Developing Entrepreneurial Competences in Student Companies

An Empirical Study in the Field of Entrepreneurship Education

Dissertation

zur Erlangung des Doktorgrades

der Wirtschafts- und Sozialwissenschaftlichen Fakultät

der Eberhard Karls Universität Tübingen

vorgelegt von

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Tübingen
2020

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Tag der mündlichen Prüfung:	09.03.2020
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DANKSAGUNG

An erster Stelle möchte ich meinen Betreuerinnen Prof. Dr. Taiga Brahm und Prof. Dr. Theresa Veer für die hilfreiche und konstruktive Unterstützung bei der Erstellung dieses Dissertationsprojekts danken.

Ein ganz besonderer und sehr großer Dank geht an Taiga: du hast mir von Anfang an mit deinem Wissen und deiner Expertise zur Seite gestanden, sowohl wenn es um methodische, inhaltliche als auch um theoretische Aspekte ging. Ich konnte immer zu dir kommen und du hast alle meine kleinen, großen und ganz großen Fragen geduldig und mich aufbauend und motivierend beantwortet, auch wenn mich die Statistik wieder einmal an allem zweifeln ließ. Ich habe sehr sehr viel bei dir und durch dich gelernt! Danke für dein stets offenes Ohr, deine Hilfe in so mancher Krise und für alles, was wir in diesen mehr als drei Jahren zusammen ge- und erschafft haben. Ohne dich als Co-Autorin und deine tatkräftige Unterstützung und dein unermüdliches Engagement hätte ich dieses Projekt nicht in dieser Art und Weise zu Ende bringen können!

Ganz herzlich möchte ich mich auch bei meinen Teamkolleginnen und -kollegen bedanken: Michelle Rudeloff für die theoretischen Inputs und die menschliche Fürsprache, die moralische und inhaltliche Unterstützung und für so manches wertschätzende Feedback; Marina Pumptow für den (bei mir leider erfolglosen) Versuch, mir „R“ nahezubringen; Malte Ring für die vielen kleinen technischen und fachlichen Hilfen, für das konstruktive Feedback in den letzten Phasen meiner Dissertation und dafür, dass du dir immer Zeit nahmst, um ein kleines Küchen- oder Bürogespräch zu führen; und Markus Trämer für die Geduld, mir zuzuhören.

Sabine Montua, Stephanie Schuhl und Felix Hettig von der IW Köln Junior gGmbH möchte ich sehr dafür danken, dass sie durch ihre Unterstützung dazu beigetragen haben, dieses Projekt mit den nötigen Hintergrunddaten zu versorgen.

Ein großer Dank gebührt auch meinen Freunden, die mir während dieser Zeit immer moralisch zur Seite gestanden, sich um mein Wohlergehen gesorgt und mich ertragen haben: Harald, Jörg und Stefan, Michael, Uli und Winnie. Nicht zu vergessen Thomas Adam, der mir schon vor sieben Jahren diesen Floh ins Ohr gesetzt hat.

Zum Schluss geht mein tiefster Dank an meine beiden Kinder Vivian und Cedric: Ihr habt immer an eure Mum geglaubt, auch wenn ihr dieses Projekt als eine ihrer mehr waghalsigeren Ideen angeschaut habt. Ich danke euch dafür, dass ihr mich nicht davon abgebracht habt, sondern durch eure Ansichten darin bestärkt habt, damit anzufangen, weiterzumachen und zu Ende zu bringen.

ABSTRACT

Gaining experience from the research area of economic education in relation to entrepreneurship education has been a major challenge of educational research and practice in recent decades.

However, in order to investigate how entrepreneurship education and its programmes affect students, up-to-date systematic and empirically based studies are required. This will help to obtain reliable results on the effects of the respective programmes, for example with regard to the intention of future venture creation or the process of acquiring and developing entrepreneurial competences which are also the building blocks for further development of programmes dealing with entrepreneurship education. Although researchers as well as educational practitioners attribute great importance to entrepreneurship education in terms of personal, social, civic, professional and methodological competence, empirical research aiming at which specific competences are gained within a specific entrepreneurial programme needs to be further elaborated.

Based on the importance of economic education and its relation to entrepreneurship education, in this dissertation analysis is made on competences being developed among students who took part in student companies, an entrepreneurial programme within the field of entrepreneurship education. To prepare the theoretical ground for it, the multifaceted definitions of entrepreneurship (varying on various theoretical and pedagogical approaches) and the resultant manifold delineations of entrepreneurship education had been worked through and a number of them are explicated according to their respective approach. This great diversity of definitions helps to understand the existing heterogeneity of entrepreneurship education both in higher education and in schools. It also explains the call for a common framework which researchers constantly claim for since frameworks of entrepreneurship education are as various and diverse as the definitions of it. A selection of frameworks differing according to their theoretical and methodological approach set the scene for the design of a newly conceptualized framework for entrepreneurial competences which the administered empirical study is based on.

In Paper 1 this newly designed and theoretically founded competence framework is presented. An initial literature review carried out to clarify the specific

competences in the field of entrepreneurship revealed more than 100 competences commonly related to entrepreneurs. Departing from this and from the perspective of competence orientation different existing frameworks for entrepreneurial competences have been examined. This resulted in a framework that provides the basis and may serve as a model for assessing the development of entrepreneurial competences. This new framework was designed and developed in a multistage process and is characterized by the fact that the variety of different competence areas which have been identified by the initial literature review is structured along three levels: the economic, the personal and the team level. The constructs assigned to each level and generated within the competence framework have been operationalised for further empirical research. By means of quantitative surveys, future research can thus investigate whether a relevant intervention within the scope of entrepreneurship education will contribute to the development of entrepreneurial competences.

Based on the fact that interventions need to be assessed to examine the effectiveness of the programme, the research instrument was operationalised by a questionnaire to investigate the development of entrepreneurial competences, using data from student participating in student companies at schools in Baden-Württemberg, Germany. Embedded in research on entrepreneurial competences, Paper 2 presents this instrument based on the previously discussed framework, aiming to find and validate the elaborated factors and constructs. The instrument in form of a questionnaire-based survey was distributed online. The instrument development used data from a pilot test in May 2017 with 163 respondents and from the pre-test in November 2017 with 226 students having completed the questionnaire. Data gathered were entered into SPSS for the respective analyses. The pre-test's reliability analysis produced internal consistency values, results of the exploratory factor analysis for dimensional reduction indicated the theoretically assumed relations between the factors. A confirmatory factor analysis was performed to determine the consistency of the given factor structure with the existing data. The data proved to be consistent with the assumptions made, but only with regard to the individual level and the team level. In respect of the economic level, the value of the Comparative Fit Index (CFI) was below the usually assumed threshold. All in all, the instrument proved to be reliable and valid.

As research on entrepreneurship education programmes, especially on mini-companies which rely on an experiential learning setting, is still a young field and shared frameworks concerning entrepreneurial competences and longitudinal research designs are missing, Paper 3 addresses this research gap by analysing whether students who participate in a mini-company develop entrepreneurial competences. Since this entrepreneurial programme is allocated with the experiential learning and teaching approach by creating a real-life situation, the topic of experiential learning and its theory is elucidated, next to the findings of the empirical study built upon the validated and psychometrically sound research instrument presented in Paper 2. The results of this quasi-experimental study with a pre-test/post-test design and a control group are presented in Paper 3 and show that students expand their entrepreneurial competences specifically on an economic level. In comparison, they show only limited developments on the personal and on the team level.

All papers in this dissertation investigated the research questions and are embedded in theoretical approaches towards entrepreneurship education and entrepreneurship education programmes. Results are summarized and discussed in relation to strengths and limitations of the present dissertation which will then direct to implications for future research and further policy and practice.

ZUSAMMENFASSUNG

Eine große Herausforderung der Bildungsforschung und -praxis in den letzten Jahrzehnten ist es, Erfahrungen aus dem Forschungsbereich der ökonomischen Bildung zur Entrepreneurship Education zu gewinnen. Um Auswirkungen von schulischen Programmen zur Bildung von unternehmerischem Denken und Handeln auf die Schülerinnen und Schüler zu erforschen, sind aktuelle, systematische und empirisch fundierte Studien erforderlich. Damit ist es möglich, zuverlässige Ergebnisse über die Effekte der entsprechenden Programme zu erhalten, z.B. in Bezug auf die Intention zukünftiger Unternehmensgründungen oder den Prozess des Erwerbs und der Entwicklung unternehmerischer Kompetenzen. Diese sind auch ein Baustein für die weitere Entwicklung von Programmen, die sich mit Entrepreneurship Education befassen. Obwohl sowohl Forscher als auch Bildungspraktiker der Bildung zu unternehmerischer Initiative und Unternehmertum im Hinblick auf persönliche, soziale, staatsbürgerliche, berufliche und methodische Kompetenz große Bedeutung beimessen, ist es notwendig, dass intensive empirische Forschung durchgeführt wird, in deren Fokus steht, welche spezifischen Kompetenzen innerhalb eines bestimmten unternehmerischen Programms oder einer Intervention erworben werden. Ein Hauptanliegen der vorliegenden Dissertation ist es demnach, die Forschungslücke bezüglich der Messung der Entwicklung von unternehmerischen Kompetenzen zu verringern.

Ausgehend von der Bedeutung der ökonomischen Bildung und deren Bezug zur Bildung von unternehmerischem Denken und Handeln, wird in dieser Dissertation eine Analyse über die Entwicklung von Kompetenzen bei Schülerinnen und Schülern durchgeführt, die in Schülerfirmen, einem Programm im Bereich der Entrepreneurship Education, teilgenommen haben. Zur Vorbereitung der theoretischen Grundlagen wurden die verschiedenen Definitionen von Entrepreneurship (die sich in verschiedenen theoretischen und pädagogischen Ansätzen unterscheiden) und die daraus resultierenden vielfältigen Ansätze der Entrepreneurship Education durchgearbeitet und einige davon werden entsprechend ihrem jeweiligen Ansatz erläutert. Diese große Vielfalt an Definitionen trägt dazu bei, die bestehende Heterogenität in der Entrepreneurship Education sowohl in der Hochschulbildung als auch in den Schulen zu verstehen. Sie erklärt auch die Forderung nach einem allgemeinen Rahmen oder Modell,

die von den Forschern immer wieder erhoben wird, da die Rahmenbedingungen für die Bildung von unternehmerischem Denken und Handeln so unterschiedlich und vielfältig sind wie die Definitionen. Eine Auswahl von Modellen, die sich je nach ihrem theoretischen und methodischen Ansatz unterscheiden, bildet die Grundlage für die Gestaltung eines neu konzipierten Kompetenzrahmens für unternehmerische Kompetenzen, auf dem die vorliegende empirische Studie basiert.

In Paper 1 wird dieser neu gestaltete und theoretisch fundierte Kompetenzrahmen vorgestellt. Eine erste Literaturübersicht, die zur Klärung der spezifischen Kompetenzen im Bereich des Unternehmertums durchgeführt wurde, ergab mehr als 100 Kompetenzen, die gewöhnlich mit Unternehmern in Verbindung gebracht werden. Zusätzlich wurden unter dem Gesichtspunkt der Kompetenzorientierung verschiedene bestehende Kompetenzrahmen für unternehmerische Kompetenzen untersucht. Ein neuer Kompetenzrahmen wurde entwickelt, der die Grundlage für die Bewertung der Entwicklung unternehmerischer Kompetenzen bildet und als Modell dienen kann. Dieser neue Rahmen wurde in einem mehrstufigen Prozess entworfen und entwickelt und zeichnet sich dadurch aus, dass die Vielfalt der verschiedenen Kompetenzbereiche, die bei der ersten Literaturrecherche identifiziert wurden, auf drei Ebenen strukturiert wird: der wirtschaftlichen, der persönlichen und der Teamebene. Die jeder Ebene zugeordneten und innerhalb des Kompetenzrahmens generierten Konstrukte wurden für die weitere empirische Forschung operationalisiert. Da die Entwicklung unternehmerischer Kompetenzen bei verschiedenen Interventionsansätzen bislang noch nicht umfassend untersucht wurde, kann mit Hilfe quantitativer Erhebungen auf Basis des Rahmens in Zukunft untersucht werden, ob eine Intervention im Kontext der Entrepreneurship Education zur Entwicklung unternehmerischer Kompetenzen beiträgt.

Um die Wirksamkeit eines Programms innerhalb der Entrepreneurship Education zu erforschen, wurde ein Fragebogen auf Basis des Forschungsinstruments entwickelt, um überprüfen zu können, ob durch die Teilnahme an einem solchen Programm eine Entwicklung unternehmerischer Kompetenzen stattfindet. Dabei wurden Daten von Schülerinnen und Schülern, die an Schülerfirmen an Schulen in Baden-Württemberg (Deutschland) teilnehmen, erhoben.

Paper 2 stellt die Operationalisierung der im Kompetenzrahmen generierten Konstrukte mit Hilfe einer quantitativen Befragung in Form einer online-fragebogenbasierten Umfrage vor. Bei der Entwicklung des Instruments wurden Daten aus einem Pilotversuch im Mai 2017 mit 163 Befragten und aus dem Pre-Test im November 2017 mit 226 Schülerinnen und Schülern, die den Fragebogen ausgefüllt hatten, verwendet. Die gesammelten Daten wurden für die jeweiligen Analysen in SPSS eingegeben. Die Reliabilitätsanalyse des Pre-Tests ergab interne Kohärenzwerte, eine explorative Faktoranalyse zur Dimensionsreduzierung wurde durchgeführtund zeigte die theoretisch angenommenen Beziehungen zwischen den Faktoren auf. Um die vorgegebene Faktorenstruktur auf ihre Konsistenz mit den vorhandenen Daten zu ermitteln, wurde eine konfirmatorische Faktoranalyse ausgeführt. Dabei erwiesen sich die Daten als konsistent mit den getroffenen Annahmen, jedoch nur bezüglich der individuellen Ebene und der Teamebene. Für die wirtschaftliche Ebene lag der Wert des Comparative Fit Index (CFI) unter dem üblicherweise angenommenen Schwellenwert. Alles in allem erwies sich das Instrument als reliabel und valide.

Die Forschung zu Programmen und Interventionen innerhalb der Entrepreneurship Education, die sich im Bereich des experimentellen und erfahrungsbasierten Lernens bewegen, ist ein noch junges Feld. Insbesondere gibt es eine Forschungslücke in Bezug auf Schülerfirmen, die diesen erfahrungsorientierten Lernansatz verfolgen und damit bezüglich Forschungen, die mit einem Längsschnittforschungsdesign die Entwicklung unternehmerischer Kompetenzen nachweisen. Paper 3 befasst sich mit dieser Forschungslücke und die Ergebnisse dieser quasi-experimentellen Studie mit einem Pre-Test-/Post-Test-Design und einer Kontrollgruppe werden vorgestellt. Diese zeigen, dass die Schülerinnen und Schüler der Experimentalgruppe ihre unternehmerischen Kompetenzen gezielt auf ökonomischer Ebene erweitern. Im Vergleich dazu zeigen sie nur begrenzte Entwicklungen auf der persönlichen und auf der Teamebene. Da diesem unternehmerischen Programm der Ansatz des erfahrungsorientierten Lernens und Lehrens durch die Bereitstellung einer Realsituation zugrunde liegt, wird neben den Ergebnissen der empirischen Studie, die auf dem in Paper 1 und Paper 2 vorgestellten validierten und psychometrisch fundierten Forschungsinstrument aufbaut, das Thema des erfahrungsbasierten Lernens und seine Theorie erläutert.

