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Factors and Conditions for Candidate Teachers' Experience of Coherence and Support at Induction Phase

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‘Understanding induction as a way to transform early professional development should be key to move beyond the idea that reforms of initial teacher education programmes alone can address the ominous challenge of preparing future teachers for their profession.’

(Paniagua & Sánchez-Martí, 2018, p. 35)

Abstract

The role of teachers is becoming increasingly complex and challenging due to the higher social, cultural, technological and economic expectations. Hence, this current situation demands a realigned and multifaceted professional development for teachers and represents a challenge for teacher education. The transition from teacher education at university to the professional life of a teacher at school – the induction phase – is central to a smooth entry and sustainable evolution of a teaching career. During this phase, an expedient connection of theory and practice can take place, if candidate teachers are induced systematically and supported in a comprehensive way. Empirical research of the last decades has revealed that becoming a teacher needs to be a continuous and coherent process of educational and professional development across all teacher education phases. Thereby, it is important to know, how candidate teachers perceive the conditions along the transition from professional preparation at university to the induction phase at school and to identify factors influencing the success and support of this transition and the induction phase itself. The present dissertation aims at exploring candidate teachers' professional preparation in the subject matter, didactics and educational science at university and the conditions, which contribute to explaining their experience of coherence through support, social relatedness, working atmosphere and feedback during this important phase of their career. Thereby, this study focuses on the professional preparation of candidate teachers when entering the induction phase. It reconstructs their transition into the profession and can show how predictive perceived professional preparation at university as well as support at the induction phase are for candidate teachers' experience of coherence. A sample of two cohorts – in total 1,089 candidate teachers – at higher secondary schools in the federal state of Bavaria (Germany) participated in a questionnaire survey. By means of structural equation modeling, it was found that perceived professional preparation at university and support at the induction phase was systematically related to candidate teachers' experience of coherence.

Zusammenfassung

Der Übergang von der universitären Lehrerausbildung zum Beruf als Lehrperson an einer Schule – das Referendariat – ist ein zentraler Bestandteil für einen erfolgreichen beruflichen Einstieg und für eine nachhaltige professionelle Entwicklung. Während dieser Phase kann eine sinnvolle Verknüpfung von Theorie und Praxis stattfinden, wenn Referendarinnen und Referendare systematisch in den Beruf eingeführt und dabei umfassend unterstützt werden. Die Anforderungen an zukünftige Lehrpersonen und somit auch an die Lehrerausbildung werden immer komplexer und umfangreicher aufgrund der dynamischen gesellschaftlichen, wirtschaftlichen, kulturellen und politischen Entwicklungen. Die bisherige Forschung zeigt, dass die Übergänge zwischen den einzelnen Ausbildungsphasen kohärent gestaltet werden müssen und Referendare und Berufseinsteiger umfassende Unterstützung benötigen. Es gibt jedoch

wenige empirische Befunde zu der Einschätzung der Referendarinnen und Referendare zu den Rahmenbedingungen und zu den Bedingungsfaktoren für das wahrgenommene Kohärenzempfinden. Ziel der vorliegenden Dissertation ist es, die Einschätzung der Referendarinnen und Referendare über ihre universitäre Vorbereitung durch die Fachwissenschaft, Fachdidaktik und Erziehungswissenschaften sowie die Unterstützung in Form von positiver Arbeitsatmosphäre, Kollegialität, Feedback und Reflektion während des Referendariats näher zu erforschen. Die vorliegende Dissertation beschreibt und untersucht empirisch, wie prädiktiv die universitäre Vorbereitung und die Unterstützung während des Referendariats für das wahrgenommene Kohärenzerleben der Referendarinnen und Referendare sind. Eine Stichprobe von zwei Kohorten – mit insgesamt 1.089 Referendarinnen und Referendaren – im gymnasialen Lehramt in Bayern (Deutschland) hat an der Fragebogenstudie teilgenommen. Mit Hilfe eines Strukturgleichungsmodells kann gezeigt werden, dass die Einschätzung der beruflichen Vorbereitung an der Universität und die Unterstützung während des Referendariats systematisch in Beziehung stehen zum wahrgenommenen Kohärenzempfinden der Referendarinnen und Referendare.

Acknowledgements

This thesis would not have been possible without the support of numerous people and organizations. Firstly, I want to thank my supervisor, Prof. Tina Seidel, for the professional guidance, persistent encouragement, flexibility and advice she has provided throughout my time as doctoral candidate at her chair. This PhD has been an outstanding experience and I am grateful, not only for her tremendous academic and personal support, but also for creating this opportunity for me. I am also hugely appreciative of the patient guidance, valuable support and constructive feedback of my second supervisor, Prof. Kathleen Stürmer-Schröpfer, throughout the process of writing this thesis. I am thankful for conversations that have shaped my horizon, everything I have been challenged with and the distinct opportunities to learn along the way. Moreover, I want to thank PD Dr. Jutta Möhringer for chairing the examination committee.

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Summas gratias ago!

Contents

Chapter 1

Introduction

‘All countries are seeking to improve their schools, and to respond better to higher social and economic expectations. As the most significant resource in schools, teachers are central to school improvement efforts. Improving the efficiency and equity of schooling depends, in large measure, on ensuring that competent people want to work as teachers, that their teaching is of high quality, and that all students have access to high quality teaching.’ (OECD, 2005, p. 7)

There is a broad consensus that teachers are among the most important agents of educational policy (Schleicher, 2011; UNESCO, 2015). High quality and sustainable development of the teaching force are vital for the ongoing transformation of societies (Darling-Hammond, 2006; Darling-Hammond & Lieberman, 2012; W. H. Schmidt, Blömeke, & Tatto, 2011). Many countries, such as Germany, have to meet the challenge of recruiting a sufficient number of new teachers to replace the high number of teachers retiring within the coming years (König, Rothland, Darge, Lünnemann, & Tachtsoglou, 2013; Niemi, Harford, & Hudson, 2012; OECD, 2005; Watt et al., 2012). Teachers are the key agents in meeting the desired educational goals of a society, and teacher education is an important institutional element with the objective to prepare future teachers for meeting their job requirements and also to contribute to the continuous improvement of teaching quality (Bauer & Prenzel, 2012; Darling-Hammond & Lieberman, 2012; Hascher & Winkler, 2017; Seidel, Stürmer, Schäfer, & Jahn, 2015). To meet the current changes of the real world in the 21st century, teachers need to improve their work in schools, reflect, evolve their competence, collegial collaboration and professional development (Brikmane & Samusevica, 2014; Collinson et al., 2009). Educational systems ought to prepare future generations of students to anticipate for prospective skill demands (Reiss &

Sälzer, 2016); also, students need to be prepared for the changes themselves (Livingston, 2012; Terhart, 2000a). A recent report on the future of jobs and skills by the World Economic Forum, for instance, has outlined that 63 % of children entering school today might end up in new jobs which do not yet exist (WEF, 2016). Consequently, the role of teachers and learners is becoming increasingly complex and challenging due to the higher social, cultural, technological and economic expectations (Hascher & Winkler, 2017; Hofer, Gasser-Dutoit, & Criblez, 2001; Oser, 2001). Hence, to meet the higher demands and the ambition to remain in the teaching profession, it is important for candidate teachers to get a solid and supportive induction into the job reality after their professional preparation at university. Therefore, the current situation demands a realigned and multi-faceted professional development for teachers and represents an ongoing challenge for teacher education (Brouwer & Korthagen, 2005; Darling-Hammond, 1999).

As teachers are the most relevant agents of the educational system (Cochran-Smith & Zeichner, 2005; Hattie, 2012; Linninger et al., 2015), teacher education has come to the fore in two ways: the first is the continuous debate on teacher education reform. The second can be found in the emerging field of research targeting at the professional preparation of candidate teachers by investigating the learning processes integrated in initial teacher education (Darling-Hammond & Lieberman, 2012; Grossman & McDonald, 2008; Stürmer & Seidel, 2017a; Terhart, 2001). Over the centuries, teacher education has been the focus of public and political debate (Cloer, Klika, & Kunert, 2000) and remains constantly exposed to critical examination and high expectations at once (Herzmann & König, 2016; Herzog & Makarova, 2011). There is also an interconnectedness between the governmental interests of a nation and its educational system and policy (Craig, 2016; Cramer, 2012; Schlotter, Schwerdt, & Woessmann, 2014) – both are serving the public to advance and help society to come forth by securing peace, prosperity, progress, and the opportunity to meet individual targets. However, despite continuous improvement in implementing qualitative and quantitative research findings in teacher education at university, a general solution to the multi-faceted problems of the school system is not available. Therefore, long-term planning and professional preparation for flexibility and complexity are required in teacher education, when teachers ought to be able to meet the demands of their students' future life and job prospects. Schools are supposed to

be adaptable and provide suitable state-of-the-art preparation for students to meet the challenges of a rapidly changing global community (Herzog & Makarova, 2011). However, education policy tends to focus only on one election period at a time and does not prepare for long-term strategy, which can be a danger to society, as educational institutions have to make arrangements for their adaptability to future requirements at present (Blossfeld et al., 2017).

Deriving from the current discourse on education in the context of policy evaluation through international comparative assessments like PISA (OECD, 2017) or TIMSS and PIRLS (IEA, 2017), a demanding call for more causal (empirical educational) research has been put ahead on national agendas (Blömeke, 2011). For the German system, Helmke (2009) even speaks of an 'empirical turnaround' (Helmke, 2009, p. 16) as a result of the rather poor and average performance of German students in the PISA assessment (Biedermann, Tettenborn, Oser, Steinmann, & Bach, 2015; Brunner, Stanat, & Pant, 2014; Herzmann & König, 2016). Thus, for Germany, these outcomes have created a furor and have resulted in yet another effort at reforming teacher education (Abs, Döbrich, Gerlach-Jahn, & Klieme, 2009; Keuffer, 2010) and the education system as a whole (Biedermann et al., 2015; Neumann, Fischer, & Kauertz, 2010). Research on teacher education has developed alongside the context of teacher education organization and reform (Cochran-Smith & Fries, 2005). Moreover, the impact professional preparation of teachers can have on their students' learning outcomes has been described in various studies by research on educational effectiveness over decades (Bromme, 1997; Kyriakides & Charalambous, 2014; OECD, 2005; Seidel & Shavelson, 2007; Zlatkin-Troitschanskaia & Kuhn, 2010). Hence, together previous findings and empirical evidence on effective professional preparation of teachers need to find ways of becoming part of university education and teacher induction programs, either gradually or immediately.

Many recent studies have focused on the effectiveness of teacher education in a rather output-oriented way and predominantly address the question, if candidate teachers acquire the necessary teaching competencies during their education (Allemann-Ghionda & Terhart, 2006; Baumert & Kunter, 2006; Hascher & Moser, 2011). Yet, the quality of initial teacher education is often seen as directly connected to school and teaching improvement, whereas, in reality, the nature of the relationship

between teaching and learning is less linear and immediate, but complex and dynamic (Loughran & Hamilton, 2016). As Grossman & McDonald (2008) point out, research in teacher education has developed in isolation from research on teaching, and a stronger connection could inform the content of teacher education (Grossman & McDonald, 2008, p. 184). However, educating teachers demands innovative and evidence-based teacher education programs with a coherent induction phase, enabling prospective teachers to connect what they have learned at university with their first teaching practice (Helmke, 2009; Reiss, Prenzel, & Seidel, 2012). The success of the transfer from university education to teacher induction, however, depends largely on candidate teachers' sustainable professional knowledge acquisition, which can be connected to the practical context of the classroom and bridging the theory-practice gap (Stürmer & Seidel, 2017a). Yet, evidence-based teacher education programs can introduce research findings to teacher students and future candidate teachers and enable them to reflect on vocational field-related research and development (Keuffer, 2010).

Moreover, a successful start and smooth transition into the teaching profession is vital for a satisfied and enduring career of prospective teachers (Ingersoll & Strong, 2011). Therefore, the organization and support provided at the induction phase are important for teacher performance and retention, as many beginning teachers most likely drop out of the profession within the first years of their career (Beijaard, Buitnik, & Kessels, 2010; Burke, Aubusson, Schuck, Buchanan, & Prescott, 2015; Ingersoll & Smith, 2004; Okhremtchouk et al., 2015). The induction phase aims to foster integrated knowledge building by linking theoretical knowledge students have acquired during university preparation into practical implementations in the real world at school (Stürmer & Seidel, 2017a; Stürmer, Seidel, & Kunina-Habenicht, 2015). Hence, a strong linkage of university coursework with experience in the field helps to acquire practice-oriented knowledge and relate practical experiences to the principles of learning and teaching (Darling-Hammond & Bransford, 2005; Grossman, Hammerness, McDonald, & Ronfeldt, 2008). Therefore, program coherence among professional preparation at university and the induction phase is crucial for candidate teachers, as they need to encounter consistent ideas and theories along with opportunities to practice skills to deepen their understanding and develop expertise (Feiman-Nemser, Schwille, Carver, & Yusko, 1999; Hammerness, 2006). Moreover,

the effectiveness of teacher education programs will be assessed through the performance of candidate teachers transferring the knowledge they have acquired during their professional preparation at university into professional practice at school (Darling-Hammond, 2010; OECD, 2005). However, stakeholders involved in the process of teacher education at university and the induction phase within the German teacher education system, still lack connection and common goals (Keuffer, 2010; Terhart, 2000b). For the improvement of program coherence and consistency during all phases of teacher education, a cooperation between universities and induction schools as well as an emphasis on the facilitation of collaborative teacher research should therefore be promoted (Willegems, Consuegra, Struyven, & Engels, 2017).

This dissertation aims at contributing to the current debate on enhancing teacher education, with the focus on teacher induction, in three ways. Firstly, the actual situation of candidate teachers currently enrolled in induction at higher secondary schools in Bavaria (Germany) is described regarding their academic background, their choice of teaching subjects and their assessment of experiences within the process of the induction phase at school. Secondly, the influencing factors for candidate teachers' perception of their professional preparation at university and the received support during the induction phase are examined, paired with implications for future research in a methodological and conceptual way. In this context, the present study investigates candidate teachers' experience of coherence among their educational phases and asks how they experience the relation of theory and practice when making the transition from university to induction phase at school. It is surveyed, how well they feel equipped by professional preparation at university and how candidate teachers experience actual support at the induction phase. Thirdly, an exemplary study evaluates the transition by investigating the relationship between candidate teachers' experience of coherence in relation to their professional preparation at university and the connected individual support during the induction phase. Furthermore, this dissertation inquires, if candidate teachers perceive learning opportunities provided as consistent and coherent, and differences can be found between the teaching subject domains, candidate teachers are related to. Next to the transfer from university education to teacher induction at school, the proportion of theoretical and practical parts of the education is critically discussed.

The next chapter will outline the structure of teacher education in Germany, as this study was conducted in the context of one particular federal state – Bavaria. Bavaria is one of the largest German states and serves as a suitable example to explore the experience of candidate teachers with the strongly segmented two-phase model of teacher education, when making the transition from professional preparation at university to teacher induction at school. Each of the two phases is further described and it is specified, how university teacher education and teacher induction are embedded in the context of professional development in the German system. Moreover, the function of each particular phase is amplified and the complex situation of aspirant teachers having to deal with critical components like strong divisions and a lack of coherence among the educational phases is characterized.

Chapter 2

The Structure of German Teacher Education

'… we have learned a great deal about how to create stronger, more effective teacher education programs. Three critical components of such programs include tight coherence and integration among courses and between course work and clinical work in schools, extensive and intensely supervised clinical work integrated with course work using pedagogies that link theory and practice, and closer, proactive relationships with schools that serve diverse learners effectively and develop and model good teaching.' (Darling-Hammond, 2006, p. 300)

2.1 A System of Educational Phases and Diverse Responsibilities

The education of prospective teachers is embedded in the context of actual educational policy and the current framework for schools in the respective country. Therefore, the concept and the conditions determining teacher education programs are subject to institutional requirements as much as to social and political change (Herzmann & König, 2016). In many countries, teacher education is characterized by a distinct division of educational phases – like teacher education at university and teacher induction or training at school (Gröschner, 2008; Herzmann & König, 2016; Zeichner & Conklin, 2005; Zimmermann, Kaiser, Bernholt, Bauer, & Rösler, 2016). This systematic division is particularly present in the consecutive German teacher education system, consisting of two very different phases (Blömeke, 2009; Kleinespel & Lütgert, 2008). Moreover, the 'Standing Conference of Federal Ministers of Education and Cultural Affairs'(KMK) in Germany defines – in the so called 'standards for teacher education' (KMK, 2004) – teacher professional development as a process divided into three different phases. The first phase is the academic education at university, with an emphasis on theory. The second phase is the induction at school, emphasizing practice (König et al., 2017). Each of the first two phases needs to be

completed by student teachers (1st phase) and candidate teachers (2nd phase) with a state exam. The third phase of teacher education focuses on continuous professional development for in-service teachers (see Figure 1). Combined, the first two phases aim to reach a systematic and cumulative acquisition of professional experience and competencies and, in its entirety, the phases are dedicated to meeting the requirements of a teacher's profession (KMK, 2004, 2008). The second teacher education phase, for instance, is accounted for by the respective federal state as they plan, coordinate, run and examine this educational phase without ~~a~~ formal link to university.

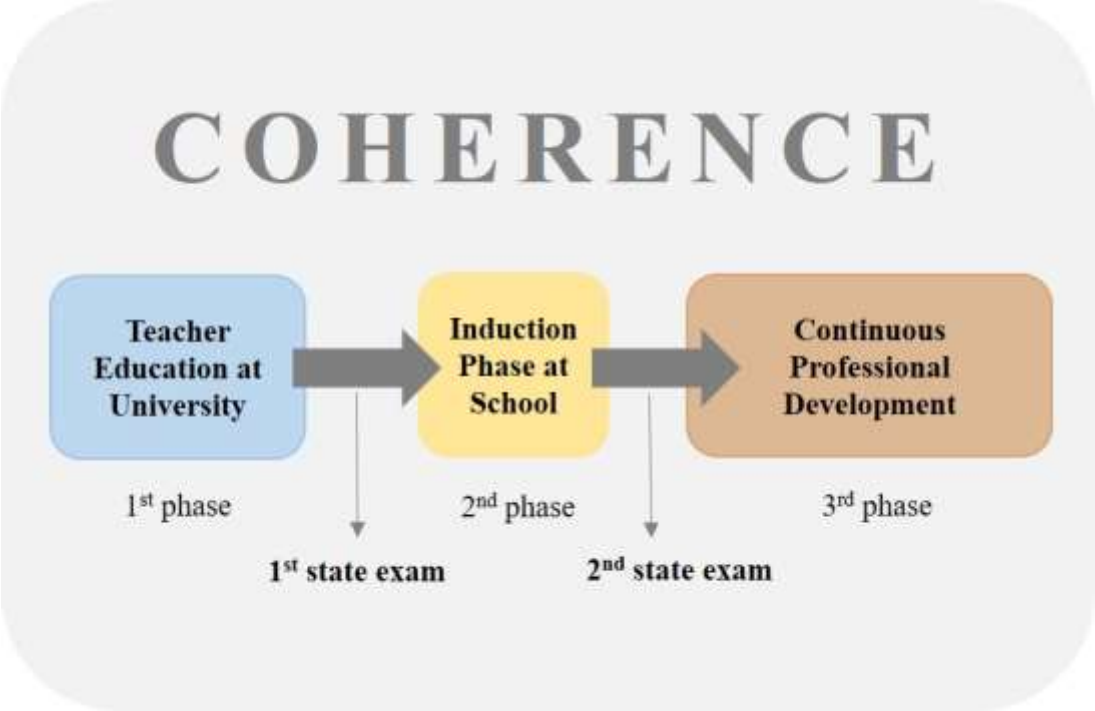


Figure 1: Structure of Teacher Education Phases in the German System

In this context, it is important to acknowledge the different phases of teacher education and to identify their function within the system. Coherence, however, should be experienced throughout the transitions and along the professional development of a teachers' career. Hansen (2008) defines the primary purpose of schooling as 'the preparation of the young for economic and social life' (Hansen, 2008, p. 13). Given the rapid pace of change, societies have to deal with and labor markets have to adopt to, where diverse and new skills are required to manage a technologically fast progressing society, the task schools have to achieve today is quite extensive and

complex (Cortina & Müller, 2014; Livingston, 2012). In order to meet the increasing requirements for the teaching profession, the introduction of so-called ‘standards’ for teacher education has been established in most places (Darling-Hammond & Lieberman, 2012; Herzog & Makarova, 2011; OECD, 2005). These standards aim to generalize and outline the requirements for teachers’ education and professional development in the respective educational system (Darling-Hammond & Lieberman, 2012).

