Positive experiences as input for reflection by student teachers
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(Received 14 December 2006; final version received 26 November 2007)

In many teacher training courses, reflection upon practice plays a very important role in learning to teach. A number of strategies have been developed to help student teachers learn to reflect. Current reflection strategies often focus on problematic instead of on positive experiences. Ideas from positive psychology and solution-based therapy have inspired us to question whether problematic experiences should always be taken as starting point for reflection. Instead, teachers might learn even more from reflecting on positive experiences. Thus, the aim of the current study is to compare the outcomes of reflecting on difficult, problematic experiences with those of reflecting on positive experiences. We focused on three outcome areas: (1) the content of teachers’ resolutions after reflecting because decisions need to be productive, (2) their motivation to act on their decision because teachers need to implement their resolutions, and (3) the emotions they have during the process of reflection because emotions are very influential to thinking and learning.

In an exploratory study, 16 student biology teachers were asked to reflect on two problematic and two positive teaching experiences and to take notes during the reflection process. Subsequently, these student teachers indicated their motivation for implementing their resolutions and they reported their emotions evoked by the reflection processes. In order to gain insight into results with respect to the three outcome areas, the content of the teachers’ resolutions was categorized, motivation scores were averaged, and emotions were scored and calculated. Our investigation showed that student teachers who reflected on positive experiences made more innovative resolutions, were more highly motivated to implement these resolutions and had more positive feelings compared to when reflecting on problematic experiences. Implications of the findings include the use of reflection methods based on positive experiences for experience-based learning and for developing adaptive expertise in teacher education. We also present some avenues for further research.

Keywords: reflective teaching; teacher education; motivation; emotion; student teacher

Introduction
During the last 20 years reflection upon practice has become one of the mainstays of teacher education (Korthagen, Kessels, Koster, Lagerwerf, & Wubbels, 2001; Korthagen & Vasalos, 2005). In many teacher training programmes student teachers are encouraged to reflect upon their experiences and to formulate and try out new resolutions. A number of different reflection-enhancing strategies have been developed (Hatton & Smith, 1995; Jay & Johnson, 2002; Lee, 2005; Zeichner & Nofke, 2001). The proposed strategies differ in many ways but share one important characteristic. Reflection is considered to be a problem-solving method because the starting point for reflection is a difficult, problematic experience for which the reflection strategy helps to formulate and analyse the root(s) of the problem, to consider alternative solutions and then to implement and test the selected solution (Copeland, Birmingham, de la Cruz, & Lewin,
1993). As a consequence reflecting on and learning from classroom experience becomes a synonym for learning from problematic situations.

This focus on problematic experiences fits in well with the traditional approach in psychology on analysis and repair of problems. Recently Seligman has initiated a new approach ‘positive psychology’ which tries to identify and enhance personal qualities and skills (Seligman & Csikszentmihalyi, 2000). Some recent handbooks report promising results of this new approach (Snyder & Lopez, 2002). In this study we transfer this approach to teacher education and we will compare the outcomes of learning from difficult, problematic teaching experiences with learning from positive, successful ones.

In this article we will first compare learning from positive experiences with both the traditional problem-focused approach and positive psychology. Then we will describe and attempt to validate the types of outcomes that are central to our comparative study between the two types of learning from experiences by a group of student biology teachers. Finally we will present some implications of our research and offer suggestions for further research into how these two kinds of learning from experience can interact and, hopefully, improve teacher education.

**Fixing what is broken versus nurturing the best**

John Dewey, on whose work most current reflection models for teachers are based, defined reflective thinking as a kind of problem-solving (Copeland et al., 1993). Reflection starts with a problematic situation which has to be remedied; so to begin with the problem has to be identified and its causal mechanism has to be elucidated. After this in-depth analysis of the problematic situation, new solutions can be sought, chosen and tried. This leads us to the conclusion that most current strategies for reflection, and also related strategies such as action research, take reflection to mean problem-solving just as Dewey did (Copeland et al., 1993; Hatton & Smith, 1995; Lee, 2005; Zeichner & Nofke, 2001). This does not imply that positive aspects of teachers’ experiences are simply being ignored by teacher educators; these facets are being considered when mentor teachers and student teachers evaluate student teachers’ lessons. However, systematic reflection on positive experiences focused on phrasing learning goals for future lessons is a rare occurrence.