Im Anschluss werden die Ergebnisse zusammengefasst, auf Stärken und Limitationen der vorliegenden Dissertation eingegangen und die sich daraus ergebenden Forschungsdesiderata und Implikationen für Bildungspolitik und Praxis diskutiert.

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1 Introduction and Theoretical Background of Economic Education

For people in a more and more globalised and cross-linked world, economic literacy and economic understanding are crucial in order to effectively solve problems in everyday life. Whether it is the decision on how to spend or invest money on a personal financial base, coping with social and economic challenges, deciding on entrepreneurship, or on understanding consumer economics or business principles, being able to apply some basic economic analysis paves the way for filling out the different roles people in an economically structured world are faced with (National Assessment Governing Board, 2006). Basic economic analysis comprises, for example, the function of economies and markets, the interdependencies of benefits and costs, or the trade-offs people are challenged by limited resources (personal, financial or environmental) and economic understanding "is, more than anything else, the ability to use a set of principles to better understand how the world around us works" (National Assessment Governing Board, 2006, p. 7).

However, economic education should not only be restricted to mere expertise and knowledge in economics, but should also raise questions on more comprehensive economic aspects such as economic systems, the complexity and dynamics of modern industrial society, the challenges and downsides of consumer behaviour, the roles of the employee and entrepreneur, worker and investor, and vocational and career development. Economic education should, thus, be more than pure economics; instead, it should be embedded in societal, historical, political and spatial context (Arndt, 2017). Demonstrating the diversity of conflicting and sometimes contradictory theories and its consequences on economic education is essential. Moreover, it is indispensable to be able to distinguish between suitable and unsuitable theories and practice models. Thus, competences to evaluate theories and practical concepts (Strunk, 2018) as well as diverse economically epistemological perspectives are crucial. In consequence, economic education contributes to enabling (economically educated) people to justify decisions, analyse real-life situations economically, explain connections within an economic system, understand and help to shape framework conditions of economic activity, and assess conflicts from an economic perspective and an ethical point of view (Keipke & Lenger, 2018).

Above all, the overall goal of economic education is to empower individuals to be independent, critical, competent and responsible in carrying out economically shaped and oriented life situations (May, 2010) and thereby it is the gateway for gaining social and participatory competences in order to be able to partake in democratic citizenships (Engartner & Krisanthan, 2016). Still, scholars adopt different views on conception and perception of economic education. Remmele (2009), for instance, distinguishes between a (reflective) participation in economic interactions on the one hand and an abstract ability to judge socio-economic processes on the other hand. Bank and Retzmann (2012), however, differentiate between a theoretical dimension (economic knowing and thinking, economic attitudes in order to use this skill, and moral judgement) and an observational dimension (economic education tests, tests on attitudes, and moral judgement tests). That means that different dispositions have to be taken into account: there is economic thinking and acting in regard to social issues from the participant's perspective, but then there is a more abstract perspective of an observer respecting economic processes (Remmele, 2009). In consequence, economic competences to judge, decide and act for one's own good and for the good of all should be fostered in economic education. Hereby, science orientation (economic perspectives, methods and findings), situation orientation (economically influenced life situations) and personality development (maturity, efficiency, responsibility) are in a balanced equilibrium with each other (Bank & Retzmann, 2012, p. 16).

By taking into account that economic competence is always subject-bound and individual, not only the individual economic perspective but also the different perceptions of economic life situations differing from person to person must be taken into consideration when teaching economic education (Frühauf, 2017). Pursuing a concept of life-situation-oriented economic education including criteria such as problem and experience orientation, exemplarity or the creation of concern as coherent didactic concept, will also help to integrate economic aspects into a "holistic societal syllabus"[1] (Steinmann, 2008, p. 211). This is not only valid for different perspectives on economics and economic concepts, but also for different approaches respecting methodology in teaching. Thus, the question arises of how should economics and economically shaped life situations best be integrated into schools' curricula?

[1] Translation by author

1.1 Economic Education and Learning

Alternative and innovative teaching methods (such as self-directed and experience-based learning) instead of the talk-and-chalk-method (Becker & Watts, 2001) are needed to put more focus on the students' competences and outcomes. Learning through experience helps to understand the complex economic world. Learning in economic courses has, therefore, to be associated with learning in variations, including the exploration of new ways of opportunities how to act, think and reflect (Liening, 2015). In consequence, this would lead to self-organisation processes which are a core contribution to economic education (Liening, 2015). Learning is a process of knowledge and understanding (Walstad & Wagner, 2016) and hence subject-determined. By transforming economic knowledge into real-life situations, learners are forced to constantly reflect and enrich their knowledge through self-reliant work and experience, and, if possible, with a real and original encounter with the learning object (Roth, 1976). That means that successful economic education with a constant interdependency of theory and practice is always action-relevant. It should, in turn, always be action-oriented so that learners are enabled to deal with economic challenges not only in order to design their own future (Liening, 2015) but also to develop a high level of economic decision-making ability, economic reasoning, and the ability to solve (real-life) problems, and to cope with economically shaped life situations (May & Albers, 2008). Action-oriented teaching methods supporting the domain-specific development of economical competences such as business cases, simulation and business games, scenario technologies, economic experiments, field studies in companies and institutions and student or mini-companies[2] are more and more included into curricula of economic classes (Schuhen, 2009) and can help to support positive learning in economic classes (Happ, Zlatkin-Troitschanskaia, & Schmidt, 2016) and the motivation to continue learning. By participating in student companies as an action-oriented learning setting, students are not only enabled to identify risks and the interaction of supply and demand in markets, to deal with competitors or to know about business finance in a real-life setting (thus stimulating economic competences) but are also inspired in terms of team competences (e.g. communicating or networking) and personal competences (e.g. self-

[2] In the following, the terms student company and mini-company will be used interchangeably

efficacy or initiative). Such overall competences can be seen as entrepreneurial competences which are often the target of so called entrepreneurship education programmes.

1.2 Research Questions of the Present Dissertation

Entrepreneurship education is embedded in economic education and exists in various forms and varieties (see Section 2.2). The present dissertation investigates the development of entrepreneurial competences within the framework of entrepreneurship education at schools. This is a highly relevant research topic as mini-companies as an action-oriented method within economic education is on the rise and is proposed even in state education plans[3]. Knowledge and research, however, on outcomes and effects of entrepreneurship education and entrepreneurial programmes is rather scarce, also with regard to the transfer of research findings into schools' curricula and policy (Fayolle, 2013; Marques & Albuquerque, 2012; Vanevenhoven & Liguori, 2013). This could also be due to the variety of teaching and learning approaches in entrepreneurship education. Such, the present dissertation contributes to research on entrepreneurship education programmes and has the overarching goal of deepening the understanding of the entrepreneurial competences to be developed in such programmes which form an integrated part of economic education. In order to fill a research gap in this area, it thus analyses the development of entrepreneurial competences of pupils participating in a specific entrepreneurial programme run at schools to find out how the development of entrepreneurial competences may be connected to a specific learning method. The entrepreneurial competences the study refers to are based on a profound literature review (e.g. Bacigalupo, Kampylis, Punie & Van den Brande, 2016; Dermol, 2010; European Commission, 2006, 2018; Kuratko, 2005; Lackéus, 2015; Man, Lau, & Chan, 2002; Moberg, 2014; Mulder, Lans, Verstegen, Biemans, & Meijer, 2007; Retzmann, 2011; Sánchez, 2011; Schwarz, 2014; Seeber, Retzmann, Remmele, & Jongebloed, 2012; Weber, Oser, Achtenhagen, Fretschner, & Trost, 2014). And as competency mastery is an issue more emphasis will be put on in future (Kuratko & Morris, 2018), the analysis and findings of this dissertation are based

[3] See for example http://www.bildungsplaene-bw.de/,Lde/LS/BP2016BW/ALLG/GYM/WI

on the following research questions which will be answered by an empirical study with a quasi-experimental design:

> Research Question 1: How can entrepreneurial competences be operationalized?
>
> Research Question 2: Which competences do students develop through student companies in entrepreneurship education?

In this manner, this dissertation addresses the following aspects and is structured as follows: the introductory section (Section one) gives an outline of economic education and its need for economic literacy in order to fulfil the requirements of today's citizen, and its need for innovative teaching techniques. It is completed by specifying the research questions of this dissertation.

In Sections 2 to 5, the broad research context and theoretical frameworks are described: Section 2 will provide the theoretical backgrounds of entrepreneurship and entrepreneurship education within the field of economic education to enable the reader to contextualize the aims of entrepreneurship education. Different frameworks for entrepreneurship education are outlined in Section 3, followed by deeper insights on the state of research on entrepreneurship education and the state of research on entrepreneurial programmes and their expected outcomes (Section 4). Experiential learning as a theoretical foundation for student companies will be followed by the state of research on student companies as one of the entrepreneurial programmes with an experiential learning approach and will be handled within Section 5.

Subsequently, three papers are presented in Section 6. Paper 1 presents the newly designed and theoretically founded competence framework as a basis for developing a research instrument on entrepreneurial competences. Paper 2 describes the development of the research instrument and first findings of a pilot test and the pre-test. Paper 3 outlines the research design and the findings of the empirical study.

In Section 7 the study's findings are discussed with regard to the research questions and the research context and the strengths and limitations of the present dissertation are outlined before delineating implications for future research on student companies within entrepreneurship programmes and implications for policy and practice.

2 Theoretical backgrounds of entrepreneurship education within the field of economic education

> "Productive *entrepreneurship* means being ignorant by choice. Focusing on important questions puts us in the awkward position of being ignorant. One of the beautiful things about *entrepreneurship* is that it allows us to bumble along, getting it wrong time after time, and feel perfectly fine as long as we learn something each time. No doubt, this can be difficult for students who are accustomed to getting the answers right. No doubt, reasonable levels of confidence and emotional resilience help, but I think *entrepreneurship* education might do more to ease what is a very big transition: from learning what other people once discovered to making your own discoveries. The more comfortable we become with being *entrepreneurial*, the deeper we will wade into the unknown and the more likely we are to make big discoveries".
> (adapted from Neck, Greene, & Brush, 2014, p. 17, citing Schwartz, 2008, p. 1771)

2.1 Entrepreneurship

Entrepreneurship education itself as one pillar of economic education has come into the fore as entrepreneurship has become an important phenomenon of a nation's societal development and innovative change and is also seen as a vehicle for technological and economic growth and welfare, as well as of innovation and competitiveness (Commission of the European Communities, 2003; Fenton & Barry, 2011; Kuratko, 2005, 2016; Lackéus & Williams Middleton, 2013; Peterman & Kennedy, 2003; OECD, 1998; Wilson, 2008) and of being empowering and transformational (Kuratko & Morris, 2018). However, definitions of entrepreneurship and entrepreneurship education encompass a broad diversity of interchangeable connotations and vary according to theoretical and pedagogical approaches and often comprise a vast variety of diverse teaching, learning and institutional settings (Fayolle & Gailly, 2008; Fenton & Barry, 2011). Cunningham and Lischeron (1991) and Fayolle and Gailly (2008) even state that – at the ontological and theoretical levels - "there is no consensus regarding what entrepreneurship is" and ask "how could there be a consensus regarding what entrepreneurship stands for as a

teaching subject" (Fayolle & Gailly, 2008, p. 570). Due to a more traditional view on entrepreneurship focussing on the creation of new ventures and new jobs, entrepreneurship education seems to lack (academic) legitimacy at the practical and pedagogical levels as there is the still remaining question if entrepreneurship can be taught at all (Fayolle & Gailly, 2008; Fenton & Barry, 2011) when presuming that entrepreneurship is just a matter of character and psychological appearances and that an entrepreneur is born and not made, an idea that has been existing for a long time (Marques & Albuquerque, 2012). Drucker's (1985) conclusions, however, that entrepreneurship is a discipline that can be learned is becoming more and more accepted, the question if it can be taught becomes obsolete and is being replaced by the questions of what should be taught and how should it be taught (Ronstadt, 1985). Hence, the vibrant processes evoked by entrepreneurship can be fortified and inspired by entrepreneurship education (Kuratko, 2005; Marques & Albuquerque, 2012) designed upon effective and technologically updated educational learning opportunities and settings. Handling the above-mentioned diversity of perspectives, arguments and dimensions regarding entrepreneurship is a demanding challenge for practitioners, researchers, educators and teachers. This difficulty is caused by the diminished progress of designing conceptual frameworks (Kuratko, Morris, & Schindehutte, 2015) and the lack of theoretical and practical guidelines, despite of many different (research-based) sources such as academic journals, books, periodicals, conference papers or policy publications (Kuratko, 2005), but also hampered by a wide variation across countries, states and national educational institutional stipulations.

Definitions of entrepreneurship also differ according to various disciplines, e.g. management, psychology, anthropology or organizational behaviour (Kuratko et al., 2015). As a founder of businesses, Kent (1990, p. 4) citing Gunderson refers to entrepreneurship as "drawing from a wide range of skills capable of enhancement to add to a target niche of human activity. The effort in finding and implementing such opportunities is rewarded by income and independence as well as pride in creation". Bruyat (1993) and Bruyat and Julien (2001) take up a more constructivist approach, taking also into account value creation and timely, environmental and entrepreneurial processes as well as the impact of the value creation process on the individual and its responsibility for the process of value creation in. The importance of entrepreneurship

has been and still is a central topic within the European Commission, stating that entrepreneurship "is first and foremost a mindset. It covers an individual's motivation and capacity, independently or within an organisation, to identify an opportunity and to pursue it in order to produce new value or economic success" (Commission of the European Communities, 2003, p. 5). Value creation to and for people is also essential, in a definition by Moberg, Stenberg, and Vestergaard (2012, p. 14): "Entrepreneurship is when you act upon opportunities and ideas and transform them into value for others. The value that is created can be financial, cultural, or social". Lackéus (2016, p. 1) takes up the value creation approach and expands it as "value creation as educational practice", whereas value here does not only focus on monetary value but on societal, personal and cultural value accordingly (economic value creation, enjoyment value creation, social value creation, harmony value creation, influence value creation). These five value creation activities are the results of the integration of three pluralistic perspectives (psychological, behavioural economics, and economic sociological) with the economic perspective of value and are seen as acting simultaneously and with one another (Lackéus, 2016, p. 12). Wilson (2008, p. 120), working on impact investment, defines entrepreneurship as "the pursuit of opportunities beyond the resources you currently control" and that it "is about growth, creativity and innovation." Gibb (2008, p. 6), researcher on entrepreneurship education, understands entrepreneurship as "behaviours, skills and attributes applied individually and/or collectively to help individuals and organisations of all kinds, to create, cope with and enjoy change and innovation involving higher levels of uncertainty and complexity as a means of achieving personal fulfilment and organisation effectiveness" and for Neck et al. (2014, p. 3) entrepreneurship "is a practice of identifying and creating from what is relatively unknown, new or emerging" but "is not simply new venture creation. The word entrepreneurship has taken on new meaning and is motivating a generation that must think and act more boldly than ever before" (Neck et al., 2014, p. 16). From a developmental science perspective, Obschonka and Silbereisen (2012, p. 107) understand entrepreneurship "as starting and growing one's own business (or, more broadly, as the identification, evaluation, and exploitation of opportunities)". Geldhof, Porter et al. (2014, p. 431) with studies on youth development, see "[E]ntrepreneurship [offering] a viable and proven pathway to economic growth and personal fulfilment"

and representing “a form of adaptive developmental regulation through which both entrepreneurs and their ecologies benefit” (Geldhof, Weiner et al., 2014, p. 81). Johannisson (2016, p. 403), researcher in the field of entrepreneurship and small business in Europe, describes entrepreneurship as “an attitude to life where change is considered to be a natural state” and Kuratko and Morris (2018, p. 12) predict that in future there will be “a continuing redefinition of entrepreneurship, which in itself can be positive”.