Moreover, the standards focus on teacher competencies by describing in detail what teachers are expected to learn and should accomplish during their initial and further professional development (KMK, 2004). They serve as guidelines for all stakeholders involved in the teacher education process to ensure quality and comparability (Abs et al., 2009; Klieme et al., 2007). They also aim to outline a competence framework, which would enable teachers to meet the challenges of a lifelong teaching career in a dynamic knowledge society (Toledo-Figueroa, Revai, & Guerriero, 2017). For the German system, the Standing Conference of Federal Ministers of Education and Cultural Affairs (KMK) describes the required competencies for prospective teachers in four domains: teaching, educating, assessing and innovating (KMK, 2004). Furthermore, the KMK outlines what is required (in theory) from teacher students at the end of their professional preparation at university and what candidate teachers should learn to apply (in practice) during the induction phase at school. For the competence domain ‘teaching’, for example, student teachers ought to have learned at university about general subject-related didactics and know how to apply them for lesson planning (see Figure 2). At the induction phase, they then should be able to select content and methods as well as modes of work and communication for their teaching (KMK, 2004, p. 7).

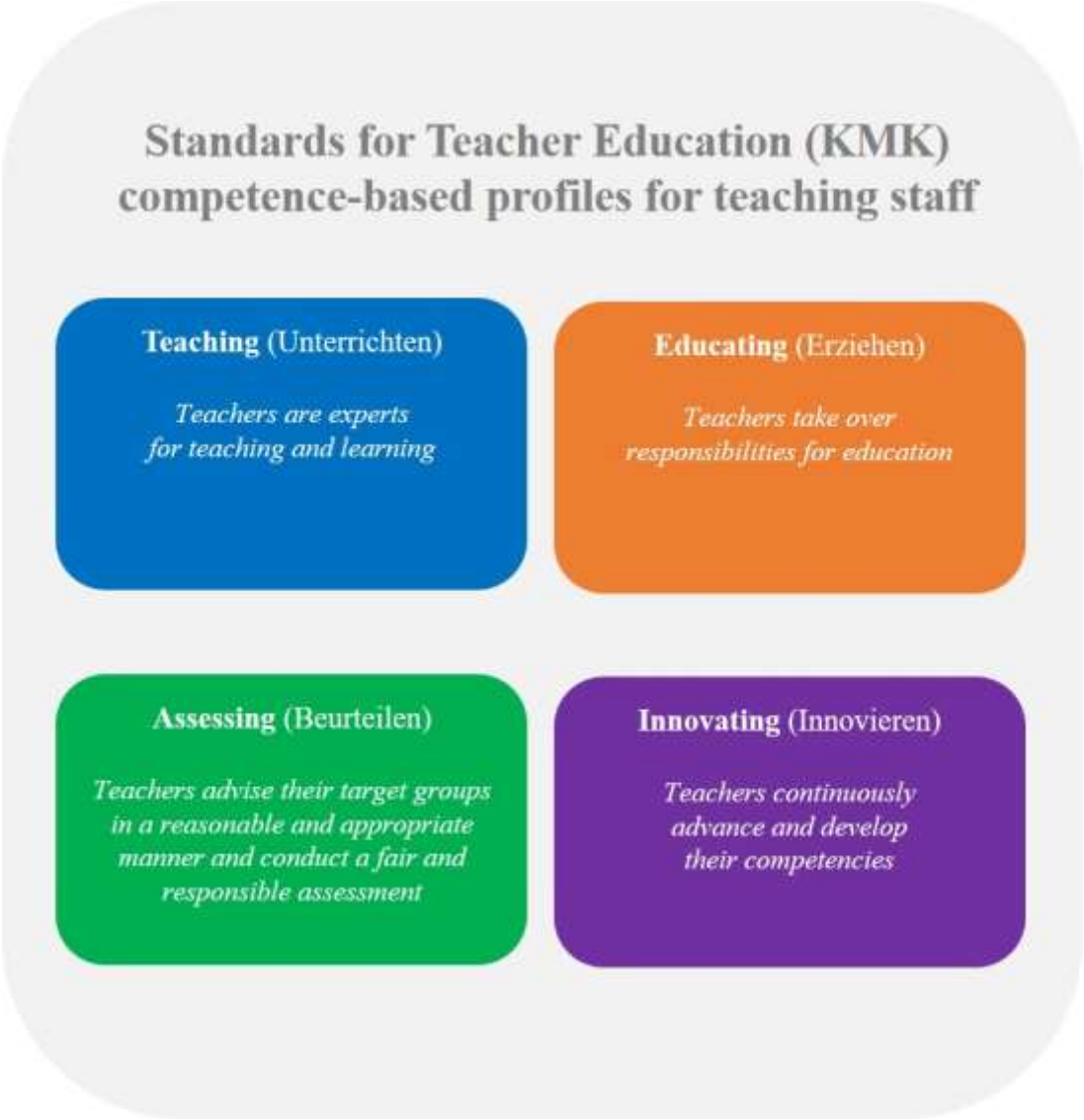


Figure 2: Overview of Competence-based Profiles (German Standards for Teacher Education) (KMK, 2004)

Yet, there is also critique, arguing that the existing standards are on the one hand too vague (Oser, 2001) and on the other hand overloaded with expectations and requirements for teacher professionals and the system concurrently (Hofer et al., 2001; Terhart, 2001). Moreover, they are still lacking a consistent concept of the teaching profession and a sufficient empirical foundation (Baumert & Kunter, 2006; Herzog & Makarova, 2011). Oser (2001) is further arguing that standards – however well refined – remain theoretical recommendations, and a rhetorical gap is created between the

technical and the human aspects of the professional development. The connectivity of knowledge obtained at university with practical experiences in clinical settings at school, remains a challenge when attempting to liaise the different educational phases with each other (Klieme et al., 2007). Therefore, candidate teachers are obliged to develop a common understanding and framework of ideas for tailoring the existing standards to their individual professional ethics and identity (Oser, 2001). Nevertheless, the standards do not contain instructions, how learning progressions should be monitored or revised during the consecutive teacher education phases. They also lack clarity in what precisely is meant by using terms like competence or qualification. But they also increasingly acknowledge the complexity of the teaching profession and that adaptability to student dispositions and different environments is an important element of teachers' professional competence (Toledo-Figueroa et al., 2017).

In this chapter, the consecutive teacher education phases as they are present in the German system, the structure of teachers' professional development, and the institutions responsible for the configuration of each phase have been introduced. Moreover, the underlying standards teacher education programs are based on are described and critically reflected. Previous research could show that program coherence among teacher educational phases is lacking and cumulative effects of learning processes for candidate teachers are limited (Herzmann & König, 2016). The question, what teacher students should have learned at the end of their university studies (first phase) when entering the induction phase at school (second phase) as candidate teachers, is an identified demand and remains subject to continuous policy improvement (Terhart, 2000a). Bridging the theory-practice gap and aligning knowledge acquired at university courses with practical experiences at clinical settings remains a challenge for candidate teachers' professional development (Klieme et al., 2007; Stürmer & Seidel, 2017a). The next section will further outline the process and the function of the first phase of teacher education at the university and address the complex situation for students by depicting the separation of the various study elements and cultures already at the early stage of their professional development.

2.2 The First Phase: Teacher Education at University

This section provides a detailed description of the first phase of teacher education as it takes place at most universities in Germany responsible for educating prospective teachers and where they are situated within the university context. Over the last decades, many attempts of reform have been made, to respond to the claim of improving and providing evidence-based teacher education at university in order to secure a well-educated teaching workforce for future generations of students and the demands of modern society (Seidel et al., 2016). Furthermore, the separate study elements subject science, subject didactics and educational science and their share within the curriculum are described (see Figures 3 and 4). Yet, previous research has shown the difficult situation of teacher education at university by being subdivided into these separate study elements, in which subject science plays a dominant role and educational science has an inferior position (Lohmann, Seidel, & Terhart, 2012). Moreover, the complex situation for teacher students resulting from the separation of the various study elements and cultures is addressed as incoherence and a lack of alignment of the various courses among each other and with their first clinical experience already starting at the early stage of their professional development. In addition, prior studies by Lersch (2006), Reintjes (2006) and Schubarth et. al (2007) show candidate teachers' critical evaluation (retrospectively) of their professional preparation at university, as this is also investigated in this dissertation.

Nowadays teacher education is taught at universities in most industrialized countries (Niemi et al., 2012). In Europe, the Bologna process has helped towards growing transparency and comparability within the European Higher Education Area (Bauer & Prenzel, 2012; Schaeper, 2008). Yet, evidence for a quality intensification at European teacher education programs – or programs in general – through the Bologna process, has not yet been found or is still lacking comprehensive research (Hascher & Winkler, 2017; Teichler, 2014). Following the debate around disappointing results of international large-scale student assessments like PISA in Germany, teacher education programs at universities have been held responsible for the capability of the school system and students' attainments. Therefore, the programs have been examined severely to improve and align teacher educational phases across all institutions involved in the education process (Keuffer, 2010). Some German

universities still consist of so-called centers for teacher education (*Lehrerbildungszentren*) as a result of the particular situation of teacher education in Germany (Keuffer, 2010; Kleinespel & Lütgert, 2008), other universities have already opened schools of education following the American model of places like Stanford or Harvard University's School of Education (Weiler, 2010). This is a novelty for the German system aiming to invigorate teacher education within the university and strengthen its visibility as an independent faculty (Reiss et al., 2012). Therefore, structural and organizational changes like the introduction of Bachelor and Master of Education degrees (in addition to the first state exam, that is still compulsory in many German federal states for seeking employment at a state school), in order to achieve international comparability, have been introduced to the system (Herzmann & König, 2016). Yet, the field is diverse and remains an ever-growing breeding ground for reform, but there is also increasing evidence that universities offer the most effective teacher education programs (Bauer & Prenzel, 2012; Darling-Hammond, 1999). However, the programs for teacher education, as versatile as they may be, all aim at preparing students to become highly skilled teachers (König et al., 2017). Moreover, previous research could show that the traditional university preparation yields to higher qualified teachers irrespective of the specific teacher education program they have completed (Berliner, 2006).

In Germany, the first teacher education phase at the university for prospective secondary teachers is subdivided into three study elements: subject science, subject didactics, and educational science along with opportunities for clinical experiences aiming at gaining teaching practice (Blömeke, 2009; Herzmann & König, 2016). Teacher students have to choose an approved combination of two teaching subjects at the beginning of their studies. In Bavaria, for instance, students have a choice of 57 combinations (Bayerisches Staatsministerium für Bildung und Kultus, 2018b). Despite the complexity and variety of teacher education programs, this subdivision of study elements is quite typical of most systems (Flores, 2016; König et al., 2017). Responsibility for the subject science is in most programs incumbent on the respective science or humanities department (e.g. math, physics, German language, history) for each of the two teaching subjects. This is in most cases a separate department from the department for education, where the courses in the subject-related didactics and in educational science are taught (see Figure 3), depending on the structure of the

respective university (Blömeke, 2009). As a result, students in teacher education are associated with several departments and therefore different study characteristics and profiles, which might influence their experience of professional preparation at university. Moreover, previous studies report on student teachers' dissatisfaction with the coordination and curriculum alignment of the three study elements at university as they consider e.g. the content of their courses consists of unnecessary repetition. Therefore, transparency and interconnectedness would help to foster the effective acquisition of competence and knowledge (Cramer, 2012).

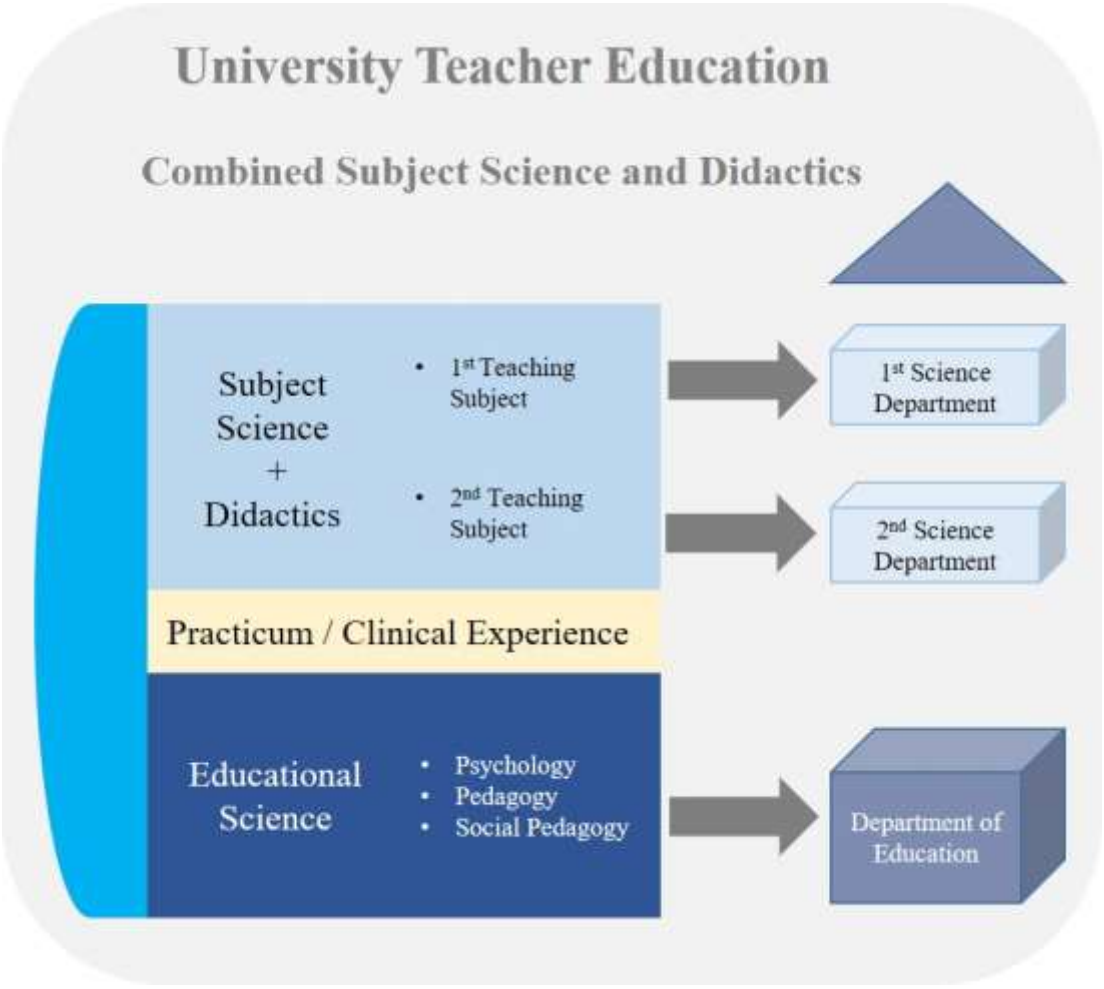


Figure 3: Organization of Secondary Teacher Education at University in Germany with Combined Subject Science and Didactics

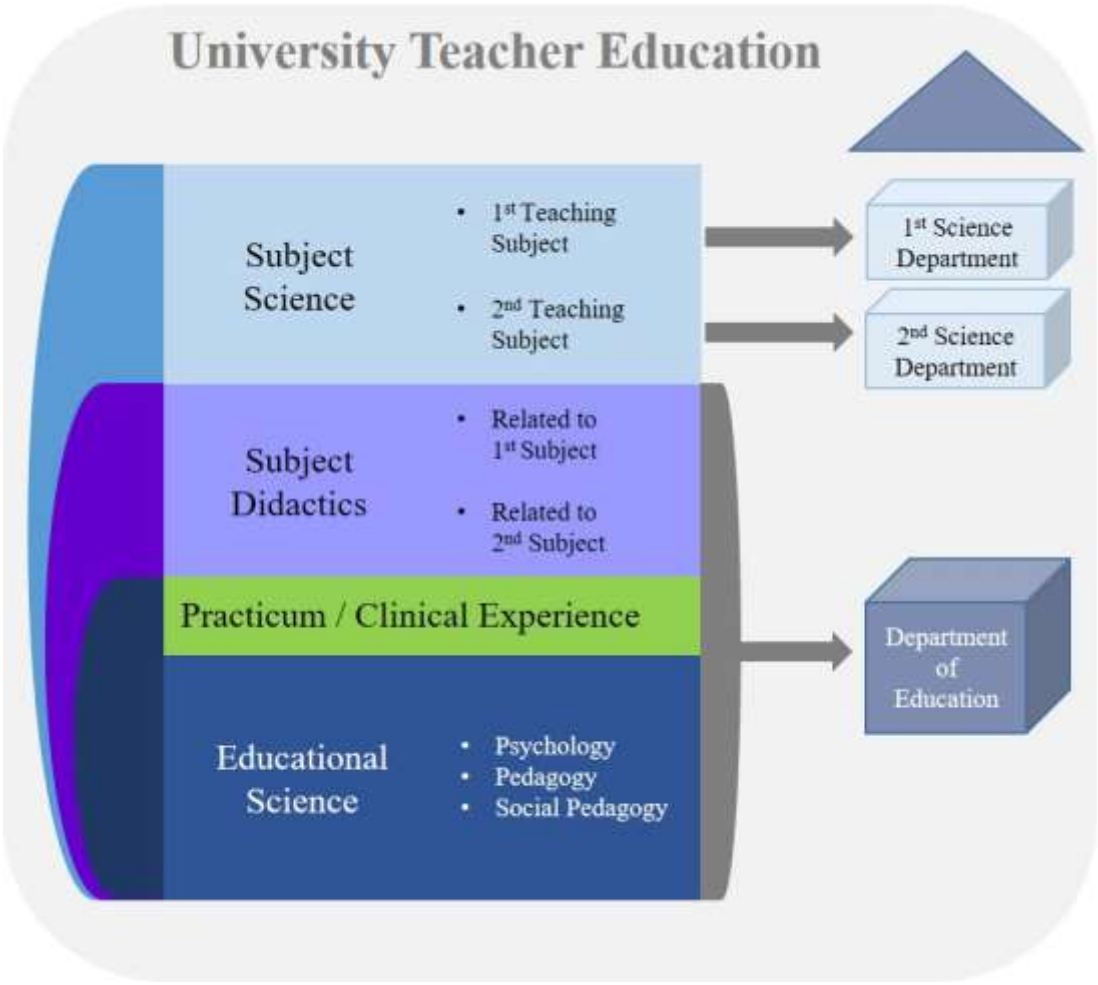


Figure 4: Organization of Secondary Teacher Education at University in Germany – Subject Didactics Integrated in Department of Education (Model of Technical University of Munich's School of Education)

Although, universities have now been established as the first educational institution for all types of teaching degrees, it was preceded by a controversial debate on standardization and positioning of teacher education in general (Cloer et al., 2000; Herzmann & König, 2016). The system of teacher education programs at different universities can be described as fissured and diverse: traditional program structures (see Figure 3) have to be observed next to new integrative approaches (see Figure 4), where subject didactics are incorporated in the education department instead of the science department, for example. Hence, the role of teacher education as an integrative part of many universities, is constantly undergoing modulation and alignment due to

the changing requirements of policy and reform. Moreover, scholars around the world are debating on the scientific status of teacher education and the question if it genuinely belongs to universities and can be considered as a 'science' for a very long time and this has become a permanent issue within the scientific community (Herzmann & König, 2016; Terhart, 2001) and the incongruity of pedagogy and content also has a long discursive history (Shulman, 1986).