In the early 1980s psychotherapists worked on new methods of helping clients to tackle problems (Miller, Hubble, & Duncan, 1996). Their novel approach did not consist of an in-depth analysis of clients’ problem(s) but focused on the clients’ skills and goals. The therapist helped their client to work on solutions, hence the name: solution-based therapy. This involved the client first stating what goals they wished to achieve, and then checking whether comparable situations had ever been realized by the client (i.e. finding positive exceptions) and elucidating the contributing factors. These, sometimes small, positive exceptions were used to find a way for the client to solve his or her problems and achieve their goals.

Solution-based therapy focuses on what is already going well instead of on what is not working. Seligman and others have built further on this, they emphasize that ‘treatment is not fixing what is broken; it is nurturing the best’. Central to this positive approach is helping people to use their positive qualities and strengths of character for personal growth and change; hence a lot of attention is paid to positive, personal qualities and strengths of character such as creativity, courage, perseverance, kindness, etc. (Snyder & Lopez, 2002).

In literature on reflection by teachers little use is made of the positive personal qualities for professional development. An important exception is the work by Korthagen who has recently developed a second reflection model: core reflection (Korthagen & Vasalos, 2005). The starting point for reflection here is, just like in his earlier ALACT model, a problematic situation which is difficult to remedy and which gives the teacher a lot of heartache. Instead of rooting out the
causes of the problem much attention is given to what the teacher would like to achieve and the factors which constrain the teacher from reaching these goals. Then the attention is focused onto the positive qualities (such as calmness, spontaneity, humor) the teacher can bring into play to remedy the situation, and how to use these in the actual teaching situation.

In Korthagens’ core reflection model we recognize both aspects of the movement away from Deweys’ problem-based approach; firstly a focus on solutions instead of on problems and secondly the active use of personal qualities to arrive at these solutions. But the reflection is still based on intractable problems which remain unsolved by the ‘ordinary’ reflection process (Korthagen & Vasalos, 2005). Our research has been inspired by the question of whether difficult, problematic experiences always have to be the starting point for reflection. Would it not be possible for teachers in training to learn even more from positive, successful experiences?

**Learning from positive versus problematic experiences**

In this study we will compare the outcomes of reflecting and learning from positive, successful teaching experiences with reflecting and learning from difficult, problematic experiences. We will focus on three outcome areas: first the content of the decisions teachers take after reflection on their various experiences; secondly on their motivation to act on their decision and finally on the emotions they have during the process of thinking through their experiences. Below we present a brief explanation of why we think these three outcome areas are relevant.

**Content of the decisions**

The reason to be interested in the contents of the decisions student teachers take is that what they actually resolve to do should be productive, meaning that if they are reflecting on a problematic situation their resolution should (help) solve this specific problem and if they are reflecting on success their decision should incorporate important aspects of the positive experience. Studies on reflection by student teachers show that they often find it difficult to reach these kinds of deeper understanding and to look critically at their work (Hatton & Smith, 1995; Mansvelder-Longayroux, Beijaard, & Verloop, 2007) and hence to generate plausible, productive solutions. This leads us to be interested in differences between the productive content of student teachers’ decisions and resolutions from learning from positive as opposed to problematic teaching experiences.

**Motivation for implementing resolutions**

But arriving at a productive decision is not enough. Student teachers need to have sufficient motivation to actually implement their resolutions in their next lessons. This has led us to be interested in measuring the motivation student teachers have to implement their decisions taken from problematic versus positive situations. Much of what researchers have learned about motivation can be organized within an expectancy-value model (Wigfield & Eccles, 2000). The expectancy-value model of motivation holds that the effort that people are willing to expend on a task is the product of: (1) the degree to which they expect to be able to perform the task successfully and thus the degree to which they expect to get whatever rewards that successful task performance will bring, and (2) the degree to which they value those rewards.

