

Full Length Research Paper

Changes in convictions and attitudes to the teaching profession and classroom management due to practical teaching experience

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The aim of this study is to analyze changes in beliefs and attitudes to the teaching profession and to classroom management as a result of teaching experience. The structure of this study is based partly on the COACTIV - model of professional competence of teachers. The COACTIV – model is divided into motivational orientations, convictions and basic attitudes, self-regulatory skills and professional knowledge (comprising general pedagogical knowledge, content knowledge, pedagogical content knowledge, organisational knowledge and consulting knowledge). There are many studies that investigate the development of professional knowledge from novice to expert teachers. However, there are very few studies that analyze the impact of teaching practice on the convictions and attitudes of teacher trainees. Blömeke et al. analyzed the epistemological beliefs (beliefs regarding the structure of mathematics and those regarding the “genesis of mathematical competence“) of mathematics teacher trainees at the end of their training period. Brunner et al. have demonstrated that teacher's beliefs have an impact on the teaching practice, Sosu and Gray observed a positive relation between constructivist conviction and the learning process. Teachers who are convinced of the constructivist approach allow more self-directed and student-centered learning within their lessons. These teachers reject transmission conviction, suggesting that they should also reject teacher-centered lessons. Krauss et al. demonstrate that teachers with a good pedagogical content knowledge and a good content knowledge prefer a constructivist approach. It is the subject of this research to analyze whether teacher trainees, who favor a constructivist approach change their convictions as a result of the practical experience leading to a possibly more teacher-centered lesson style.

Key words: Teaching practice, changes in beliefs, teacher trainee

INTRODUCTION

Teaching style and classroom management

The teacher-centered or student-centered teaching style varies from country to country. Maulana et al. (2012) show

that Dutch classes are taught with a more student-centered lesson style whereas that in Indonesia is more teacher-centered. They have also shown that “changes in lesson structure is not a function of time“ (Maulana et al.,

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2012, p. 835). The teaching style and the attribution of failure or good performance to the taught students affect their learning success. Important and central for all teaching approaches are concepts of learning and beliefs about the transfer of subject matter (Darling-Hammond and Bransford, 2005), which are often subconscious, but nevertheless influence learning success. Furthermore, learning success depends on classroom management. Numerous papers and studies have shown (Darling-Hammond and Bransford, 2005; Skiba and Rausch, 2006) that effective classroom management, an aspect of pedagogical knowledge, is an important precondition for successful teaching and learning. Classroom management not only means "efficient classroom management—that is, preventing disruption and using classroom time effectively" (Baumert et al., 2010, p.146). When nevertheless there is disorder in the classroom, the teacher has to respond and to discipline. For this reason, the frequency of disciplining could be a measure of the efficiency of the classroom management. Voss and Kunter, (2011) showed that teacher trainees improve their knowledge of classroom management during their training period. There are very few studies that compare the basic beliefs and the self-assessment of the classroom management of teacher trainees before they begin teaching with those after these teachers' first practical experience in teaching. There may be a change in some of the beliefs and in classroom management due to this first teaching experience.

Changes in self-assessment as a result of the first practical experience

Teaching may also have an impact on self-assessment of the benefits of the teaching profession such as cooperation with other colleagues, the variety and challenge of teaching and the satisfaction derived from working as a teacher. Benefits derived from the teaching profession have been listed as utility aspects of the teaching profession (Klusmann et al., 2011). These utility aspects could be proved to be ultimate career motives, playing an important role in selection of a university course and having a life-long effect (Keller-Schneider, 2011). Teaching requires the practical implementation of content knowledge and pedagogical content knowledge acquired through the course of studies. Teachers do not consider themselves well prepared in pedagogy and pedagogical content knowledge (Terhart, 2000; Voss and Kunter, 2011). Scientification and courses which are not geared to teaching practice are often cited as a weakness in the German teacher training at university (Kotthoff and Terhart, 2013). On the other hand, teachers are well prepared with respect to content knowledge acquired at German universities. Terhart's theory regarding the insufficient training of pedagogical content knowledge could be reinforced by the personal assessment of teacher