However, the interrelation of teacher education and universities provides status and academic credibility for the one and high numbers of students and social value to the other side (Labaree, 2008). At many bigger German universities for example, students in teacher education sum up to such a large number out of all students enrolled that only factory-like study conditions are given and the requirements for a sound pedagogical education are unachievable (Terhart, 2001). Yet, teacher education has to deal with a low status that comes with a lack of social recognition for the teaching profession, or even teacher bashing in places like the United Kingdom or the United States (Darling-Hammond & Lieberman, 2012; MacBeath, 2012). Many countries are adversely affected by this development as they are lacking aspirant teachers wanting to succeed the parting generation of teachers, who will leave the profession on grounds of retirement in the upcoming years. Therefore, a serious talent acquisition and change of the public perception of the teaching profession is required (OECD, 2005). The prejudices concerning teachers and their professional standing seem to be particularly inadequate as teaching is a difficult occupation even if it appears to be simple (Cloer et al., 2000; Wernstedt, 2000). Moreover, many teachers have to deal with difficult working conditions, shortages, pressure and administrative responsibilities, which are especially challenging at the beginning of their career (Berliner, 2006). Today, the next generation of teachers needs to be able to prepare the next generations of students for rapidly changing demands of the labor market, for economic and social change, this has significant impact on teacher education and the perception of a teaching career in general (Schleicher, 2016). The distinctive feature of the teaching profession is its dependent relationship of teachers with their students, as the success of either one cannot be assessed uncoupled. Even well-educated and skilled teachers risk failing, if they are unable to motivate their student's compliance and readiness to learn (Labaree, 2008; Oser, 2001).

Yet, previous research has shown the difficult situation of teacher education at university by being subdivided into separate study elements, in which subject science plays a dominant role and educational science has an inferior position (Lohmann et al., 2012). Candidate teachers are enrolled in the study of the subjects they are going to teach at school, and they are required to acquire content knowledge and pedagogical content knowledge alongside. Yet, in the teaching subject science studies, the focus is on the acquisition of content knowledge – therefore, mainly on theory – mostly without ~~a~~ direct connection to practical implications for their teaching practice (Herzmann & König, 2016; Oelkers & Oser, 2001). The connection of content as learned in subject science with instructional practice and applications for teaching, needs to be established by candidate teachers autonomously as part of their professional preparation. It has, however, been shown through previous studies like COACTIV, that an in-depth acquisition of content knowledge can be predictive for the experience of a satisfactory teaching career by mathematics teachers, for example (Baumert et al., 2011). An important aspect of knowledge acquisition in the different areas is that it is well grounded, remains accessible, and can be integrated and applied throughout professional preparation at university, the induction phase and continuous professional development of teachers. Moreover, candidate teachers, when starting to teach at school, need to learn individually how to link their accumulated content knowledge, pedagogical content knowledge, and pedagogical knowledge with their practical teaching experience.

Furthermore, students in teacher education take courses in psychology as well as pedagogical knowledge as part of the study of educational science. These separate study elements receive varying emphasis by different institutions and play different roles at different times (Lohmann et al., 2012). When asking candidate teachers which elements have been most relevant for their professional preparation, they assess their first phase at university, for instance, in a study by Schubarth et.al (2007), rather critical and report a disparity of theory and practice, too little opportunities for clinical experiences or insufficient education in subject didactics and educational science (Schubarth, Speck, & Seidel, 2007). Retrospectively, the practical experience during university education, like internships and pedagogical content knowledge courses, have been named by beginning teachers to be the most useful and critical component of professional preparation (Hascher & Moser, 2001; Okhremtchouk et al., 2015).

Almost all teacher education programs provide opportunities for clinical experiences as part of the professional preparation at university. Yet, how to support and supervise students during internships has become an area of extensive educational research (Gröschner & Seidel, 2012). Yet, there is great variation of the characteristics, the design and implementation of these internships according to the study programs, which makes it difficult to compare the results and assess the effectiveness of the particular program (K.-H. Arnold, Gröschner, & Hascher, 2014; Gröschner et al., 2015). Yet, the application of professional knowledge acquired during university education proves to be difficult for candidate teachers when starting to teach. Therefore, integrated practical experiences and their reflection during professional preparation at university serve as attenuation for the gap between theory and practice.

In the German context, an empirical study by Lersch (2006) has closer investigated – amongst other things – how three different groups of prospective secondary teachers (teacher students at the beginning of their studies, teacher students at the end of their studies, and candidate teachers at the induction phase retrospectively) evaluate their professional preparation at university regarding the different study elements. All three groups agree on the estimation that their qualification in educational science and the acquisition of pedagogical content knowledge is an important prerequisite for the teaching profession and needs to be further expanded. Also, they state, the element with the biggest share during secondary teacher education at university, the subject sciences, is clearly lacking occupational reference. This is why more applied and less scientific content would be considered useful (Lersch, 2006). Additionally, a study by Reintjes (2006) has focused on the estimation of teacher educators involved in teacher induction, asking how well-grounded candidate teachers enter the induction phase regarding their knowledge in educational science. Teacher educators rate the professional qualifications of candidate teachers in the respective domain as rather limited. They suspect that the thematic content at university is mainly sufficient, but lacks sustainability in transfer (Reintjes, 2006a). Moreover, previous research has shown a broad consensus between teacher educators of different domains on the theoretical knowledge, which should be provided as part of the educational science curriculum, and relevant topics for all disciplines could be identified and agreed upon (Kunina-Habenicht et al., 2012).

The cross-national study TEDS-M (Teacher Education and Development Study: Learning to teach Mathematics) has collected and analyzed data related to mathematics teacher education programs and policy in the 16 participating countries (Germany included) also as a response to the great variation of student achievement levels at international large-scale assessments like TIMSS (Tatto et al., 2008). In this study, opportunities to learn (OTL) for prospective mathematics teachers in primary and lower secondary education regarding subject knowledge, subject didactic and pedagogical knowledge were tested. Findings show that despite a great variety of OTL, there is a relation to performance and belief of future teachers and the respective teacher education institution, which is mutually dependent and therefore proves that teacher education is of particular importance (W. H. Schmidt et al., 2011).

Providing teacher students with optimal conditions for professional knowledge building demands innovative and evidence-based teacher education programs with integrated practical experience (Gröschner et al., 2015). These should be followed by a coherent transition into the induction phase and enable prospective teachers to connect what they have learned at university with further teaching practice at school (Helmke, 2009; Reiss et al., 2012). The success of the transfer from university education to teacher induction depends on candidate teachers' sustainable professional knowledge acquisition, which can be connected to the practical context of the classroom and on bridging the theory-practice gap (Stürmer & Seidel, 2017a). Thus, candidate teachers need to be provided with further opportunities to learn during the induction phase, to facilitate consistency in their professional knowledge acquisition (Borko, 2004; Darling-Hammond, 2010; König et al., 2017; Stürmer et al., 2015). This present study investigates the perceived gaps between university education and teacher induction and, therefore, highlights the importance of close collaboration of all stakeholders involved in the teacher education process and the support needed by aspirant teachers across all different phases. Regarding university teacher education, teacher educators need to collaborate closely across institutional boundaries in order to provide a coherent curriculum in teacher education which is linked to the later affordances in the teaching profession and predicts successful professional development of candidate teachers (Brouwer & Korthagen, 2005; Kraler, Dittrich, & MacKay-Falls, 2017; Terhart, 2000a).

2.3 Teaching Subjects

This dissertation aims at exploring, how candidate teachers perceive the conditions along the transition from professional preparation at university to the induction phase at school and to identify factors influencing the success and support of this transition and the induction phase itself. Therefore, candidate teachers' professional preparation in the subject matter, didactics and educational science at university and the conditions, which contribute to explaining their experience of coherence during this important phase of their career are described and investigated. This section outlines the setting of the subject sciences within the teacher education system in general and describes how it is embedded in professional preparation at university.

2.3.1. Subject Profiles

In Germany, the standards of teacher education, as formulated by the Standing Conference of Federal Ministers of Education and Cultural Affairs (KMK), have acknowledged the different educational requirements for the various teaching subjects by establishing so-called subject profiles (*Fächerprofile*) (KMK, 2008). The subject profiles are a continuation of the already-established "standards for teacher education" (KMK, 2004), aiming to outline and unitize the content and requirements for students in each of the teaching subject matters across all teacher education programs in Germany. Additionally, they aim to foster students' mobility by securing mutual recognition of course achievements (KMK, 2008). The elaboration of the profiles consist of a subject-related competence profile (*fächerspezifisches Kompetenzprofil*), describing comprehensively what teacher students are required to have achieved at the end of their subject science studies, including the skills they ought to have learned differentiated by subject science and didactics. For a prospective art teacher, for example, it is required to obtain detailed knowledge in art theory, art history, architecture, fashion, design, and art pedagogy in conjunction with artistic skills (painting, graphic design, sculpture and performance), media analysis and design (KMK, 2008, p. 21). For a prospective math teacher, detailed knowledge in the

following areas is required: arithmetic and algebra, geometry, linear algebra, analysis, stochastics, applied mathematics, and mathematical technology (KMK, 2008, pp. 39-40). These two examples illustrate the challenge to compare the content, requirements and outcome of different subject matter studies.

2.3.2. Subject Subcultures

It is known from previous studies that a subject-specific socialization of prospective teachers, due to the different cultures and norms of the various subject matters, starts to contribute to the development of subject subcultures already at an early stage of teacher education (Tatto, 1998). Teachers have different attitudes towards their understanding of knowledge, instructional beliefs or curricular freedom according to their respective disciplinary socialization (Grossman & Stodolsky, 1995; Tatto, 1998). A video study by Blomberg et.al (2011) could show that by comparison of two groups of candidate teachers – one with STEM teaching subjects and one with social science / humanities subjects – the social science / humanities group had acquired higher generic knowledge of teaching and learning and higher professional vision. The researchers explain this result not by the quantity of courses taken in educational science (no significant differences were found) by each group, but by the design and content of the courses according to the respective teaching subject culture (Blomberg, Stürmer, & Seidel, 2011). Moreover, in a comparative study of candidate teachers at the beginning of the induction phase by Lohse-Bossenz et.al, it was investigated whether teachers from different subject backgrounds show differences concerning their level of general pedagogical knowledge, and differences could be found, as candidate teachers with STEM subjects achieved better test results for knowledge on diagnostic and evaluation and scored lower test scores for theory of education than teachers in the language arts. No difference, however, could be found in knowledge on learning and instruction between the different groups (Lohse-Bossenz, Holzberger, Kunina-Habenicht, Seidel, & Kunter, 2018). Hence, little is known about differences in evaluating professional preparation at university regarding the subject sciences and didactics, or the extent the respective subject connection impacts candidate teachers' experience of coherence when entering induction phase.

Therefore, it has to be assumed that candidate teachers show diversity in their assessment and experience of professional preparation at university and possibly in their experience of coherence among educational phases in relation to their teaching subjects.

Yet, another aspect directly linked to the choice of teaching subjects of candidate teachers, is the job prospect, for example, in the German education system. In almost all federal states, teachers graduating in the STEM subjects in secondary teacher education have good chances to be appointed by the state, whereas graduates in the language arts and social sciences have less promising perspectives for getting a teaching position, as the competition is harder and the demand is lower. An indication for an appointment is the exam grades of a candidate teacher with the respective teaching subject choice. Candidates need much better results in the language arts and social sciences than they need in the STEM subjects (Bayerisches Staatsministerium für Bildung und Kultus, 2018a).

In the German teacher education system the choice of teaching subjects is highly relevant and distinguishes cohorts of teacher students, therefore it offers scope for further investigation, if the perception of professional preparation at university might be experienced differently.

2.4 Teacher Induction in Germany

The teacher induction phase refers to the initiation of candidate teachers into the teaching profession and the school organization in their new role as beginning teachers (Beijaard et al., 2010). The induction phase acts as the link between professional preparation at university and continuous professional development as an in-service teacher. Yet, great importance has been attached to this particular teacher education phase, as the success of induction can be seen in teachers wanting to stay and further develop in their profession. Previous studies describe the induction phase as an exceptional situation and a difficult, but efficient time in a candidate teachers' biography (Strietholt & Terhart, 2009).

The German system of teacher induction is quite unique (Howe, 2006). The distinct separation of theory and practice can be deduced by the first phase of teacher professional preparation at university, succeeded by the second (induction) phase at school (Blömeke, 2009). Germany is one of the few countries – next to Singapore – consisting of a consecutive model for teacher education, as most other countries have a one-phase model (Hascher & Winkler, 2017; Howe, 2006). The induction phase is typically a two-year program for candidate teachers which consists of various elements of school-based training at designated induction schools, supervised by specially trained teacher mentors. Although the composition and procedure of the induction phase varies between the different federal states in Germany, candidate teachers usually enter the induction phase at school after having finished their first phase of education at the university in most places (Abs, 2011; Zimmermann et al., 2016). The responsibility candidate teachers assume is rising gradually during the induction phase, although they still remain learners provided with mentoring and opportunities for reflection on their teaching practice (Dicke, Holzberger, Kunina-Habenicht, Linninger, & Schulze-Stocker, 2016; J. Schmidt, Klusmann, & Kunter, 2016). During the induction phase, candidate teachers are deployed as almost fully responsible teachers, but still remain apprentices respectively, they constantly expand their own responsibility and start teaching independently. The two-year program in Bavaria, for example, is subdivided into three different stages candidate teachers spend at different induction schools, where they are supervised by teacher mentors and start teaching autonomously (see Figure 5). During that time, candidate teachers have

a reduced timetable and limited tasks. Throughout the induction phase, one day a week is dedicated to a seminar in psychology, pedagogy, civic education and school law, usually conducted by the principal of their induction school, where they continuously have the opportunity to meet with peers (Richter, Kunter, Lüdtke, Klusmann, & Baumert, 2011). Apart from working with students, parents and colleagues, teacher candidates also have to resolve a number of assignments and tests, e.g. their lessons are reviewed and assessed. Candidate teachers also have to resolve specific developmental tasks and continuously meet their supervisors' expectations. Additionally, they have to pass a final exam (second state exam) before they are eligible for an appointment for a life-long teaching position at public schools (see Figure 5). The selection criteria for being appointed for a teaching position by the state usually is the grade candidate teachers have been awarded in their final state exams (Bayerisches Staatsministerium für Bildung und Kultus, 2018a; Terhart, 2000a).

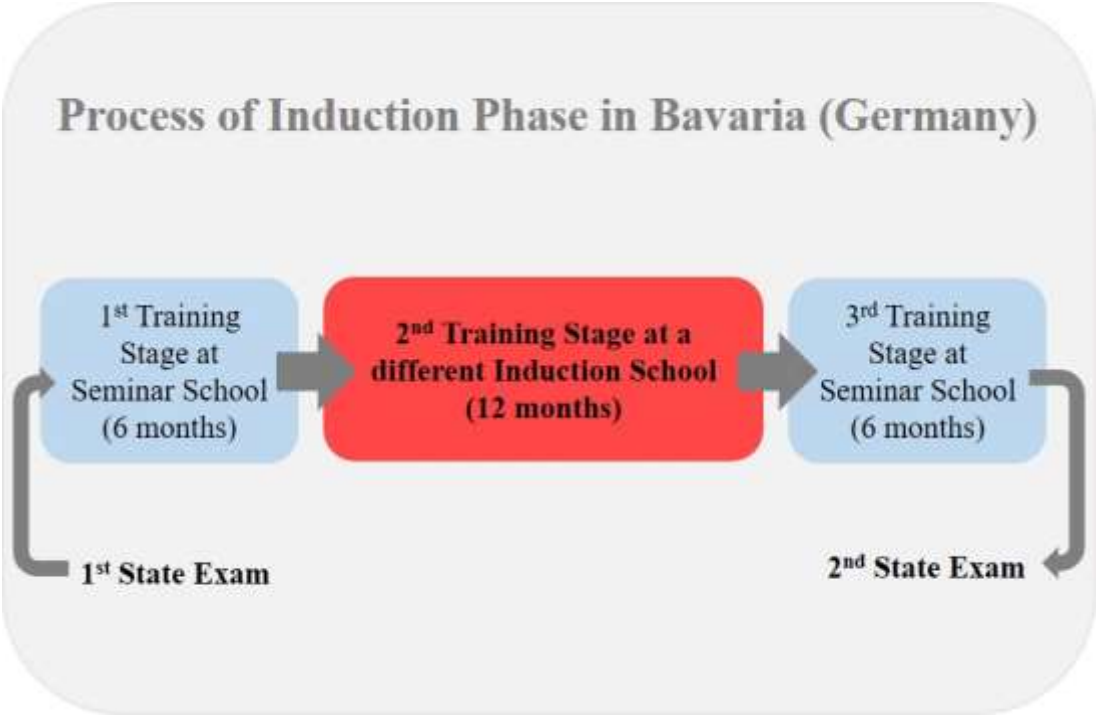


Figure 5: Process of Induction Phase in Bavaria (Germany)

The German system of teacher induction is also considered to be well organized but lacking a proper alignment of the different phases (Valencic Zuljan & Marentic Pozarnik, 2014). The quality of learning within the induction phase has been widely recognized as important and predictive for future teaching practice (Ingersoll & Strong, 2011; Terhart, 2001), although, it also is pointed out that the surrounding conditions are challenging and a considerable cultural change to the previous educational phase (Kiel & Pollak, 2011; Schubarth, Speck, Große, & Seidel, 2006). However, what impact these elements have on candidate teachers' professional development and teaching quality is lacking sufficient research (Glazerman et al., 2010; Seidel et al., 2015). Yet, too little is known about the substantial requirements for candidate teachers at the end of their initial teacher education at the university, when making the transition to induction at school. Moreover, quality and structure of the various teacher education programs vary immensely (Flores, 2017), and the critical aspect for candidate teachers – how coherent their learning throughout the educational phases is conducted – remains unsolved (König et al., 2017). Schools are the most appropriate place to learn about teaching considering the reality and the daily routines of being a teacher. Different school settings during the induction phase might help candidate teachers obtain a broader understanding of the context the job is situated in. The lengths of field experiences or the induction phase can differ, although there is no evidence base for an appropriate length of time needed (Gröschner et al., 2015).

There is also an apparent difference between the personnel responsible for educating student and candidate teachers at the first and second phases. Regarding the composition of the group of teacher educators for the first phase of teacher education – at university level – these members have a rather transparent background, yet, with a clear focus on theory and the scientific approach to education. When looking closer at the professional background of teacher educators at the induction phase (e.g. mentors at school), they are fully qualified teachers and experts in practice, but often no particular further professional qualification for the role is provided, they generally become teacher educators for the respective subject seminar by appointment of the school principal (Herzmann & König, 2016). Moreover, systematic research on the characteristics of teacher educators across all phases in the German system is still lacking (Schmotz, Felbrich, Lehmann, Hacke, & Kaiser, 2010). Hence, teachers as practitioners often take over responsibility for the education of a group of candidate

teachers without receiving further professional training (König et al., 2017; Korthagen, 2001; Terhart, 2000b) and next to the already demanding duties of being a member of the teaching force (Zeichner & Bier, 2014). Furthermore, teacher educators at school act mostly independent in shaping the outline of their seminars (Schmotz et al., 2010).

It is an important aspect of teacher education that it does not produce ready-made teachers (Keller-Schneider, 2012). After the completion of teacher education at the university (first phase) and teacher induction at school (second phase), the professionalization of teachers continues as a life-long process, they have to be seen as a part of a learning organization – the school – and remain constantly exposed to the changing nature of their students' living environment and life-long-learning (Leonhard, 2008). Therefore, the great importance attached to exam results for getting a life-long position as a teacher after completing the two educational phases, is to be seen critical. Competencies have then been certified by exams, but the scope for their engagement cannot be foreseen and the actual teaching career starts after having finished the second phase of teacher education (Oelkers & Oser, 2001).

