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Leiden
The Netherlands

The learning portfolio as a tool for stimulating reflection by student teachers

Mansvelder-Longayroux, D.D.

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General conclusions and discussion

In this chapter, the major results and conclusions of the present thesis are summarised in the light of the research questions of the study (section 5.1). In section 5.2 we discuss some points related to the purpose of the learning portfolio in the training of student teachers. Attention is also paid to the limitations of the study (section 5.3) and suggestions for further research are made (section 5.4). We conclude this chapter with practical implications of the study for teacher education (section 5.5).

5.1 Conclusions

Student teachers' perception of the learning portfolio

In Chapter 2 we reported on the functions of the learning portfolio in student teachers' learning processes as perceived by the student teachers themselves. The research question in this study concerned student teachers' understanding of working on a learning portfolio. This question was broken down into two parts: (a) What functions in their learning process do student teachers ascribe to the learning portfolio? and (b) How do the functions of the learning portfolio distinguished by the student teachers relate to each other? On the basis of the analysis of the interviews with the student teachers and their portfolio-evaluation reports, we distinguished seven functions of the learning portfolio. There were two product functions ('meeting the requirements' and 'showing others or yourself') and five process functions ('recollecting and structuring experiences', 'evaluating development', 'understanding experiences', 'understanding the learning process', and 'understanding yourself as a teacher'). This distinction between a product and a process function of the learning portfolio is also made in the portfolio literature (e.g., Darling, 2001; Loughran & Corrigan, 1995).

By relating the process function to the learning process of student teachers, we obtained a subtler picture of the process function of the learning portfolio. Two subgroups of process functions of the portfolio were distinguished based on the type of learning they facilitate: a group of process functions geared to action and improvement of action in teaching practice and a group of process functions geared to understanding underlying processes that can play a role in action in teaching practice and learning to teach. Two functions, 'recollecting and structuring experiences' and 'evaluating development', were geared to action and improvement of action in teaching practice. In these functions the learning portfolio has a bearing on the learning process, but does not play a role in it, in the sense that working on the portfolio starts a new learning process. Three functions, 'understanding experiences', 'understanding the learning process', and 'understanding yourself as a teacher', were geared to understanding underlying processes that can play a role in action in teaching practice and learning to teach. In these latter functions the learning portfolio plays a role in the learning process of the student teachers. These portfolio functions were mentioned less often than the other functions mentioned by the student teachers. The homogeneity analysis of correlations between the portfolio functions revealed that internal motivation to work on the portfolio seems to play a role in mentioning these portfolio functions.

Based on these results we conclude that teacher educators must inform the student teachers well about the intended function(s) of the learning portfolio. When they aim for working on a portfolio to start a learning process, they must make clear to the student teachers the difference between a portfolio that has a bearing on their learning process and a portfolio that also plays a role in their learning process, and how student teachers can realise the latter. Where possible, teacher educators should ensure that student teachers are as much as possible internally motivated to work on the portfolio and that they do not see working on a portfolio purely as a compulsory element of the course.

Reflection in the portfolio

The second research question of our study was, How do student teachers reflect in their portfolios? To be able to answer this question, we first had to determine how reflection in the portfolio could be operationalised. In Chapter 3 we described how we searched for an operationalisation of the concept of reflection in the literature. Because of the operationalisation of reflection in terms of learning activities, the research question on how

student teachers reflect in their portfolios was further specified in the question, What learning activities do student teachers undertake as they compile their portfolios? From the portfolio analysis, in which we used the learning activities distinguished by Vermunt and Verloop (1999), six learning activities emerged: 'recollection', 'evaluation', 'analysis', 'critical processing', 'diagnosis', and 'reflection'. These learning activities differed in the types of learning they aimed at: action and improvement of action in teaching practice, or understanding the underlying processes that can play a role in action in teaching practice. This distinction fits into a division used in research on how student teachers learn, between performance-oriented student teachers and meaning-oriented student teachers (e.g., Kubler LaBoskey, 1993; Oosterheert & Vermunt, 2001). 'Recollection' and 'evaluation' addressed immediate performance, and the improvement of performance, in teaching practice. The learning activities 'analysis', 'critical processing', 'diagnosis', and 'reflection' were oriented towards understanding the underlying processes that can play a role in action in teaching practice. These learning activities were found to a much lesser extent in the portfolios than 'recollection' and 'evaluation'.