trainees (Gawlitza and Perels, 2013). Content knowledge, that is profound knowledge of teaching materials, forms the basis on which didactic flexibility can develop (Baumert and Kunter, 2013). Pedagogical content knowledge (Shulman, 1987) is the knowledge of how students learn, their preconceptions and also their misconceptions, influencing student learning success. Strategies to facilitate students' understanding of their teaching materials are also part of the pedagogical content knowledge. The pedagogical content knowledge and content knowledge acquired at university are to be transferred to school level. This process may be accompanied by personal assessment of the benefits of this knowledge. Therefore, it is possible that the personal assessment of knowledge acquired at university may change as a result of practical experience. This has not previously been investigated. Voss and Kunter (2011) have found that knowledge regarding lesson styles and students' learning processes grows during teacher trainee time. Teacher trainees in this study were convinced of the constructivist theory and rejected a transmission approach when they started the second-phase training for high school and comprehensive school teachers (Gawlitza and Perels, 2013). The potential effect of practical teaching experience on these convictions is to be proven as well as the effects on teachers' beliefs regarding attribution of failure or good performance. Effects on lesson style such as teacher-centered versus student-centered lessons and effects on teachers' assessment of their discipline problem-solving also need to be analyzed. The potential change in personal assessment of content knowledge and pedagogical content knowledge due to practical teaching experience will be analyzed. Do the beliefs and attitudes to the teaching profession change, when teacher trainees undergo their own practical experience with teaching for the first time?

Aim of the study

The first aim of the study is to analyze changes in convictions and attitudes to the teaching profession and classroom management due to the practical teaching experience of teacher trainees for mathematics, biology and German at high-school (in Germany: Gymnasium) and comprehensive school levels. It has been assumed that the attribution of students' performance, the assessment of classroom management, the assessment of teacher- or student-centered teaching styles and also the assessment of the benefit of the teaching profession to a teacher could be influenced as a result of practical teaching experience. Conversely, it has been suggested that constructivist and transmission convictions would not change due to practical teaching experience because they are basic beliefs.

The second aim is to verify the potential change in personal assessment of the usefulness of content knowledge

and pedagogical content knowledge for the teaching practice.

METHODS

Participants of the study

This investigation is part of a research project involving 94 teacher trainees tested over two years both with longitudinal and cross-sectional study design. This study reports a repeated measurement (at first time of measurement and second time of measurement) of 23 teacher trainees (10 male, 13 female) at Saarland's high-school and comprehensive school levels of mathematics, German and biology.

Procedure and statistics

When this investigation was conducted the second-phase training for teacher trainees had a duration of two years. The teacher trainees were questioned at each time point by means of an instrument of 53 items. The survey was anonymous, voluntary and took place at Saarland's central study seminar for high-school and comprehensive school teachers. This paper reports on the investigation at the beginning of second-phase training (first time of measurement) and further investigation after eleven months (second time of measurement). At first time of measurement the teacher trainees had not taught at all; half a year later they started with teaching practice with ten lessons a week. So they had five months of practical experience in teaching before they were tested a second time. The differences between the first and the second measurement were examined using ANOVA with repeated measures. Bortz (2005) recommends an alpha error level at least 20% to confirm the null hypothesis and to avoid a beta error. According to the research questions the alpha significance level used is 25% if it is assumed that it will be no change. To confirm the alternative hypothesis (Bortz, 2005) an alpha error level of 5% should be selected. For this reason, an alpha significance level of 5% should be used if a change between the two measurements is supposed.

