middle manager and researchers during this process

(Research Question 1) and student learning during the implemented curriculum units (Research Question 2) at one school during the first research year.

3.1 Design process of curriculum unit 1: the Coffee Morning unit

The teachers, researchers and school middle manager jointly shaped the process of design of the Coffee Morning unit. The design process involved three steps: 1) creating a rough plan, 2) elaborating learning goals, learning content and learning activities and assessing students' learning outcomes and 3) checking the four design parameters.

3.1.1 Step 1: Creating a rough plan

During a brainstorm session, the two teachers proposed organising an event for the elderly that would give the students the opportunity to talk and participate in activities with them. The elderly are an interesting target group for the vocational orientation of students of Care & Welfare, because they may work with the elderly in their future workplaces. The teachers focused on how to organise the Coffee Morning unit in terms of both the event and the implications for the regular curriculum. After several practical considerations were discussed, it was decided that the curriculum unit would be embedded in the regular lesson plan. The researcher tried not to disrupt the teachers' enthusiasm and remained open to their ideas and approaches. The school middle manager supported the idea of inviting the elderly to the school because this activity would provide an authentic experience for the students, which was in line with the school's vision regarding teaching and learning.

3.1.2 Step 2: Elaborating learning goals, learning content and learning activities and assessing students' learning outcomes

After creating a rough plan, the teachers focused on determining what activities would be appropriate for students to undertake with the elderly. The teachers proposed activities that were mainly inspired by the worksheets used in the regular curriculum—serving coffee and cake, polishing shoes, painting fingernails and playing games. Thus, the regular classroom curriculum was the teachers' starting point for the design. They did not explicitly define the goals or how to assess the students' learning outcomes. The researcher guided the process by asking which competencies the students should develop and what kinds of tasks would contribute to this goal. Because the teachers found answering these questions difficult, the researcher elaborated on competence-based learning. In addition, the researcher gave examples of how the design parameters were already incorporated in the regular worksheets and how to further incorporate them. During two joint meetings, the school middle manager encouraged the teachers to reflect on the design parameters and noted that the teachers may consider the students' opinions regarding the event, emphasising the importance of meaningful learning. As a result, the teachers asked the students to complete a worksheet elaborating an activity they would undertake with the elderly.

3.1.3 Step 3: Checking the four design parameters

The researcher took the initiative in incorporating the design parameters presented above during three of the four design meetings and tried to involve the teachers by posing questions. The third design meeting was devoted to determining to what extent the four parameters were rooted in the design. The researcher concluded that the parameters were present in the overall design but proposed alternatives regarding how to incorporate these parameters into the regular worksheets. Although the teachers appreciated this input, the suggestions were only partly implemented, mainly by the researcher herself. The teachers were clearly focused on other aspects of the design process, indicating their limited understanding of the parameters until that point. In two meetings, the school middle manager emphasised the importance of vocational orientation. By participating in professional activities during the Coffee Morning event, students could experience being part of a community of (vocational) practice and being professional care providers (professional identity).

3.2 Brief description of curriculum unit 1 as intended: The Coffee Morning

In the final design of the Coffee Morning unit, the four parameters manifested in learning and instructional activities as follows: *Shared learning* was incorporated while maintaining the regular division of students in small groups into simulated workplaces (i.e. Welfare and Housekeeping). The groups were responsible for a specific part of the organisational tasks. The students made the invitations, picked up the elderly people from the service flat, welcomed them to the classroom, set up the tables, made coffee and arranged the cake. In addition, each student group talked with a group of elderly people about their specific simulated workplace and undertook two activities with them. The students selected one of the activities, while the other activity was a required part of the regular curriculum. By requiring the students to participate in these activities, the group identity and the shared goals of the small group were emphasised.

Meaningful learning was promoted by informing the students from the start that they would engage in activities with 'real' elderly people. As a result, the preparatory lessons for the event were more meaningful for the students, because they would need to be able to skilfully interact with the elderly in a few weeks. The opportunity for the students to decide on an activity to undertake with the elderly contributed to the meaningfulness of the learning.