Chapter 3

Coherence and Support among Teacher Educational Phases

‘Coherence may be better seen as also happening in the minds and discourse of students. In this sense, students make connections among ideas, assimilate them into their own conceptual frameworks, and apply them to problems and situations they care about. Faculties and the curriculum facilitate this learning process wherein knowledge, skills, and attitudes are developed. The implication of this alternate frame for coherence is that coherence is an ongoing process of reconciling tensions to facilitate complex meaning in the minds of individual students rather than an attempt to resolve tension to communicate a singular vision to all students.’ (Johnson & Ratcliff, 2004, p. 88)

3.1 Coherence among Teacher Education Phases

Graduating from university with a teaching degree is only one part of the continuous process of professionalization for beginning a teaching career (see Figure 1). At this stage, the respective candidate teachers have learned in theory about teaching and gained some additional teaching practice. Beginning a teaching career as a candidate teacher at school, however, implies starting to teach eventually: it is seen as an evolution from being a student teacher to becoming a teacher of students (Ingersoll & Smith, 2004; Ramsden, 2003; Wang, Odell, & Schwille, 2008). This transition from university education to professional practice has often been regarded as a ‘Praxis-Shock’ (Dicke, Elling, Schmeck, & Leutner, 2015; Dietrich, 2014a; Veenman, 1984). Moreover, after many years of rather self-determined studying at the university, the change to the heteronomous job reality at school can be quite drastic for candidate teachers (Strietholt & Terhart, 2009). However, becoming a fully qualified teacher is a complex process as teaching is a complicated proficiency, therefore, candidate teachers need time to reflect on the pedagogical and structural processes involved (Keller-Schneider, 2012; Tynjälä & Heikkinen, 2011).

Teacher education at the university aims to provide the scientific basis for acquiring professional knowledge on which students are required to start to reflect on for their future professional practice (Borko, 2004; Darling-Hammond, 2010). Whereupon, the induction phase aims for candidate teachers to further acquire and train immediate professional competencies and getting into routines (Terhart, 2000a). When beginning to teach, candidate teachers start learning a lesson not only about themselves, but their colleagues, their students, the school, the curriculum and the community, this can only be learned in the context of teaching (Feiman-Nemser et al., 1999). This is why induction is widely considered to be an essential and necessary part of teacher professional development (Darling-Hammond & Bransford, 2005; Howe, 2006; Zeichner, 2010). Howe (2006) states that 'teachers need a gradual acculturation into the profession with a structured and well-supervised clinical induction period' (Howe, 2006, p. 292). In many studies, teacher induction, when well-conducted and paired with well-conceived mentoring, is presented as successful in providing job satisfaction, efficacy and retention of new teachers (Dicke et al., 2015; Ingersoll & Smith, 2004; Okhremtchouk et al., 2015). However, stakeholders responsible for shaping induction programs have to keep in mind that candidate teachers are still learners and the provision of assistance, support and guidance is the facilitation of their successful professional development (Dickhäuser, Butler, & Tönjes, 2007; Evertson & Smithey, 2000; Feiman-Nemser et al., 1999). If candidate teachers experience transitions as incoherent and unsupportive, it raises the chances that they are less able to focus on their learning and their further development as professional teachers.

Unlike beginning a career in other professions, responsibilities and duties of candidate teachers rise fast and when they start teaching independently, they often report to struggle with issues like classroom management or student assessment and experience this at an early stage of their career as challenging and stressful (J. Schmidt et al., 2016; Veenman, 1984; Zimmermann et al., 2016).

"When we look at the development of teacher expertise, the greatest learning is not from teacher-education programs but from the first year of full-time classroom teaching (the next is from the second year). After this, the increase in the development of expertise fades and initial teacher education has little or no effect. There is a well-known phenomenon called 'transition shock', which is what new teachers discover

when they are ‘released’ into their first year in the classroom. The class is buzzing, busy and decision-laden, and most new teachers say they were not well prepared for the harsh reality of the classroom. ‘Lack of preparation shock’ would probably be a better label.’ (Hattie, 2015, p. 29).

Moreover, the process of induction itself provokes critical situations due to personal and situational interactions (Terhart, 2001). Many of these cannot be foreseen and candidate teachers constantly have to adapt to new challenges in a dynamic environment (Keller-Schneider & Henricks, 2011; Tynjälä & Heikkinen, 2011). Irrespective of the setting of candidate teacher’s induction into the profession, the general framework and organizational structure for beginning a professional teaching career is therefore recognized as important but challenging (Ingersoll & Strong, 2011; Schubarth et al., 2006).

Teacher induction is situated in a pivotal position between initial professional preparation at university and continuous professional development as an in-service teacher and will influence teacher’s professional identity on a long-term basis (Britton, Paine, Pimm, & Raizen, 2003; Feiman-Nemser et al., 1999). Yet, wanting to become a teacher today demands not only innovative and evidence-based teacher education and a coherent system of initial teacher induction, but also continuous professional development (Bauer & Prenzel, 2012; Reiss et al., 2012).

The experience of coherence is an important factor for the successful transition into the profession (Grossman et al., 2008). Johnson and Ratcliff (2004) even speak of coherence in the context of general education reform as ‘the unfinished agenda’ and define coherence as an ongoing process of reconciliation (Johnson & Ratcliff, 2004, p. 92). However, current research on coherence in teacher education is lacking an elaborated definition and systematical exploration of ‘the specific factors that contribute to coherence’ (Grossman et al., 2008), as coherence is only described as the ‘solution to fragmentation or the theory-practice gap in teacher education’ (Grossman et al., 2008). Therefore, it needs to be distinguished carefully between coherence as experienced in the individual context of the candidate teacher’s transition process opposed to coherence as seen in the institutional curricular context.

If candidate teachers experience transitions as incoherent and unsupportive, it raises the chances that they are less able to focus on their learning and their further development as professional teachers. A number of studies have shown, for Germany for instance, that candidate teachers experience coherence among the first and second phases as quite insufficient (E. Arnold, 2010; Menck & Schulte, 2006; OECD, 2005; Schubarth et al., 2006). Candidate teachers also perceive the transition from university education to induction phase at school as a gap (Jenewein, 2015; Reintjes, 2006b; Terhart, 2001a, 2014). Hence, as in many other countries worldwide, there has been a call for more coherence in teacher education for a long time and it is marked by scholars and policy makers alike. In the past years, numerous reforms have been initiated for increasing coherence among all three educational phases, yet they often failed to connect effectively but co-exist (Reiss et al., 2012). Comprehensive literature on reform in teacher education suggests that coherence among all stages of teacher education is a key feature of successful redevelopment (Bauer et al., 2010). Without explicit attention to coherence and collaborative environments in program development and implementation, reform efforts seem unlikely to succeed (Darling-Hammond & Bransford, 2005; Johnson & Ratcliff, 2004; Russell, McPherson, & Martin, 2001).

Important to the experience of coherence by candidate teachers is, if they perceive the requirements of the professional development process to be aligned with their own objectives and their social context at school (Darling-Hammond & Bransford, 2005; Grossman et al., 2008; Nasser-Abu Alhija & Fresko, 2010). Moreover, the process consists of shared ideas and common goals and can be seen as ‘a shared vision regarding teaching and learning’ (Grossman et al., 2008).

3.2 Networks and Support

The experience of a supportive environment during the induction phase is vital for candidate teachers to focus on their learning, their further development as professional teachers, and to prevent attrition at a later stage of their career (Dicke et al., 2016). The extent of social support candidate teachers perceive during the induction phase has been identified as a protective factor (Chan, 2002). Recent studies have identified the opportunity for candidate teachers to exchange with and receive support from teacher mentors and peers to be protective in easing the stress of beginning a teaching career (Alhija & Fresko, 2010; Richter et al., 2011). The need to support new-to-the-profession teachers, has also been acknowledged in many countries and educational systems, as the most common element at induction is to provide a mentor for candidate teachers (Hobson, Ashby, Malderez, & Tomlinson, 2009; Howe, 2006; Ingersoll & Smith, 2004; Nasser-Abu Alhija & Fresko, 2010; Wong, 2004). Nature and quality of feedback given to candidate teachers must be consistent. As an example, Grossman and colleagues (2008) could show in a comparative study on different teacher induction programs in the U.S. that consistency and frequency of feedback provided by supervisors or mentors to align candidate teacher's field experience at school have an impact on their perception of coherence (Grossman et al., 2008).

It is important for prospective teachers to have a strong support system in and outside of school, they need to establish professional and personal networks to share ideas as much as personal issues (Okhremtchouk et al., 2015). Research shows a positive assessment by candidate teachers of the support situation at induction, (Schaefers, 2002; Wernet, 2006) also the atmosphere at work, the support they received in seminars and the feedback and constructive criticism provided for candidate teachers regarding their teaching are evaluated positively (Spindler, 2000). If the full potential of induction programs were to be made available to the quality of candidate teacher's teaching, who are still learning to teach, 'conditions, support and guidance to help them construct a professional, standards-based practice in the context of their teaching' needs to be provided (Feiman-Nemser et al., 1999, p. 2). In response to higher demands on beginning teachers today, stakeholders are focusing on teacher induction as socialization and on emotional support, to provide consistent learning for

candidate teachers (Wang et al., 2008). Previous research shows how meaningful the genuine dialogue with supervisors and peers about their successful and failing experiences in the classroom can be, for candidate teachers to approach the daily realities of the profession (Okhremtchouk et al., 2015). Thus, the simple existence of a mentor is not effectual, but the mentor's knowledge of how to support candidate teachers and their supervising skills are a determining factor (Evertson & Smithey, 2000; Ingersoll & Smith, 2004). Moreover, it needs to be considered that most research in the field is relying on self-report of mentors and mentees and little is known about other factors and influences (Hobson et al., 2009; Zeichner & Conklin, 2005). Again, it is decisive that candidate teachers perceive the mentor's actions as supportive in order to experience self-esteem (Tomlinson, Hobson, & Malderez, 2010), to link university education with actual experiences during the induction phase (Gröschner, 2009; Renta Davids, Van den Bosche, Gijbels, & Fandos Garrido, 2016), and hence, to experience coherence in the transition among teacher educational phases (Grossman et al., 2008). Teacher induction aims to soften the entry into the teaching profession and facilitate support and adjustment to the school culture. In particular, the entrance to a teaching career is a critical momentum, when scaffolding is needed for candidate teachers' learning (Feiman-Nemser et al., 1999; Ingersoll & Smith, 2004; Nasser-Abu Alhija & Fresko, 2010; Wong, 2004).

The next chapter outlines the research questions and conjectures of this dissertation in detail. The present study investigates two main research questions, which have been previously addressed in the paper: 'How Candidate Teachers Experience Coherence in University Education and Teacher Induction: The Influence of Perceived Professional Preparation at University and Support during Induction Phase'. It was accepted by the Journal Vocations and Learning and published in September 2018. After describing the dissertation's methodology, the results are summarized with regard to the research questions.

Chapter 4

Research Questions and Conjectures

4.1 Research Scope

This dissertation aims to contribute to understanding candidate teacher's experience of coherence when making the transition from university to in-service education at school. Regarding teacher educational phases as described in Chapter 2, interesting lines of research have generated findings on the relevance of coherence and support within the past decades as described in Chapter 3. Yet, there are still a number of aspects offering scope for further investigation. This dissertation is connecting the different strands of research and it relates candidate teachers' experience of coherence to their professional preparation at university and their support at the induction phase.

As discussed above, previous research has shown that teacher induction is an important and central part of candidate teachers' professional development, situated in a pivotal position between teacher education at the university and continuous professional development for in-service teachers. Coherence and how it is experienced as an individual, is seen as the central concept to support and facilitate this transitional phase. Therefore, the factors that influence this experience of coherence are in the focus of this thesis. Moreover, experiences made at the induction stage of a teaching career are considered trendsetting for the future professional development or as an alternative option for deciding to leave the teaching profession. However, little is known to what extent these factors influence the experience of coherence and support by candidate teachers. This dissertation aspires to contribute to the understanding, how candidate teachers experience their preparation by university education and support in teacher induction at school, and how the surrounding conditions and factors influence the experience of coherence among those two teacher education phases.

It is important to find instruments providing empirical access to map the experience of coherence of candidate teachers. Therefore, the first research question

is addressing the validity of the instrument (see Chapter 5) applied for the first time in this questionnaire survey (see Appendix) with candidate teachers in the federal state of Bavaria (Germany). Research questions two and three have been investigated in a study of its own (see Chapter 6) and the fourth research question has been addressed as an additional aspect for discovering possible differences in the perception of coherence and support at the induction phase resulting from the teaching subject background of candidate teachers.

The use of a questionnaire study was the only way to reach a larger number of candidate teachers currently enrolled in induction phase at higher secondary schools in Bavaria. Therefore, self-report scales in the questionnaire for the subjective assessments of candidate teachers are reported and investigated in this study. Questionnaire items usually do not provide detailed information on the specificity, character and depth of support candidate teachers have received and the coherence they have experienced, however, they provide an insight into the reflection of candidate teachers' on experiences at induction phase and their assessment of professional preparation at university.

4.2 Accessibility of Coherence, Professional Preparation and Support

Research question 1:

Are the three assumed aspects, experience of coherence, professional preparation at university, and the perceived support at the induction phase empirically accessible by a questionnaire survey, and can they be systematically differentiated?

Conjecture 1:

For the German teacher education context, there is a lack of existing instruments to measure the three variables of this dissertation (on an individual level: the dependent variable experience of coherence, and on an institutional level: the two independent variables, perceived professional preparation at university and support at induction), and to study the transition process from university education to teacher induction. For research question 1, it is assumed that the three focused constructs can be measured reliably through candidate teachers' self-report.

4.3 Experience of Coherence

Research question 2:

To what extent do candidate teachers perceive coherence among professional preparation at university and teacher induction?

Conjecture 2:

Due to a lack of alignment regarding learning contents and practical implications of the different teacher educational phases, it is assumed that most candidate teachers perceive the transition from university to teacher induction at school as rather incoherent and report a (theory-practice) gap.

4.4 Professional Preparation at University and Support at Induction Phase

Research question 3:

Do professional preparation at university and actual support during the induction phase predict candidate teachers' perceived coherence among educational phases?

Conjecture 3:

Due to the structural setting of teacher educational phases and previous empirical findings, it is assumed that professional preparation at university and actual support at the induction phase are systematically related to candidate teachers' perception of coherence among educational phases.

4.5 Teaching Subject Background of Candidate Teachers

Research question 4:

Do candidate teachers perceive coherence among educational phases and their professional preparation at university as well as the support at the induction phase differently according to their teaching subject background?

Conjecture 4:

It is assumed that candidate teachers' respective teaching subject background has an impact on their perception of coherence among educational phases and the relation between their professional preparation at university and the actual support at the induction phase.

Chapter 5

Method

5.1 Study Context: The TUMconnect Project

The present study has derived from the TUMconnect project at the Technical University of Munich's School of Education, which has been funded by a grant of the Stifterverband für die Deutsche Wissenschaft and the Heinz Nixdorf Foundation called '*Lehrer-Initiative* [Teacher-Initiative]' from 2013 to 2016. The 'Teacher Initiative' aimed to promote the central role of teacher education at university with a strong commitment to interdisciplinary and sociopolitical dialogue across all departments and in cooperation with schools and institutions outside university (Stifterverband, 2017).

TUMconnect has focused on finding best practices, which foster a coherent development across all stages of teacher education by effectively linking university teacher education with the second training stage – the induction phase at school – as well as approaches to continuous professional development. It was the aim of the project to integrate all acting parties involved in teacher education within the context of career orientation, facilitating networks along the training stages and establishing continuous professional development (CPD) initiatives for teachers.

Another part of the TUMconnect project has been the development of two questionnaire surveys: REFconnect and STARTconnect. REFconnect aimed at exploring the situation of candidate teachers, when starting and passing through induction phase in a questionnaire survey. STARTconnect targeted beginning teachers about one year after having finished their induction phase also with a questionnaire survey. Only the Data collected for the REFconnect questionnaire survey has been the basis for this present study.

5.2 Design of the Study

For this study, a survey has been conducted targeting at a representative number of candidate teachers. The questionnaire survey was developed for candidate teachers of a local teacher education setting in the federal state of Bavaria in Germany, which is quite typical for a segregated teacher education system. Teacher induction schools provide subject-related seminars alongside psychology and pedagogy seminars plus mentoring programs for the associated candidate teachers. After graduating from university and having passed a first state exam, candidate teachers are eligible to start their induction phase. Across all training stages – from beginning to almost having finished their two years of induction – a number of approximately 2,000 candidate teachers are typically involved in the induction phase.

The Bavarian Ministry of Education has approved on conducting this survey and supported the distribution of a paper-and-pencil version of the questionnaire to all of these candidate teachers through their school's administration. Therefore, principals of all higher secondary schools in Bavaria responsible for teacher induction (70 schools in total) have been contacted to ask, if they agree to participate and to find out how many candidate teachers are employed at their respective school. In a next step, 1,413 questionnaires were sent out and distributed to participants by the schools. N = 537 completed questionnaires have been returned individually by the candidate teachers (38 % return rate) at the first measuring point (cohort I). For the second measuring point, a number of 1,677 questionnaires were sent out and 582 completed questionnaires (cohort II) have been returned (35 % return rate).

As participants were asked to generate an individual code, a number of 30 candidate teachers have been identified as participants of both measuring points and were therefore excluded from the total sample of N = 1,089. All participants took part in the survey voluntarily and data was collected anonymously.

5.3 Sample Description

The sample of this study was collected in the context of the REFconnect study, which has been described in more detail in a previous section (section 5.1). As a sample, 1,089 candidate teachers participated in the survey, which was conducted at two measuring points (winter / spring 2014 / 15, winter / spring 2015 / 16), targeting two following candidate teacher cohorts in the Federal State of Bavaria, Germany. The sample includes 70 % female and 30 % male participants, they had a mean age of 28.4 years, and on average 2.6 years have passed since they have graduated from University.

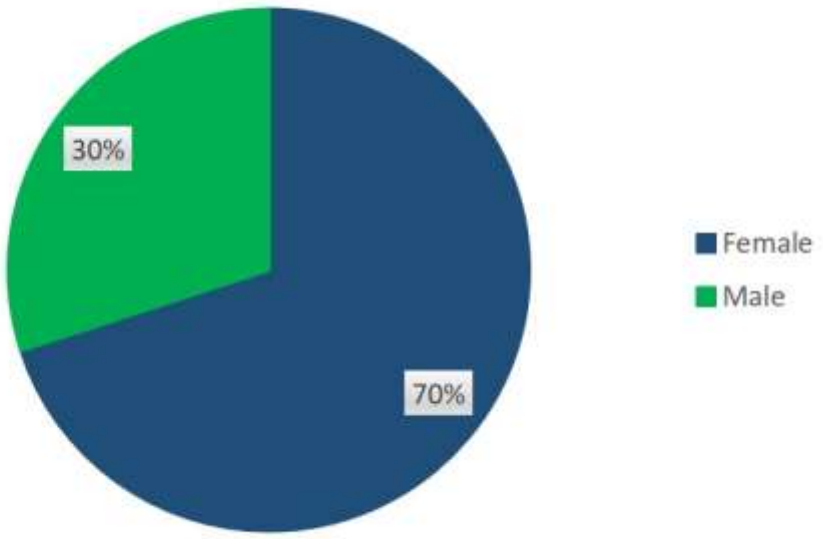


Figure 6: Percentages of Female and Male Participants

Cohort I:

The first cohort, 537 candidate teachers (71 % female), participated in this study between December 2014 and April 2015. Participants had a mean age of 28 years (M = 28.4; SD = 2.15) and on average 2 years (M = 2.11; SD = 1.29) have passed since they have graduated from university and completed their first state exam.

Cohort II:

The second cohort, 552 candidate teachers (69 % female), participated in the study in the period from December 2015 to May 2016. Participants had a mean age of 28 years (M = 28.3; SD = 2.24) and on average 3 years (M = 3.04; SD = 1.3) have passed since they have graduated from university and completed their first state exam.