Effort investment is viewed as the product rather then the sum of the expectancy and value factors because it is assumed that no effort at all will be invested in a task if one factor is missing. This led us to score decisions taken after reflecting on successful and after reflecting on problematic situations on the two main factors for motivation, value and expectancy.
Emotions evoked by reflecting

Reflection not only leads to resolutions but it evokes emotions as well. We think it is important to categorize the emotions which student teachers undergo during reflection because research has shown that both negative and positive emotions signal personal well-being and influence further learning. It is well known that negative emotions lead to a narrowing of the mind and a reduced problem-solving ability and thus to inhibition of the willingness and ability to try out new things. Recent research has shown that positive emotions have the opposite effect and lead to an increase in thinking and to a greater willingness and ability to try out new things (Fredrickson, 2002; Isen, 1987). Fredrickson has developed the broaden-and-build theory of positive emotions to explain how positive affective experiences contribute to personal growth. Negative emotions such as anxiety or anger narrow peoples’ momentary thought-action repertoire, so that they are ready to act in a particular self-protective way. Positive emotions, in contrast, broaden their momentary thought-action repertoire. This broadening of momentary thought-action repertoires offers opportunities for building on enduring personal resources, which in turn offers the potential for creating new experiences which evoke positive emotions, and thereby creating positive spirals of emotion, cognition and action. This is the rationale behind our decision to study the differences and/or similarities between the emotions evoked by reflecting on problematic and on positive situations.

Thus, the aim of this study is to compare the outcomes of reflection by student teachers on successful, positive experiences with reflection on problematic ones. In line with the literature outlined above, to do so we will look at the following three different but intertwined research questions:

(1) What are the differences in outcomes of reflection on successful, positive experiences as compared to problematic ones?
(2) Does reflection on successful, positive experiences lead to more motivation to implement the decisions than reflection on problematic ones?
(3) Does reflection on successful, positive experiences lead to different emotions than reflecting on problematic ones?

Method

Context and participants

The current study was conducted in the context of a graduate school of teaching. Sixteen student biology teachers volunteered to participate in the study. The student teachers all had a master degree in the life sciences when starting their teacher education. During one year, they attended working classes on Mondays. The rest of the week they were teaching at an internship school. These student teachers had on average two months of teaching experience of six lessons a week and had already been familiarized with reflection; the focus of which had been learning from problems.

Procedure

Student teachers interviewed each other in pairs using worksheets with questions (Table 1), taking turns being interviewer and interviewee. The interviewer made notes of the answers and then the interviewer and interviewee changed places. Each student was asked to reflect on two problematic and two positive, successful teaching experiences, all of which concerned the way pupils dealt with the content of the lesson.

After formulating their resolutions for each experience students were asked to rate their emotions with either + (present) or – (absent) based on a list of emotions taken from personality
research based on valuation theory (Hermans & Hermans-Janssen, 1995). They distinguish four types of emotions: generally positive (such as feeling happy); specifically positive which refers to self-esteem (such as feeling proud); general negative (such as being disappointed) and specific negative emotions which refer to stress (such as feeling tense). Subsequently, after putting together all their resolutions, the students were asked to indicate their motivation for implementing these resolutions. The semantic differential is by far the most widely used measurement instrument within an expectancy-value framework (Fishbein et al., 2001). In our study, we asked students to score their resolution on both the value component and success-expectancy component of motivation in a unipolar fashion from 1 to 7. The value component is indexed along the not important/important dimension. The success-expectancy is indexed along the unlikely/likely dimension (see example in Table 2).

Furthermore, students were requested to prioritize their resolutions in the order of which they were actually motivated to implement them in a classroom situation.