Instruments

The data were collected using a questionnaire containing 53 items of a closed answer format (Table 1). The items relate to convictions such as those regarding attribution of failure, transmission teaching approach, classroom management and benefits of the teaching profession (based on the COACTIV model). Preferred lesson styles are also explored with two questions, "What percentage of your lesson is dominated by teacher - centered / pupil - centered or group lesson teaching?" (1 = 0 – 25 %; 2 = 26 – 50 %; 3 = 51 – 75 %; 4 = 76 – 100 %). In addition to these questions teacher trainees were asked for their assessment of the usefulness of pedagogical content knowledge and content knowledge acquired by studying at university for the current teaching practice. Both issues also have a closed answer format (1 = does not apply at all, 2 = does rather not apply, 3 = is rather correct, 4 = is fully correct).

RESULTS

Conviction and attribution

The first aim of the study is to analyze the potential

change in attribution of student's performance and convictions of the teacher trainees. The attribution of poor or good performance (Table 2) does not change as a result of the practical experience.

At the first measurement on item-level, the results show that the attribution of poor students' performance is especially explained by insufficient concentration ($M = 3.32$; $SD = .57$) and insufficient motivation ($M = 3.0$; $SD = .80$).

Good performance of the students is attributed by good concentration ($M = 3.26$; $SD = .62$) and high motivation ($M = 3.17$; $SD = .78$). These attributions do not change significantly between the two measurements. Transmission conviction does not change due to the practice (Table 2), but constructivist conviction decreases significantly from the first ($M = 3.59$; $SD = .38$) to the second measurement ($M = 3.34$; $SD = .38$).

Classroom management and teaching methods

It is also part of the first aim of this study to find out if teaching practice influences the self-assessment of classroom management and also if it has an effect on the frequency of disciplining. The results of the study show that there is no change in the assessment of classroom management due to practical experience (Table 3). The scale of frequency of disciplining - a measure of the efficient classroom management - does not increase between the two measurements (Figure 1).

On item level, no significant differences could be found in oral reprimand, entering in class list, conversation with parents, individual conversation with pupils and class council, class conference (Table 2).

Only the exclusion from lessons shows a significant change; it increases from $M = 1.23$ ($SD = .43$) to $M = 1.55$ ($SD = .60$). Teaching practice results in an insignificant decrease in the frequency of student-centered teaching style such as group lessons, study circles and teamwork, whereas the teacher-centered lessons increase considerably.

Benefits of the teaching profession and personal assessment of the usefulness of content knowledge and pedagogical content knowledge acquired at university

The second aim of the study is to verify the potential change of personal assessment of the usefulness of content knowledge and pedagogical content knowledge for the teaching practice. There are no significant changes in the assessment of the benefit of teacher profession due to teaching experience. No significant differences could be found in the assessment of cooperation with colleagues, of variety and challenge and assessment of the satisfaction from the teaching work (Table 4).

Table 1. Scales used.

Scale / author	Example of an item/ number of items/ answer format	Cronbach's alpha
Convictions		
Attribution of failure / 1	If you look at the worse-performing pupils, what do you think about their failure? / 6 / a	.60
Attribution of good performance / 2	If you look at the well-performing students, who can solve all tasks easily., how do you attribute their good performance? High diligence. / 5 / a	.76
Transmission conviction / 3	Pupils are usually not able to discover connections themselves. / 10	.55
Constructivist conviction / 3	Pupils learn best by solving problems themselves. / 6	.79
		.74
		.80
		.73
Classroom management		
Classroom management / 1	I notice immediately if one or more pupils are unattentive and I integrate them into the lesson. / 2 / a	.54
Use of disciplinary measures / 2	Which of the following disciplinary measures do you use? Oral reprimand. / 7	.60
		.59
		.54**
Benefits of teacher profession		
Cooperation with colleagues / 1	Pedagogical cooperation with colleagues. / 4/ a	.78
		.79
Variety and challenge	Variety and challenge of the work. / 3 / a	.75
		.75
Satisfaction from the teaching work	The possibility to pass on my knowledge in my lesson. / 6 / a	.70
		.82

Note. a: 1= does not apply at all, 2= does rather not apply, 3= is rather correct, 4= is fully correct. b: 1= never used, 2= used rarely, 3= often used. 1 = Baumert et al. (2009); 2 = designed by the authors themselves; 3 = Leuchter et al. (2006); Klieme et al. (2005). *First and second measurement; **Due to the decline of the internal consistency of the scale between the first and the second measurement the evaluation is conducted on item level additionally.