Approaching the term entrepreneurship by its characteristics, indicators and features, it results in the following outlining: entrepreneurship is an individual mindset, covering an individual’s motivation and competences, based and focused on the ability to spot opportunities and challenges and to develop strategies in order to pursue these target-oriented, also in respect of being economically successful and of advancing innovation. Understanding economic concepts, having, developing and realizing visions, being creative concerning problem-solving, being able to adapt to constantly changing framework conditions and heterogeneous groups, acting value-oriented, and maintaining ethical and sustainable thinking are key concepts for this entrepreneurial mindset.

In order to approach entrepreneurship as a whole, emphasis should go beyond business plans or case studies and encompass the complete entrepreneurial process, including environment, resources, concept, organizational context and the entrepreneur himself (Kuratko et al., 2015). For teaching entrepreneurship, this means that prior to knowledge transfer, the focus should be put on interdisciplinary skills and competences that are individually gained and developed by (economic) contents representing complex and realistic issues.

In order to further assess competence development in entrepreneurial education, a closer look at how entrepreneurship education is defined within various literature will be taken.

2.2 Entrepreneurship Education

According to these different and various definitions and attitudes towards entrepreneurship, the growing awareness upon this topic has spurred a demand for

characterisations and delineations upon entrepreneurship education, both conceptually and technologically. In accordance to the Commission of the European Communities (2003), entrepreneurship education should start at an early stage of the education system by systematically teaching and promoting entrepreneurial thinking and acting at school in order to foster an entrepreneurship-oriented culture as well as encouraging creativity, self-reliance and a proactive attitude towards entrepreneurship. Nonetheless, the 2016 Eurydice Report (European Commission/EACEA/Eurydice, 2016) examining 38 education systems in the EU reveals that only 11 of them currently have a detailed entrepreneurship education strategy, 18 got a broader strategy, whereas nine countries do not claim to have any national strategy linked to entrepreneurship education at all. Unfortunately, there are no data respecting entrepreneurship education strategies for Germany (European Commission/EACEA/Eurydice, 2016, p. 39), but a survey among German adults (aged 15 to 64) revealed, that only 34 per cent agreed "that their school education provided them with the skills and know-how would enable them to run a business" (OECD, 2014, p. 113). To remedy this deficiency, entrepreneurship education should be given a greater importance in the national educational plans of the German federal states and should become a part of compulsory education in Germany in order to strengthen entrepreneurship education in the school curricula and to generate and create social added value as well as to provide socio-economic effects on a macro-level (O'Connor, 2013).

The key challenge, however, is to overcome the lack of homogeneousness in curricula and programmes' designs and to establish policy guidelines for application and monitoring entrepreneurship education at schools. Even if there is a common understanding of entrepreneurship education being an important step for implanting an innovative culture in education institutions and thus having a notable impact on the so-called entrepreneurial mindset, the broad nomenclature for entrepreneurship leads, consequently, to a vast diversity of definitions and characterisations on entrepreneurship education due to the coexistence of the multifaceted domains in the educational context. The absence of common comprehensive learning outcomes respecting entrepreneurial learning thus leads to aggravated research on the development of entrepreneurship education, especially in Europe (Bacigalupo et al, 2016; European Commission/EACEA/Eurydice, 2016).

Pittaway and Cope (2007, p. 500) even state that "We do not really know what 'entrepreneurship education' actually *is*" when it is applied in practice, whereas Sarasvathy and Venkataraman (2011, p. 130) outline the relation of entrepreneurship and entrepreneurship education by examining two different methods: "[A]s a method of human action, comparable to social forces such [as] democracy and the scientific method, namely, a powerful way of tackling large and abiding problems at the heart of advancing our species", meaning that everyone can learn entrepreneurship through basic education when policy, pedagogy and practice are connected and synergised. Based on this comprehensive formulation, entrepreneurship education is said "[not to] generate necessarily entrepreneurs, but can promote, or potentiate, with renewed pedagogical goals and tools, the possibilities or capacities to be one" (Marques & Albuquerque, 2012, p. 57), to pervade "all areas from the entrepreneurial sphere itself to the personal qualities required for socially proactive citizenship" (Lindner, 2018, p. 119) and "should rather be more a 'factory' designed to produce (future) entrepreneurs capable of thinking, acting and making decisions in a wide range of situations and contexts" (Fayolle, 2013, p. 698) as thus it can "open people's minds and/or extend their knowledge" (Fayolle & Gailly, 2008, p. 572). Therefore, it should be defined as "the transfer of knowledge about how, by whom, and with what effects opportunities to create future goods and services are discovered, evaluated and exploited" (Kindle, 2007, p. 107).

Lackéus (2015, p. 10) identifies three pedagogical approaches of teaching entrepreneurship: the theoretical approach of teaching *about* entrepreneurship (as a cognitive element); teaching *for* entrepreneurship by providing the required skills and knowledge for future entrepreneurs; teaching *through* entrepreneurship as the pedagogical and experiential approach. According to Hytti and O'Gorman (2004) and Henry, Hill, and Leitch (2005), entrepreneurship education should be mirrored in the learning objectives of education *about* enterprise (understanding entrepreneurship by awareness creation and theory on entrepreneurship), education *in* enterprises (learning to become entrepreneurial by management trainings) and education *for* enterprise (learning to become an entrepreneur by encouraging people to set up their own venture). Based on a Delphi analysis on definitions of entrepreneurship education, Neck and Corbett (2018, p. 10) "encourage a transition to teaching approaches based on adult

learning, namely andragogy and heutagogy". Heutagogy is seen here as putting the emphasis on self-directed learning, based on the extension of andragogy, the theory of life-long learning of adults. Welsh, Tullar, and Nemati (2016, p. 127) put their focus on transformative changes and processes being developed over time rather than on methods: "Through entrepreneurship education, flexibility, adaptability, and reliance are taught and applied so that success can be achieved as workforce demands change over time", whereas Moberg et al. (2012, p. 14) identify entrepreneurship education as "[c]ontent, methods and activities supporting the creation of knowledge, competencies and experiences that make it possible for students to initiate and participate in entrepreneurial value creating processes". This approach is also pursued by Lackéus (2016, p. 2): "Letting students learn and develop through creating value for others can be a powerful method for developing entrepreneurial behavior, entrepreneurial competencies and even entrepreneurial identity".

Wai Mui Yu (2013, p. 705), though, sees significance in entrepreneurship education in a KSA (knowledge, skills, attitudes) approach: "Entrepreneurship Education (EE) enables learners to develop entrepreneurial knowledge, skills and attributes […] that draw on cultural and economic influences in society […] [and] is largely interdisciplinary, […] providing a means for students to learn how their interests and talents can be integrated into further study, employment, community service and educational opportunities".

Being aware that the educational system is a major part of linking and preparing the youth for their forthcoming part in society (Moberg, 2012), entrepreneurship education is also looked at as a means for career orientation or getting new perspectives on one's career (Costa, Caetano & Santos, 2016; Fayolle & Gailly, 2008, 2015; Geldhof, Weiner et al., 2014; Lazear, 2005; Obschonka & Silbereisen, 2012; Pittaway & Cope, 2007) as these competences and knowledge can then be transferred and help to decide either on becoming an entrepreneur or not by sharpening the awareness of one's strengths and weaknesses. "Going into any job, individuals with a broader range of skills, acquired either through investment or through endowments, are more likely to be entrepreneurs" (Lazear, 2005, p. 662). Additionally, enabling career planning and a more successful transition of students into the job market (whether self-employed or not) is

supported by entrepreneurship education (Bacigalupo et al., 2016; European Commission/EACEA/Eurydice, 2016).

In a more restricted sense, entrepreneurship education can also be described as a method aiming to develop, train and continuously advance expertise in terms of professional occupational skills that leads to entrepreneurial autonomy (Schwarz, 2014). A side effect of entrepreneurship education is to "[…] encourage the growth of new businesses thus exploiting the creative potential and depth of knowledge within [higher] education" (Birdthistle, Hynes, & Fleming, 2007, p. 266). Within a comprehensive framework of economic education, it is not only economic expertise and proficiency but also skills and competences that students will need and be in use of to cope with various (economical) life situations now and in their future. Thus, Kirchner and Loerwald define entrepreneurship education as follows: "Entrepreneurship Education comprises all educational processes that foster entrepreneurial creativity, innovative capability, belief in self-efficacy, performance motivation, rational risk management and sense of responsibility, and which generate economical and interdisciplinary competences that are needed for initiation, realisation and reflection of entrepreneurial initiative (entrepreneurship)" [4] (Kirchner & Loerwald, 2014, p. 39). However, it should be taken into account that "creating an entrepreneurial climate and an entrepreneurial mentality, facilitating experiments and learning, enhancing an organisation's adaptive abilities and ability to learn, searching new ways of organising the innovation process [and] balancing the need for individual autonomy with corporate strategy" (Harkema & Schout, 2008, p. 520) is a core issue of entrepreneurship education as well as equipping students with the required competences that are needed not only in the market context but also later on in life.

[4] Translation by author

3 Different Models and Frameworks for Entrepreneurship Education

There is a plethora of entrepreneurship education programmes, differentiated between curricular and extra-curricular offers, and ranging from business cases, simulation games, role plays, student companies, board games, analysing enterprises, establishing real-life experiences, and project work to preparing a business plan and developing a business idea (Gibb, 2008; Gibb & Price, 2014). Hence, all of these programmes provide inputs in multiple ways; matching these inputs with the desired (and sometimes not even clearly framed) outcomes, however, is difficult as participants' profiles and individual learning structures, knowledge and skills, and social and cultural influences are not coherent, nor are the pedagogical approaches or processes. It follows that there is a lack of a common and shared conceptual framework for entrepreneurship education which is syntonised with contemporary trends, on-going research and current progresses in entrepreneurship education (Thrane, Blenker, Korsgaard, & Neergaard, 2016) as well as linking pedagogical approaches to enterprising outcome to support effective entrepreneurial learning (Gibb & Price, 2014). Thus, the need for an instrument assessing and evaluating both input and output (here: objectives) is evident (Gibb, 2008) and this also applies to design a conceptual framework which provides the basis for a sound measuring instrument (Matlay, 2006; Samwel Mwasalwiba, 2010).

However, there are a number of conceptual frameworks for entrepreneurship education, extending from economic theory and its multi-definitional perspectives on entrepreneurship and entrepreneurship education and the demand for pedagogical processes being made visible. The aim is to overcome this lack of theoretically sound foundation, whether on assessing and evaluating entrepreneurship education programmes or on designing, comparing or improving the design (Draycott & Rae, 2011; Fayolle, 2013; Fayolle & Gailly, 2008; Fayolle, Gailly, & Lassas-Clerc, 2006b; O'Connor, 2013). These frameworks may also serve as a contribution to government policies as entrepreneurship advancement, development and teaching with respect to economic purposes can foster a nation's economic activity and performance, improve employment by creating jobs, have an impact on human capital issues and on regional as well as macroeconomic growth, and strengthen value orientation for a sustainable future and society (Audretsch & Keilbach, 2005; Costa et al., 2016; Lackéus & Williams

Middleton, 2013; Lindner, 2018; Volery, Müller, Oser, Naepflin, & del Rey, 2013). If not lacking consistency, they may also serve as guidelines for policymakers, researchers and educators within the complexity and diversity of an abundance of entrepreneurial programmes being offered worldwide, dependent on theoretical approaches, objectives and major purposes, and expected impacts, outcomes and effects either on economy or individual development (see Section 3.1). By clearly defining purposes and determining priorities, platforms are provided for a distinct selection of entrepreneurial programmes, depending on either economic outcomes and dynamics, supporting career development, intentions or competences, assessment of entrepreneurship education programmes, or individual attitudes and behaviour.

In the following, a selection of different models and frameworks of entrepreneurship education is presented to give a glance on their multitude differentiating inter alia on pedagogical approaches, ontological views, outcomes and respective measures, and the development of entrepreneurial competences. It will be discussed what possibly influences this evolution, also in order to make clear how challenging it is to design a 'common' framework of entrepreneurship education and to enlighten the call for it.

The models and frameworks described are subdivided according to their focus:

Context: Models and frameworks that focus on economic objectives and their related sectors, empirical research, the elements of entrepreneurship education, entrepreneurship education as a holistic learning approach, and entrepreneurial learning processes.

Theory and praxis: Models and frameworks that delineate the interrelationship between theory and practice, and the interrelationship between philosophy and pedagogy (epistemological approach).

Impacts: Models and frameworks that put their attention on impact factors, assessment of impacts, influences, and effects.

Competences: Models and frameworks focussing on mapping the entrepreneurial landscape by competences, influences on entrepreneurial competence, and the development of competences.

3.1 Context Models and Frameworks

An economic-driven approach was taken up by O'Connor (2013, p. 555), identifying four concrete objectives which supply the drafting of entrepreneurship education's purpose and orientation (see Figure 1). He connected behavioural distinctions to several units of analysis which consist of economic objectives and market contexts (differentiated by macroeconomic terms: utility – exogenous; development – exogenous; growth – expansionary; productivity – endogenous), of organisational levels of enterprises and their corresponding objectives (social change, innovation, survival or arbitrage), and of the individual form of reasoning (effectual, creative causal or causal) needed to contribute to these distinct objectives. Building upon this assumption, O'Connor (2013, p. 557) connected different sectors to the four economic objectives: Economic utility is linked to the social sector, targeting on social welfare, outcomes and businesses. Economic development is related to the knowledge sector emphasizing innovation and facilitating strategy and effectiveness. Economic productivity is associated with the corporate sector, concentrating on existing firms which enhance competitiveness by innovation and development of capabilities. Economic growth, finally, encompasses activities from all the other three sectors taking also into account the human actor level (such as knowledge, competences or experience).