**Table 1. Guiding questions for reflection on problematic and positive experiences.**

<table>
<thead>
<tr>
<th>Problematic experience</th>
<th>Positive experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>What happened?</td>
<td>What happened?</td>
</tr>
<tr>
<td>What did you think went wrong?</td>
<td>What did you think went well?</td>
</tr>
<tr>
<td>What made it go wrong?</td>
<td>What made it go well?</td>
</tr>
<tr>
<td>What do you resolve to do?</td>
<td>What do you resolve to do?</td>
</tr>
</tbody>
</table>

**Table 2. Example of a resolution by a student and scales for scoring importance and likelihood of implementing the resolution.**

Resolution by student:

*I’m going to try to bring things into class more often and then ask the pupils to generate questions. Then we can go through the subject on the basis of these questions.*

Implementing this resolution is unimportant (1) to very important (7) to me

unimportant:____:____:____:____:____:____:____: very important

\[1\ 2\ 3\ 4\ 5\ 6\ 7\]

Successfully implementing the resolution is unlikely (1) / likely (7) to me

unlikely:____:____:____:____:____:____:____: likely

\[1\ 2\ 3\ 4\ 5\ 6\ 7\]

Analysis

We collected the worksheets from the interviews and analysed the content of teachers’ resolutions, taking into account only those resolutions, which students ranked as their personal top three. These resolutions were categorized according to their content using a cyclical process of categorization (cf. Straus, 1987), which ended with a system of categories which included most of the resolutions. The initial analysis was performed independently by the first and second authors, and the labelling was compared. When categorizations did not match, these were discussed. In all matters, agreement could easily be reached. The few resolutions, which we were not able to fit into a category, were labelled as a separate category ‘other’ (see Table 3).

The value and expectancy questions were averaged for both learning from problems and learning from success. The positive and negative feelings reported by the student teachers were scored and calculated.
Results
Below we will summarize our results per research question, followed by a case which illustrates our most important findings.

Content of the decisions
Table 3 presents the categorized resolutions from reflection on both problematic and positive experiences. It is obvious that the resolutions made after reflecting on problematic experiences differ from those made after positive ones. Resolutions made after reflecting on problematic experiences mainly fall in the categories 1: prepare content in depth; 2: stick to timing during lesson; category; 3: explain content systematically; and 4: give clearer instructions about assignments. In contrast, most of the resolutions made after positive experiences, fall in categories 5: motivate pupils for the subject of the lesson; and 6: have pupils think about the content. It is noteworthy that a closer look at the data reveals that reflection on problematic experiences taken from both conservative and innovative lessons seem to have led to resolutions in which the teacher decides on the why, what, when and by whom of the learning process (see Table 3).

Studying the resolutions made after reflecting on problematic experiences, we found them to reflect a more conservative, direct instruction model of teaching with an emphasis on teacher control in the various aspects of the learning process (Rosenshine & Meister, 1995). A problematic experience from a conservative teaching situation is, for example, when the teacher could not explain the content of the lesson well enough; an example of a problematic experience from an innovative lesson is when the teacher did not succeed in getting the pupils to think about the topic actively and in enough depth. In both cases, the student teachers’ resolution could be qualified as direct instruction. In contrast, the resolutions made after positive experiences refer more to innovative teaching methods in which the pupils are first motivated to learn, for example, by using personal stories or real materials and driving questions. Once motivated, they are stimulated to take control of their own learning process through challenging questions, which they can answer in small groups or in a class discussion (see Merrill, 2002 for an overview of shared characteristics of innovative teaching approaches). Table 4 shows that positive teaching experiences were in themselves more innovative, and reflection leads to resolutions that are innovative too. Reflection on conservative, positive types of teaching experiences were not found (Table 4). In our general discussion, we will attempt to explain these results.

Table 3. Resolutions from reflection on problematic and positive experiences, grouped by content.