Table 2. Attribution of pupils' performance, convictions and classroom management.

Scales	n*	M(SD)*	M(SD)**	(df1;df2)	F	Significance p	Partial η^2	Effect size d
Attribution of failure / a	23	2.98 (.38)	2.97(.42)	(1; 22)	.002	.963	.000	.03
Attribution of good performance /a	23	3.06 (.36)	3.19 (.44)	(1;22)	2.59	.122	.105	.32
Transmission conviction /b	23	2.18 (.50)	2.28 (.30)	(1;22)	1.33	.260	.057	.24
Constructivist conviction /b	23	3.59 (.38)	3.34 (.41)	(1;22)	9.55	.005	.303	.63

Note. * = first measure; ** = second measure. a = used alpha error level 5%; b = used alpha error level 25%. Significant values in bold type.

The results indicate that the personal assessment of the usefulness of content knowledge acquired by studying at university was positively impacted by teaching practice; it increases from $M = 1.96$ ($SD = .83$) to $M = 2.39$ ($SD = .99$). This compares with an insignificant decrease in the assessment of pedagogical content knowledge due to the practical experience.

DISCUSSION

The sample size of this investigation is small, but

according to Cohen (1988) the results are significant due to the good effect size and the f value. According to the structure of the COACTIV-model (Baumert and Kunter, 2013), the first aim of the study is to analyze changes in convictions, attitudes to the teaching profession and to classroom management due to practical teaching experience. The results of this study show that attribution of students' performance, transmission conviction and classroom management do not change as a result of practical teaching. This compares to a decrease in constructivist convictions and the increase of the discipline

Table 3. Classroom management, disciplining methods and lesson style.

Scales	n*	<i>M(SD)</i> *	<i>M(SD)</i> **	(df1;df2)	F	Significance p	Partial η^2	Effect size d
Classroom management /a	23	2.94 (.38)	3.07 (.46)	(1;22)	1.17	.291	.050	.31
Scale: Disciplining methods /a	23	1.75 (.38)	1.76 (.29)	(1;22)	.005	.942	.000	.03
Items 1 disciplining methods:								
Oral reprimand	22	2.77 (.53)	2.91 (.29)	(1;21)	1.00	.329	.045	.33
Entering in the class list	23	1.65 (.49)	1.65 (.65)	(1;22)	.00	1.000	.000	.00
Exclusion from lesson	22	1.23 (.43)	1.55 (.60)	(1;21)	4.34	.050	.171	.61
Conversation with the parents	22	1.64 (.49)	1.68 (.65)	(1;21)	.137	.715	.006	.07
Individual conversation with the pupil	22	2.36 (.58)	2.41 (.50)	(1;21)	.137	.715	.006	.09
Class council	22	1.23 (.53)	1.09 (.43)	(1;21)	1.30	.266	.058	.29
Class conference	22	1.32 (.48)	1.18 (.40)	(1;21)	1.87	.186	.082	.32
Group lessons, study circles, Teamwork / a	23	2.26 (.86)	2.00 (.90)	(1;22)	4.08	.056	.157	.30
Teacher centred lesson/ a	22	2.46 (.96)	2.81 (.91)	(1;21)	5.51	.029	.208	.37

Note * = first measurement. ** = second measurement. a = used alpha error level 5%. b = used alpha error level 25 %. due to the decline of the internal consistency of the scale between the first and the second measurement the evaluation is conducted on item level additionally. 1 = 0 – 25 %; 2 = 26 – 50 %; 3 = 51 – 75 %; 4 = 76 – 100 %. Significant values in bold type.