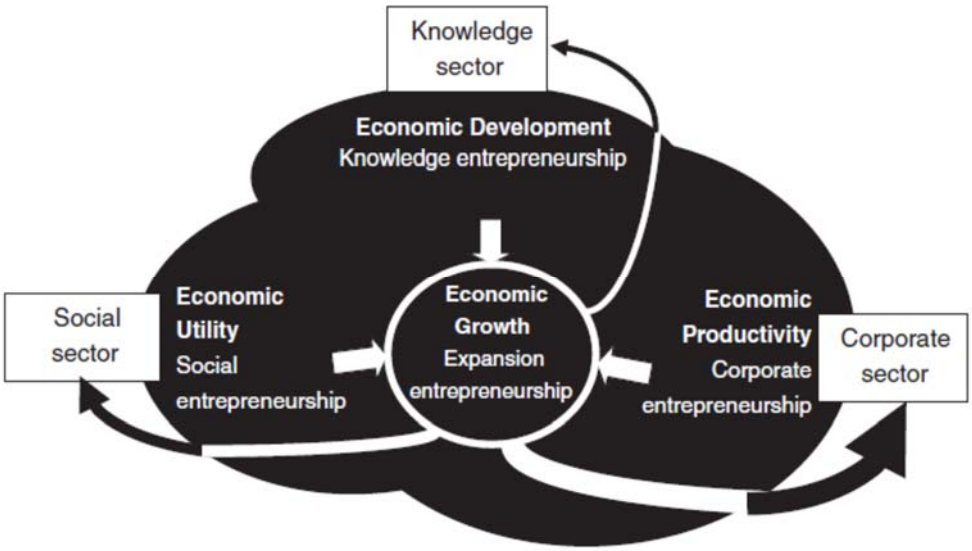


Figure 1 Relating sectors to the economic objectives. (O'Connor 2013, p. 557)

As a result of a systematic literature review, Pittaway and Cope (2007) present a thematic framework for entrepreneurship education in higher education identifying key areas for empirical research (see Figure 2). Two macro-level areas were detected: The "general policy climate for entrepreneurship education" as a "systemic input into the environment" and the "general enterprise infrastructure" as a "systemic output" providing the "infrastructure and support […] once 'education' is turned into 'practice'" (Pittaway & Cope, 2007, p. 484). Factors that serve as indirect inputs for entrepreneurship education are, for instance, the university enterprise context, including the supply of the faculty in terms of academic enterprise, student-entrepreneur interactions, outreach activity and management training. These factors, however, also influence graduate employability and graduate enterprise and as such have an impact on the general enterprise infrastructure. The core of the framework is enclosed in the programme context (comprising pedagogical curricula, extracurricular activities, the intensities of student orientation and propensity and their capability to reveal this, and departmental philosophical influences). When systemically identifying contextual factors and then consolidating all these areas and factors, the demand for a holistic approach to entrepreneurship education is obvious, but then again there is the need for transparency on the outcomes to design the adjacent incomes. Thus, the impact of interventions and specific entrepreneurial programmes might be evaluated on a high degree.

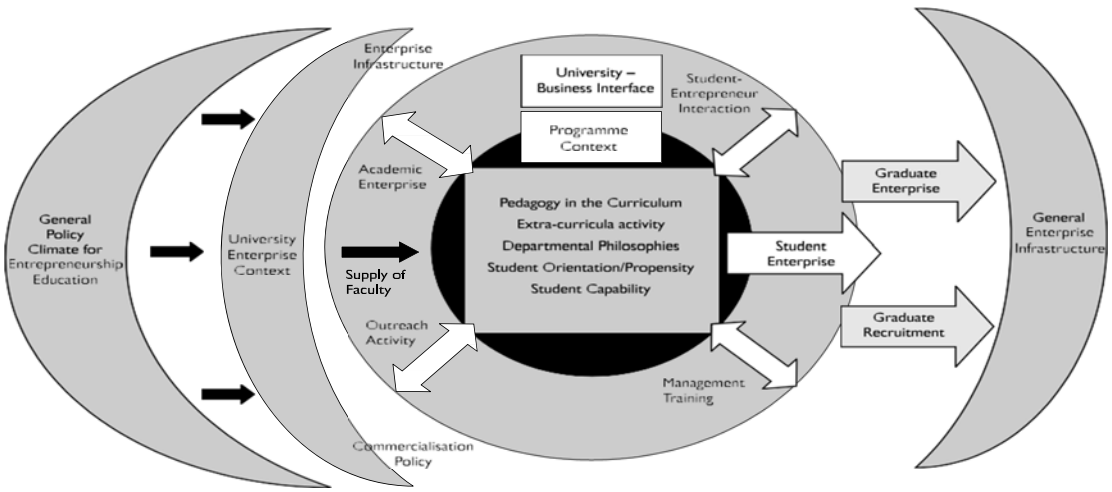


Figure 2 A Thematic framework for entrepreneurship education (Pittaway & Cope, 2007, p. 484)

As soon as 2006, the European Commission had established a European reference framework and identified eight key competences for lifelong learning. One of these, the "[s]ense of initiative and entrepreneurship", "refers to an individual's ability to turn ideas into action. It includes creativity, innovation and risk-taking, as well as the ability to plan and manage projects in order to achieve objectives. This supports individuals […] in being aware of the context of their work and being able to seize opportunities and is a foundation for more specific skills and knowledge needed by those establishing or contributing to social or commercial activity" (European Commission, 2006, n.p.). In the framework (see Figure 3), elements of entrepreneurship education are split up into two categories: on the one side, there is the entrepreneurial individual, on the other side entrepreneurship in personal, social and work life. Knowledge (learn to understand entrepreneurship), skills (learn to become an entrepreneur) and attitudes (learn to become entrepreneurial) of the individual influence processes and behaviour in personal, societal and work-life and thus bridge the worlds of the individual and society by simultaneously improving the awareness of the individual's role in the context of work, society and economy.

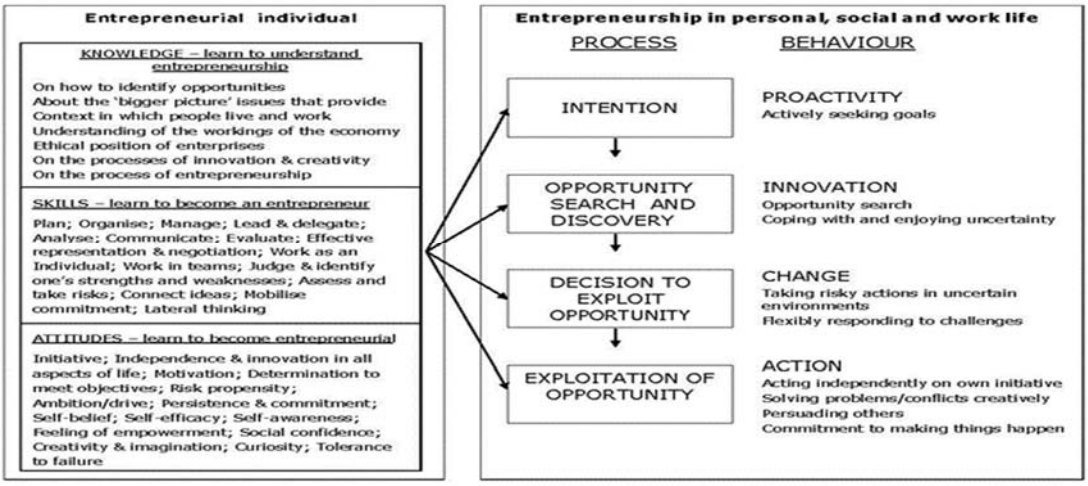


Figure 3 The elements in entrepreneurship education (European Commission, 2012, p. 43)

Intentions and competence levels of entrepreneurship education are combined in the TRIO Model of Entrepreneurship Education (see Figure 4), developed during a pilot project of the Schumpeter College (Lindner, 2018). It covers three segments: core entrepreneurship education (core competences fostering entrepreneurial development and implementation on the personal or individual level), entrepreneurial culture

(encouraging entrepreneurial thinking, communication and relationships by empathy and independence), and entrepreneurial civic education (focussing on a societal culture of responsibility in order to face social challenges). Intentions are divided into three different approaches of entrepreneurship education: learning to become an entrepreneur (learning how to start and manage a business: "education *for* entrepreneurship"), learning to become entrepreneurial (learning to take responsibility for one's own life: "education *through* entrepreneurship") and learning to understand entrepreneurship (learning about an entrepreneur's role in society: "education *about* entrepreneurship") (Lindner, 2018, p. 120). Competences comprise three levels (primary, secondary and tertiary level). Segments, intentions and levels can be combined in various ways so that entrepreneurship education can be varied according to curricular dimensions and requirements.

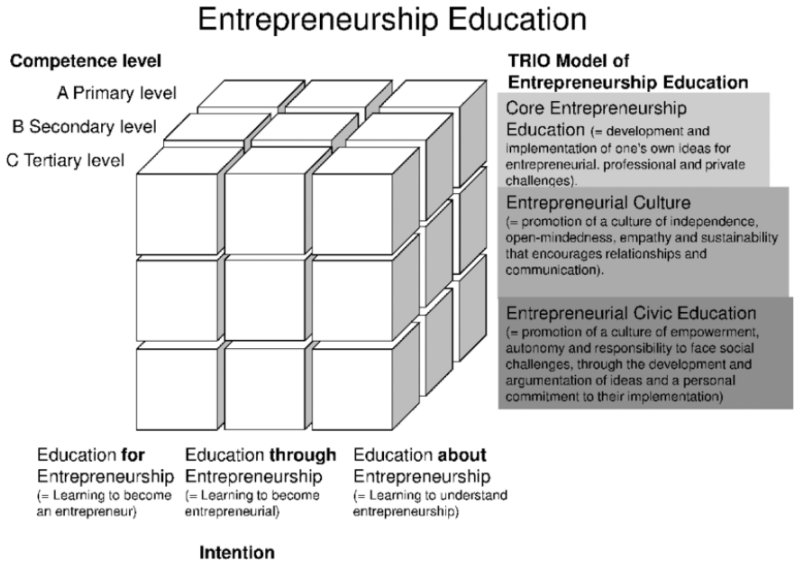


Figure 4 TRIO Model of Entrepreneurship Education: Possible combinations in Entrepreneurship Education (Lindner 2018, p. 120)

Shane and Venkataraman (2000) see the biggest challenge in creating a unifying framework in the definition of entrepreneurship when this discipline is reduced to the entrepreneur's deeds and person: "The problem with this approach is that entrepreneurship involves the nexus of two phenomena: the presence of lucrative opportunities and the presence of enterprising individuals" (Shane & Venkataraman, 2000, p. 218). Reconceptualising this approach, Thrane et al. (2016) present the

entrepreneurship education learning process as the result of the nexus of the individual (or team) and a disclosive space, where entrepreneurial identity work and development and entrepreneurial opportunity creation are seen as a mutually beneficial process supporting the entrepreneurial learning process (see Figure 5).

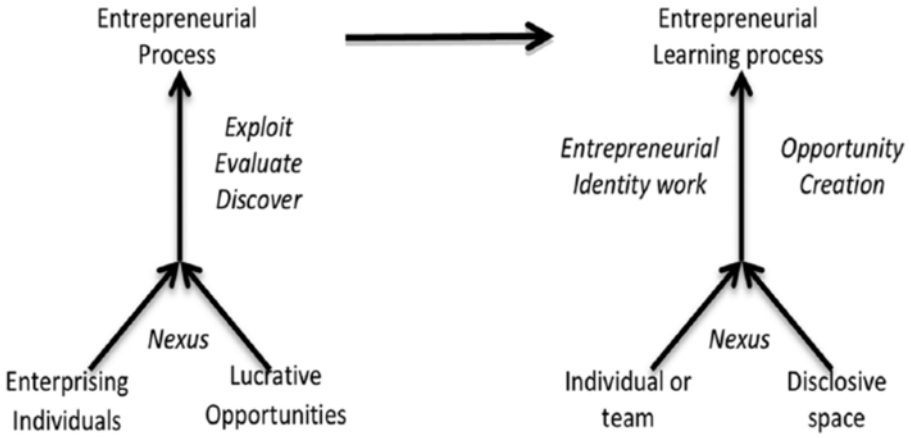


Figure 5 Reconceptualization of the nexus (Thrane et al., 2016, p. 914)

This reconceptualised individual-opportunity nexus is characterised by 6 steps of learning for, about and through the entrepreneurial process of opportunity creation: identity work, disclosing harmonies, qualifying disharmonies into general anomalies, constructing innovative solutions, prototyping and business modelling (Thrane et al., 2016, 914f). All these steps include an experiential, process-based and action-oriented learning approach which is said to provide students with a positive association to the creation of opportunities (Walter & Dohse, 2012) (also see Section 5).

3.2 Theory-and-Praxis Models

Focussing on the interaction and continuum of theory and practice and as such reflecting on the evolution of entrepreneurship education, Neck et al. (2014, p. 6) introduced a theory-practice matrix illustrating four different boxes of entrepreneurship education (see Figure 6): the Genesis cell (as the origins of entrepreneurship education with little theory existing and rather low practice); the Apprentice cell (preferring practice to theory as for example designing business plans and be taught how to build up a business); the Academic cell (with high theory aiming on analytical skills of the students but in turn with a lack of practice leading to pure explanations and descriptions without application); and the Synthesis cell (combining high theory and high practice by

application theory into practice without really being aware of doing so). Practice here is seen as actions or applications in real-life settings and is needed to transfer simple theory into actionable theory. Thus, entrepreneurship in the Synthesis cell is rather seen as a method with iteration, creativity and action-focus and not as a science and as such juxtaposes the process-oriented Academic cell characterized by linearity, prediction and rationality. Synthesis here represents "highly experiential entrepreneurship education where theory is actionable but, more or less, invisible to the student but very present" (Neck et al., 2014, p. 4). The overall aim is to equilibrate the more invisible theoretical components and the more observable practical components of entrepreneurship education also in terms of the experiential learning approach and to emphasize the fact that there is not only one practice and one theory but an assortment of practices based on a variety of theories.

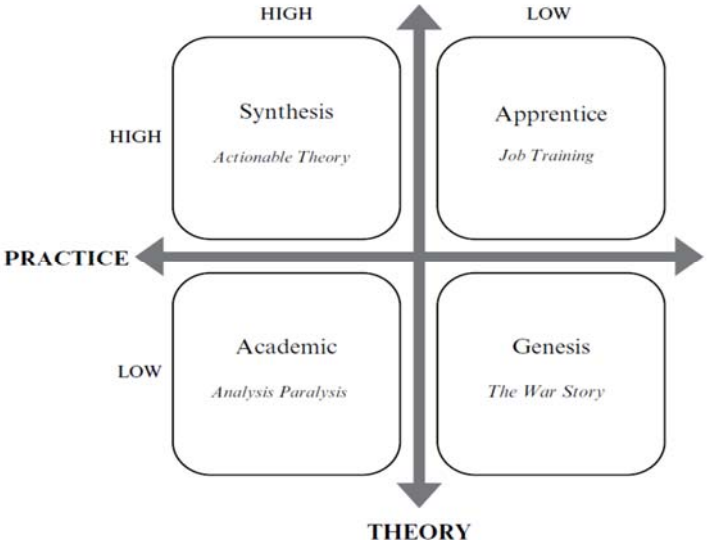


Figure 6 Theory-practice matrix (Neck et al., 2014, p. 6)

Taking up and expanding these aforementioned independent variables of the framework, Fayolle and Gailly (2008) created a teaching model framework with two dimensions (see Figure 8): an ontological or philosophical level, dealing with the questions of a definition of entrepreneurship education, and a definition of what education means for both teachers and students and their respective roles within entrepreneurship, i.e. the teaching domain itself. The educational (or pedagogical or didactical) level as the second dimension is concerned with five interrelated aspects:

objectives (why?), audiences and targets (for whom?), evaluations and assessments (for which results?), contents and theories (what?) and methods and pedagogies (how?) (Fayolle & Gailly, 2008, p. 572). Particular attention is paid to the applicability to diverse situations, stakeholders, learning processes, and theoretical and practical approaches. The latter builds the bridge between the education sciences and entrepreneurship in order to legitimatize entrepreneurship education in a scientific environment. Thus, teaching model frameworks based on the aforementioned model can be completed in a very individual way, both theory-driven and practice-driven, and contribute to synergies by sharing best-practices between researchers and practitioners and help to update knowledge in these spheres. Fayolle (2013) encourages researchers on entrepreneurship education even to make use of theoretical frameworks of education in general and – by adjusting to entrepreneurship education - to benefit from their research and concepts.