<table>
<thead>
<tr>
<th>Main categories of resolutions</th>
<th>Reflection on problematic experiences (%)</th>
<th>Reflection on positive experiences (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Prepare content of lessons in more depth</td>
<td>21</td>
<td>2</td>
</tr>
<tr>
<td>2. Plan time and stick to timing during lesson</td>
<td>18</td>
<td>2</td>
</tr>
<tr>
<td>3. Explain content systematically in language pupils can understand</td>
<td>26</td>
<td>4</td>
</tr>
<tr>
<td>4. Give clearer instructions about assignments</td>
<td>20</td>
<td>2</td>
</tr>
<tr>
<td>5. Motivate pupils for the subject of the lesson</td>
<td>4</td>
<td>41</td>
</tr>
<tr>
<td>6. Have pupils think about the content of the lesson individually, in small groups or by having a class discussion</td>
<td>3</td>
<td>38</td>
</tr>
<tr>
<td>7. Other</td>
<td>8</td>
<td>11</td>
</tr>
</tbody>
</table>
Motivation for implementing the decisions
Table 5 shows the averaged findings with respect to value and success-expectancy, as well as the percentage of resolutions that were incorporated in student teachers’ top three. On average, student teachers thought the resolutions from reflecting on positive experiences were 1.7 points more valuable and their success-expectancy was 0.7 point higher.

We find that both the main factors that constitute motivation (value and expectancy) scored higher after reflecting on positive experiences. We also note that student teachers rated the resolutions from reflecting on positive experiences as higher up on their priority list (65% in top three of resolutions vs. 35%).

Emotions evoked by reflections
Table 6 summarizes the number of times an emotion was scored after the student teachers had reflected on either a problematic or a positive experience. It can be seen that reflection on problematic experiences leads to mainly negative feelings and emotions and reflection on positive experiences lead to mainly positive ones. An important exception is the specific positive feeling of meaningfulness, which was scored six times when reflecting on problematic experiences.

Paula’s case
To illustrate the findings above we present a case of a student teacher (Paula) who reflects on a problematic and a positive teaching experience.

Table 7 summarizes Paula’s reflections on both problematic and positive experiences. Paula is a Grade 11 student teacher who tried unsuccessfully to get pupils actively involved by asking questions about kidneys. However, the pupils refused to participate and finally Paula decided not to continue with the introductory classroom discussion. Reflection on this problematic experience lead her to decide on a direct instruction approach in which she briefly explains the topic and then assigns work to the pupils. Paula felt disappointment and although she was quite convinced of the feasibility of her decision she didn’t find the result very worthwhile, she didn’t rank it among her top three resolutions for implementation.

Table 5. Means of value and success-expectancy on seven-point Likert Scale and prioritization of resolutions made by reflecting on problematic and on positive teaching situations.

<table>
<thead>
<tr>
<th>Resolutions after reflection on problematic experiences</th>
<th>Value</th>
<th>Success-expectancy</th>
<th>Percentage of resolutions in top three (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolutions after reflection on positive experiences</td>
<td>6.5</td>
<td>5.9</td>
<td>65</td>
</tr>
</tbody>
</table>
Paula’s example of reflection on a positive experience in Grade 7 shows a very different result. In this case she succeeded in getting the pupils to raise and answer questions about snails. Paula resolved to make more use of the questions pupils raise as a guideline for the lessons about other topics in Grade 7. She decided to use this innovative, successful approach in other lessons. During this reflection she felt happy and proud, and she reported a high motivation to actually implement this resolution. She ranked it as the number one resolution to implement.

### Table 6. Number of times an emotion was scored after reflecting on problematic and positive experiences.

<table>
<thead>
<tr>
<th></th>
<th>Reflecting on problematic experiences ($N = 16$)</th>
<th>Reflecting on positive experiences ($N = 16$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>General negative feelings</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>Specific negative feelings</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>General positive feelings</td>
<td>1</td>
<td>17</td>
</tr>
<tr>
<td>Specific positive feelings</td>
<td>6</td>
<td>25</td>
</tr>
</tbody>
</table>