Reflective learning was addressed with the use of a competence card. At the start of the unit, two weeks into the unit and then again after the event, the students used a competence card created by the teachers to evaluate how competent they think they are. The competencies pertained to the preparatory lessons, the conversation about the workplace, the organisation of the activity they chose and the obligatory activity. The students added competencies that are fundamental to the activity that they plan to undertake with the elderly. Reflection was again encouraged during the evaluation after the Coffee Morning event. In groups, students discussed their impressions of the event, what they would do differently and what they had learnt. The groups presented the results from their evaluations to each other.

A focus on transferable learning outcomes was promoted by the organisational composition of the curriculum unit. The students were presented with situations that

were increasingly complex. What students learnt in the training situation with their classmates was meant to be applied when they interacted with the elderly during the event. Learning for transfer was also promoted by conducting a single activity in different ways to show why one way may work better than other ways. For example, the students may find that serving coffee or cake along the left side of a person might cause them to elbow the guests in the face.

3.3 Evaluation of the Coffee Morning unit

3.3.1 Evaluation of the design process

How did the teachers collaborate with the school middle manager and the researchers while developing the curriculum units? We concluded that during the design cycle of the Coffee Morning unit, the teachers and researchers did not share the goal of fostering communities of learners for vocational orientation. Whereas the researchers' aim was realising the design parameters, the teachers were mostly concerned with organising a new and interesting activity for the students. The researcher, after assuming an attitude of expectation, supported the teachers in the design process by providing a theoretical background for learning in communities and gave practical suggestions regarding how to incorporate the parameters into the curriculum unit and materials. Still, the teachers considered the parameters of the community of learners for vocational orientation to be the researcher's concern. To guarantee the research study's aims and to guide the design process, the researcher noted that during the joint design of the next curriculum unit, the teachers should address the learning goals and the parameters earlier in the process.

During the joint meetings, the school middle manager encouraged the teachers to reflect on the choices made during the design process by asking reflective questions. Accordingly, he encouraged the teachers to reflect on the link between the school's vision regarding teaching and learning and the way this vision was operationalised in the curriculum unit. Although the teachers themselves requested the meetings with the school middle manager and the researchers, they showed resistance when they found that the meetings focused on why the activities were performed rather than on practical issues related to the activities. Explicit reflection on their own behaviours, choices and motives was not something the teachers were used to doing, although they stated that they 'reflected all day long' (i.e. engaged in implicit reflection).

In sum, the teachers, school middle manager and researchers all contributed to the development of the Coffee Morning unit. However, despite the efforts of the school middle manager and researchers, the parameters of a community of learners only had limited meaning for the teachers. Furthermore, encouraging the teachers to focus on their own learning processes led to resistance.

3.3.2 Evaluation of the implemented curriculum unit

This section addresses each parameter of this study's second research question, 'Did the implemented Coffee Morning unit promote student learning in the intended shared, meaningful, reflective and transfer-oriented way?'

The division of tasks aimed to promote *shared learning*. However, because the teachers were in charge of allocating and coordinating the tasks, the groups of students did not need to engage in joint discussions, provide each other with feedback or work together as classmates. The students knew what to do in their own groups but knew little about what the other groups were doing. As a consequence, the activities that should have promoted shared learning were often not performed as intended. The students worked on the worksheets independently, did not read them properly and consequently did not follow the steps they delineated. Because of the teachers' lack of ownership in designing the worksheets, they did not know how to guide the students in completing them. Thus, it was concluded that in the next curriculum unit, the teachers should know the content and procedures presented on the worksheets by participating in designing them and that they should pay more attention to realising positive interdependence between the students.

Working with 'real' people was intended to foster *meaningful learning*. The activities, however, only became meaningful halfway through the curriculum unit, when the event was approaching. During the preparatory lessons, the students received little information about the elderly and how they live, which made it difficult for them to empathise with their target group. Moreover, the students were not matched to one specific person whom they could focus on, learn more about and feel responsible for. During the event, it became clear that most of the elderly people were very bright and in good health. Because this specific group of people was quite different from what the students had learnt about during the lessons, they could not fully apply the competencies they had practiced. The activities that the students selected to engage in with the elderly proved to be meaningful for the students but did not always fit the needs or desires of the elderly. Thus, in the next series of lessons, it was concluded that efforts should be made to acquaint the students with the characteristics of their target group and the person they would be responsible for early in the project and to link the content of the preparatory lessons with the characteristics of these guests.