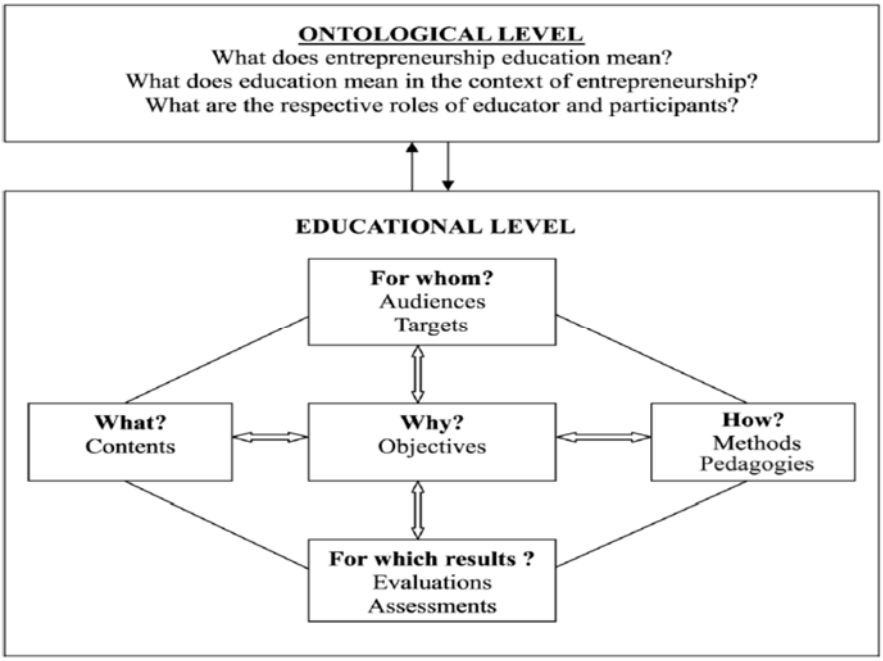


Figure 7 Teaching model framework for entrepreneurship education (Fayolle and Gailly 2008, p.572)

3.3 Impact Models

When Nabi, Liñán, Fayolle, Krueger, and Walmsley (2017) analysed 159 published empirical articles (from 2004 to 2016) on the impact of entrepreneurship education in higher education, they detected that research largely laid particular emphasis on

outcome measures but not on the correlation between pedagogical approaches and designs and the attained outcomes. Moreover, there is a paucity of research focussing on emotion, affect or motivation by inspiration which can be raised by different pedagogical methods. Backing on the three teaching models (supply, demand, competence model) and two hybrid models (supply/demand, demand/competence) identified by Béchard and Grégoire (2005, p. 108), five operational levels with impact factors are linked with the underpinning pedagogies (see Figure 8). By this way, the behaviourist approach (supply model with remembering and applying, the students as passive recipients and the teacher as presenter), the constructivist approach (demand model with understanding and analysing, the students as participants and the teacher as facilitator), and the competence model (with evaluating and creating, the students being active participants and the teacher a coach), as well as the relevant hybrid approaches are assigned to measures during the programmes and to post-programmes measures (between 0 and more than 10 years). Impact indicators vary from interest and awareness (on-going measures) via knowledge and entrepreneurial intentions up to number and survival of start-ups and contribution to society (post-programme measures). Comparing these different types of impact with different pedagogical teaching methods and approaches can support research to identify which types of effects are achieved. Here again, the need for future research to integrate examination from both pedagogy and the field of entrepreneurship becomes obvious.

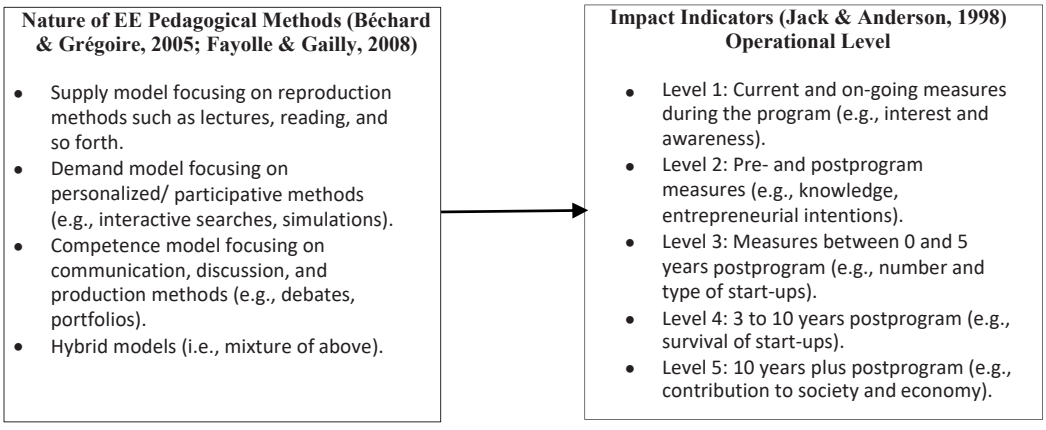


Figure 8 An integrated teaching model framework encompassing EE impact and underpinning pedagogy (Nabi et al., 2017, p. 279)

The absence of a common framework or teaching model for entrepreneurship education led Fayolle et al. (2006b) to design a theoretical framework to evaluate and assess entrepreneurship education programmes going beyond the sheer measurement of skills, knowledge and attitudes or number of start-ups (as a microeconomic point of view). In their entrepreneurship teaching programme (ETP) framework (see Figure 9), they identified audience, objectives, contents and teaching methods, institutional settings, and teaching approaches as independent variables and as characteristics of entrepreneurship programmes being assessed and compared with each other (Fayolle et al., 2006b, p. 710). Their assessment model was based on Ajzen's theory of planned behaviour (1991), defining attitudes towards the behaviour, subjective norms, perceived behavioural control and entrepreneurial intentions as the dependent variables in the model. The theory-based framework for the assessment of entrepreneurship education programmes focused on the impact of these programmes related to entrepreneurial mindset, intentions and attitudes, development of ideas and innovation rather than on the number of new ventures or businesses being launched.

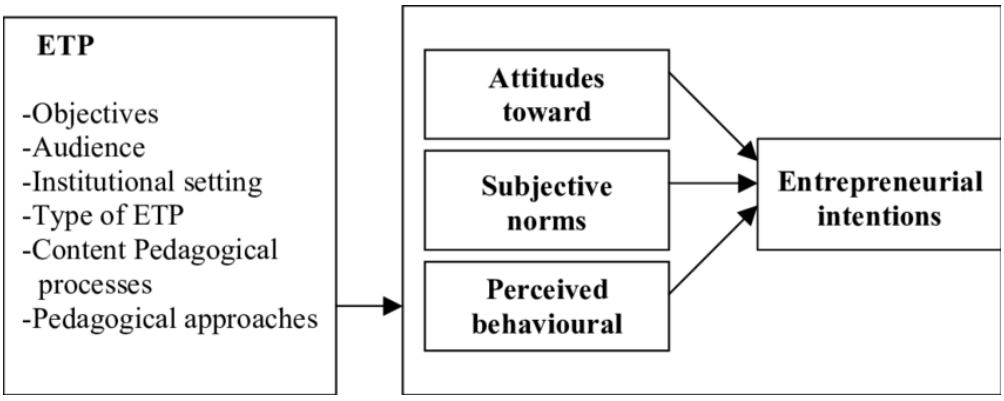


Figure 9 ETP Assessment Model (Fayolle, Gailly, & Lassas-Clerc, 2006a, p. 513)

What influences the range of entrepreneurship education and training (EET) effects was the starting point of Valerio, Parton, and Robb (2014) to design a conceptual framework for EET (see Figure 10). Three dimensions were identified: context, participants and programme characteristics, which are all said to transform entrepreneurial knowledge into a multiplicity of outcomes. The outcomes themselves are categorized into four domains: the entrepreneurial mindsets, capabilities, status and performance. Context factors relate to the contextual implementation and encompass economic, political and cultural context. These factors are said to have a major influence

on individuals whether to start a new venture or not (Pittaway & Cope, 2007). Individual characteristics of the participants are a key moderating factor on programmes' outcomes. This dimension is split up into the following categories: the individual profile, education, experience, interest and intentions, and behaviour. Programme characteristics are the third dimension due to the fact that EET programmes differ so much in concepts and designs. This dimension encompasses the programme design, trainers and delivery, content and curriculum, and wrap-around services. With this comprehensive framework, a tool is presented for recognizing and realizing the array of factors influencing the outcomes of entrepreneurship education programmes (Valerio et al., 2014, 35ff).

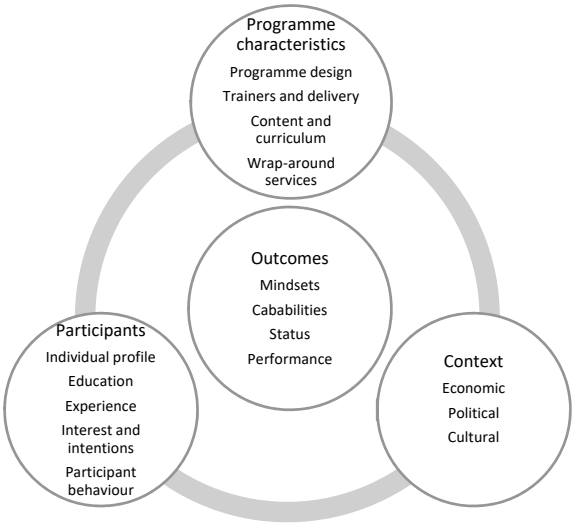


Figure 10 Conceptual framework (adapted from Valerio et al., 2014, 35ff)

Linking entrepreneurial education and entrepreneurial competences in order to show if entrepreneurial competences as a mediating variable lead to better firm performance was the aim of a conceptual (not empirically tested) paper by Minai, Raza, Hashim, Zain, and Tariq (2018). Based on a comprehensive literature review, the authors proposed a conceptual framework proposing an effect of entrepreneurial education on entrepreneurial competences (see Figure 11).

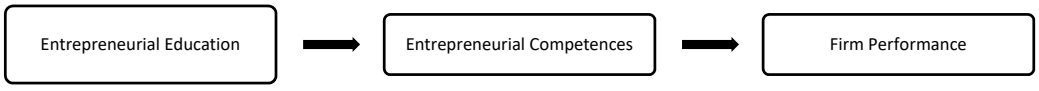


Figure 11 Proposed conceptual framework (adapted from Minai, Raza, Hashim, Zain, & Tariq, 2018, p. 63)

It is not only that entrepreneurship education influences the attitude towards entrepreneurship but also the development of enterprising skills (Athayde, 2009, 2012) and competences which are also associated with growth and success of a business and consequently with firm performance. What is missing, however, is a deeper insight on what is understood by entrepreneurship education and which kind of programme enhances which entrepreneurial competences that will then be related to higher firm performance.

3.4 Competence Models

Also in respect of competences, Draycott and Rae (2011) conducted a literature review of (entrepreneurial) competence frameworks used in the context of secondary education at schools in England. Despite some differences, there are also common features: personal (e.g. developing ideas, spotting opportunities), situational (e.g. subject to practice) and economic (e.g. creation of financial, social, personal value) competences are competences unquestionably connected to entrepreneurship (or 'enterprise' as they call it). When it comes to purpose and contribution of competence frameworks, however, the authors prefer talking of educational maps instead of competence frameworks for a better perception of the entrepreneurial landscape also in respect of value and reflection of perceived skills, attitudes and the learning process itself. This is based on the assumption that educators teaching entrepreneurship are rather seen as coaches than traditional teachers, as entrepreneurship education should primarily be concerned with multidisciplinary, experimental, experiencing, reflecting and transformative processes instead of just concentrating on the more measurable outcomes. Thus, the mapping of an entrepreneurial landscape is a kind of model that is interchangeable and adjustable according to institutional specifications, contents, objectives, participants (educators, students) and methodological approaches.

Lackéus, Lundqvist, and Williams-Middleton (2015) presented an innovative design for assessing entrepreneurial learning consisting of a smartphone app to elucidate how, when or why students' development of entrepreneurial competences will take place. Entrepreneurial competences here are defined as a three-part interplay of entrepreneurial knowledge (e.g. declarative or procedural entrepreneurship

knowledge), skills (e.g. marketing or learning skills), and attitudes (e.g. perseverance or entrepreneurial passion) and are developed by educational interventions which trigger critical and emotional learning events, the latter being regarded as a proxy between the interventions and the development of entrepreneurial competences (see Figure 12).

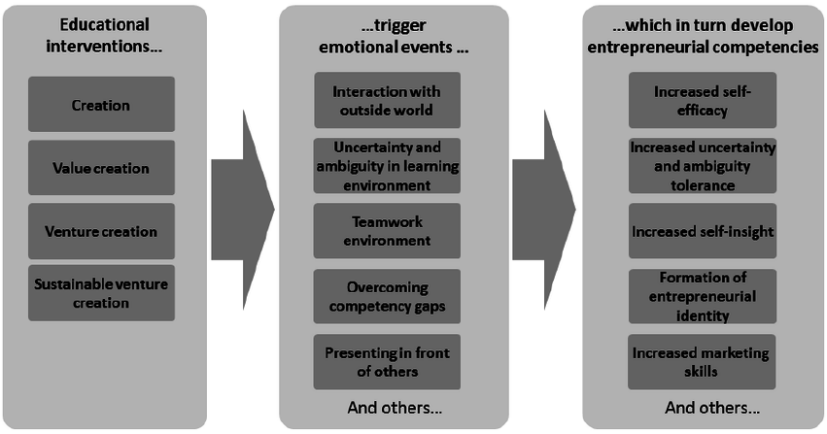


Figure 12 The proxy theory of assessing entrepreneurial education (Lackéus et al., 2015, p. 6)

This model is designed to underline the role of emotional learning when entrepreneurial competences are developed and will also help to assess entrepreneurial learning: "Measuring the prevalence of certain key emotional learning events among students is proposed as an alternative to measuring the evasive entrepreneurial competencies" (Lackéus et al., 2015, p. 5). Using findings of assessments like these on underlying mechanisms of entrepreneurship education not yet researched may also make a valuable contribution to the research on entrepreneurial learning settings and environments (see Section 5.4).

A study launched by the Joint Research Centre (JRC) of the European Commission in 2015 to promote entrepreneurship competences finally led to a common definition of entrepreneurship as a competence and the so-called "EntreComp Framework" (Bacigalupo et al., 2016) as a conceptual model, developed via a mixed-methods approach (including inter alia a literature review, case studies, expert workshops and iterative multi-stakeholder discussions). Bridging the worlds of education and work with this framework, entrepreneurship is referred to as a "transversal competence, which applies to all spheres of life: from nurturing personal development, to actively participating in society, to (re)enter the job market as an employee or as a self-employed person, and also to starting up ventures (cultural, social or commercial)" (Bacigalupo et

al., 2016, p. 6). Entrepreneurship as a competence is thus defined as the result of an individual's or group's action also aiming to create social, cultural or economic value for others. This comprises personal development, contribution to and participating in social and societal development as well as entering the job market, whether as an employee or the founder of a business. The framework depicts two dimensions: (1), three intertwined competence areas (ideas and opportunities; resources: personal, material and non-material resources; into action), and (2), five competences assigned to each one of the areas (though being interrelated and interconnected). Entrepreneurship as a competence is in the centre, designated as "the ability to transform ideas and opportunities into action by mobilising resources" (Bacigalupo et al., 2016, p. 10) while the 15 competences serve as building blocks (see Figure 13). Learning outcomes of each of the competences are comprehensively described in an elaborated progression model with eight different proficiency levels (foundation: discover and explore; intermediate: experiment and dare; advanced: improve and reinforce; expert: expand and transform) designed as kind of a taxonomic reference framework.