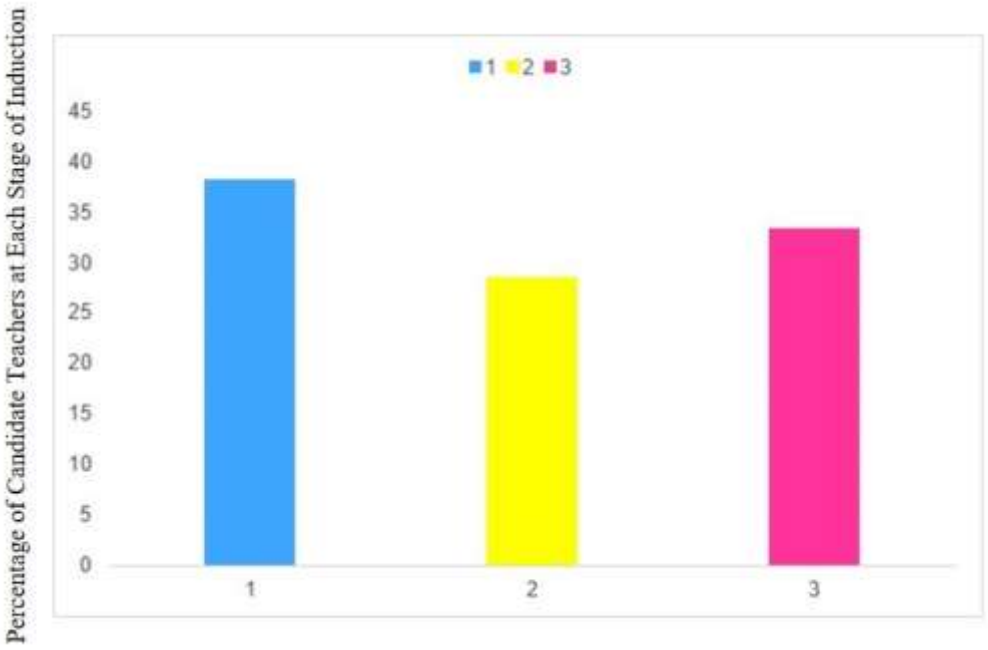


Figure 7: Percentages of Participants at Actual Training Stage of Induction Phase N = 1,083.

Participants are distributed across all three training stages of the induction phase: 413 (38 %) candidate teachers are at the first stage, 309 (29 %) are at the second stage and 361 (33 %) are at the third and last stage.

Table 1: Sample Characteristics of Participants

	N	%
Participants		
Cohort I (December 2014 through April 2015)	537	49
Cohort II (December 2015 through May 2016)	552	51
Total	1,089	100
Teaching subjects		
Language Arts / Social Science	383	35.2
Language Arts / Language Arts	276	25.3
STEM / STEM	158	14.5
STEM / Social Science / Language Arts	209	19.2
Social Science	53	4.9
Gender		
Female	760	70
Male	322	30
Stage of induction phase (for cohorts I + II)		
First stage (at seminar school)	413	38
Second stage (at in-service school)	309	29
Third stage (at seminar school)	361	33
Sample characteristics	**M**	**SD**
Age	28.4	2.2

In order to determine the comparability of the data generated at the two different measuring points – data of candidate teachers who have started their induction phase at different times – a t-test for the an independent groups was applied. The prerequisites of two independent groups, repeated measures and normal distribution are given. In a first step, the two subsamples have been t-tested with regard to their age and gender as the aim was to determine whether the differences between characteristics (age and gender) for the two cohorts – distinguished by the two measuring points – are significant. Considering the age and gender of the two independent samples, no significant differences could be observed. Given that the Levene's test has a probability greater than .05, it can be assumed that there is homogeneity of variance.

Participants have obtained their degrees from 30 different universities in Germany. The majority of participants with a number of 1,019 (97.4 %) has graduated with a first state exam from 12 out of the 14 universities in Bavaria offering teacher education programs (Bayerisches Staatsministerium für Bildung und Kultus, 2018c). In addition, 2.6 % of the participating candidate teachers have obtained their degree from one of the 18 universities outside Bavaria which were involved in this study (see Table 2). For maintaining anonymity, the universities are numbered, and names have been removed.

Table 2: Overview of the Number of Universities Participants Have Graduated From

University	**N**	**%**
1	274	26
2	159	15
3	122	12
4	119	11
5	108	10
6	49	5
7	43	4

8	43	4
9	36	3
10	23	2
11	23	2
12	18	2
13	3	.3
14	2	.2
15	2	.2
16	2	.2
17	2	.2
18	2	.2
19	2	.2
20	2	.2
21	1	.1
22	1	.1
23	1	.1
24	1	.1
25	1	.1
26	1	.1
27	1	.1
28	1	.1
29	1	.1
30	1	.1

Note: N = 1,044. Total of percentages is not 100 due to rounding.

5.4 Teaching subjects

Differentiated by teaching subject combinations, 158 (14.6 %) of the participating candidate teachers are teaching a combination of two STEM subjects, 276 (25.6 %) are teaching a combination of two language arts subjects, 209 (19.4 %) are teaching a STEM subject in combination with social science. The biggest group consists of 383 (35.5 %) candidate teachers, who are teaching language arts in combination with a social science subject. Only, social science has not been considered separately, as the sample was too small, it was added to the language arts / social science group. This sample ratio reflects the ratio of teaching subjects in university education in Germany in general (Bildungsberichterstattung, 2016).

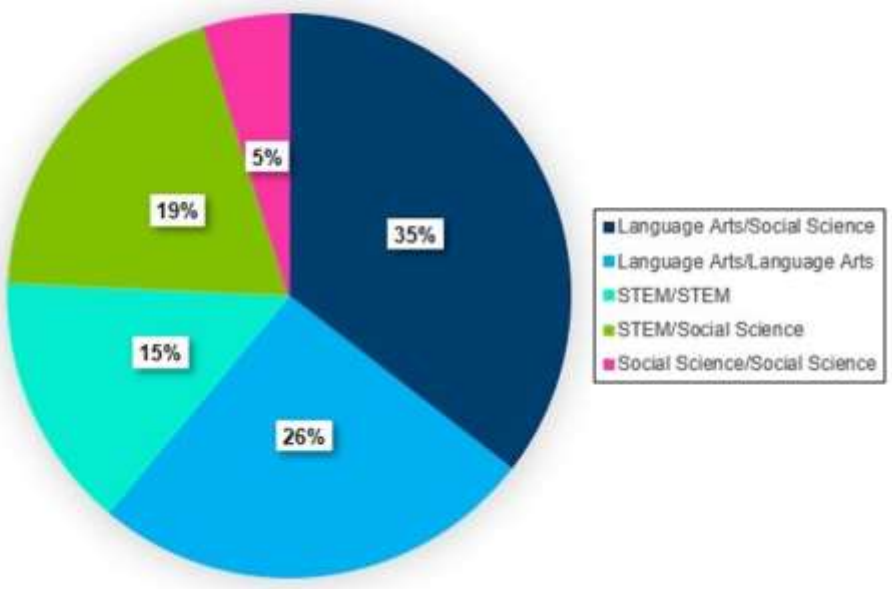


Figure 8: For Five Types of Teaching Subject Combinations (Language Arts / Social Science, Language Arts / Language Arts, STEM / STEM, STEM / Social Science, Social Science / Social Science) of Candidate Teachers (N = 1,089), Who Participated in the Survey

5.5 Instruments

Questionnaire development: For the study, a paper-and-pencil version of a questionnaire survey with self-report scales for candidate teachers was developed (see Appendix). In lack of an already existing instrument and suitable scales regarding the research questions of this dissertation, in parts new scales focusing on the perceived coherence, professional preparation at university and support at the induction phase have been developed. To answer the second research question, *how can candidate teachers' perceived coherence among professional preparation at university and teacher induction be described*, two newly constructed scales, asking participating candidate teachers how they perceive professional preparation at university and how they experience the transition from university education to the induction phase at school, were produced. Additionally, an existing scale created by the Bavarian State Ministry of Education considering the support candidate teachers receive at induction was used.

Demographic characteristics: The questionnaire included 8 items collecting demographic characteristics: gender, age, graduation date, previous university education, location of the induction school plus the related population figure and asked for the current stage of the induction phase. In a next step, candidate teachers were asked for assessing their perceived professional preparation at university for the induction phase.

Perceived coherence of transition: First, we have asked for candidate teachers' experience of coherence among university education and the induction phase. The scale contains 3 items measured on a 4-point Likert scale ranging from 1 (*not true*) to 4 (*true*). The facets of *transition*, asking participants how they have experienced the transition from university to school, and if the coordination between educational phases should be improved. For further analysis, the three transition items have been bundled for the actual coherence scale.

Perceived professional preparation at university: Secondly, participants were asked, how well prepared they felt for teacher induction considering their professional preparation at university with each area of their teacher educational studies. The first and second teaching subject science gather together for the facet *subject science*. Didactics for the first and second teaching subjects produce the facet *subject didactics* and pedagogy, psychology and school pedagogy are combined for the facet *educational science*. Seven items with a 4-point Likert response scale ranging from 1 (not true) to 4 (true) were provided for their rating.

Perceived support at the induction phase: Furthermore, respondents were asked to answer another set of questions related to the support they received during the induction phase by indicating on a 5-point Likert scale 1 (*not true*) to 5 (*true*). The questionnaire contained 10 items regarding the support they received during the induction phase. This scale has been previously developed by the Bavarian State Ministry of Education (Bavarian State Ministry of Education, 2013). Due to theoretical considerations, the scale was subdivided into four different facets. The facet *exchange* is addressing teacher educator's openness towards exchange with candidate teachers. This was investigated with a bundle of two items asking for the opportunities to talk and discuss with their respective mentors. Further, the facet *reflection* is covering reflection on jointly observed lessons and valuable feedback on planning and designing lessons. The facet *atmosphere* has been addressed by a bundle of three items asking about workplace atmosphere, colleagueship and support during candidate teachers' initiation at school. Lastly, the facet *criticism* is asking if constructive criticism is provided and candidate teachers' individual strengths have been acknowledged.

5.6 Data Analysis

The first research questions investigate, if the three assumed aspects, experience of coherence, professional preparation at university and the perceived support at the induction phase, are empirically accessible by a questionnaire survey, and if they can be systematically differentiated. For the basic statistical analysis SPSS version 24.0 (IBM, 2016) has been used to conduct descriptive analyses to answer the first research question. Therefore, internal consistencies (Cronbach's α) were computed for the three scales (see Chapter 6, tables 3-5) using the software SPSS. Means, standard deviations and percentage frequencies of each item, facet, and scale were calculated.

Furthermore, to test the factorial validity of the three scales *coherence*, *university preparation*, and *support*, a confirmatory factor analysis (CFA) for a three-factor-model based on the facets described has been conducted by using the software MPlus (Muthén & Muthén, 2010).

Regarding research question two, it was investigated, to what extent candidate teachers perceive coherence among professional preparation at university and teacher induction. Correlations among the three variables of this study (on an individual level: the dependent variable *experience of coherence* and on an institutional level: the two independent variables, *perceived professional preparation at university* and *support at induction)* have been computed. As a next step, the conjecture that due to a lack of alignment regarding learning contents and practical implications of the different teacher educational phases, it was assumed that most candidate teachers perceive the transition from university to teacher induction at school as rather incoherent and report a (theory-practice) gap, was examined by applying a structural equation model (SEM) on a latent level using the software MPlus Version 7 (Muthén & Muthén, 2010). Structural equation models with latent variables permit the detailed definition of regressions on a latent level (Scheibe, Trittel, Klug, & Schmitz, 2014).

Measurement errors are specifically considered within the independent and dependent variables, and thus, allow an exact estimation of the SEM parameters (Byrne, 2012).

The structural equation model, investigating to what extent candidate teacher perceive coherence among professional preparation at university and teacher induction, (on an individual level: the dependent variable *experience of coherence* and on an institutional level: the two independent variables, *perceived professional preparation at university* and *support at induction)* applied in this dissertation for research question two, and the model applied for research question three, have been previously submitted to the Journal *Vocations and learning* and published in September 2018 (Alles, Apel, Seidel, & Stürmer, 2018).

In order to investigate, if professional preparation at university and actual support during the induction phase predict candidate teachers' perceived coherence among educational phases (research question 3), structural equation modelling was also applied using the software MPlus Version 7 (Muthén & Muthén, 2010).

A multivariate Analysis of Variance (MANOVA) was conducted to answer research question 4, if candidate teacher's perception of coherence among educational phases and their professional preparation at university, as well as the support at the induction phase differs according to their teaching subject background (see Table 7) by using the software SPSS.

In a next step, the structural equation model, which has been applied and tested for answering research question two and three was also used for answering research question four. Analysis was conducted with the software Mplus. Regarding the differences of candidate teachers' perception of coherence among educational phases and their professional preparation at university as well as the support at the induction phase according to their teaching subject background, a difference in perception is assumed, therefore, the model has been applied on two groups of candidate teachers differentiated by their choice of teaching subjects (STEM and NoSTEM).

Chapter 6

Results

6.1 Descriptive Analysis

In a first step, internal consistencies (Cronbach's α) were computed for the three scales: experience of coherence (see Table 4), professional preparation at university (see Table 5) and support during the induction phase (see Table 6). Based on preliminary studies and theoretical considerations, the number of items of each scale, which did not make ~~a~~ positive contribution to the level of α, has been reduced to achieve maximum internal consistency. Cronbach's alpha coefficient of internal consistency for the coherence scale was acceptable (α = .71). The professional preparation at university scale shows also acceptable reliability with α = .73. Cronbach's alpha of the support scale is α = .92 and shows excellent reliability.

6.1.1 Experience of Coherence

Candidate teachers have been asked about their experience of coherence among university education and the induction phase (see Table 3). The scale contains the three facets gap (*I have experienced the transition from university to the induction phase as a big gap)*, transition (*I think, the transition between the different educational phases should be improved)* and coordination (*I think, coordination among the different phases of teacher education should be improved),* for further analysis, items have been bundled for the actual coherence scale. In summary, most of the candidate teachers have experienced the transition from university to the induction phase as inadequate (*M* = 3.18; *SD* = .78).

Concerning the experience of a big gap (facet: gap), when proceeding from university to the induction phase, 52.5 % of the participating candidate teachers agreed, another 28.1 % partly agreed and 13.4 % partly did not agree and 6 % have responded that they have not experienced a big gap between the educational phases. Moreover, participants have responded to the facet of *transition*, asking them how they have experienced the transition between the educational phases, by 56.3 % that the transition should be improved, and 23.7 % of the candidate teachers partly agreed that the transition needs improvement, whereas 13.3 % of the participants partly did not agree that improvement is needed and 6.2 % responded that improvement is not needed at all. Regarding the facet *coordination*, asking participants, if coordination among teacher educational phases should be improved, 58.5 % of the candidate teachers agreed and 29.5 % partly agreed, 9 % of the participants partly did not agree and 3 % did not agree at all on the need for improvement (see Table 3).

Table 3: COHERENCE Scale

	not true %	*partly not true* %	*partly true* %	*true* %	M	SD
Coherence	2.3	16.8	41.5	38.6	3.18	.78
Facet: Gap						
I have experienced the transition from university to the induction phase as a big gap	6	13.4	28.1	52.5	3.27	.90
Facet: Transition						
I think, the transition between the different educational phases should be improved	6.2	13.3	23.7	56.3	3.31	.92
Facet: Coordination						
I think, coordination among the different phases of teacher education should be improved	3	9	29.5	58.5	3.43	.78

Note: *N = 1,049, 4-point Likert Scale, α = .71*

6.1.2 Professional Preparation

Professional preparation was investigated by asking participants, how well prepared they felt for teacher induction considering their professional preparation at university in each area of their teacher educational studies (see Table 4). First and second teaching subjects science gather together for the facet *subject science* and candidate teachers felt better prepared in this area of their studies compared to the subject didactics and the educational sciences. For their first teaching subject, candidate teachers felt overall quite well prepared (M = 2.77; SD = 1), 35.2 % of the candidate teachers felt partly well prepared and 28 % felt well prepared, in contrast 27.2 % of the participants felt partly not well prepared and 12.6 % felt not well prepared. Concerning the science for their second teaching subject, participants showed similar responses, the majority felt quite well prepared (M = 2.8; SD = .96). Therefore, 35.2 % of the candidate teachers reported to be partly well prepared and 28 % to be well prepared, while 26.3 % of the participants felt partly not well prepared and 10.6 % felt not well prepared.

Considering the didactics for their first (M = 2.25; SD = .98) and second teaching subjects (M = 2.25; SD = .97), which together produce the facet *subject didactics*, participants have responded rather critically. Hence, concerning the didactics for their first teaching subject, 36 % of the candidate teachers felt partly not well prepared and 26.2 % not well prepared, 25.5 % of the candidate teachers partly agreed and 12.5 % of them completely agreed to have been well prepared. Regarding didactics for their second teaching subject, 38 % of the candidate teachers felt partly not well prepared and 25.2 % not well prepared, whereas 23.8 % of the candidate teachers partly agreed and 13 % of them agreed to have been well prepared.

Psychology, pedagogy and school pedagogy are combined for the facet *educational science,* in this area of their teacher education studies, participants did not feel well prepared and the most critical perception of professional preparation at university has been reported. Considering *psychology* (M = 2.22; SD = .94), 36 % of the candidate teachers reported that they felt partly not well prepared and 26.1 % not well prepared all in all, whereas 28.4 % of the participants felt partly well prepared and 9.5 % of them well prepared. Regarding *pedagogy* as another part of the facet

educational science, the least satisfactory rating was given (*M* = 1.93; *SD* = .85). In detail, 38.9 % of the participants have reported to feel partly not well prepared and 35.9 % felt not well prepared, considering pedagogy as part of their educational science studies; 21 % of the candidate teachers agreed to have been partly well prepared and only 4.3 % of them felt well prepared. With regard to school pedagogy (*M* = 2.06; *SD* = .88), 38.3 % of candidate teachers have reported to feel partly not well prepared and 30.3 % did not feel well prepared, 26 % of the participants felt partly well prepared and 5 % of them agreed to be well prepared by their professional preparation at university.

Table 4: PROFESSIONAL PREPARATION Scale

	not true %	*partly not true* %	*partly true* %	*true* %	M	SD
I felt well prepared for induction phase by my university education…						
Facet: Subject science						
… considering science for my first subject	12.6	27.2	32.1	28.1	2.77	1
… considering science for my second subject	10.6	26.3	35.2	28	2.80	.96
Facet: Subject didactics						
… considering didactics for my first subject	26.2	36	25.5	12.3	2.25	.98
… considering didactics for my second subject	25.2	38	23.8	13	2.25	.97
Facet: Educational science						
…considering psychology	26.1	36	28.4	9.5	2.22	.94
…considering pedagogy	35.8	38.9	21	4.3	1.93	.85
…considering school pedagogy	30.3	38.3	26	5.4	2.06	.88

Note: N = 1,006, 4-point Likert Scale, α = .71

6.1.3 Support

In a next set of questions, participants have been asked to rate the support they received during the induction phase divided into four different facets. Throughout all different facets of the support scale, the standard deviation was relatively high (≥ .97). It can be summarized that candidate teachers have been mostly satisfied with the levels of support they have received. Yet, differences could be observed, for example regarding their experience of relatedness.

The facet *exchange* is addressing teacher educator's openness towards exchange with candidate teachers. This was investigated with a bundle of two items asking for the opportunities to talk and discuss with their respective mentors. Regarding the question: "*Seminar director and teacher educators provide sufficient room for discussions*" (*M* = 3.93; *SD* = 1.10), 36.3 % of the participants agreed and 34.5 % of them partly agreed, while 17.2 % remained neutral, 9.6 % of the candidate teachers partly disagreed and 2.4 % disagreed in general. The second question of the facet *exchange* asked, if the seminar director and teacher educators were open for talks (*M* = 4.18; *SD* = .99), 48.2 % of the candidate teachers agreed and 31.2 % partly agreed regarding this question, 13.1 % of the participants opted for neutral, 5.9 % partly disagreed and 1.7 % disagreed. The third question for this facet is addressing the feedback for candidate teachers provided by teacher educators, and if this feedback has been helpful with practical implications being discussed (*M* = 3.89; *SD* = .98).