Although the students completed the competence card properly, most of them did so at the request of the teacher rather than because they wanted to *reflect* on what they had learnt. During the joint evaluation after the Coffee Morning event, it became clear that the students were aware of what they and their classmates had and had not done well with the elderly guests, although some students found it difficult to provide constructive feedback to one another. Additionally, the students mentioned the feedback they had received from the elderly guests. The students' reflection was most evident in their presentation of their evaluations. Most noteworthy from these presentations was the change in their perceptions of working with the elderly from being 'boring' to 'pleasant'. It was concluded that reflection should be made meaningful for students, for instance, through presenting what they have learnt. Moreover, explicit direction should be given regarding providing constructive feedback.

Learning for transfer was promoted by the increasing complexity of the activity (practicing from a worksheet, simulating the experience through role playing and actually participating in the event). During these phases, instructions also addressed *why* the activities should be undertaken in a particular way. The students, however, did not experience increasing complexity through this design. They did not perform the role play seriously until the teacher pointed out the purpose of the simulation.

Moreover, the students did not always follow as intended the purpose of the activities as laid out in the worksheets. These observations show the importance of the teacher's role in encouraging learning for transfer during the lessons. When the teacher explained the purpose of the activities, reflection occurred in a self-evident way. It was concluded that students should be informed about the purpose of the different elements of the lessons during the next curriculum unit and that the purpose of activities should also be made explicit during the lessons.

3.4 Design process of curriculum unit 2: The Activity Morning

During the second part of the school year, the same team of teachers, researchers and the school middle manager designed another curriculum unit, the 'Activity Morning'. Findings from their experiences in designing the Coffee Morning unit were applied to this new design.

3.4.1 Step 1: Creating a rough plan

The teachers proposed presenting activities in a primary school to give students the opportunity to gain experience with another relevant Care & Welfare target group—school children. Similar to the Coffee Morning unit design process, the teachers started to focus on the different organisational aspects of the project (which site, which age group) and how the new curriculum unit would relate to the regular curriculum. The teachers were inspired by a study day on cooperative learning structures in their school and wanted to incorporate these structures into the design. In evaluating the Coffee Morning unit, the researcher and teachers concluded that the learning goals and parameters should be addressed earlier in the design process; therefore, the researcher started to steer the process by explicitly linking the teachers' plans to the goals of the research project. Because integrating the Coffee Morning unit into a regular workplace was complicated, the teachers decided to design an isolated curriculum unit for this project. The researcher did not advocate for abandoning the regular workplace structure, because this learning environment offers the opportunity to shape the learning for transfer parameter, and she also anticipated that an isolated curriculum unit would not be a lasting part of the curriculum. The teachers, however, persisted in viewing the regular workplaces as an element separate from the Activity Morning unit. The school middle manager provided support regarding organisational issues and the design itself. He suggested a primary school and proposed a circulation system for the different activities during the event at the primary school site. Moreover, he asked the teachers to present their experiences with the Coffee Morning unit to the school team, with a focus on the elements that promoted meaningful learning, authentic learning and learning for transfer.

3.4.2 Step 2: Elaborating learning goals, learning content and learning activities and assessing students' learning outcomes

The researcher proposed creating a lesson plan that included the following elements: learning goals, learning content, lesson composition, instructional methods, materials, lesson conclusion and parameters of a community of learners for vocational orientation. Her aim was to structure the design process to facilitate the

replication of the design at another time or by other teachers. The teachers supported this idea and decided to work out this lesson plan in the five weeks before the curriculum unit was implemented. On the researcher's initiative, the teachers discussed which of the examination regulations were relevant to address in the curriculum unit. The teachers also discussed which learning goals they thought were important to the students. They discussed what students had to learn to work with primary school children; however, how the various learning goals related to each other was not evident to them. The teachers discussed what curriculum content should be addressed each week to prepare the students for the event. For each learning activity, an instructional method was designed. The researcher and the teachers used the materials from the study day on cooperative learning structures to create learning activities and were inspired to develop their own structures. The school middle manager followed the design process, asking the teachers to report what they had already designed and their further plans. He also provided input on the design and actively participated in preparing the presentation for the school team.