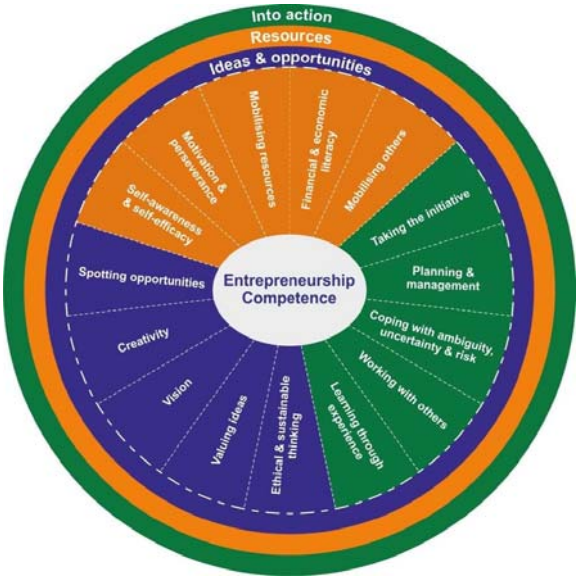


Figure 13 Areas and competences of the EntreComp conceptual model (Bacigalupo et al., 2016, p. 11)

As outlined above, several approaches for designing a common framework for entrepreneurship education and their relevant programmes have been published recently, each of the presented models depending on different underpinning objectives and methodology. Approaches range from focussing on entrepreneurial learning itself

and its related objectives, the interrelation between theory and practice, factors that influence the impact on entrepreneurial intentions, economic objectives and outcomes, social, personal, situational and economic competences associated with entrepreneurship, and the development of entrepreneurial competences themselves. For the present study, different aspects of the bespoken frameworks have been taken into account to design a new conceptual framework focussing on entrepreneurial competences in order to shed light on the research questions if (entrepreneurial) competences are developed by participating in a mini-company and hence, which and to what extent these competences increased. Thus, issues like the interrelationships between entrepreneurial learning and specific teaching methods (such as, for example, experiential learning), expected outcomes of entrepreneurial programmes and factors influencing the impact on entrepreneurial behaviour (also in the context of economic objectives), and the topic of which competences are said to be 'entrepreneurial' were integrated into the design process of the new framework (see Section 6.1).

4 Entrepreneurship Education – State of Research

The aforementioned multi-lens perspectives might serve as an explanation for the lack of empirical studies on the evaluation of entrepreneurship education and the need for more in-depth research on entrepreneurship education programmes and initiatives (Garavan & O'Cinneide, 1994; Martin, McNally, & Kay, 2013; Matlay, 2006), which is also key for bridging the gap between education sciences and entrepreneurship education (Fayolle & Gailly, 2008). It must not be disregarded, though, that policy's focus upon entrepreneurship education in scientific publications has shifted over the last decades. From the original emphasis on the labour market and self-employment by new venture creation, the focus moved onto international competitiveness caused by globalisation and to prepare the youth to cope with a more and more complex world by fostering managerial as well as personal and economic skills and attitudes (Gibb, 2008).

Nasr and Boujelbene (2014) also focused on this aspect in their investigation at a Tunisian University when exploring the impact of formal entrepreneurship training on the entrepreneurial profile of the students with the help of component analysis. Their findings identified three entrepreneurial fields which had a positive impact on students. They highlighted the improvement of communicative and relational skills (interpersonal skills as well as cooperative ones), the acquisition of entrepreneurial motivation in respect of idea creation, initiating a project and the awareness about the project procedure, and also the increase in entrepreneurial intention.

Increasing entrepreneurial intentions, attitudes and motives are also the result of a quasi-experimental study conducted by Welsh et al. (2016), looking at the impact of entrepreneurship education in a US university. The authors stress the fact that entrepreneurship has to be seen not only as gaining declarative knowledge and reaching defined targets but rather as an educational process: entrepreneurship education at its best is learning by doing by means of combining experience with hands-on learning opportunities which is seen as a process of becoming.

In 2002, Solomon, Duffy, and Tarabishy conducted an empirical analysis on entrepreneurship education and its pedagogy in higher education institutions and concluded that entrepreneurship education comprises skill-building in terms of creativity, leadership, technological innovation, and serves as a career orientation. This

is best done by programmes designed on experiential learning, also including for instance field trips, interviews with entrepreneurs, and learning opportunities for individual and group activities which provide situations that are unstructured, ambiguous and sometimes risky in order to let the students be successful in an entrepreneurial world that is uncertain by nature (Kuratko, 2005).

When Zeithaml and Rice (1987) examined 100 collegiate business schools in the United States in a non-random sample, their findings resulted in several conclusions for future entrepreneurship education. Inter alia, they recommended that entrepreneurial programmes should not only focus on starting or managing a business but be integrative and pragmatic; programmes should foster corporate venturing (cooperation of start-ups and established businesses), should point out a high commitment in quality research and should also think of aspects such as generating funds. This might result in monetary benefits for schools as well as in more interest of researchers in entrepreneurship education programmes. According to the authors, research should thus also concentrate on teaching matters of the several programmes in terms of systematic studies on the value and effects of existing programmes and examining alternative approaches. Kuratko (2005, p. 590) calls this “A call to action” also in respect of entrepreneurship educators: fresh and innovative approaches should be included in the teaching of this subjects by applying new technologies and media, too.

Nevertheless, research on entrepreneurship education and the publication of results does not evolve as fast as research in the field of entrepreneurship (Neck & Corbett, 2018). Researchers constantly demand longitudinal investigations including data sets from different countries and sources and stress the need for high-quality entrepreneurship education and the necessity that entrepreneurship training should be available for all individuals (Vanevenhoven & Liguori, 2013). By introducing the Entrepreneurship Education Project (EEP) as a global, longitudinal research in 2010, Vanevenhoven and Liguori contributed to overcoming this lack of research by collecting data from over 400 universities in over 70 countries and thus being able to work on over 18.000 student responses (Vanevenhoven & Liguori, 2013, 315f). The empirical research was designed to study the transformation from student to entrepreneur and the underlying processes, based on the theory of motivation with three different core constructs: self-efficacy beliefs, outcome expectations and goal-directed activity. The

authors encourage scholars to use this multifaceted data-set for further research in order to enable progress on international studies on entrepreneurship education and pedagogy (Rushworth, Vanevenhoven, Winkel, & Liguori, 2016).

Rideout and Gray (2013) also identified a need for future research on entrepreneurship education: in their literature review on empirical studies about university-based entrepreneurship education (published between 1997 and 2011), they only found 12 studies that were close to meet their criteria on "quantity, coverage and quality of the research" including a pre-test/post-test design and comparison groups and which could give an answer on the question "Does E-ed really work?" (Rideout & Gray, 2013, p. 343). Five of the studies looked at by the authors focused on examining effects on psychosocial outcome measures, whereas the other seven studies evaluated the objective outcomes. Regarding the studies on psychosocial measures, for example, the authors surprisingly found only little empirical evidence that supports Ajzen's theory of planned behaviour that entrepreneurial self-efficacy may be affected by entrepreneurship education (Ajzen, 1991). They concluded that these studies measuring psychosocial outcomes do not really explain how entrepreneurship education works (Rideout & Gray, 2013). This goes in line with the studies concerning the hard outcomes, such as the number of start-ups, consecutive entrepreneurial activities or follow-up businesses: despite the fact that the results of these studies were more positive than those of the psychosocial studies, the authors concluded that here as well there is no answer on the question if entrepreneurship education really works, as those studies either lacked internal validity or suffered from a selection bias.

When Martin et al. (2013) accomplished a meta-analysis by way of a quantitative literature review in the context of human capital theory with 42 independent studies, they also revealed the inconsistency and ambiguousness of outcome studies. Their research addressed the impacts of entrepreneurship-related human capital assets and their outcomes in entrepreneurship underpinning the theory that the more an individual is equipped with higher-level human capital (knowledge, skills, and competences), the greater the exploitation, discovery and performance of entrepreneurial opportunities will be. Findings of the study showed that there is indeed a positive association between entrepreneurship education and entrepreneurship-related human capital assets and entrepreneurship outcomes. What should be taken into account, however, is that the

results also show the weaker relationship between entrepreneurial outcomes and programmes focused on training in contrast to a stronger relationship between entrepreneurial outcomes and interventions being more academic-focused.

These findings contradict the results of studies by Lepoutre, van den Berghe, Tilleuil, and Crijns (2011), Mason and Arshed (2013) or Gielnik et al. (2015) (also see Section 5.5). The authors point out, though, that due to a lack of methodologic rigour and some methodological weaknesses, there is a big heterogeneity and thus equivocation among the studies. They recommend future research including quasi-experimental studies with pre-test/post-test designs and treatment and control group, focussing for example on specific aspects such as programmes' content and structure, teaching methods, training and education of teachers or instructors, and a more profound insight into intervention's outcomes differing between an experiential learning approach to entrepreneurship and the more lecture-style programmes.

Finding empirical evidence of the impact of entrepreneurship education formed the starting point for an exhaustive literature review by Nabi et al. (2017), analysing 159 published empirical articles on entrepreneurship education in higher education between 2004 and 2016, and concluding that due to contradictory or even insufficient findings in entrepreneurship education much more empirical research is needed respecting if and how entrepreneurship education works. The authors also advocate more profound research on the impact of pedagogical methods which should be based on a conceptual framework to ensure greater generalizability in terms of the interaction of pedagogical methods (fostering competence-based methodologies), impact (for example on entrepreneurial behaviour) and contexts.

To shed light on the discourse among scholars on the development of pedagogy in entrepreneurship education was the purpose of a systematic literature review by Hägg and Gabrielsson (2019), analysing 359 articles (ranging from January 1980 to December 2018). The authors observed a shift from teacher-centred instructional methods and models to the question of teachability and to learnability (process-centred and context-centred periods), finally emerging to the learner-centred period (Hägg & Gabrielsson, 2019, n.p.) and to the contemporary discussions on experiential teaching and learning methods based both on theoretical and philosophical aspects. With this study, the need for practice-orientation and real-life experience within

entrepreneurship education is once again emphasized (also see Section 5). Experiential learning theory including both social and cognitive constructivist perspectives is seen as a nucleus of entrepreneurship education, encompassing different subject domains and thus being interdisciplinary und not only bound to entrepreneurship itself.

A common claim by scholars is that contemporary research on entrepreneurship education should focus on long-term and longitudinal studies with a pre-test/post-test design including control groups. High-quality studies are needed to ensure internal validity and consistency as well as methodological rigour. In essence, the state of research on entrepreneurship education has to be looked at by various points of view as it has incorporated different concepts. There is, for example, a large range of studies respecting various impacts (e.g. interpersonal or cooperative skills, human capital, entrepreneurial intentions, attitudes and motives, or hard outcomes such as the number of start-ups), or on the field of pedagogy and entrepreneurial learning (different learning opportunities, innovative learning and teaching approaches, or action orientation) and on examining the underlying processes of transformation from student to entrepreneur as well as taking into account predisposition factors (e.g. prior positive or negative experience on entrepreneurship or awareness towards it). Recent research has also addressed and focussed on entrepreneurial programmes and several studies and findings on this specific field of research will be presented in the following.

4.1 State of Research on Entrepreneurship Education Programmes in Higher Education and Schools – an Overview

Entrepreneurship education programmes have received more and more attention during the last decades and as Matlay (2005, p. 672) puts it: “[T]he importance of well designed entrepreneurship education programmes to nascent entrepreneurs and their impact upon new venture creation should not be underestimated.” The widespread awareness towards these programmes has led to different approaches on all educational levels. Due to the heterogeneity both in primary and secondary education at schools’ and higher education institutions’ curricula, however, entrepreneurship education processes are not homogenous and, consequently, neither are target dimensions of entrepreneurial programmes. Targets not only differ according to the

level of education or to the methodological approach, but also to the expected outcomes in terms of numbers of start-up inclinations (as future self-employment), designing business models, emphasizing practical orientation, promoting critical thinking, encouraging entrepreneurial attitudes, spirit and mindset, fostering career choice intention and orientation (by differentiation processes regarding strengths and weaknesses), advancing personal development (also in the sense of social contacts and competences and learning achievements), acquisition of key competences or qualifications, or developing respectively strengthening entrepreneurial competences (Hytti & O'Gorman, 2004; Lindner, 2018; Packham, Jones, Miller, Pickernell, & Thomas, 2010; Sherman, Sebora, & Digman, 2008). Hence, Kuratko and Morris (2018, p. 20) set the thesis that "[a]n effective entrepreneurship program can empower students to create their own job; create their own future; create their own wealth; create their own sense of pride and self-worth; create their own identity; create their own facilities and operations; create jobs for others; create their own contribution to the world; and create their own ability to give back".

This diversity and the various estimated effects of the programmes make it difficult to compare them with each other, also when it comes to a common understanding of how to best achieve the aforementioned targets. As soon as 1994, Garavan and O'Cinneide (1994, p. 4f) stated, that "[m]ost of the research has tended to be fragmented […] and focus on the more immediate measures of effectiveness. […] It is, therefore, understandable that the content of entrepreneurship education and training programmes varies according to the trainer's personal preferences as to definition and scope". This may also explain the fact that research respecting the effects or outcomes of entrepreneurial programmes is still rare and - after more than 25 years - in its fledging states even though the necessity of high-quality research is unquestioned, especially related to research carried out at schools (Draycott & Rae, 2011; Gibb, 2008; Kristová & Malach, 2017; Sherman et al., 2008). And despite of the fact that more initiatives and programmes focussing on entrepreneurship education have been offered at school and university level almost world-wide (Sánchez, 2013), still "the usefulness of these programs has only been assessed by means of the opinions of the parties involved; however, the impact these programs have on the students taking them as opposed to students who have not [taken part in an entrepreneurial

programme] has not yet to be evaluated" (Sánchez, 2013, p. 448) and there is a scarcity of research respecting assessment and measurement of the various entrepreneurial programmes (Fayolle, 2013). Fayolle's legitimate claim, therefore, is that "future research needs to meet the highest standards in terms of research methodology: pre- and post-EE intervention measures, inclusion of treatment and control groups and random assignment" (Fayolle, 2013, p. 696). This is especially valid for secondary schools, whereas studies on effects of entrepreneurial education in higher education have been conducted more often so far (Rodrigues, Raposo, Ferreira, & Paco, 2010; Solomon et al., 2002; Souitaris, Zerbinati, & Al-Laham, 2007).

Also, empirically validated findings on the role and impact on entrepreneurial activities are still scarce, especially when it comes to longitudinal studies including experimental groups as well as control groups (Matlay, 2005) - albeit the fact that the number of entrepreneurial programmes has been extended noticeably during the past three decades. By a review of existing literature on entrepreneurship education and evaluating 230 programmes and trainings (for secondary education students and higher education students), Valerio et al. (2014) detected positive outcomes and promising results with entrepreneurship programmes for secondary students in the enhancement of the entrepreneurial mindset as well as a development of socio-economic skills (e.g. self-confidence, motivation, resilience or self-efficacy). Still, there is a great need for more impact evaluations to what works how and why, i.e. which entrepreneurial programme in which context (economic, social or political) and in which design and environment will have the most target-related and sustainable outcomes.