From the portfolio analysis it appeared, furthermore, that the learning activities could be undertaken both in the present (during the production of the portfolio) and in the past (at an earlier stage in the learning process). In addition, a distinction could be made with regard to the period of time to which the learning activities related. All learning activities could refer to separate experiences or related experiences over a period of time and different contexts. The learning activities that emerged from the portfolio themes frequently followed each other in a particular, inter-related, sequence. This pattern of learning activities could coincide with a theme, or several patterns could be found within one portfolio theme. The pattern of learning activities was confined, in most cases, to a description of separate or related situations, experiences, or activities, followed by an evaluation. In a small number of portfolio themes, a more elaborate pattern was found. In these cases, the description of the situation(s), experiences, or activities was followed by the learning activities 'analysis', 'critical processing', 'diagnosis', or 'reflection'.

Based on these results, we conclude that mainly forms of 'recollection' and 'evaluation' were found in the portfolios of the student teachers. Using these learning activities, student teachers selected the experiences that were important to them and examined what they knew and were able to do. These learning activities form a condition for starting a learning process. Processing of these experiences using the meaning-oriented learning

activities ‘analysis’, ‘critical processing’, ‘diagnosis’, or ‘reflection’, however, rarely takes place. To realize that working on the portfolio starts a learning process, student teachers must go through an elaborate pattern of learning activities and the learning activities ‘recollection’ and ‘evaluation’ must be followed by meaning-oriented learning activities.

Meaning-oriented learning activities and working on the portfolio

In Chapter 4 we reported on the manifestation of meaning-oriented learning activities in the portfolio themes. This part of the study followed the part of the study described in Chapter 3 into the learning activities that student teachers undertake as they work on their portfolios. In that part of the study we distinguished between action-oriented learning activities geared to (the improvement of) action in teaching practice and meaning-oriented learning activities geared to the understanding of underlying processes that can play a role in action in teaching practice. In this part of the study we focused on when and how the meaning-oriented learning activities (analysis, critical processing, diagnosis, and reflection) manifest themselves in a portfolio theme. Sub-questions were (a) What themes do the student teachers include in their portfolios? (b) Which portfolio themes show meaning-oriented learning activities? and (c) How do the meaning-oriented learning activities manifest themselves within a portfolio theme in relation to the other learning activities in the theme? Based on the portfolio analysis we distinguished six theme clusters, about problems experienced, the educational reform (*Studiehuis*), teaching and testing, activities other than teaching, oneself as a teacher, and development and functioning. We found themes with meaning-oriented learning activities in four of the six theme clusters distinguished: in problems experienced, the educational reform, teaching and testing, and development and functioning. These four theme clusters seemed to relate to each other in the personal involvement of the student teachers with themes in these clusters. This is in line with the findings of other researchers (e.g., Desforges, 1995; Vermunt & Vermetten, 2004). The basic form of these portfolio themes was always composed of the action-oriented learning activities ‘recollection’ and ‘evaluation’. The meaning-oriented learning activities generally played a small part next to these action-oriented learning activities in the portfolio themes. It is characteristic of meaning-oriented learning activities that they go into the ‘why’ of experiences. They form as it were a continuation, a depth, of the description of a situation, an approach, an opinion, or an evaluation of functioning or development.

Based on these results we conclude that meaning-oriented learning

activities did not occur much and only in those portfolio themes in which the student teachers felt personally involved. Personal involvement should be stimulated as much as possible through the selection of the portfolio themes.

5.2 Discussion

The concept of reflection

We have described what student teachers see to be the value of the learning portfolio for their learning process and how they reflect in their portfolios. In developing a description framework, great difficulty was posed by the concept of reflection. The operationalisation in terms of learning activities offered us opportunities not only to describe the portfolio and interview data, but also to do justice to the variation we found in these data. Because of this operationalisation, we gained a greater understanding of the concept of reflection, of which it is often said in the reflection literature that it has been conceptualized in many different ways and that it is a too general and wide concept (Hatton & Smith, 1995; Korthagen, 2001). In the literature, the content of reflection, the product of reflection, and the process of reflection are often used interchangeably. The result of this is that the concept of reflection is extremely vague and must be seen as a principle for teacher education rather than an indication for a mental thinking process. The operationalisation in terms of learning activities offered us possibilities to relate reflection and the learning of student teachers, and with that to gain more insight into the operation of the learning portfolio and the type of learning that the portfolio can stimulate. It was confusing in this study that because of the operationalisation of reflection in terms of learning activities the ‘broad’ concept of reflection enclosed reflection ‘in the narrow sense’. The question arises whether teacher education institutes must still speak of reflection ‘in the broad sense’. Would it not be better if they indicated what learning activities they mean by that, of which reflection ‘in narrow sense’ is possibly one?