### Table 7. Paula’s reflections on problematic and positive experiences; motivation and emotions.

<table>
<thead>
<tr>
<th>Problematic experience</th>
<th>Positive experience</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What happened?</strong></td>
<td></td>
</tr>
<tr>
<td>I was having a class discussion with Grade 11 kids about the kidneys but I just couldn’t get them to answer the questions I was asking. A few were staring out of the window and some were doing other things. At a certain point I gave up and assigned them the questions in the book.</td>
<td>To introduce a grade 7 to biology, I brought a snail and a mirror for every two pupils. I asked them to raise questions about the snail and write these down. Then I took an inventory of their questions in a class discussion and we tried to answer them together. Unanswerable questions were divided among the pupils to prepare for the next lesson. In this next lesson I drew an analogy between their research on snails and the way that biologists do research. We also discussed how living things are different from non-living things.</td>
</tr>
<tr>
<td><strong>What did you think went wrong?</strong></td>
<td><strong>What did you think went well?</strong></td>
</tr>
<tr>
<td>The pupils were not participating in the lesson but were doing other things.</td>
<td>The pupils liked watching the snails and raised a lot of questions which they wanted to answer. Snails were a good example to illustrate general characteristics of organisms to discuss the following lesson.</td>
</tr>
<tr>
<td><strong>What made it go wrong?</strong></td>
<td><strong>What made it go well?</strong></td>
</tr>
<tr>
<td>Maybe the questions were too hard. And they just like talking more than learning.</td>
<td>The fact that the snails were live animals that they could see and touch. Also their own questions were answered.</td>
</tr>
<tr>
<td><strong>What do you resolve to do?</strong></td>
<td><strong>What do you resolve to do?</strong></td>
</tr>
<tr>
<td>Introduce subjects briefly in Grade 11, explain the main points and then let them answer questions out of the book.</td>
<td>I’m going to try to bring things into class more often and then ask the pupils to generate questions. Then we can go through the subject on the basis of these questions.</td>
</tr>
</tbody>
</table>

**Motivation**
- Value: 3
- Success-expectancy: 5

**Evoked emotions**
- Disappointment (−)
- pride (+), happiness (+)
General discussion
The results of this explorative research show that the outcomes of reflecting on problematic experiences differ considerably from those of reflecting on positive experiences. Compared with the former, the latter leads to more innovative resolutions, a higher motivation and more positive emotions. We will first present an explanation for these remarkable differences in content, motivation and emotions and then we will consider the limitations of our research and formulate a few avenues for further research. We end by discussing what our findings could mean for teacher training programmes.

Explaining content differences
The contents of the resolutions differed markedly after reflection on positive and problematic experiences. Reflection on problematic experiences leads to resolutions that can be summarized as direct instruction teaching, which we consider to be a conservative way of teaching. A closer look at the data shows that this effect is present for almost all problematic experiences during either conservative or innovative teaching situations. In almost all cases the student teachers’ resolution could be qualified as direct instruction. Positive experiences on the other hand were in themselves more innovative and reflecting on these usually leads to resolutions that are innovative too.

There is no real necessity for reflection by student teachers on problematic experiences to lead to conservative resolutions, but we think it is understandable that this does happen. To formulate an innovative resolutions a student teacher must have (some) knowledge of innovative teaching strategies. A positive experience based on an innovative, (partly) successful situation implicitly contains this knowledge, because it was part of the lesson. All the student teacher has to do is make this knowledge explicit and rephrase it as a resolution for a new situation. In a problematic experience, be it in an innovative or a conservative situation, this implicit knowledge is absent. The teacher realizes that something was not working well but does not know how to remedy the situation, and as a consequence finds it much harder to formulate an innovative resolution. Even if the teacher would be able to think of an effective action to take, she/he probably would not be confident about trying it out because it is new (see explanation of differences of motivation). A person who does not know how she/he can reach a certain situation will probably try to avoid the difficult situation by reverting to the beaten path (cf. Minsky, 1986, p. 96).

It is striking that reflection on conservative, positive types of teaching experiences were not found in this study, although it is conceivable that this combination does occur. It might be that conservative teaching experiences do not often evoke feelings of success in teachers since these experiences are not conceived as very spectacular. However, further research should shed more light on this matter.