Further, the facet *reflection* was covering reflection on jointly observed lessons and valuable feedback on planning and designing lessons. The first question has asked candidate teachers, if the reflection on jointly observed lessons has been valuable for them (*M* = 3.80; *SD* = 1.12) and 32.8 % of the participants agreed, 31.9 % partly agreed, 20.7 % had no opinion, 10.9 % partly disagreed and 3.7 % disagreed completely. Next, participants have been asked, if the teacher educator for their respective subject has provided them with valuable suggestions for planning and designing their lessons (*M* = 3.91; *SD* = 1.03), 37 % of the candidate teachers partly agreed and 33 % agreed. The third question addressed the feedback given by teacher educators, whether it was helpful and practical implications have been discussed (*M* = 3.89; *SD* = 98). Regarding this question, 37.8 % of the candidate teachers partly agreed

and 36.9 % agreed, whereas 17 % remained neutral, 6.7 % of the participants partly disagreed and 1.7% completely disagreed.

The third facet *atmosphere* consists of a bundle of three items asking about workplace atmosphere, colleagueship and support during candidate teachers' initiation at school. The first question has asked, if there was a kind working atmosphere at the induction phase, and if participants felt well supported (M = 3.89; SD = 1.15), 38.6 % of the candidate teachers agreed, 29.9 % partly agreed, 18.4 % opted for neutral, whereas 8.5 % partly disagreed and 4.6 % completely disagreed. The second question of this facet has asked, if candidate teachers have been treated as a prospective colleague by the seminar director and the teacher educators. This item has received the most critical response, where only 24.9 % of the participants agreed, 26.6 % partly agreed, 21.4 % neither agreed nor disagreed, 17.7 % partly disagreed and 9.4 % disagreed completely. The last question addressed the first days at induction school and asked, if candidate teachers have received intensive support (M = 4.08; SD = 1.03). This question has received the highest acceptance as 43.4 % of the participants agreed, 31.8 % partly agreed, 16% opted for neutral, 6.8 % partly agreed and only 2 % disagreed.

Lastly, the facet *criticism* was asking, if constructive criticism was provided and candidate teachers' individual strengths have been acknowledged. The first question has asked, if candidate teacher's individual strengths have been acknowledged and valued (M = 3.73; SD = 1.19). 31.7% of the participants agreed, 32.2% of the candidate teachers partly agreed, 19.2% remained neutral, 10.9% of the participants partly disagreed and 6.1% disagreed completely. The second and last question of this scale addressed, if criticism has been provided in an appropriate and constructive manner (M = 3.87; SD = 1.09). Here, 34.3% of the candidate teachers agreed completely and 34.4% partly, another 18.8% of the participants neither agreed nor disagreed and 8.8% partly disagreed, only 3.7% of them disagreed completely.

Table 5: SUPPORT Scale

	not true %	*partly not true* %	*neutral* %	*partly true* %	*true* %	M	SD
Facet: EXCHANGE							
Seminar director and teacher educators provide sufficient room for discussions	2.4	9.6	17.2	34.5	36.3	3.93	1.10
Seminar director and teacher educators are open for talks	1.7	5.9	13.1	31.2	48.2	4.18	.99
Facet: REFLECTION							
Reflection on jointly observed lessons has been valuable for me	3.7	10.9	20.7	31.9	32.8	3.80	1.12
The teacher educator for my subject is providing me with valuable suggestions for planning and designing my lessons	2.8	7.3	20	37	33	3.91	1.03
The feedback provided by teacher educators is very helpful, practical implications are being discussed	1.7	6.7	17	37.8	36.9	3.89	.98
Facet: ATMOSPHERE							
There is a kind working atmosphere at induction school and I feel well supported	4.6	8.5	18.4	29.9	38.6	3.89	1.15

Seminar director and teacher educators treat me as a prospective colleague	9.4	17.7	21.4	26.6	24.9	3.40	1.31
Within the first days at induction school I received intensive support	2	6.8	16	31.8	43.4	4.08	1.03
Facet: CRITICISM							
My strengths are acknowledged and valued	6.1	10.9	19.2	32.2	31.7	3.73	1.19
Criticism is provided in an appropriate and constructive manner	3.7	8.8	18.8	34.4	34.3	3.87	1.09

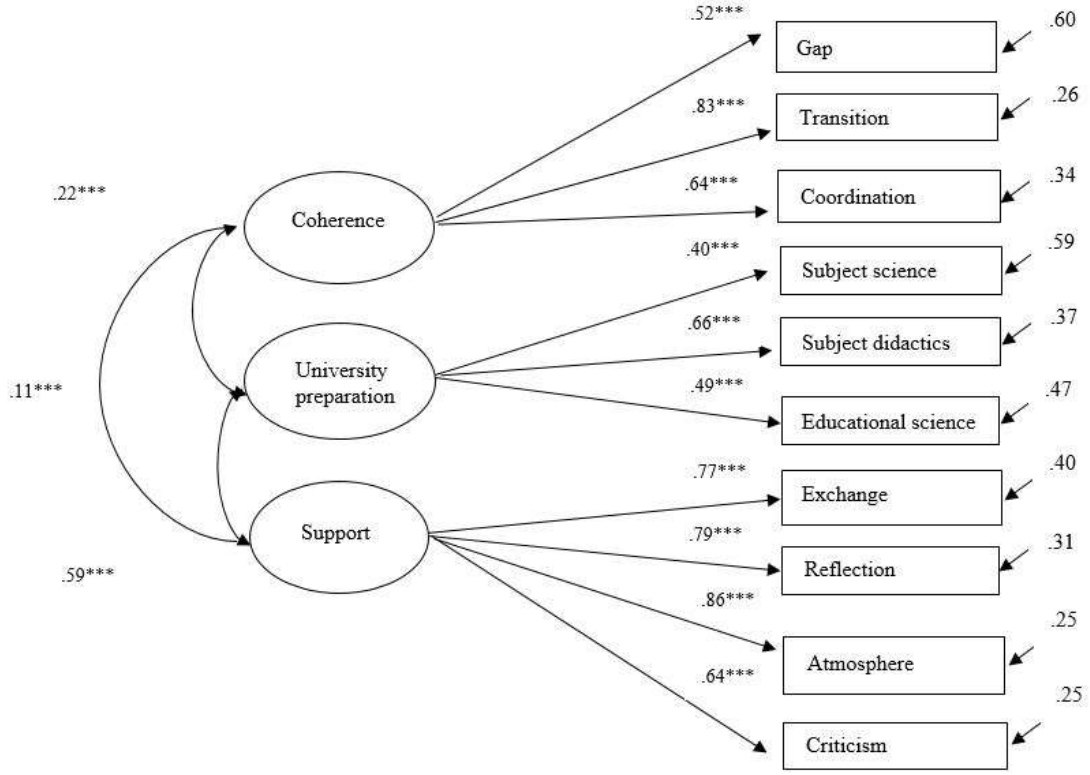
Note: N = 1,069, 5-point Likert Scale, α = .92

6.2 Empirical Accessibility of Candidate Teachers' Experience of Coherence, Professional Preparation at University and Support at Induction Phase

For the German teacher education context, a lack of existing instruments to measure the three variables of this dissertation was observed (on an individual level: the dependent variable *experience of coherence* and on an institutional level: the two independent variables, *perceived professional preparation at university* and *support at induction),* and to study the transition process from university education to teacher induction.

The first research questions have investigated, if the three assumed aspects, experience of coherence, professional preparation at university and the perceived support at the induction phase are empirically accessible by a questionnaire survey, and can be systematically differentiated. It is assumed that the three focused constructs can be measured reliably through candidate teachers' self-report.

In a next step, structural equation modeling was applied, using the software MPlus Version 7 (Muthén & Muthén, 2010). Furthermore, to test the factorial validity of the three scales *coherence*, *university preparation* and *support*, a confirmatory factor analysis (CFA) for a three-factor-model, based on the facets described above, has been conducted. The analysis revealed a good fit of the model with the empirical data (χ^2 = 50.26*, df* = 32*, p* = *.02*, *CFI* = .99, *TLI* = .99, *RMSEA* = .03). Although chi² is significant, it can be explained due to a large sample size, as this is known to be a critical index sensitive to sample size (Hooper, Coughlan, & Mullen, 2008). Therefore, it can be referred to the chi²/degrees of freedom ratio as an alternative index of model fit. A result < 2 is acknowledged to be an indicator for a good model fit (χ^2/df = 1.57) (Hoyle & Panter, 1995). All factor loadings show significance and a p-value ≤ .001. Hence, it can show the factorial validity of the construct of candidate teacher's assessment of *coherence, university preparation* and *support* during the induction phase. Descriptive statistics of the different facets of each scale are displayed in Tables 3-5. Figure 9 depicts the model of the 3-factor-confirmatory factor analysis and shows the standardized model results.



Note: Latent constructs are shown in ellipses, and observed variables are shown in rectangles.

**** $p \leq .001$.*

Figure 9: Confirmatory Factor Analysis (CFA) 3-Factor-Model

6.3 Candidate Teachers' Perception of Coherence among Professional Preparation at University and Teacher Induction

Regarding the second research question, *how can candidate teachers' perceived coherence among professional preparation at university and teacher induction be described?* Considering the answers to the coherence scale, it can be shown that candidate teachers have a rather negative perception of coherence among professional preparation at university and the induction phase ($M = 1.77$; $SD = .77$). Next, it can be discovered that the perceived professional preparation at university related to subject science, didactics and educational science ($M = 1.89$ up to 2.75; $SD = .85$ up to 1) and the support at the induction phase have a rather positive development ($M = 3.81$; $SD = 0.81$).

Table 6: Intercorrelations for All Three Scales

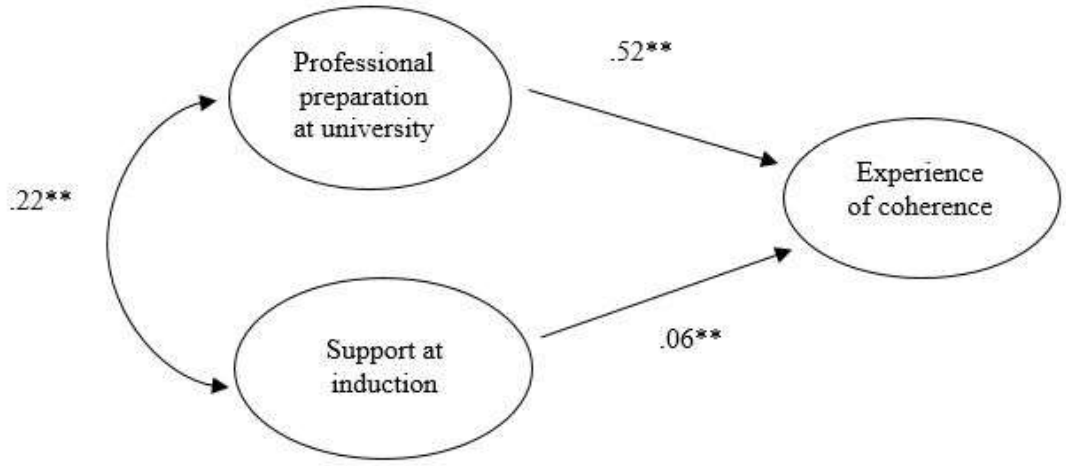
Measure	**1**	**2**	**3**
1. Coherence	__		
2. University Preparation	-.37	__	
3. Support	-.24	.22	__

Note: ** $p \leq .01$.

6.4 Influence of Professional Preparation at University and Support at Induction Phase on Candidate Teachers' Perception of Coherence

According to the third research question, *how do candidate teachers experience coherence related to their perceived professional preparation at university and the support they receive during the induction phase?* Results show that perceived professional preparation at university (.26**) and the support at the induction phase (.18**) correlate significantly with the experienced coherence. Furthermore, perceived professional preparation at university correlates with support at the induction phase (.22**) ** $p < .01$.

Based on these results, the correlations were further investigated by using a path model. The indices of the model accuracy demonstrate a good fit for the supplied data, e.g. chi-square value of the targeted model does not indicate a significant deviation of the model from the data as $p > .05$. The chi-square value of the baseline model is very high and highly significant. Therefore, we can assume that independence (zero correlation) among variables is not given.



Note: *** p < .01, * p < .05.*

χ^2 = 65.49, df = 32, p = .00, CFI = .99, TLI = .99, RMSEA = .03

Figure 10: Relation of Professional Preparation at University and Support at Induction Phase with Experience of Coherence (Alles et al., 2018)

With regard to the structural equation model, results show that perceived professional preparation at university is positively related to the experience of coherence. Experience of professional preparation at university explains 18 % and support at induction 1.2 % of variance regarding the experience of coherence at the induction phase (R-Square). Therefore, professional preparation at university and support at the induction phase together explain 19.2 % of variance concerning the experience of coherence.

6.5 Differences in Candidate Teachers' Experience of Coherence Related to Their Teaching Subject Background

Regarding the differences of candidate teachers' perception of coherence among educational phases and their professional preparation at university as well as the support at the induction phase according to their teaching subject background, a difference in perception is assumed. In a first step, a multivariate Analysis of Variance (MANOVA) was conducted for participants with a STEM subject background rate, their professional preparation and support at induction was better than that of their colleagues without STEM teaching subject background, and differences can be observed.

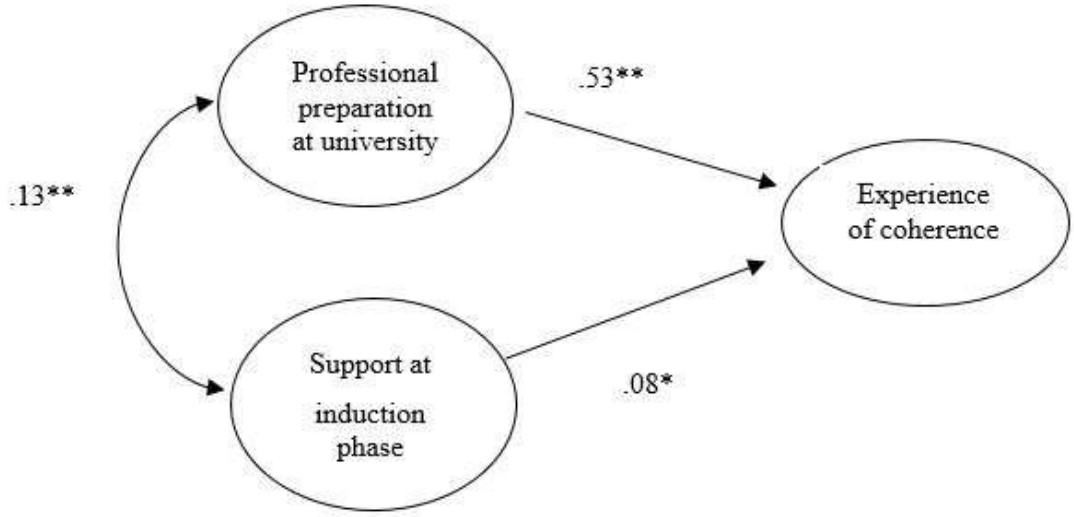
Table 7: Mean Scores and Standard Deviations for Measures of the Three Constructs (Coherence, Professional Preparation and Support)

Group	**M**	**SD**
Coherence		
STEM Teachers	3.22	.63
Language Arts Teachers	3.37	.61
Professional Preparation at University		
STEM Teachers	2.40	.57
Language Arts Teachers	2.20	.58
Support		
STEM Teachers	3.92	.69
Language Arts Teachers	3.75	.84

Note: MANOVA

STEM/NoSTEM: $F (3, 507) = 5.84$, $p < .0005$; Pillai's $\Lambda = 0.033$, partial $\eta = .03$

Therefore, the differences in between the sample divided the candidate teachers in two groups: one included all participants with a STEM teaching subject background and the second group comprised all other participants. In a next step, the existing path model was applied on both groups separately. For the first group of candidate teachers, who are teaching STEM subjects, professional preparation at university and support at the induction phase together explain 18.5 % of variance concerning the experience of coherence. The experience of professional preparation at university alone explains 16.9 % and the experience of support at induction explains 1.6 % of variance regarding the experience of coherence at the induction phase.



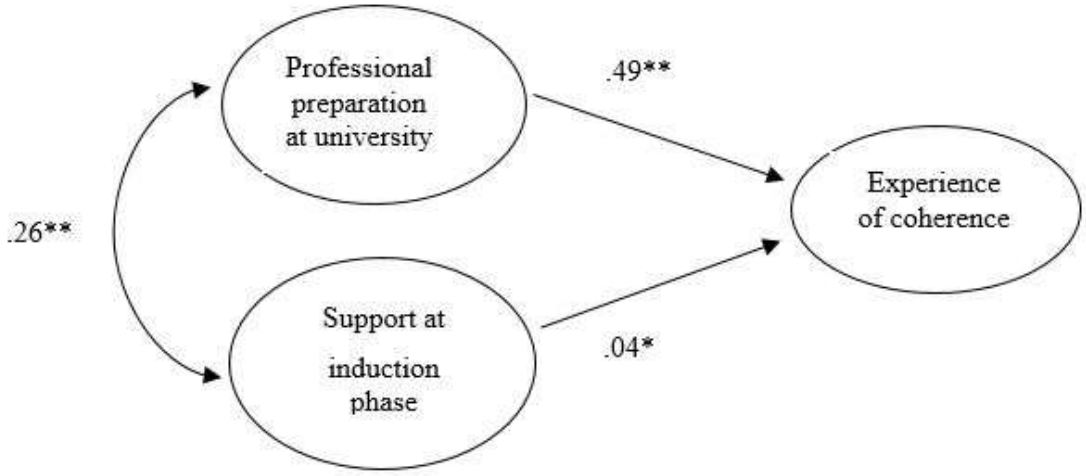
Note: ** $p < .01$, * $p < .05$.

$\chi^2 = 43.72$, $df = 32$, $p = .08$, $CFI = .99$, $TLI = .98$, $RMSEA = .09$

Figure 11: Relation of Professional Preparation at University and Support at Induction Phase with Experience of Coherence for Candidate Teachers with STEM Teaching Subjects

For the second group of candidate teachers without a STEM teaching subject background, professional preparation at university and support at the induction phase together explain 18.9 % of variance concerning the experience of coherence. Experience of professional preparation at university explains 17.3 % and support at induction 1.6 % of variance regarding the experience of coherence at the induction phase.

Both groups of candidate teachers show almost the same response according to their experience of coherence predicted by professional preparation at university and support at induction. The choice of teaching subjects and the different courses in the subject matter and didactics taken by candidate teachers during university teacher education and the related seminars at induction do not provide further differentiation for the experience of coherence.



Note: ** $p < .01$, * $p < .05$.

$\chi^2 = 51.45$, $df = 32$, $p = .02$, $CFI = .99$, $TLI = .99$, $RMSEA = .03$

Figure 12: Relation of Professional Preparation at University and Support at Induction Phase with Experience of Coherence for Candidate Teachers without STEM Teaching Subjects

Chapter 7

Discussion

In this dissertation, the aim is to contribute to the understanding of candidate teachers' experience of coherence among their educational phases by asking whether they feel well prepared through professional preparation at university, well supported at the induction phase and, also, whether they perceive learning opportunities provided as consistent and coherent. The role of teachers has become increasingly complex and challenging due to the higher social, cultural, technological and economic expectations. Therefore, the transition from teacher education at university to the professional life of a teacher at school – the induction phase – is central to a smooth entry and sustainable evolution of a teaching career. During this phase, an expedient connection of theory and practice can take place, if candidate teachers are induced systematically and supported in a comprehensive way. Empirical research of the last decades has revealed that becoming a teacher needs to be a continuous and coherent process of educational and professional development across all teacher education phases. Thereby, it is important to know, how candidate teachers perceive the conditions along the transition from professional preparation at university to the induction phase at school and to identify factors influencing the success and support of this transition and the induction phase itself. Moreover, the high number of teachers choosing to leave the profession after a short period of time, as in-service teachers demand a thorough reflection and evaluation of the factors responsible for teacher retention. Hence, this current situation demands a realigned and multi-faceted professional development for teachers and remains a challenge for teacher education.