Results of the content analyses of the portfolios indicated that a distinction could be made between action-oriented and meaning-oriented learning activities. Undertaking action-oriented learning activities leads to *consciousness-raising* of what one knows and is able to do; undertaking meaning-oriented learning activities leads to *understanding* of experiences in teaching and learning. Meaning-oriented learning activities can be

considered forms of deep-processing. They are directed towards making sense of experiences and are important for the building up and structuring of practical knowledge (Entwistle & McCune, 2004). It is important for the learning process of student teachers that they undertake both action-oriented learning activities and meaning-oriented learning activities. The action-oriented learning activities (recollection and evaluation) that we found in our study may be considered forms of selection of experiences. This selection of experiences is necessary for subsequent processing of these experiences (Vermunt & Verloop, 1999). We found little evidence of processing of these experiences using meaning-oriented learning activities in the portfolios. Without the processing of experiences there is no development of theories (of practical knowledge) and it remains separate observations of experiences (Kolb, 1984).

Biggs and Collis (1982) examined the learning outcomes of students in different academic contexts. They found that the outcomes of students' learning displayed similar stages, from 'knowing more' (quantitative) to 'to deepen understanding' (qualitative). They indicate that training institutes must pay attention to learning goals that aim at the qualitative aspects of learning, and that this should be supported by both teaching and assessment methods. *"Quantitative conceptions of teaching and learning address the first aim [increase of knowledge] only, so that the deepening of understanding is left to students' predilections for spontaneous deep learning activities"* (Biggs, 2003, p.41). Teacher education institutes should think about the purposes for which they wish to use the learning portfolio. When they aim at understanding, they must match the goal, use, and supervision of the portfolio to that.

The learning of student teachers

We found some meaning-oriented learning activities in the learning portfolios of the student teachers. They occurred especially in themes about class management, teaching, and testing which were personally important for the student teachers. Even in these themes, however, their occurrence was rare. The question is whether it is possible to stimulate student teachers to undertake more meaning-oriented learning activities by working on their portfolios, and also with regard to other aspects of the teaching profession, than they do already. It is known from research that student teachers differ in the way they learn from their experiences. The distinction between action-oriented and meaning-oriented learning activities that came up in this study fits into a division used in research into how student teachers learn. Some

student teachers are more willing than others not only to relate problems or situations that arise to their actions in teaching practice, but also examine what underlying factors can play a role in these problems and situations (Kubler LaBoskey, 1993; Oosterheert & Vermunt, 2001). The way the portfolio was used in this study is best suited to student teachers who have a meaning-oriented learning style. These student teachers are already directed towards gaining insight into situations and experiences. The student teachers' beliefs about learning seem to play a role in their use of the portfolio. The results of the study by Vermetten, Vermunt, and Lodewijks (2002) show that students use instructional measures in different ways. The way students 'use' their learning environment corresponds to their own views on learning. For the training of teachers, this means that it is important to pay explicit attention to the learning of student teachers, to student teachers' conceptions of learning, and to their learning styles. Working on a portfolio should be related to that.

5.3 Limitations of the study

The study has a number of limitations. Firstly, we interpreted reflection as a mental process that takes place while working on the portfolio. We deduced reflection as a process from the product of the portfolio using content analyses. This implies the restriction that it was possible to describe only that reflection in the portfolio that we found in the portfolio themes. The question arises whether what has been written has also been undertaken, and vice versa. So we could only deduce cognitive learning activities, and no affective learning activities, because it was not usual for the students to write about any feelings they may have had when producing their portfolio in the portfolio itself. However, feelings do play a role in the reflection process (see Korthagen, 2001).