Explaining motivation differences
A second major difference is found in the motivation to actually implement the resolutions made by reflecting on problematic compared to positive teaching experiences. On average student teachers are more motivated to try out the resolutions taken from positive experiences. The value-expectancy model of motivation can offer us an explanation of these results (Wigfield & Eccles, 2000). The motivation to actually implement a resolution is the product of two main factors: value- and success-expectancy. When student teachers reflect on positive experiences they discover things that they both can do and which they value, hence their positive and high-ranking resolutions which they are confident they can achieve because they have done it (partly) before. On the other hand, when they are reflecting on problematic experiences they are reflecting upon
situations they don’t want to happen again and they can’t do well. This makes it difficult for them to envisage a decision, which allows them to achieve what they want, as discussed earlier. This causes them to turn to a tried-and-true approach which avoids the difficult situation, but probably does not allow them to achieve their goals. It is notable that student teachers assigned a low value-factor to resolutions taken from problematic experiences. On the other hand they commonly expect to be able to implement these resolutions, their expectancy value is relatively high, probably based on earlier experiences with the implementation of conservative approaches.

**Explaining emotional differences**

Finally, our research shows that the emotions involved when reflecting on problematic situations are quite different from those when reflecting on success. The latter leads to mainly positive emotions and the former to mainly negative ones. This can be explained by considering the nature of emotions. Emotions are not separate entities unrelated to person’s beliefs and wants. Instead a person’s emotions derive from the relationship between person’s wants and beliefs (Smedslund, 1997). Positive emotions occur when a person believes that a want is, or is going to be, satisfied. Negative emotions occur when a person believes that a want is, or is going to be, frustrated. Reflecting on success focuses on what the student teacher can do and wants to do. This leads to positive feelings such as happiness but also to more specific feelings such as self-confidence and pride. Reflecting on their problems focuses on what the student teacher cannot do (well) and what he or she does not want. It is harder to make resolutions from this that have both a high value and expectancy factor and this, we think, explained the negative emotions student teachers report.

**Limitations of our current investigation and directions for future research**

Our research shows significant differences between reflecting on problematic and on positive situations. But this research has a number of limitations which could affect the possibility to generalize these outcomes. Together with the limitations, we provide some suggestions for further research.

The first limitation is the small size of our research group, which consisted of 16 students who had been enrolled in teaching training for about only three months. Yet, earlier research on our approach provided comparable results (see Durlinger, van Ham, Pokojska, & Visseren, 2004). However, it would be useful to repeat this research with a larger group of student teachers at different phases of teacher training and teaching experience.

There is a second drawback to our research. We asked student teachers to formulate resolutions and to explain their emotions and motivation, but we did not check if they actually implemented them. In our coming research we will keep track of a larger number of student teachers over a longer period of time during which they repeatedly go through the cycles of reflecting on positive and on problematic situations. We will monitor whether they actually implementing their resolutions and their experiences in doing so will be the input for the next cycle of reflection. Consequently we might find more support for our claims about the relationships between content, motivation and emotions of reflections on positive versus problematic experiences. It will be interesting to find out whether ongoing reflection on positive experiences leads to innovative resolutions, more teacher motivation and positive emotions; and whether the opposite holds true when reflecting on problematic experiences. We base this claim on Fredrickson’s broad-and-build theory (Fredrickson, 2002), which shows that experiences that induce negative emotions (like problematic teaching situations) lead to a narrowing of the thinking and acting skills of the person involved. This person does not use every opportunity contained within the situation and within
themelves, and so the problematic experience becomes even more negative. On the other hand, experiences with positive emotions lead to an increase in thinking and acting skills, which in turn leads to a better use of the situation and personal skills and hence to a more positive experience. Further research should tell if these effects do indeed occur when student teachers go through a number of cycles of reflection on positive and problematic experiences.