Table 4. Benefits of the teaching profession and personal assessment of usefulness of content knowledge and pedagogical content knowledge acquired by studying at university

Scales	n*	<i>M(SD)</i> *	<i>M(SD)</i> **	(df 1;df 2)	F	Significance p	Partial η^2	Effect size d
Cooperation with colleagues / a	23	2.76 (.56)	2.71 (.58)	(1;22)	.129	.723	.006	.09
Variety and challenge / a	23	3.64 (.44)	3.77 (.35)	(1;22)	2.07	.165	.086	.33
Satisfaction from the teaching work / a	23	3.53 (.50)	3.65 (.33)	(1;22)	1.80	.194	.076	.28
Assessment of the content knowledge acquired by studying / a	23	1.96 (.83)	2.39 (.99)	(1;22)	6.11	.022	.217	.47
Assessment of the pedagogical content knowledge acquired by studying / a	23	1.70 (.64)	1.57 (.84)	(1;22)	.683	.418	.030	.17

Note * = first measurement. ** = second measurement. a = used alpha error level 5%. Significant values in bold type.

method “exclusion from lesson“. The results show that the teaching style, either student- or teacher-centered, is affected by teaching practice. The teacher-centered style is used significantly more often whereas the student-centered style and teamwork among pupils tend to decrease, though not significantly. There is no effect on the assessment of the benefit of teacher profession when teacher trainees assume teaching responsibility.

The second aim of this study is to verify the potential change in personal assessment of the usefulness of content knowledge and pedagogical content knowledge for the teaching practice. It could be proven that the assessment of the usefulness of content knowledge increases significantly as a result of teaching experience, while the assessment of the usefulness of pedagogical content knowledge tends towards lower values, but not to

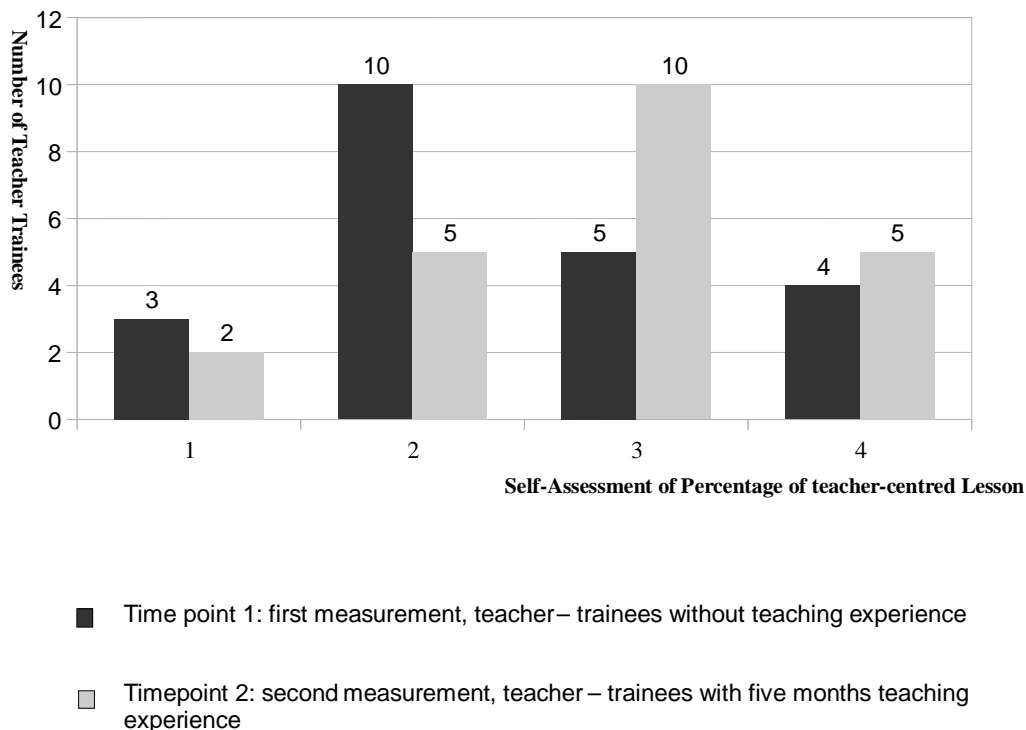


Figure 1. Self-assessment of teacher-centred lesson style at time point 1 and time point 2. 1 = 0 – 25%; 2 = 26 – 50%; 3 = 51 – 75%; 4 = 76 – 100%

a statistically significant degree.