3.4.3 Step 3: Checking the four design parameters

The teachers, supported by the researcher, thoroughly prepared the first lessons of the curriculum unit. However, the teachers found it difficult to work systematically and translate the abstract parameters of a community of learners into learning activities. Working out the cooperative learning structures was more difficult than expected. Finally, only two weeks were left to create the lesson materials. While implementing the first week's lessons, the design hours were used to discuss how the upcoming week's learning activities should be performed. The time pressure made it even more difficult for the teachers to think about how to incorporate the parameters of a community of learners into the design. Again, the researcher posed questions to the teachers about the extent to which the parameters were incorporated in the design and made suggestions for improvements. The school middle manager was involved in the planning process and deciding on the design content during the joint meetings and helped emphasise the link between the school's vision and the parameters.

3.5 Brief description of curriculum unit 2 as intended: The Activity Morning

This section describes how the parameters of a community of learners for vocational orientation were manifested in the learning and instructional activities of the design of the Activity Morning unit. *Shared learning* was promoted by dividing the students into groups and asking each group to present an activity worksheet that they could all execute with the primary school children during the event. This particular activity was organised to promote positive interdependence, a basic element of cooperative learning (Kagan, 1994). Far more than during the Coffee Morning unit, the students were encouraged to make plans together, deliberate, supplement each other's ideas and give each other feedback. More than during the Coffee Morning unit, cooperative learning structures were incorporated into this unit in order to structure the interactions between the students.

Meaningful learning was realised in the design by telling the students when the lessons began that they would be organising an event for children at a primary school. The students were shown a video showing the school, the teachers and the younger children in grades 1 and 2. The groups were also assigned 'their' children, which allowed the students to adopt the role of a primary school teacher, learn about the children and feel responsible for successfully carrying out the event. Allowing the students to decide which activities to undertake with the children aimed to encourage meaningful learning. The teachers provided guidelines for these activities. The class then decided which of the proposed activities to perform at the primary school.

Reflective learning was stimulated by asking the students to provide feedback on each other's activities concerning their suitability for the children, the clarity of the steps involved and the materials needed. This feedback was used to make a final version of each worksheet. Moreover, the students reflected on the competencies that they would need to develop to present the event properly, using the 'Think, Pair, Share' strategy (Kagan, 1994). This activity aimed to encourage the students to reflect on whether working with children suits them as well as identify the necessary knowledge, skills and professional attitude needed for this work.

A focus on *transferable learning outcomes* was promoted by the particular structure of the series of lessons. The students first practiced the activities through role plays with their classmates and later performed them with the primary school children. During the curriculum unit, the teachers constantly noted the reasons why the activities should be done in a certain way.

3.6 Evaluation of the Activity Morning Unit

3.6.1 Evaluation of the design process

How did the teachers collaborate with the school middle manager and researcher in developing curriculum units that would foster communities of learners for vocational orientation? The researcher encouraged the teachers to work systematically by creating a lesson plan and focusing on the learning goals and incorporating the parameters for communities of learners earlier in the design process. Although the researcher's guidance did structure the teachers' activities at the beginning of the design period, when they started feeling some time pressure, they eventually abandoned this plan. Moreover, during the Activity Morning design process, the teachers and the researcher still did not share the goal of designing learning environments that foster a community of learners for vocational orientation. Addressing the parameters in the design was the researcher's goal, and this remained her task. This goal was clearly less meaningful to the teachers. The teachers easily discarded elements of the design that reflected the concept of a community of learners, even after experiencing the value of the elements during the Coffee Morning unit. The teachers' main aim remained designing activities that the students would enjoy. The researcher's evaluations with the teachers after implementing the Activity Morning unit presented an appropriate moment for the teachers to reflect on the designed curriculum unit and the process of designing the unit. Nevertheless, they indicated that the evaluations were of more interest to the researcher than to themselves.

The school middle manager tried to encourage the teachers to reflect on their design activities for the Activity Morning unit during the joint meetings. By asking the teachers to present the Coffee Morning unit to the team, he provided the teachers with an audience (a meaningful context) to present their work as a good practice, and he also encouraged them to reflect on the process, because preparing the presentation required thorough reflection. For the teachers, however, the presentation remained only an accidental circumstance that demanded substantial time. Although the presentation provided an opportunity for shared, meaningful and reflective learning for the teachers, they did not appreciate the value of this opportunity. The presentation of the Coffee Morning unit was overall more meaningful to the school middle manager than to the teachers.