Secondly, for the reason mentioned above, the learning activities inherent in working on a portfolio, such as selection and structuring, were also not given attention in the study. These learning activities refer to the portfolio as a whole and were not usually reported explicitly by the student teachers in their portfolios. Researchers have found that there is a relation between the selection of experiences and the way these experiences are processed by students (Vermunt & Vermetten, 2004).

Thirdly, in the description of the reflection in the portfolios, we related working on a portfolio to how student teachers learn. In the description of

reflection, however, we restricted ourselves to the description of the process (the mental activities) and the content to which the mental activities refer. We left the product of reflection (practical knowledge) out of consideration. For this reason, we were unable to examine whether different learning activities led to different types of practical knowledge.

Fourthly, to enable us to describe reflection in the portfolios, we developed a description framework by mapping the variation in reflection that we found in the data ('outcome space', Marton & Booth, 1997). This description framework was developed on the basis of the portfolios of a small number of student teachers, from one course year, and from one teacher education course. For this reason, our research findings cannot necessarily be generalised to other teacher education contexts. More variation in reflection in portfolios is possible.

Fifthly, the study is of a descriptive and qualitative nature. Only content analyses were used: content analyses of retrospective interviews, portfolio-evaluation reports, and portfolios. We did not examine factors that may have influenced the reflection we found in the portfolios and the influence of these factors on the portfolio functions that were mentioned by the student teachers. In the portfolio literature, ownership, experience in producing a portfolio, instruction and supervision, and learning orientation are mentioned as factors that can play a role in the use of the portfolio by student teachers (e.g., Darling, 2001; Loughran & Corrigan, 1995; Meyer & Tusin, 1999; Wade & Yarbrough, 1996).

5.4 Suggestions for further research

Research into the learning portfolio

We have taken the initiative in filling a gap in portfolio research. Up to now, much attention has been paid to factors that influence the use of the learning portfolio by student teachers, in particular to reasons why student teachers use or fail to use the portfolio in the way that the teacher education institute deems desirable. Little empirical research has been done so far into reflection in the (learning) portfolio. As long as it remains unclear what is meant by reflection and it is not indicated clearly what the aim of using the learning portfolio is, it will be difficult to examine whether the portfolio is a suitable instrument to stimulate reflection (Zeichner & Wray, 2001). An essential step is omitted in this way, which is not only important for the research into portfolios but can also contribute to the development of theory about

the learning of student teachers. Neither making a portfolio nor reflection is an aim in itself. The portfolio is an instrument that must contribute to the learning process of student teachers. Further portfolio research should, therefore, be related to research on how student teachers learn.

Research into student teachers' learning

More empirical research on how student teachers learn is desirable. Oosterheert and Vermunt (2001) mention that little is known about the learning process of student teachers. Much is unclear. How do student teachers learn? What is the nature of the practical knowledge they develop? What role does reflection play in that? Research in higher education into how students learn can facilitate research into, for example, learning activities that student teachers undertake and their learning styles. These concepts have been examined in an academic context and they must be given their own meaning in the context of the education of teachers. This latter context is different and complex, and one in which learning from experiences takes an important place. Examination of the characteristics of the learning environment of student teachers makes clearer what is desirable and achievable for the learning of student teachers. Instruments such as the portfolio can then be used to achieve more specific aims and their value can be examined in a more targeted manner (Breault, 2004; Delandshere & Arens, 2003).

5.5 Recommendations for teacher education

Purpose and use of the learning portfolio

The purpose that students reflect on their development as teachers by working on their portfolios is not specific enough. Reflection conceived of as a thinking process includes different thinking or learning activities. We made a distinction within the process function of the learning portfolio between learning activities geared to action and the improvement of action (recollection and evaluation) and learning activities geared to understanding underlying processes that can play a role in teaching practice (analysis, critical processing, diagnosis, and reflection). Most of the student teachers in this study saw the portfolio's function mainly in terms of looking back on their performance in teaching practice, and making explicit what they knew and what they could do compared with earlier in the course. The portfolios mainly showed the learning activities 'recollection' and 'evaluation'. These

learning activities encouraged the student teachers to become aware of their own actions, functioning, and development. For this reason, the portfolio had a bearing on the student teachers' learning process, but did not always initiate a learning process.