The assumption that the attribution of poor or good performance will probably alter as a consequence of exposure to students' efforts could not be verified. This attribution could be a profound belief which is not influenced by practical teaching. This may have negative effects on students' learning success, because teachers' beliefs regarding learning influence students' learning outcomes (Darling-Hammond and Bransford, 2005). In each measurement of this study, poor performance is attributed to insufficient concentration and motivation. Students' motivation could be increased by teaching and as a result successful learning. To achieve this aim it is necessary to support teacher trainees with special training in students' motivations. The learning process could also be positively affected by constructivist convictions (Sosu and Gray, 2012). In this study at the point of first measurement, all trainees favored a constructivist approach. The significant change in the constructivist conviction was not expected, because this conviction is a basic belief. The cause for this change could be found in the lack of experience of time management of the teacher trainees. Maulana et al. (2012) proved that time management is an important part of lesson style, which teacher trainees have to learn in order to teach effectively including the scheduling of the subject matter they want to teach. Group lessons or other student-centered lesson styles require more time than a teacher-centered style.

This could be the reason for the increase in the constructivist conviction. Learning to teach and classroom management are competences which are acquired with practical teaching (Darling-Hammond and Bransford, 2005). In this study, there could be found no effect on the self-assessment of classroom management: Teacher trainees are convinced of their skills with or without practice. This personal belief in their own skills seems to be stable over time. The results of Voss and Kunter (2011) regarding the increase of the knowledge in classroom management during the teacher training period could not be found in trainees' assessment of classroom management. Contrary to expectations, teaching practice does not affect the assessment of perceived benefits of the teaching profession. The utility aspects of the teaching profession could be shown (Klusmann et al., 2011) as ultimate career motives, playing an important role in selection of a university course and these career motives continue to persist throughout the professional career (Keller-Schneider, 2011). This also seems to be applicable during the training period, because the career motives are stable over time and are not influenced by the practical experience. As suspected, the personal assessment of utility of content knowledge acquired by studying at university is not stable over time. This assessment changes positively with practical experience, meaning that the teacher trainees reflect on their knowledge and recognize the utility of the content knowledge with

respect to their current teaching practice. In contrast to the assessment of the content knowledge, the assessment of pedagogical content knowledge does not change due to the practical experience. It remains at a low level. This reinforces Terhart's (2000) theory regarding the insufficient training of pedagogical content knowledge at university. In this competence teacher trainees are not well prepared for their profession.

Limitations

The deficiency of this study is the small number of participants and the low internal consistency of the scales of classroom management and of disciplining methods. A strength of this study is the diversity of the investigated areas.

CONCLUSION AND IMPLICATIONS

The scales of COACTIV (convictions, classroom management, benefits of the teaching profession) have proven themselves in reviewing the changes in professional competence. Practical experience influences constructivist convictions, the discipline method "exclusion from lesson", the teaching style and the assessment of the utility of content knowledge acquired by studying at university. Teacher trainees believe that they are not well prepared for their profession as regards pedagogical content knowledge. This important part of teaching competence should be improved by more practice-oriented courses at university. Teacher trainees need more support in time management to facilitate the constructivist approach and training in motivation strategies to improve students' learning outcomes.

Future directions

A further investigation will be conducted at a timepoint of six months and at a first time of measurement 2 months from second time of measurement in order to confirm the findings to date and to investigate what effect the variables measured at the initial timepoint have longitudinally.

Conflict of Interests

The authors have not declared any conflict of interests.

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