In sum, regarding the first research question (concerning the process of developing curriculum units), we concluded that the input and structure that the researcher provided during the Activity Morning design process did not substantially affect how the teachers designed or approached designing the activities. Moreover, we concluded that the researcher's and school middle manager's actions did not fundamentally affect how the teachers viewed the parameters of a community of learners for vocational orientation. The teachers were not focused on their own learning processes, no matter how explicitly the researcher and the school middle manager attempted to facilitate their learning.

3.6.2 Evaluation of the implemented curriculum unit

We now discuss each parameter of the second research question: 'Did the implemented Activity Morning unit promote student learning in the intended shared, meaningful, reflective and transfer-oriented way?'

Shared learning was promoted using principles of cooperative learning. The students created an activity worksheet for the rest of their classmates, and the class selected activities that seemed suitable for primary school children; however, because of a lack of time, the theoretical knowledge that the students' learnt was not applied to the selected activities. As a result, an exchange of information between the students did not occur. We concluded that although the design of the curriculum unit did incorporate principles of cooperative learning to promote shared learning, the shared learning of the students was different from what was intended.

Meaningful learning was promoted by showing video clips of the primary school children in their school and by giving the students the freedom to select their own activity to undertake with them. The students were enthusiastic about and interested in the video clips of the children ('Boy, they are active!'), whereas they were less interested in the clips of the primary school environment. As a result, the students developed an image of the target group but were not able to get an idea of the opportunities that the primary school environment offered for possible activities. The teachers concluded that they would guide the students through the video clips next time (e.g. by making remarks like, 'Look, there is a small stage that you may use for activities'). The students appreciated the freedom to choose the activities, even though they had to meet certain criteria. Giving the teachers less control and the students more control over the activities is a learning point for designing future curriculum units.

Reflective learning was expected to occur, as the students gave feedback on the worksheets and competencies of the other groups. Some of the groups, however, did not revise their worksheet on the basis of this feedback. The worksheets did not seem important to the students during the event, because they had already spent so much time discussing each other's activities. Student competence was strongly improved in the Activity Morning unit compared with the Coffee Morning unit. Because the students had to think about which competencies they had to develop for the event, more reflection occurred. Still, the students found it difficult to convince their classmates of their own competencies. They did not appear to clearly think about whether working with children would suit them. It was concluded that the design of future curriculum units should focus on the following aspects: providing more freedom concerning how the students utilise feedback, stimulating reflection by letting the students think about the competencies they need to develop and carrying out the unit with a focus on the event itself rather than 'working with children' in general.

The focus on *transferable learning* outcomes was grounded in the organisational composition pertaining to selecting activities, practicing with classmates, executing the activity with the target group, followed by an evaluation. The students handled themselves well at the school site during the event and interacted in an appropriate fashion with the children. Still, the students were not always oriented to the task of selecting activities and practicing with their classmates during the lessons, as they believed they would manage well without preparation. We concluded that the design of future curriculum units should focus on the following aspects: elaborating on the proper application of instructional methods in the context of practicing activities with classmates, involving students more in preparing for the event and providing examples of situations in which performing activities would be more difficult (for example, role playing scenarios in which they have to deal with shy or hyperactive children).

4. DISCUSSION

In this chapter, we examined how the researcher, teachers and a school middle manager designed and implemented a learning environment aimed at fostering a community of learners in pre-vocational education, using a conceptual framework consisting of four parameters (shared, meaningful, reflective and transfer-oriented learning) as a point of departure. Two curriculum units were developed and implemented: the Coffee Morning unit and the Activity Morning unit. Our research questions focused on how the teachers collaborated with the school middle manager and researchers during the process of developing the curriculum units and on whether the implemented curriculum units promoted student learning as intended.

Regarding the first question, we conclude that the teachers were actively involved in the process of designing and implementing the curriculum units. Nevertheless, they did not appreciate the value of a community of learners for vocational orientation. During both design cycles, the teachers paid considerable attention to the organisational aspects of the units (who, what, where and when). Moreover, they only focused on learning goals, learning content, instructional methods and assessments after the organisational matters had been settled. Keeping

the teachers focused on the parameters of a community of learners for vocational orientation remained the responsibility of the researcher. Relating the parameters and the developed curriculum units to the school's vision regarding teaching and learning and reflecting on possibilities for transferring the lessons learnt to other curriculum units only occurred when the school middle manager encouraged such reflection.