Teacher education institutes should work out whether this is what they aim at with the portfolio, in particular with reflection. If they aim for student teachers to undertake learning activities that lead to deep-processing, in other words, to the development of practical knowledge, they should examine whether the learning environment in which the portfolio functions supports this type of learning. Learning during the teacher education course differs from academic learning. Student teachers find themselves in a completely different and complex learning environment, in which learning from experience has an important place and in which problems in practice attract much attention. Embarking on learning activities that are geared to improving understanding is time-consuming (see also Boekaerts & Simons, 1995). Teacher education institutes should give student teachers the time to distance themselves from teaching practice.

The use of the learning portfolio in the teacher education course examined in this study does not seem well suited to stimulate learning activities such as analysis, critical processing, diagnosis, and reflection. It is possible that insufficient structure was given to the portfolio at the start. The portfolio used in the course had an open character regarding both the content of learning (the learning experiences described by the student teachers in the portfolio) and the regulation of learning (how the student teachers learned from their experiences). Although the literature on the use of portfolios indicates that the value of the portfolio for ownership and understanding of the learning process is dependent on this open character, among other factors (Johnson & Rose, 1997), it is too easy to assume that regulation of the learning process and the development of practical knowledge will follow from the production of a portfolio (Krause, 1996; Oosterheert, 2001). Vermunt and Verloop (1999) described how destructive friction can arise for students who find it difficult to regulate their learning process when the lecturer or learning environment leaves the regulation of learning entirely to the students. Teacher education institutes should pay attention to the extent to which they appeal to student teachers' capacity for self-regulating their learning process by using the portfolio and, if necessary, they must help and supervise the student teachers more in the process of learning from experiences.

Instruction and portfolio supervision

As mentioned above, the student teachers mainly described in their portfolios what they had done, what areas they had made progress in, what situations they had come across, how they dealt with them, and what they had learned from them. A possible explanation for this other than the reasons mentioned above is that the concepts of 'professional development' and 'reflection' were not explained well by the lecturers and supervisors on the course. Student teachers often conceived of development as being able to do something better, and not as forming an opinion about something, becoming aware of their own beliefs, changing their beliefs, etc. Moreover, student teachers tended to be more inclined to look at *what* they had changed (what aspects of their practice had improved) than at *how* they had changed (how their learning process had gone).

It may be worthwhile to give student teachers the opportunity to 'experience' the various process functions of the portfolio by means of exercises, in particular, the interplay between producing a portfolio and their learning process. This would be a way to show them that there are different ways to reflect on themselves as beginning teachers and that the portfolio, in addition to having a bearing on their learning process, can also be used for their learning process, in other words, to work on developing practical knowledge. This requires the student teachers to work on their portfolios on a regular basis.

Student teachers do generally already ask the 'what works' and 'how can I' questions. Portfolio supervision should aim to encourage the student teachers to ask the 'why' questions. Student teachers have probably not gained enough experiences to make out for themselves the important experiences and learning moments and where there are still questions and lack of clarity (Kagan, 1992). They need others to be able to ask questions about things that go without saying and to see that a situation can also be interpreted in other ways (Freidus, 1998; Oosterheert, 2001; Orland-Barak & Kremer-Hayon, 2001).

Personal involvement

It appears from the results that to stimulate the undertaking of meaning-oriented learning activities it is important that student teachers do not see working on a portfolio as a compulsory part of the course, but that that they see that they work on a portfolio for themselves, for their own development. In particular personal involvement with the themes on which the student teachers work seems essential. Meaning-oriented learning activities arise

from a problem which is perceived as urgent or from personal interest in certain teaching activities that the student teachers enjoyed very much or find important, or both.

When a course aim is that student teachers undertake meaning-oriented learning activities by working on their portfolio themes and come to learning, to developing practical knowledge, the selection of themes could be a good starting point. Student teachers seem more willing to undertake meaning-oriented learning activities when the themes are relevant to them and are personally important, so that they are intrinsically motivated to work on the themes. This means that to promote meaning-oriented learning activities, it can be important to give student teachers a free choice of themes in their portfolios. Because undertaking meaning-oriented learning activities requires much time and energy (Newton, 2000), the number of themes that the student teachers have to include in their portfolios must not be too high. Five to eight themes per portfolio is quite a lot and may mean that some themes are included in the portfolio out of necessity to make up the required number, with the result that the student teachers only undertake action-oriented learning activities.