The first and superordinate aim of this study was to find empirical access to the assessment of candidate teachers' individual experiences regarding their transition from professional preparation at university to the induction phase at school. As little is known about the influencing factors of this transition from the individual candidate teacher's point of view, interesting and novel findings on program coherence, professional preparation at university and support at induction could be generated.

Therefore, an instrument – a questionnaire survey – aiming to empirically test and further explore the relationship of three important variables within the transition process from university education to teacher induction was developed for the sample investigated in the present study. On an individual level, it is the dependent variable *experience of coherence* and on an institutional level, there are the two independent variables, *perceived professional preparation at university* and *support at induction*.

As this study aims at contributing to the current debate on enhancing teacher education, with the focus on teacher induction, in three ways. Firstly, the actual situation of candidate teachers currently enrolled in induction at higher secondary schools in Bavaria (Germany) is described regarding their academic background, their choice of teaching subjects, and their assessment of experiences within the process of the induction phase at school. Secondly, the influencing factors for candidate teachers' perception of their professional preparation at university and the received support during the induction phase are examined, paired with implications for future research in a methodological and conceptual way. In this context, the present thesis investigates candidate teachers' experience of coherence among their educational phases and asks how they experience the relation of theory and practice when making the transition from the university to the induction phase at school. It is surveyed, how well they feel equipped by professional preparation at university and how candidate teachers experience actual support at the induction phase. Thirdly, an exemplary study evaluated the transition by investigating the relationship of candidate teachers' experience of coherence in relation to their professional preparation at university and the connected individual support during the induction phase. Furthermore, this dissertation inquires, if candidate teachers perceive learning opportunities provided as consistent and coherent, and if differences can be found between the teaching subject domains, candidate teachers are related to. Next to the transfer from university education to teacher induction at school the proportion of theoretical and practical parts of the education is critically discussed.

With regard to the first research question, if the three assumed aspects, experience of coherence as dependent variable and professional preparation at university and the perceived support at the induction phase as the independent variables, are accessible by a questionnaire survey, it can be shown that the three aspects can be empirically differentiated. The different facets of each of the three aspects show medium and high-factor loadings, and therefore can contribute to the representation of the variables by having used self-report scales. The aspects of coherence, professional preparation at university and support at induction can be separated quite well and contribute to the assumption of having an influence on the understanding of candidate teachers' perception of coherence. Therefore, the newly developed and adapted instrument based on factors as derived from teacher education literature is made empirically accessible and can contribute to a better understanding of the interplay of different educational phases in teacher education.

Referring to the second research question, to what extent candidate teachers perceive the transition from university teacher education to the induction phase as a gap, indicated by frequent descriptions of experienced incoherence among those two phases, I can show that indeed the majority of candidate teachers does not feel well prepared for the requirements of teacher induction regarding their professional preparation at university. Therefore, they mostly experience the transition from university to the induction phase at school as a gap. As previous research shows, practical experiences in classroom settings during university education have been emphasized to be the most useful component of professional preparation for beginning teachers (Okhremtchouk et al., 2015). This is why practice orientation might have to be further strengthened and implemented in university education right from the beginning. This would mean to strengthen the acquisition of knowledge that is transferred systematically to relevant situations of professional practice (Borko, 2004; Darling-Hammond, 2010; Seidel et al., 2015). Therefore, the findings of the medium assessment of professional preparation at university by candidate teachers, considering the subject science (M = 2.77 for the first teaching subject and M = 2.80 for the second teaching subject), didactics (M = 2.25 for both subjects didactics) and educational science a little lower – especially in their estimation of preparation in pedagogy – (M = 2.22 for psychology, M = 1.93 for pedagogy and M = 2.06 for their preparation in school pedagogy) complement previous research, and emphasize the claim to

closely connect curricular development to the requirements of the reality of the teaching profession (E. Arnold, 2010; Lersch, 2006).

Findings referring to the third research question, whether professional preparation at university and actual support during the induction phase can predict candidate teachers' experienced coherence among educational phases, the results support the conjecture that professional preparation at university is predictive for candidate teachers' experience of coherence at the induction phase. As the results of this study indicate, the better candidate teachers feel prepared by professional preparation at university education, the more coherent they experience their transition into the profession. These findings are of special interest since it seems that the experience of a gap between phases (expressed as an experience of incoherence) can be decreased if students retrospectively feel well prepared by their university teacher education. Thus, the findings indicate, that it is mainly the preparation at university that might be responsible for an experienced gap, which is supported by the descriptive statistics showing quite positive evaluation of support at the induction phase.

Looking closer at the different study elements of university preparation, preparation regarding subject science is rated more positively compared to subject didactics and educational science. Therefore, it seems that, retrospectively, candidate teachers feel quite well prepared regarding their content knowledge in the subjects they are teaching. However, the preparation regarding subject didactics and educational science is perceived comparatively lower and more diverse among candidate teachers. As it is known from previous research, a strong link between university coursework and working in the field can also increase the coherence perceived by candidate teachers in those study elements and can have an important impact on the success of their learning experience (Grossman et al., 2008; Renta Davids et al., 2016). Therefore, the findings presented in this study might contribute to a differentiated discussion on the specific design of teacher education programs. Not only, can a gap be identified between educational phases, but a lack of connection to professional practice is also revealed between university study elements.

The present study with candidate teachers in Bavaria can show that participants assess their general experience at the induction phase rather positively. They feel well supported and experience the conditions of their second educational phase as

beneficial for their individual professional development. Moreover, candidate teachers are satisfied with their support situation, and these findings are in line with previous studies on induction phase (Schaefers, 2002; Schubarth et al., 2006; Wernet, 2006). Nevertheless, the majority of these candidate teachers have experienced the transition from university preparation to the induction phase at school as a gap. Yet, the lack of experienced coherence among the educational phases also confirms previous studies (Menck & Schulte, 2006; Schubarth et al., 2006).

Many studies examine only single aspects of the complex system of teacher education and professional development, which often leads to a simplified view of the solutions to teacher education improvement and reform as well as instructional practice and student outcomes (Baumert & Kunter, 2006; Seidel & Shavelson, 2007). Yet, the fragmented nature of teacher education programs makes it difficult to draw general conclusions (Gröschner, 2008; Zeichner & Conklin, 2005). The present study has instead investigated 'teacher preparation components and organizational structures' which help understand the success of professional development (Cochran-Smith & Fries, 2005). Therefore, it needs to be carefully distinguished between coherence as experienced in the individual context of candidate teachers opposed to coherence as seen in the institutional curricular context. Looking at the institutional curricular context, in particular at the various study elements (subject matter, pedagogy, subject didactics), several university departments are responsible, which makes it difficult to create an aligned teacher education program (König et al., 2017) and leaves room for improvement in shaping consistent study programs. Results on candidate teachers' estimation of the various study elements provide the conclusion that subject didactics with regards to job reality and relevance needs to be improved and a stronger connection to the requirements of teaching practice at the induction phase.

For some time now, previous research has been discussing the difficulties to find reliable measures for the effectiveness of professional preparation at university for the acquisition of teaching competencies, which can be applied and practiced in the context of school reality (Desimone, 2009; Seidel, 2012; Stürmer & Seidel, 2017b). The results of the present study could serve as indicators for developing new

formats of testing the effectiveness of the acquisition conceptual knowledge and its transformation in teaching practice across the educational phases.

Cochran-Smith & Fries describe different research paradigms in teacher education which are distinguished as studying teacher education as ‘a curriculum, a training, a learning or a policy problem’ (Cochran-Smith & Fries, 2005, p. 1087). This distinction provides assistance when investigating different areas and responsibilities of the teacher education process, although an underlying interconnection of the four approaches can usually be discovered. The present study can relate in particular to two of the paradigms – the curricular and the training problem of teacher education – as findings support the differences candidate teachers have made by evaluating the curriculum in form of professional preparation at university and the training (clinical) opportunities during the induction phase.

The problem of experienced incoherence between coursework and clinical experience in teacher education is not new (Zeichner & Bier, 2014), although many efforts have been made at the university to collaborate closely with partner schools and align field experience with the content of pedagogy coursework. The transition to the induction phase, however, hands over the responsibility for content and program of the second teacher educational phase to different stakeholders, disconnected from professional preparation at university and is therefore experienced as a gap as the present study can clearly confirm. Previous research could show that teacher educators at school have little or no knowledge of the content of educational courses at the university (Schmotz et al., 2010). This is yet another gap, which needs to be covered in order to achieve program alignment and consistency in professional knowledge acquisition for candidate teachers and requires collaborative partnerships among the first and second phases of teacher education. However, no matter at which stage of the teacher education process connections to professional practice are made (for example, in the form of clinical experiences), they need to be reflected on in detail with the support of a mentor (Korthagen, 2001; Zeichner & Bier, 2014). Moreover, previous research has shown that it is important to the experience of coherence by candidate teachers, if they perceive the requirements of the professional development process to be aligned with their own objectives and their social context at school (Darling-

Hammond & Bransford, 2005; Grossman et al., 2008; Nasser-Abu Alhija & Fresko, 2010).

The findings of this study represent the view of candidate teachers at the phase of induction, retrospectively evaluating their preparation at university and their current perceived support at induction. These two perspectives of actual and retrospective perceptions have to be kept in mind. It seems to be an interesting phenomenon that the evaluation of different teacher education phases and study elements change depending on these two perspectives. For example, practical experiences at the university (e.g. internships) are often evaluated as positive and sufficient while taking place or shortly after (Hascher & Moser, 2011). However, retrospectively – after the transition from the university to induction – these experiences are more likely to be regarded critically (Gröschner, Schmitt, & Seidel, 2013; Hascher, 2006; Keller-Schneider, 2016). Regarding the evaluation of the subject science as a study element of teacher education programs: these are often perceived as quite insufficient and lacking connection to practice when evaluated by university teacher education students. In the context of this study, after changing to the induction phase, these same study elements are regarded as important and helpful with regard to their preparation for teaching. These different perspectives and their changes during teacher preparation might be of particular interest to research since they can represent important learning processes of candidate teachers and should be studied more closely (Grossman et al., 2008).

The findings of this study regarding the perceived gaps between university education and teacher induction also indicate the importance of close collaboration of all stakeholders involved in the teacher education process across all different phases. Regarding university teacher education, this means that teacher educators from different sciences and backgrounds have to collaborate closely in order to provide a coherent curriculum in teacher education that is linked to the later affordances in the teaching profession (Brouwer & Korthagen, 2005; Kraler et al., 2017; Terhart, 2000a). Current reforms in Europe (Bauer et al., 2010) as well as Germany (Seidel et al., 2016) strongly focus on improving incoherence of study programs between subject science, subject didactics and educational science by e.g. strengthening of subject didactics with regards to job reality and relevance.

Moreover, this thesis provides an additional perspective onto differences regarding teaching subject background and socialization by the differences shown in candidate teachers' assessment of their respective professional preparation at university and the resulting experience of coherence. Given the different subject matter and subcultures of the various teaching subjects in responsibility of diverging university departments, it can be assumed that candidate teachers run through strongly varied teacher education programs even at the same university. Therefore, the single study elements demand greater attention when comparing the experiences of candidate teachers. Still the current study was unable to identify the differences of teaching subject cultures to be predictive for candidate teachers' experience of coherence among educational phases. Yet, when grouped by candidate teachers teaching STEM or no STEM subjects the variance explaining the prediction of professional preparation at university only differs by 0.4 % (16.9 % for STEM teachers opposed to 17.3 % for teachers without STEM subjects). This result suggests that rather the curricular composition of study elements and courses is causing the experience of incoherence than the content of the different subject matter courses. Therefore, the curricular composition should be the focus when aiming to enhance teacher education programs in line with OTL for teaching (Zeichner & Bier, 2014).

Since not all of the gaps that are resulting from the transition from professional preparation at university to the induction phase at school can be covered, the aim for teacher education programs should be to enable prospective teachers with methods to immediately identify and address problems as they occur. Moreover, educational research can provide a useful resource not only for candidate teachers, but for teachers at every stage of their career, to tackle e.g. stressful and demanding classroom issues or simply daily routines and help with advice and best practices. As the utmost aim of teacher education programs should be to be based on state-of-the-art empirical educational research, important findings have to be integrated in the content and outline of professional preparation at university (Bauer & Prenzel, 2012). However, knowing how to access and making use of empirical findings in educational research for candidate teachers' own instructional practice or the challenges of classroom management should therefore be introduced at an early stage of their professional preparation and be implemented in university coursework. In addition, teacher preparation programs like the induction phase can continue to offer research-oriented

learning opportunities and shape candidate teachers' attitude towards using research as a tool to improve their instructional and professional practice (Laine, Behrstock-Sherratt, & Lasagna, 2011). This, however, requires trustworthy and relevant sources like clearinghouses for example, which edit, summarize and disseminate recent findings for teacher educators, who then integrate the awareness for important topics in their teacher education seminars and advice to candidate teachers (Seidel, Mok, Hetmanek, & Knogler, 2017).

The development of problem-solving skills and a constant evaluation and reflection of their teaching practice is the key for candidate teachers, instructional practice must be constantly evaluated throughout a teaching career (Hattie, 2012; Oelkers & Oser, 2001). There is also a claim for each attempt of educational reform to be accompanied by sound and regular evaluation as this is inevitable in order to see, what does work well and what does not (Schlotter et al., 2014). The process of data collection and designing proper evaluation instruments alongside the reform endeavor is costly, challenging, and complex, yet a necessity when educational policy is meant to improve the current situation. Previous research could show that especially in Europe educational policy is lacking the implementation of systematic evaluation as part of the reform efforts (Schlotter et al., 2014).

7.1 Limitations and Directions for Future Research

Firstly, it has to be acknowledged that the results of the study context presented in this dissertation only refer to the German system of teacher induction and here the Bavarian induction phase was spotlighted. Therefore, it is debatable, if evidence emanates for other teacher education systems. Yet, the important experience of coherence among educational phases and significant influence of professional preparation at university applies to all systems comprehensively and the results of this study can be transferred to different settings.

Secondly, the use of a questionnaire study seemed to be the only way to reach a larger number of candidate teachers currently enrolled in induction programs. Therefore, a common method bias needs to be explicated by using self-report scales in the questionnaire as the subjective assessments of candidate teachers was investigated. The danger of varying interpretations of the questionnaire items by different respondents are instrument-immanent and – as a matter of course – cannot be refuted. Questionnaire items usually do not provide detailed information on the specificity, character and depth of support candidate teachers have received and the coherence they have experienced. Additionally, gatekeepers were involved in accessing the sample, as the questionnaires could only be distributed with the assistance of school administration, instead of contacting candidate teachers directly.

Yet, another limitation comes with the method applied as the questionnaire survey has collected quantitative data and previous research has observed a tendency of candidate teachers to assess their induction phase more positively in a quantitative study, than it can be reported by qualitative studies in the context. When candidate teachers get the opportunity to talk about their experiences in more detail, they have a tendency to focus more on experienced challenges and difficulties (Dietrich, 2014b). Another aspect of the questionnaire has also been different options to answer the items for the coherence and professional preparation scale, where a four-point Likert scale ranging from ‘not true’ and ‘true’ was used. In contrast, for the scale asking candidate teachers about the support they have received during induction phase, a five-point Likert scale (‘not true’, ‘partly true’, ‘neutral’, ‘partly not true’ and ‘true’) was used, which derived from an existing questionnaire by the Bavarian Ministry of Education.

A tendency to opt for the ‘neutral’ rating could be observed within this scale by 14-20 % of the participants.

Future research in teacher education in general needs to distinguish thoroughly the particular elements and the context of the observed programs (Zeichner & Conklin, 2005). In this context, future studies could be targeted to program alignment and collaboration and follow up studies targeting at the experience and outcomes of explicit course work of particular teacher education programs.

Moreover, differences in experiencing coherence among the educational phases in relation to the teaching subject background of candidate teachers as traced in this study are an indication for further investigation of teacher socialization and program development in the respective field. Building on evidence drawn from the present dissertation, a systematic analysis of detectable factors influencing the experience of coherence caused by the subject matter contingent of teacher education at the university and at the induction phase could be further investigated.

7.2 Conclusion

As the present study shows, many interesting aspects of candidate teachers' experience at the induction phase have been elucidated and differentiated. In many respects, the data presented in the above tables reinforces what was already assumed about the strength and weaknesses of the teacher induction phase in the German education system. The German two-phase model of teacher education is experienced as a system lacking coherent learning opportunities and the transition from the university to the induction phase provides a significant gap. However, a few new aspects to the current debate could be discovered as there are numerous factors influencing the process of candidate teachers' professional preparation before and during teacher induction phase at school.

The significant influence of professional preparation at university on candidate teachers' experience of coherence, which was observed in this study, leads to thinking about new ways to establish collaborative teams and curricular development in line with current findings on satisfactory and on stressful factors of teacher professional development. A strong collaboration between stakeholders involved in clinical and theoretical training of aspirant teachers needs grounded and well-reflected measures to be applied throughout the different phases. Therefore, future reform endeavors need to consider the entire cycle of teacher professional development from university education to life-long learning as an in-service teacher and should call for alignment and coherence across all educational phases. It is important to overcome the long known and discussed theory-practice gap of teacher education by anticipating the needs and conditions of each of the educational phases, rather than neglecting the alterations of a teacher's career. Yet, the phenomenon of the theory-practice gap is not only relevant for the professional development of teachers, it is also well-known by aspirant doctors or other professions. Therefore, successful concepts of aligning practical experiences with theory by research-based reflection can serve for different disciplines and they can benefit from each other.

Moreover, teacher education programs across all phases should be based on state-of-the-art empirical educational research, important findings have to be integrated in the content and outline of professional preparation at university (Bauer & Prenzel, 2012). However, knowing how to access and making use of empirical findings in educational research for candidate teachers' own instructional practice or the challenges of classroom management should therefore be introduced at an early stage of their professional preparation and be implemented in university coursework. In addition, teacher preparation programs like the induction phase can continue to offer research-oriented learning opportunities and shape candidate teachers' attitude towards using research as a tool to improve their instructional and professional practice (Laine et al., 2011). This, however, requires trustworthy and relevant sources like clearinghouses, for example, which edit, summarize and disseminate recent findings for teacher educators, who then integrate the awareness for important topics in their teacher education seminars and advise candidate teachers (Seidel et al., 2017). Long-term and evidence-based research should therefore be an integral part of teacher education across all phases and offer an empirical knowledge base for the development and design of new programs (Brouwer, 2010).

The teacher induction phase has been appreciated as a complex endeavor and is subject to various influencing factors across all training stages including all stakeholders involved in shaping, conducting and mentoring the program. Moreover, it is a highly individual process that evokes different reactions and perceptions by different candidate teachers (Keller-Schneider, 2012). Future candidate teachers need to be educated to deal with the challenges of a continuously changing and demanding teaching career and adopt to it. Therefore, they need the support and cooperation of all stakeholders and partners involved in their respective teacher education and throughout their professional life. University teacher education is in the pivotal position to improve existing and establish new standards for professional preparation of aspirant teachers in aligning theory and practice and providing learning opportunities to connect professional knowledge with the reality and the demands of a teaching career (Stürmer & Seidel, 2017a).