In retrospect, we question if all the participants truly had a shared goal in this design research study. Although the teachers, the school middle manager and the researcher agreed to collaborate to foster communities of learners for vocational orientation, each of them pursued their own goals. For the teachers, the main focus was designing activities that the students would enjoy, while the school middle manager's focus concerned school development and disseminating innovative learning practices. The researcher was interested in investigating the use of communities of learners to enhance students' quality of and engagement in learning. Realising so many different goals at such different levels may have been too ambitious for a two-year project. Additionally, because the researcher, who developed the idea of fostering communities of learners, had initiated the project, the teachers' appreciation of the concept of communities of learners had to be developed during the process. Finally, the collaboration method used in the design research study was not a regular practice at the school. As a result, the teachers did not reflect on the process collaboratively (make plans, provide colleagues with feedback and reflect on how what they were doing was in line with the school's vision regarding teaching and learning).

We believe that these problems are typical of collaborations between researchers, teachers and school middle managers, but we also believe that being more explicit about the participants' roles and allowing more time for the design process may mitigate some of these issues. Participating in a design research study requires more than teachers' motivation to participate. Researchers should be aware that structured and conceptual reasoning are academic skills that are not self-evidently developed by teachers. It seems advisable to help teachers to draw on and develop these skills. Additionally, time is needed to develop a shared conception of the starting points for developing curriculum units. A fruitful design process is only possible when these starting points fit the school's vision and when that vision is elaborated and applied by not only the school middle manager but also the individual teachers involved. In addition, engaging teachers in the context and problem analysis phase of a design research study—the first instead of the third phase—may help the development team to arrive at a shared conception of the goals of and the starting points for developing curriculum units.

Regarding our second research question, we conclude that with the second curriculum unit (the Activity Morning), we were better able to promote student learning as intended than with the first (the Coffee Morning). The parameters were better manifested in the design of the Activity Morning unit than in that of the Coffee Morning unit. Shared learning, for example, was more clearly present because approved cooperative learning instructional methods were incorporated in the design. Regarding meaningful learning, the design allowed the students to gain a much better understanding of the target group (primary school children), thus facilitating their ability to assume the professional role of a primary school teacher's assistant. In the second unit, having the students think in advance about which

competencies they would have to develop for the event and use this information for later reflection made this reflection on what was learnt more meaningful to the students.

All evaluations during the design research study yielded new suggestions for improvement. For example, a tentative heuristic for meaningful learning, derived from the conceptual framework, was to 'have students participate in an authentic ('real') vocational activity'. This tentative heuristic was incorporated in the design of the Coffee Morning unit by having the students prepare for and eventually accompany and support elderly people during diversional activities. As this did engage students in meaningful learning during the event with the elderly, but not during the preparatory lessons, we adjusted the heuristic to 'help students understand how to prepare for and establish an authentic vocational activity'. This heuristic was subsequently incorporated in the Activity Morning unit by introducing the school children to the students at the start of the unit. This design increased the students' meaningful learning, but as the teachers largely controlled the preparatory lessons, the students were unable to effectively adopt the professional role of a primary school teacher's assistant. Therefore, the heuristic was adjusted once again to 'help students understand how to prepare for and establish an authentic vocational activity and take the lead in doing so'. Thus, the collaboration with the teachers and school middle manager enabled us as researchers to refine and elaborate the tentative heuristics that we started out with.

In conclusion, despite the challenges we encountered, we believe that we were able to elaborate on the concept of a community of learners in a way that is useful for pre-vocational secondary education. The collaboration between the researcher, the teachers and the school middle manager resulted in ecologically valid designs and elaborated heuristics. Additionally, the curriculum units appeared effective in enhancing the students' quality of learning and engagement (as discussed in the previous chapters). Although we are uncertain of the extent to which the concept of a community of learners and its parameters were meaningful to the teachers, several years after our design research study, the effects of the project appear to have taken root in the school. The success of the curriculum units developed in the context of our design research study motivated the teachers to continue these kinds of projects. The Coffee Morning and Activity Morning have become part of the regular curriculum of the school, and similar units for the 10th grade curriculum were developed and implemented by the teachers.