Hytti and O'Gorman (2004) conducted a study analysing 50 entrepreneurial programmes run in four European countries according to objectives, methods and achieved results and addressed all kinds of levels (primary and secondary school level, higher education level and adult education institutes). Despite the considerable variety of the programmes and the corresponding broad array of aims, three main programmes' objectives could be elaborated: increasing the number of launched businesses by building up skills necessary to found or manage a start-up, preparing participants for the world of work by providing the necessary information about small businesses and entrepreneurship itself, and helping people to develop entrepreneurial skills in order to better cope with everyday life and societal changes. Teaching and learning approaches

also varied broadly and encompassed the more traditional methods (such as lectures, assignments and exams) as well as practical training (for example providing real-life situations by working in a mini-company). Most of the adopted programmes' methods actually focused on traditional learning settings, followed by business simulations (e.g. case studies), and workshops (e.g. project work). Although more action-oriented learning settings are probably associated with entrepreneurship education, methods such as study visits, games and competitions or actually setting up and running a business as practical training, occurred in less frequency (Hytti & O'Gorman, 2004, p. 17). Measuring the output of the bespoken entrepreneurial programmes, however, is still vague due to the time gap between the intervention and the definite output, for example. Thus, intervening aspects such as a change of the educational institution or even economic reasons during this time lag may influence the outcome.

4.1.1 State of Research on Entrepreneurship Education Programmes in Higher Education[5]

In 1993, Krueger conducted an exploratory study among US university students testing Shapero's (1975) model of new-venture initiation focussing attitudes towards entrepreneurship in terms of perceived feasibility and perceived desirability associated with entrepreneurial intentions. The study confirmed Shapero's model and propositions that "entrepreneurial intentions derive largely from (1) perceptions of feasibility, (2) perceptions of desirability, and (3) a propensity to act which derives from control beliefs" (Krueger, 1993, p. 17) and that people's motivation derives from displacement, be it positive or negative. Hence he suggests that "training should focus on increasing perceptions of both desirability and feasibility. Teaching a relevant skill is not enough. The trainee/student needs to perceive that actual use of the skill is feasible" (Krueger, 1993, 18f).

Packham et al. (2010) also put their focus on attitudes towards entrepreneurship education among 237 undergraduate students of three different European universities (in France, Germany and Poland). The students participated in a short enterprise course and were asked in a pre-test/post-test design about their intentions of becoming an

[5] Also see Paper 3

entrepreneur within 12 months after having completed their studies. Research findings showed positive effects on entrepreneurial attitudes among students from France and Poland, whereas the intervention had a negative impact on male German students. Consequently, the authors claim for deeper research on dispositions in gender, cultural, national and industrial terms when exploring the impact of entrepreneurship education programmes.

The findings of a study Souitaris et al. (2007), however, revealed a different view on what might intensify the probability of starting a business. The study in two universities (London, UK, and Grenoble, France) was based on the theory of planned behaviour (Ajzen, 1991). It was designed as a pre-test/post-test study with an experimental group taking part in an entrepreneurship programme (n=124) and a control group not participating in any entrepreneurial programme (n=126). The results of the research questions ("Do entrepreneurship education programmes raise entrepreneurial attitudes and intention of students? And, which programme-derived benefits raise entrepreneurial attitudes and intention?", Souitaris et al., 2007, p. 567) showed that subjective norm and intention and thus entrepreneurial attitudes were raised among the participants of the experimental group (but not among the students of the control group) and that 'inspiration' was the programme's most influential benefit. Intentions and attitudes, however, were not implicitly related to nascence: "In summary, the study illustrated that entrepreneurship programmes are a source of trigger-events, which inspire students (arouse emotions and change mindsets)" (Souitaris et al., 2007, p. 585) and "[t]he main practical implication for entrepreneurship programme developers, is that whereas knowledge and resources could increase the likelihood of success for those who are going to start a new venture […], it is the inspiration that raises attitude and intention and increases the chances that students will eventually attempt an entrepreneurial career" (Souitaris et al., 2007, p. 587).

A study with American university students by Sherman et al. (2008) examined the role of diverse entrepreneurial activities and the impact (negative or positive) of different types of pedagogical approaches (traditional or experiential approaches) on career choice intentions as becoming an entrepreneur. Students were asked to participate in at least one of eighteen entrepreneurial activities divided into three categories: reading, listening/watching, or doing (e.g. preparing and writing a business

plan, interviewing an entrepreneur, listening to an entrepreneur's speech and experiences, watching a video about entrepreneurship or having had prior business experiences; Sherman et al., 2008, p. 36). Their findings showed that more traditional approaches such as reading a textbook or articles on entrepreneurship or watching a video are not as effective as experiential methodologies that require more practical work, i.e. experiential approaches in entrepreneurship education have more impact on the decision to become an entrepreneur and are positively associated with launching a new venture.

Gielnik et al. (2015) came to a similar conclusion: An action-based entrepreneurship training and its impact on business creation was the core of their study conceptualized as a randomized field experiment with a pre-test/post-test and control group design. Both the treatment group (n=194) and the control group (n=190) consisted of Ugandan university students and entrepreneurial action was measured in three waves during a 12-month period. By identifying action-related mediators seen as background regulating actions (entrepreneurial goal intentions, action planning, entrepreneurial self-efficacy and action knowledge), the training was linked to entrepreneurial action which in turn leads to business creation and a theoretical framework based on these factors was designed (Gielnik et al., 2015, p. 79). Evaluation of the training showed a significant effect on the identification of business opportunities and business creation among the treatment group. Yet the authors note the limitation of the study: the findings might not be generalizable due to the self-bias of the students who took voluntarily part in the training and effects may not be the same when the training will be held in more developed countries.

Which competences are necessary for entrepreneurial actions was in the focus of a Delphi study employed by Morris, Webb, Fu, and Singhal (2013) among American and international students taking part in a six-week academic programme. 13 entrepreneurial competences were identified being core to the entrepreneurship discipline (such as for example opportunity recognition, risk management, tenacity, resilience) and scales were developed to measure the effectiveness of entrepreneurial programmes since measuring key competences implicate inter alia the further development of entrepreneurship education and henceforth, pedagogical approaches

may be required that go beyond traditional forms of teaching. Thus the findings of this study (presenting significant improvement in all the 13 competences) can "help to define the content of entrepreneurship education programs going forward" and "highlight the complexity of entrepreneurial action and […] suggest a need for a stronger emphasis on experiential learning in education programs" (Morris et al., 2013, p. 362).

Lackéus (2013b) conducted a nine-month longitudinal study with a mixed-methods approach (quantitative by using a mobile app-based survey and qualitative by semi-structured interviews) among three Swedish university students examining the links between strong emotions and entrepreneurial learning outcomes in order to detect if entrepreneurial competences are being developed. Effects could be discovered inter alia in increased perseverance, self-efficacy, ambiguity tolerance and self-confidence and even more entrepreneurial passion and identity, all of these attitudinal learning outcomes could be traced back to the specific setting of action-based learning. Limitations, however, include the small number of students involved in the study as well as if the findings are transferable to other contexts in entrepreneurship education.

4.1.2 State of Research on Entrepreneurship Education Programmes at Schools

Studies by Peterman and Kennedy (2003) and by Moberg (2014) on entrepreneurial programmes at schools (from primary to secondary and vocational schools) support the proposition that the perceptions of entrepreneurship had been increased by participating in an entrepreneurial programme. However, in contrast to research in higher education, examples for research on the impact of entrepreneurship education and its programmes at schools have been rather patchy (Draycott & Rae, 2011) and demanding if it comes to match the outcomes. This has become all the more pertinent in light of a rising increase of entrepreneurial programmes performed and sometimes even implemented in schools and their curricula. To fill the gap and to improve the theoretical background, scholars have drawn more attention on outcomes and effects of relevant programmes and trainings at schools as is presented in the following overview (in chronological order):

Authors/Year	Country	Primary Schools	Secondary Schools	Scope
Peterman & Kennedy, 2003	Australia		X	Effects on perceptions of desirability and feasibility respecting starting a business
Frank, Korunka, Lueger, & Mugler, 2005	Austria		X	Factors that increase entrepreneurial orientation and tendencies for venture building
Birdthistle et al., 2007	Ireland		X	Perceptions and attitudes towards entrepreneurial programmes
Gibb, 2008	United Kingdom	X	X	Issues affecting the embedding of entrepreneurship education schools' curricula
Draycott & Rae, 2011	England		X	Purpose and impact of competence and entrepreneurial education frameworks
Athayde, 2009, 2012	London (England)		X	Impact of enterprise education (especially among students participating in a young enterprise programme) on attitudes towards enterprise
Moberg, 2012	Denmark		X	Effects on personal development
Rosendahl Huber, Sloof, & van Praag, 2012	The Netherlands	X		Development of cognitive and non-cognitive skills
Johansen & Schanke, 2013	Norway		X	Categorization of various types of entrepreneurship education and its spread
Sanchéz, 2013	Spain			Attitude towards entrepreneurial behaviour and intention to start a business
Volery et al., 2013	Switzerland		X	Effects on personality traits, beliefs and competences; impact on entrepreneurial intention
Wai Mui Yu, 2013	Hongkong		X	Advancing entrepreneurship education by capacity building
Spilling, Johansen, & Støren, 2015	Norway	X	X	Scope and current status of entrepreneurship training programmes and its effects
Barba-Sánchez & Atienza-Sahuquillo, 2016	Spain	X		Improvement of entrepreneurial competences and the potential to start a business
Kristová & Malach, 2017	Czech Republic	X	X	Impact of primary and secondary school education and family environment on entrepreneurial attitudes

Table 1 Overview on state of research on entrepreneurship education programmes at schools

As shown in the overview above, studies on impacts respecting venture creation, learning outcomes and entrepreneurial intentions and personal development differ significantly in terms of design, methodology or approach what turns out to be challenging when comparing them with one another. To underline this perception, four studies are examined in more detail.

Peterman and Kennedy (2003), for instance, also used the Shapero model (1975, see Section 4.1.1) to examine the effect of entrepreneurship education on perceptions of both desirability and feasibility in respect of starting a business. In contrast to Krueger (1993), however, Peterman and Kennedy conducted their study not with a sample of university students but with about 100 students of schools in Queensland, Australia, aged between 15 and 18 years taking part in a YAA (Young Achievement Australia) programme. The results of the study designed in a pre-test/post-test control group research design "clearly show an increase in YAA participants' perceived desirability and perceived feasibility" and that these perceptions "are strongly influenced by the YAA program" and, moreover, it "provides empirical evidence to support the inclusion of an additional exogenous variable in intentions models, namely exposure to entrepreneurship or enterprise education" (Peterman & Kennedy, 2003, p. 141).

The research findings of a study published by Birdthistle et al. in 2007 examining perceptions and attitudes towards enterprise education programmes in general in secondary schools in Ireland were based on a subject-specific questionnaire comprising not only students (n=70) but also teachers (n=10) and parents (n=15). Among the students, communication was the skill that was most commonly identified as being the biggest learning outcome of taking part in a school enterprise. A bit lower in the ranking were presentation skills, gaining self-confidence, teamwork (the latter two were also those identified by the teachers as the most common skills), decision-making skills and creativity. Conflict management and risk-taking scored the lowest. The parents, however, considered confidence as the most important skill to be obtained, whereas teamwork was ranked the least. Out of the results of this multi-stakeholder perspective on enterprise education programmes, the authors conclude that – despite of the findings' differences of the various groups – "one common and consistent finding emerges, which is the continued need and benefits of enterprise education programmes

at secondary level" and that "[t]he education system can also influence students' attitudes and play a role in actively promoting entrepreneurship" (Birdthistle et al., 2007, p. 274).

Addressing the effects which entrepreneurship education and project-based education may have on entrepreneurial intentions and personal development in terms of self-conception and future orientation was the scope of a survey by Moberg (2012), a random sample of 2000 Danish lower secondary level students (with a total response of 724 respondents). Entrepreneurship education here is identified by the strong linking between the student's own idea and the more emotional than cognitive experience. Different stages of action and thinking characterize the project-based approach, and experience is seen as a final stage of reflection on the actions performed. Both approaches are practice-based, but the findings of the study are rather puzzling. When combining both approaches, effects on self-conceptions were diminished. Then again, there is a positive effect on personal development and on entrepreneurial intentions if only entrepreneurship education as an approach is examined, whereas there is no effect on entrepreneurial intentions but on future orientation when project-based education is in the focus. In the light of these findings, the author recommends not to run the two approaches in parallel but to focus on one of the methods in order to complement learning objectives and methods instead of letting them clash.

Sánchez (2013) took a different approach towards entrepreneurial education in the sense of finding out if entrepreneurial education will increase the intention to found or to start a business. By using a pre-test/post-test quasi-experimental design including an experimental group (n=347) and a control group (n=363), the research findings were based on an entrepreneurship programme offered over eight months in different schools in Spain. Questionnaires focussing on analysing the impact of an entrepreneurial programme on entrepreneurial competences and intentions were handed out both to the experimental and to the control group at two different times (before the programme started and after the programme had been completed). Results of the study "show that the mean values of the program sample in the post-test for self-efficacy, proactiveness, risk taking, and intention of self-employment are significantly higher in relation to the pre-test" (Sánchez, 2013, p. 456) and that the programme offered "clearly shows a

major improvement in entrepreneurial competencies and intentions and thus a positive attitude toward entrepreneurial behaviour" (Sánchez, 2013, p. 458).

However, longitudinal studies are missing which explore the developmental process in entrepreneurship as stated by Geldhof, Porter et al. (2014, p. 442): "There have been no longitudinal studies explicitly designed to understand the development of (i.e. intraindividual change in) entrepreneurship among late adolescents or young adults." Consequently, Geldhof et al. designed the YES[6] project, a mixed-methods "longitudinal study of the development of entrepreneurship during late adolescence and young adulthood" (Geldhof, Weiner et al., 2014, p. 86) aiming to explore how adolescents develop entrepreneurial intent and capacity. Preliminary findings of this study suggest that there are a number of aspects predicting entrepreneurial intent ("self-regulation, innovation orientation, and having entrepreneurial role models (i.e., parents)"; see Geldhof, Weiner et al., 2014, p. 81) and that intentional self-regulation, in particular, should be focused on in future research on entrepreneurial development. Unfortunately, there are no more recent results of this study available.

In sum, in a number of countries research on entrepreneurship education programmes at schools is on the rise, nonetheless, there is a paucity of relevant and current empirical studies encompassing this topic in Germany. This is all the more startling as the number of entrepreneurial interventions and trainings also increase in German schools (mostly performed in secondary education) and even find their way into schools' curricula (depending on the individual German federal states). As the few studies available (Bundesministerium für Wirtschaft und Technologie, 2010; De Haan, Grundmann, & Plesse, 2009; Knab, 2007) all address student companies as entrepreneurial programmes, details will be given Section 5.5.

As discussed above, studies on the impact and effects of entrepreneurial programmes at schools revealed that a number of these programmes are based on an action-oriented or experiential learning approach. This is underlined as well in a publication by the OECD (2014) inter alia on the latest research on entrepreneurship education: "In secondary school, entrepreneurship education often places more focus on the delivery specific technical skills using mini-companies and activities entailing

[6] YES: Young Entrepreneur Study

active learning and real-life situations" (OECD, 2014, p. 111). This perspective will be examined in Section 5 by delineating experiential learning in entrepreneurial programmes and especially the experiential learning approach as a theoretical foundation for mini-companies.

5 Experiential Learning in Entrepreneurship Education Programmes

In 2009, the World Economic Forum focused on entrepreneurship education and on how to bring it into school curricula: “Making the change to universal availability of youth entrepreneurship education is, of course, a monumental task. […] A major key to success will be putting experiential techniques and entrepreneurship content into the basic training aspiring teachers receive at schools of education and teachers’ colleges” (Wilson et al., 2009, p. 30).