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List of Abbreviations

CFA	Confirmatory Factor Analysis
COACTIV	Cognitive Activation in the Classroom: The Orchestration of Learning Opportunities for the Enhancement of Insightful Learning in Mathematics
CPD	Continuous Professional Development
Eds.	Editors
e.g.	for example, *exempli gratia* (Latin)
Et.al	and others, *et alia* (Latin)
IEA	International Association for the Evaluation of Educational Achievement
KMK	Standing Conference of Federal Ministers of Education and Cultural Affairs, *Kultusministerkonferenz* (German)
MANOVA	multivariate Analysis of Variance, *multivariate Varianzanalyse* (German)
OECD	Organization for Economic Co-operation and Development
OTL	opportunities to learn
PISA	Program for International Student Assessment
PIRLS	Progress in International Reading Literacy Study
SEM	Structural Equation Model
STEM	Science, Technology, Engineering, and Mathematics
TEDS-M	Teacher Education and Development Study: Learning to teach Mathematics
TIMSS	Trends in International Mathematics and Science Study
UNESCO	United Nations Educational, Scientific, and Cultural Organization
WEF	World Economic Forum

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Appendix

Questionnaire

Projekt der Stiftung für die Deutsche Wissenschaft und der Heinz-Nixdorf-Stiftung „TUMconnect. Universitäre Lehrerbildung in Verbindung mit Studienseminaren und Weiterbildung“

Fragebogen „REFconnect“

für Referendar/-innen

genehmigt durch das Bayerisches Staatsministerium für Bildung und Kultus, Wissenschaft und Kunst
Nr.: X.7-BO5106/113/13
Datum: 18.11.2014

Friedl Schöller-Stiftungslehrstuhl
für Unterrichts- und Hochschulforschung
TUM School of Education
Technische Universität München

TUMconnect
Universitäre Lehrerbildung in Verbindung mit Studienseminaren und Weiterbildung

Vielen Dank, dass Sie an dieser Studie teilnehmen!

Mit folgendem Fragebogen möchten wir erfahren, wie Sie den Übergang zwischen universitärer Lehrerbildung und Ausbildung an der Seminarschule erleben. Insbesondere interessiert uns, welche Ansprechpersonen für Sie relevant sind, wie Sie die Rahmenbedingungen des Referendariats einschätzen und wie Ihre Motivation und emotionale Einstellung gegenüber der zweiten Ausbildungsphase sind. Gefragt wird auch nach subjektivem Kompetenzerleben sowie individuell bedeutsamen Situationen während des Referendariats.

Die Fragen können überwiegend durch einfaches Ankreuzen beantwortet werden. Sie werden genauere Anleitungen an entsprechender Stelle finden. Bitte antworten Sie möglichst spontan und wahrheitsgetreu. Achten Sie bitte auch darauf, keine personenbezogenen Angaben über Dritte, z.B. Schüler/-innen, Kolleg/-innen, Eltern, etc. zu machen.

Die Teilnahme an der Befragung ist freiwillig. Bei Nichtteilnahme entstehen für Sie keinerlei Nachteile. Es besteht auch die Möglichkeit, einzelne Fragen des Fragebogens unbeantwortet zu lassen.

Ihre Angaben werden wir anonym behandeln und mit den Ergebnissen vertraulich umgehen. Da wir nicht nach Ihrem Namen fragen, bitten wir Sie, einen 5-stelligen Code zu generieren. Dieser wird ausschließlich für die wissenschaftliche Auswertung der Untersuchung genutzt.

Der Personencode wird aus dem ersten Buchstaben Ihres Geburtsorts, dem zweiten Buchstaben Ihres Vornamens und dem dritten Buchstaben Ihres Nachnamens (ggf. Mädchenname) sowie den jeweils letzten Ziffern Ihres Geburtstags und Ihres Geburtsjahres gebildet. So lautet der Code für die aus **M**ünchen (1. Stelle) stammende C**l**audia Kr**ü**ger (2. und 3. Stelle), geb. am 2**6**.03.198**3** (4. und 5. Stelle des Codes): **MLÜ63**.

Ihr Code:

_ _ _ _ _

Nach Projektabschluss im Oktober 2016 werden alle Referendarcodes gelöscht. Nach 10 Jahren Speicherung werden schließlich alle Daten vernichtet. Sie können Ihre Einwilligung zur Teilnahme an der Befragung auch jederzeit zurückziehen. In diesem Fall werden alle Angaben im Datensatz gelöscht.

Wir beantworten Ihnen gerne Fragen zu unserem Projekt. Bitte wenden Sie sich dazu an folgende Adresse:

Jennifer Apel
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80333 München
Tel.: +49 89 – 289 28212
E-Mail: jennifer.apel@tum.de

Angaben zur Ihrer Person

a) In welchem Jahr wurden Sie geboren? _____

b) Sie sind: ☐ weiblich
☐ männlich

c) An welcher Universität haben Sie Ihren Lehramtsabschluss gemacht?

Universität: _____ Ort: _____

d) In welchem Jahr haben Sie Ihr gesamtes erstes Staatsexamen erfolgreich absolviert?

_____

e) Welche Fächerkombination haben Sie studiert?

a) 1. Fach: _____

b) 2. Fach: _____

c) ggf. Erweiterungsfach: _____

f) In welchem Regierungsbezirk absolvieren Sie ihr Referendariat?

☐ Oberbayern
☐ Niederbayern
☐ Schwaben
☐ Mittelfranken
☐ Oberpfalz
☐ Oberfranken
☐ Unterfranken

g) Wie viele Einwohner hat der Ort, in dem Ihre Seminarschule ist?

☐ weniger als 5.000 Einwohner
☐ weniger als 20.000 Einwohner
☐ weniger als 100.000 Einwohner
☐ mehr als 100.000 Einwohnern

h) In welchem Ausbildungsabschnitt des Referendariats stehen Sie gerade?

☐ 1. Ausbildungsabschnitt (erstes ½ Jahr an der Seminarschule)
☐ 2. Ausbildungsabschnitt (zweites und drittes ½ Jahr an der Einsatzschule)
☐ 3. Ausbildungsabschnitt (viertes ½ Jahr an der Seminarschule)

Fragen zur Kohärenz zwischen universitärer Lehrerbildung und Referendariat

Inwieweit treffen folgende Aussagen für Sie zu?

Bitte in jeder Zeile nur ein Kästchen ankreuzen.

Ich fühlte mich durch meine universitäre Ausbildung gut auf das Referendariat vorbereitet in Hinblick auf…

		trifft nicht zu			trifft zu
a)	die Fachwissenschaften in meinen Fächern:				
	1. Erstes Fach	☐	☐	☐	☐
	2. Zweites Fach	☐	☐	☐	☐
	3. ggf. Erweiterungsfach	☐	☐	☐	☐
b)	die Fachdidaktik:				
	1. Erstes Fach	☐	☐	☐	☐
	2. Zweites Fach	☐	☐	☐	☐
	3. ggf. Erweiterungsfach	☐	☐	☐	☐
c)	die Erziehungswissenschaften:				
	1. Psychologie	☐	☐	☐	☐
	2. Allgemeine Pädagogik	☐	☐	☐	☐
	3. Schulpädagogik	☐	☐	☐	☐

		trifft nicht zu			trifft zu
d)	Ich fühle mich sehr gut auf die beruflichen Anforderungen im Referendariat vorbereitet.	☐	☐	☐	☐
e)	Die Praxiserfahrungen in meinem universitären Studium empfand ich als sehr sinnvoll als Vorbereitung auf den Lehrerberuf.	☐	☐	☐	☐

		trifft nicht zu			trifft zu
f)	Neben meinem universitären Studium habe ich freiwillig noch weitere Praxiserfahrungen gesammelt, um mich auf den Lehrerberuf vorzubereiten.	☐	☐	☐	☐
g)	Ich halte für mich persönlich den Kontakt mit der Universität auch weiterhin für sehr notwendig.	☐	☐	☐	☐
h)	Ich empfand den Übergang von Universität in das Referendariat als großen Bruch.	☐	☐	☐	☐
i)	Ich finde, der Übergang zwischen den Ausbildungsphasen sollte verbessert werden.	☐	☐	☐	☐
j)	Ich finde, die Abstimmung zwischen den Phasen der Lehrerbildung sollte verbessert werden.	☐	☐	☐	☐

Fragen zu Ansprechpersonen und Netzwerken

Inwieweit treffen folgende Aussagen für Sie zu?

Bitte in jeder Zeile nur ein Kästchen ankreuzen.

Bei allen **Anforderungen im Referendariat** (egal ob an der Seminarschule oder in der Einsatzschule) sind für mich folgende Ansprechpersonen wichtig:

		gar nicht wichtig			sehr wichtig
a)	Meine Seminarlehrer/-innen	☐	☐	☐	☐
b)	Meine Seminarkolleg/-innen an der Schule	☐	☐	☐	☐
c)	Meine Lehrerkolleg/-innen an der Schule	☐	☐	☐	☐
d)	Mein Freundeskreis	☐	☐	☐	☐
e)	Mein/e Partner/-in	☐	☐	☐	☐
f)	Meine Familie	☐	☐	☐	☐
g)	Meine Universitätsprofessor/-innen oder -dozierenden	☐	☐	☐	☐
h)	Meine ehemaligen Studienkolleg/-innen	☐	☐	☐	☐
i)	Sonstige Personen _____	☐	☐	☐	☐

Wenn ich **Schwierigkeiten in Bezug auf Anforderungen im Referendariat** (egal ob an der Seminarschule oder in der Einsatzschule) habe, sind für mich folgende Personen wichtig:

		gar nicht wichtig			sehr wichtig
a)	Meine Seminarlehrer/-innen	☐	☐	☐	☐
b)	Meine Seminarkolleg/-innen an der Schule	☐	☐	☐	☐
c)	Meine Lehrerkolleg/-innen an der Schule	☐	☐	☐	☐
d)	Mein Freundeskreis	☐	☐	☐	☐
e)	Mein/e Partner/-in	☐	☐	☐	☐
f)	Meine Familie	☐	☐	☐	☐
g)	Meine Universitätsprofessor/-innen oder -dozierenden	☐	☐	☐	☐
h)	Meine ehemaligen Studienkolleg/-innen	☐	☐	☐	☐
i)	Sonstige Personen _____	☐	☐	☐	☐

Wenn ich **Erfolg in Bezug auf Anforderungen im Referendariat** (egal ob an der Seminarschule oder in der Einsatzschule) habe, sind für mich folgende Personen wichtig:

		gar nicht wichtig			sehr wichtig
a)	Meine Seminarlehrer/-innen	☐	☐	☐	☐
b)	Meine Seminarkolleg/-innen an der Schule	☐	☐	☐	☐
c)	Meine Lehrerkolleg/-innen an der Schule	☐	☐	☐	☐
d)	Mein Freundeskreis	☐	☐	☐	☐
e)	Mein/e Partner/-in	☐	☐	☐	☐
f)	Meine Familie	☐	☐	☐	☐
g)	Meine Universitätsprofessor/-innen oder -dozierenden	☐	☐	☐	☐
h)	Meine ehemaligen Studienkolleg/-innen	☐	☐	☐	☐
i)	Sonstige Personen _____	☐	☐	☐	☐

Rahmenbedingungen an der Seminarschule

Inwieweit treffen folgende Aussagen für Sie zu?

		trifft nicht zu				trifft zu
a)	Seminarvorstand und Seminarlehrkräfte geben ausreichend Raum für Diskussionsbeiträge.	☐	☐	☐	☐	☐
b)	Seminarvorstand und Seminarlehrkräfte sind offen für Gespräche.	☐	☐	☐	☐	☐
c)	Seminarvorstand und Seminarlehrkräfte behandeln mich als zukünftige Kollegin/ zukünftigen Kollegen.	☐	☐	☐	☐	☐
d)	Das Material, das ich in den Fachsitzungen erhalte, ist hilfreich.	☐	☐	☐	☐	☐
e)	Das Material, das ich in den Fachsitzungen bekomme, wird ausreichend besprochen.	☐	☐	☐	☐	☐
f)	Es finden hilfreiche Rückmeldungen durch die Fachseminarlehrkraft statt, konkrete Vorschläge werden diskutiert.	☐	☐	☐	☐	☐
g)	Die Fachseminarlehrkraft gibt wertvolle Anregungen für die Planung und Gestaltung meines Unterrichts.	☐	☐	☐	☐	☐
h)	Die Reflexion von gemeinsam beobachteten Unterrichtsstunden (Hörstunden) ist für mich gewinnbringend.	☐	☐	☐	☐	☐
i)	In den ersten Tagen wurde ich an der Seminarschule intensiv betreut.	☐	☐	☐	☐	☐
j)	Die Arbeitsatmosphäre an der Seminarschule ist angenehm und ich fühle mich gut betreut.	☐	☐	☐	☐	☐
k)	Meine Stärken werden anerkannt und gewürdigt.	☐	☐	☐	☐	☐
l)	Kritik wird in angemessener und konstruktiver Weise geübt.	☐	☐	☐	☐	☐

Fragen zur Motivation im Referendariat

Wie häufig treffen die folgenden Aussagen für Sie zu?

Bitte in jeder Zeile nur ein Kästchen ankreuzen.

Während meines **bisherigen Referendariats**...

		nie				sehr häufig
a)	verging die Zeit wie im Flug.	☐	☐	☐	☐	☐
b)	hat mich die Arbeit so fasziniert, dass ich mich voll einsetzte.	☐	☐	☐	☐	☐
c)	machte das Unterrichten richtig Spaß.	☐	☐	☐	☐	☐
d)	habe ich mich eingesetzt, weil ich meinen eigenen Zielen ein Stück näher kommen wollte.	☐	☐	☐	☐	☐
e)	wollte ich selbst den Unterrichtsstoff (der an Schüler/-innen vermittelt wird) verstehen/beherrschen.	☐	☐	☐	☐	☐
f)	war mir klar, dass ich die Anforderungen für meinen Beruf erfüllen muss.	☐	☐	☐	☐	☐
g)	habe ich nur das getan, was ausdrücklich von mir verlangt wurde.	☐	☐	☐	☐	☐
h)	hätte ich ohne Druck von außen nichts getan.	☐	☐	☐	☐	☐
i)	habe ich mich nur angestrengt, damit ich keinen Ärger bekomme.	☐	☐	☐	☐	☐
j)	war mir alles egal.	☐	☐	☐	☐	☐
k)	war ich mit meinen Gedanken wo anders.	☐	☐	☐	☐	☐
l)	versuchte ich mit möglichst wenig Aufwand durchzukommen.	☐	☐	☐	☐	☐

Wie häufig treffen die folgenden Aussagen für Sie zu?

Bitte in jeder Zeile nur ein Kästchen ankreuzen.

m) Ich fühle mich im Referendariat in Bezug auf die Anforderungen im Lehrerberuf **insgesamt sehr belastet** hinsichtlich…	nie				sehr häufig
1. des erforderlichen Fachwissens	☐	☐	☐	☐	☐
2. der Unterstützungssituation an der Seminar-schule	☐	☐	☐	☐	☐
3. des Vermittelns/Erklärens von Inhalten	☐	☐	☐	☐	☐
4. des Umgangs mit/der Beratung von Eltern und/oder Schüler/-innen	☐	☐	☐	☐	☐
5. meines Erziehungsauftrags	☐	☐	☐	☐	☐
6. der Disziplinierung von Schüler/-innen	☐	☐	☐	☐	☐
7. der Anforderung, fachliche und pädagogische Erkenntnisse in meine Arbeit einzubringen	☐	☐	☐	☐	☐
8. der Beurteilung von Leistungen	☐	☐	☐	☐	☐
9. der Unterrichtsvorbereitung	☐	☐	☐	☐	☐
10. des Unterrichtens	☐	☐	☐	☐	☐

n) Ich bin mit dem Referendariat **insgesamt sehr zufrieden** hinsichtlich…	nie				sehr häufig
11. des erforderlichen Fachwissens	☐	☐	☐	☐	☐
12. der Unterstützungssituation an der Seminar-schule	☐	☐	☐	☐	☐
13. des Vermittelns/Erklärens von Inhalten	☐	☐	☐	☐	☐
14. des Umgangs mit/der Beratung von Eltern und/oder Schüler/-innen	☐	☐	☐	☐	☐
15. meines Erziehungsauftrags	☐	☐	☐	☐	☐
16. der Disziplinierung von Schüler/-innen	☐	☐	☐	☐	☐
17. der Anforderung, fachliche und pädagogische Erkenntnisse in meine Arbeit einzubringen	☐	☐	☐	☐	☐
18. der Beurteilung von Leistungen	☐	☐	☐	☐	☐
19. der Unterrichtsvorbereitung	☐	☐	☐	☐	☐
20. des Unterrichtens	☐	☐	☐	☐	☐

Fragen zum Kompetenzerleben im Referendariat

Während meines bisherigen Referendariats fühlte ich mich in folgenden Dimensionen kompetent.

Bitte in jeder Zeile nur ein Kästchen ankreuzen.

		trifft nicht zu				trifft zu
a)	Planen und Gestalten des Unterrichts	☐	☐	☐	☐	☐
b)	Auswählen von Methoden, Arbeits- und Kommunikationsformen	☐	☐	☐	☐	☐
c)	Sinnvoller Einsatz von Medien	☐	☐	☐	☐	☐
d)	Erstellen von Leistungsnachweisen	☐	☐	☐	☐	☐
e)	Erheben und Bewerten von Schülerleistungen	☐	☐	☐	☐	☐
f)	Fördern der Lern- und Leistungsbereitschaft von Schüler/-innen	☐	☐	☐	☐	☐
g)	Finden von Lösungsansätzen für Schwierigkeiten und Konflikte in Schule und Unterricht	☐	☐	☐	☐	☐
h)	Diagnose von Lernschwierigkeiten und gezielte Förderung	☐	☐	☐	☐	☐
i)	Beratung von und Zusammenarbeit mit Erziehungsberechtigten	☐	☐	☐	☐	☐

Fragen zu Schlüsselerlebnissen im Referendariat

a) Denken Sie an Ihr bisheriges Referendariat. Gab es eine Situation an der Seminarschule oder Einsatzschule, die Sie als Lehrer/-in besonders geprägt hat? Dieses Schlüsselerlebnis kann sowohl positive als auch negative Emotionen bei Ihnen ausgelöst haben. Schildern Sie dieses bitte in ein paar Sätzen oder Stichpunkten.

Wichtig: Bitte treffen Sie dabei **keine Aussagen über Dritte**. Nennen Sie weder Namen noch andere Personenmerkmale.

b) Falls Sie in dieser Situation Unterstützung benötigt haben, wer hat Ihnen geholfen?

Es können mehr als nur ein Kästchen angekreuzt werden.

- ☐ Meine Seminarlehrer/-innen
- ☐ Meine Seminarkolleg/-innen an der Schule
- ☐ Meine Lehrerkolleg/-innen an der Schule
- ☐ Mein Freundeskreis
- ☐ Mein/e Partner/-in
- ☐ Meine Familie
- ☐ Meine Universitätsprofessor/-innen oder -dozierenden
- ☐ Meine ehemalige Studienkolleg/-innen
- ☐ Sonstige Personen

Bitte in jeder Zeile nur ein Kästchen ankreuzen.

		gar nicht						sehr stark
c)	Wie stark hat Sie dieses Ereignis emotional angesprochen?	☐	☐	☐	☐	☐	☐	☐
		negativ						positiv
d)	Wie wirkte sich diese Situation auf Ihre weitere Professionalisierung aus?	☐	☐	☐	☐	☐	☐	☐
		ganz anders						ganz genauso
e)	Würden Sie im Nachhinein wieder genauso handeln?	☐	☐	☐	☐	☐	☐	☐

Fragen zur übergreifenden Einschätzung

Das universitäre Lehramtsstudium…

		trifft nicht zu				trifft zu
a)	hat mir Klarheit über die Anforderungen des Arbeitsplatzes Schule über den Unterricht hinaus verschafft.	☐	☐	☐	☐	☐
b)	hat mich in meiner Berufswahl bestätigt.	☐	☐	☐	☐	☐
c)	ist insgesamt zu meiner Zufriedenheit verlaufen.	☐	☐	☐	☐	☐

Das Referendariat…

		trifft nicht zu				trifft zu
d)	verschafft mir Klarheit über die Anforderungen des Arbeitsplatzes Schule über den Unterricht hinaus.	☐	☐	☐	☐	☐
e)	bestätigt mich in meiner Berufswahl.	☐	☐	☐	☐	☐
f)	verläuft insgesamt zu meiner Zufriedenheit.	☐	☐	☐	☐	☐

Vielen Dank für die Teilnahme an der Befragung!