A third limitation of our research is caused by the way we asked student teachers to reflect on problematic experiences. We asked them to reflect according to Dewey, putting the main focus on describing and analysing the roots of their difficult situations (‘what made it go wrong?’). Perhaps a more solution-oriented approach focussed on analysing possible solutions, comparable to solution-based therapy (Miller et al., 1996), would have led to less conservative resolutions. We think a solution-based approach could look like this: first, ask the student teacher to focus on the problem. Then stimulate him/her to think about what positive outcomes she/he would wish for in this specific situation and then subsequently help the student to bring to mind memories of earlier relevant positive experiences in which she/he reached or got close to the desired situation. Finally the student teacher can formulate resolutions for tackling the problem based on these positive experiences. This method generally follows the procedures outlined by Korthagen (Korthagen & Vasalos, 2005) (see Section ‘Method’) but the difference is that our method does not ask about general personal qualities (e.g. spontaneity, humour) but asks about positive experiences. A student teacher can then base his resolutions on this analysis and use these as guidelines for future behaviour. Often, we think, our method will suffice, and that Korthagens core quality method is more eminently suited to persistent difficulties which have to be tackled by reaching into deep(er) layers of a person’s personality.

Our results show that student teachers do not use the method as described above without prompting. We often noticed, even during one session, that they overlooked the possibilities they glean from positive experiences to try to solve problematic situations. In the case study of Paula (Table 7) we think she would have found it much easier to remedy her problematic situation in Grade 11 by applying the innovative resolutions taken from the positive situation in Grade 7, by asking pupils to pose questions about materials, in this case kidneys, which she could bring into class. These questions could be answered by the pupils themselves, e.g. by using the textbook. More research will tell if our solution and succes-oriented approach does indeed lead to higher motivation, more innovative resolutions and teaching choices as compared to the Dewey reflection approaches.

Implications: learning from positive experiences and developing adaptive expertise

Recently adaptive expertise and its development have become an important topic in teacher training (Bransford, Derry, Berliner, & Hammerness, 2005). During the whole teaching career is finding a balance between innovation and efficiency an important goal, this can be visualized as the ‘Optimal Adaptability Corridor’ (see Figure 1).

Teachers are considered to be adaptive experts when they develop along both of the dimensions of efficiency and innovation. A teacher who develops along the efficiency axis learns to use routines more effectively, such as correcting, having pupils take turns, etc. A teacher who develops along the innovation axis is capable of learning and adopting new ideas (about teaching), knowledge and skills. Such a teacher does not rely on routines but is continually improving his/her teaching through reflection. When the development of a teacher is skewed towards either efficiency or innovation, she/he can become bored or stressed.

It is still unclear how an optimal adaptability corridor can be reached and supported. It entails the teacher striking the right balance between innovation and efficiency, and continually improving and staying motivated to improve even further. If reflection encompasses both problematic
and positive experiences, this might be a great help in achieving this optimal learning route. Our research makes it plausible to expect that if a student teacher only uses traditional Dewey reflection methods, they will more often produce traditional resolutions and teaching choices, which in turn makes them more unlikely to support innovative teaching. Hence they do not move upwards along the axis of innovation but become, perhaps more, conservative in their approaches to teaching. We think it might be possible to turn this around if teachers also use our method of reflection on positive experiences as outlined in this study.

In line with our findings we think that reflection methods based on positive experiences will help (student) teachers to embark on the route of optimal development because they produce more innovative resolutions which they are highly motivated to apply. This means that reflection on positive experiences might put them on the route to optimal development because they strike a balance between innovation and routines. The student teacher has gained confidence from the positive experience that she/he can implement their innovative teaching choice (so it is, perhaps slightly, a routine), so they move along the axis of routines. But because these more innovative resolutions are not just copies of the original experience but build on their strengths, the student teachers are also moving upwards along the axis of innovation. More research concerning teachers’ reflection on both positive and problematic experiences and their relationships with adaptive expertise should shed more light on how teachers’ optimal learning routes can be promoted.

References


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