This task is meant to address policy, research and all those who are engaged in this topic worldwide. Meanwhile, the GEM Global Report 2017/18 identified the German educational sector “as one of the weakest components of the entrepreneurial environment worldwide” (Global Entrepreneurship Research Association [GERA], 2018, p. 42). To overcome this deficiency, the GERA recommends creating entrepreneurship programmes specially designed for school students with a true-to-life and thus experiential approach, being implemented into schools’ curricula and lasting for at least one school year. Experience and practice are key factors for successful entrepreneurship and experiential learning leads to effective entrepreneurial learning outcomes (Mason & Arshed, 2013), keeping in mind the guiding principle of the responsible and autonomic individual and the on-going learning process: “Experiential learning exists when a personally responsible participant(s) cognitively, affectively, and behaviorally processes knowledge, skills, and/or attitudes in a learning situation characterized by a high level of active involvement” (Hoover & Whitehead, 1975, p. 25).

5.1 Experience Underpinning Entrepreneurial Learning

To shed light on entrepreneurial learning (with a focus on behavioural learning) and to delineate that experience is directly linked with this specific learning, Wing Yan Man (2012) conducted a qualitative study focussing on learning behaviours among 12 successful entrepreneurs and designed an empirically grounded model on entrepreneurial learning. The first analysis (stage 1) resulted in six different patterns of learning behaviours: actively seek learning opportunities; learn selectively and purposely; learn in-depth; learn continuously; improve and reflect upon experience;

transfer learning outcomes into current practices (Wing Yan Man, 2012, p. 555). Five themes emerged from stage 2 of the analysis: learning behaviours of the entrepreneur; his/her tasks; experience; knowledge, skills and attitudes; and the context of entrepreneurial learning (Wing Yan Man, 2012, p. 556). These patterns and themes were transferred into an initial framework of entrepreneurial learning (Wing Yan Man, 2012, p. 553), where key themes within the entrepreneurial learning context are three transformative processes: inputs (e.g. individual knowledge or skills and experience), outcomes (such as competences related to entrepreneurship) and the process of learning (achieved competences that are demonstrated by behaviour). Here, themes are interconnected within an interactive cyclical process, they are iterative, cognitive and experiential. The transformative processes now link the aforementioned concepts of an entrepreneur's experience, knowledge, skills and attitudes and his/her tasks, centred upon learning behaviours (see Figures 14 and 15). With this iterative and generative model, the accumulation and consolidation of an entrepreneur's experience may be illustrated. Further enrichment by reflection upon this experience, continuous learning and proactivity will lead to outcomes that will then be transferred into more and in-depth competences. Moreover, by offering more occasions where learning outcomes and the respective behaviours may be applied in taking action and real-life contexts, experience is accumulated and continuously enlarged.

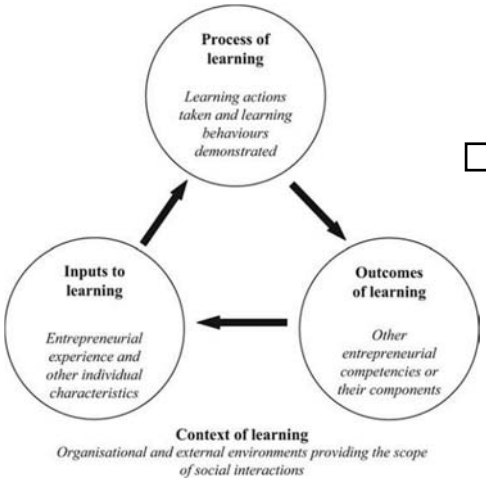


Figure 14 An initial framework of entrepreneurial learning (Wing Yan Man, 2012, p. 553)

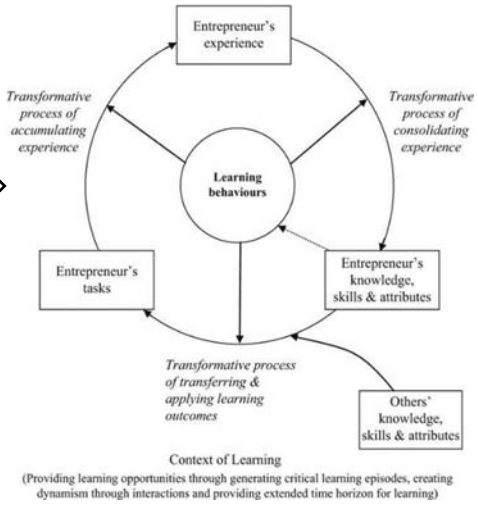


Figure 15 A behaviour-centred model of entrepreneurial learning (Wing Yan Man, 2012, p. 561)

As literature reveals and by the model above is described, experience is a key factor of entrepreneurial learning (Wing Yan Man, 2012). Thus, by taking the above-outlined model into account, entrepreneurial training programmes should focus on experience and experiential learning to be as successful as possible. Since this learning approach is central to the nature of student companies, the notion of experiential learning based on Kolb's experiential learning theory (Kolb, 2014) will be delineated in order to pave the way to entrepreneurship programmes focusing on experiential learning, especially on student companies.

5.2 Experiential Learning as Theoretical Foundation for Entrepreneurship Education Programmes: Kolb's Experiential Learning Theory

In experiential learning theory (ELT), the term *experiential* is described as "a theoretical perspective on the individual learning process that is applied in all situations and arenas of life, a holistic process of learning that can aid in overcoming the difficulties of learning from experience" (Kolb, 2014, n.p.). It thus explains "how experience is transformed into learning and reliable knowledge. Truth is not manifest in experience; it must be inferred by a process of learning that questions preconceptions of direct experience, tempers the vividness and emotion of experience with critical reflection, and extracts the correct lessons from the consequences of action" (Kolb, 2014, n.p.). Kolb defines experiential learning as "the process whereby knowledge is created through the transformation of experience" (Kolb, 2014, n.p.), incorporating this definition into his four-stage experiential learning cycle based on immediate or concrete experience and reflective observation (these are the modes of grasping experience) as well as abstract conceptualization and active experimentation (as modes of transforming experience (see Figure 16).

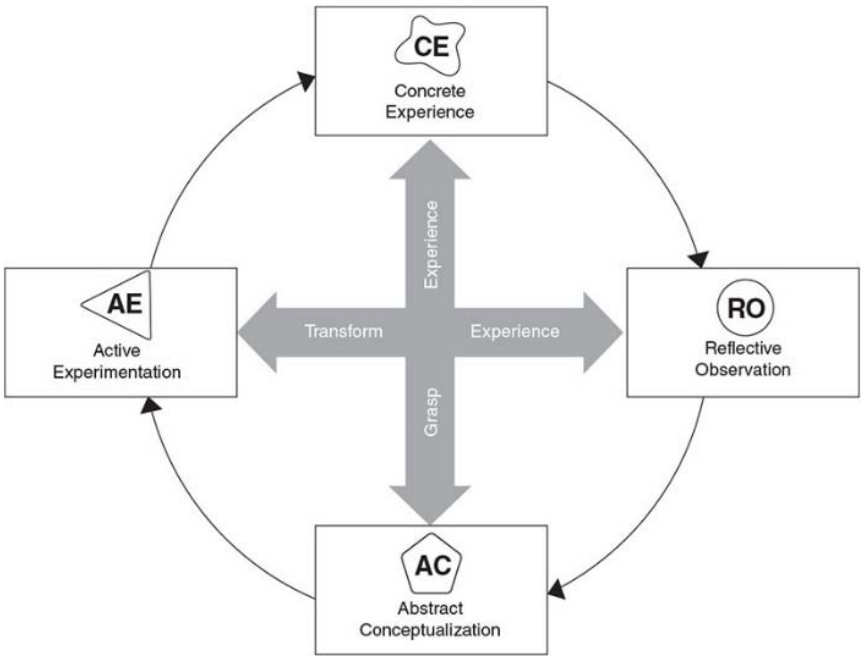


Figure 16 The experiential learning cycle (Kolb, 2014, n.p.)

Explicitly shown here is the recursive and ongoing process of experience being transformed into learning and hence into consistent knowledge. Consequentially, there is a perpetual intertwining between theory and practice, as theoretical reflections are based on practical experience and are then adapted to abstract concepts, which, in turn, result in implications of active experimentation generating new experience. These reflections are used in a metacognitive way and are such a means to codify one's own learning (Neck et al., 2014) when learning is thought of as a continuing process of thinking, reflection, experience and action (Holman, Pavlica, & Thorpe, 1997). Transferring Kolb's model to the experiential learning approach of a student company, selected activities could be made transparent like this:

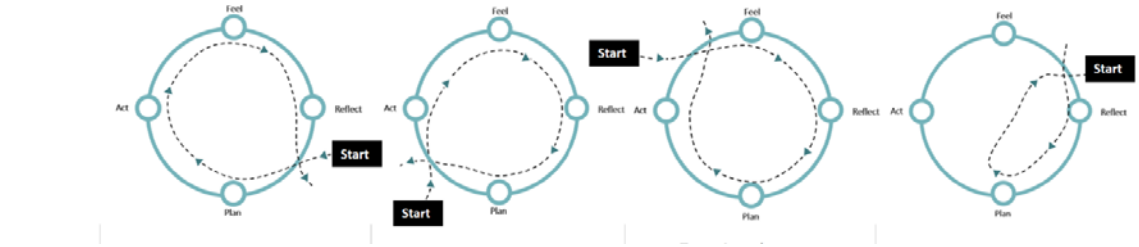
Kolb's Stage in Learning	**Concrete Experience**	**Reflective Observation**	**Abstract Conceptualization**	**Active Experimentation**
Budgeting	Funding money by selling shares or other means of fundraising	Preparing a budget plan	Feasibility of a budget plan	Create cash flow, breakeven and ratios
Decide on product or service	Participants decide on product/service that fits the market needs	Reflection on product/service and, if necessary, rectification	Group decision making concepts: conclusions are drawn	Sale of product/service in an external environment impacts capitalizing on opportunities
Financial and accounting controls	Students must create databases and spreadsheets to track inventory, money & service metrics	Bank account reconciliation, weekly use and final report for shareholders	Accounting checks and balances, business metrics, income in and out	Students use their process in the course of the business

Table 2 Selected student company activities within Kolb's learning circle (own representation based on Michaelsen & McCord, 2011, p. 40)

Each of these selected activities undergoes the four steps of the experiential learning circle described above. Whether it is respecting finances, the product or service the company deals with, the concrete experience when a certain action is carried out is always the beginning (here, for instance, the decision on product or service). Reflective observation proceeds when a prototype of the product or service is manufactured and by means of group decision concepts conclusions on probable or necessary rectifications are drawn (abstract conceptualization). Testing the ideas and conclusions on the real market is the phase where participants actively experiment. Here opportunities can be capitalized in terms of generating new sales strategies or opening new markets.

Kolb's learning circle was adapted and modified by Lackéus (2020)[7] through the scientific social media platform 'LoopMe'. Although it was actually built for entrepreneurship research purposes, the design can also be adjusted to reflect upon entrepreneurial behaviour among participants of experiential entrepreneurial programmes (see Figure 17).

[7] Use of this source by friendly permission of the author



Type	Planned reflective action	Attitude-changing action	Emotional event based reflection	Topic-based reflection
Step 1	Do a carefully planned activity	Do a very simple activity, preferably emotional	Pick a lived emotional event	Think about a given topic
Step 2	Reflect once the activity is done	Reflect once the activity is done	Reflect upon the emotional event	Reflect upon the given topic
Step 3	Deeply probing questions	Deeply probing questions	Deeply probing questions	Deeply probing questions

Figure 17 Four different task types possible to craft in LoopMe (Lackéus, 2020, p. 15)

According to which phase of the circle is started with (either plan as abstract conceptualization, or act as the active orientation, or feel corresponding to concrete experience), the reflective task differs; mandatory, however, are the three steps of each of the phases. With this model, manageable tasks for reflections can be provided. If the starting point is a planned reflective action in terms of testing the "venture hypothesis on a potential customer and reflect upon the result" (Lackéus, 2020, p. 15), the task might be framed like this: "Meet a customer and test your venture hypothesis [Step 1]. Reflect afterwards […] around key insights [Step 2]. […] Reflect also around what surprised you. Analyse if the experience led to changes in any of your deep beliefs around your venture [Step 3]" (Lackéus, 2020, p. 16). By performing a task like this, students' reflective abilities will be enhanced and more profound and effective learning will be enabled.

These models show that effective learning requires reflection on experiences which then leads to optimizing strengths and compensating weaknesses and adjustments of action plans. Hence, new ideas are being tested, thereby leading to further experience. Being personally involved in concrete experience, and thus getting the chance to create and test new ideas and theories, can support students' personal development as well as the development of critical thinking which again is the foundation for setting goals, making decisions, and taking risk, thereby enabling them to develop and enhance entrepreneurial thinking and acting (Raposo & do Paço, 2011).

That is why Neck and Greene (2011, p. 68) call reflection an “integral component of entrepreneurship education”, supported by Hägg and Kurczewska (2016) stressing the fact that entrepreneurship education cannot be examined without considering the intertwining of action, experience and reflection as a substantial component of the entrepreneurial learning process.

5.3 Effects of Experiential Learning

However, the effects of experiential learning have been discussed diversely over the years, also due to the fact that these effects are hardly empirically validated (Holman et al., 1997). For example, Eisenstein and Hutchinson (2006, p. 257) examined performance in decision-making based on experiential learning and found that “contrary to popular wisdom, […] reliance on this type of experiential learning is likely to be a risky proposition because it can be either accurate and efficient or errorful and biased”. March (2010, p. 107) contrasted experiential knowledge with academic knowledge and concluded “it is difficult to uncover the causal structure and to identify the effects of actions. […] As a result, the lessons derived from experiential learning are rife with unjustified conclusions, superstitious associations, misleading correlations, tautological generalizations, and systematic biases”. On the other hand, however, multiple experiential learning techniques lead to an increase in knowledge when compared to knowledge acquired by lecture formats only and can be beneficial for students, as a study by Hamer (2000) revealed. This might be due to the fact that in being challenged by recurrent and sometimes ubiquitous settings, students have to apply to what they had learned previously. Hence, they are able to bridge the gap between abstract knowledge and concrete appliance and are then in a good position to take control of their learning processes. Furthermore, encountering real-life learning situations by being exposed to ambiguous conditions and critical events and thus getting the relevance of underlying theoretical concepts can lead to an enhancement of social, personal and professional competences, and may even have a positive impact on entrepreneurial intentions, as a case study by Mason and Arshed (2013) revealed. When conducting a qualitative study about student entrepreneurship clubs and societies (also comprising mini-companies), Pittaway, Rodriguez-Falcon, Aiyegbayo, and King (2011) got similar results respecting experiential learning in entrepreneurial learning situations:

students taking part in these specific learning settings focussing on action-oriented approaches reported in the interviews that they enhanced in practical (e.g. engagement in venture creation) and social skills (e.g. working with stakeholders) as well as in personal skills such as learning by failure and coping with problems in a better way, raising self-confidence or being capable to develop reflective practice. Thus, participants gained benefits in the field of entrepreneurial competences which support the assumption that the impacts of experiential learning are superior to more traditional learning approaches with an emphasis on theory and content by lectures and literature. Positive impacts of experiential learning on the decision to becoming an entrepreneur as a career option were the findings of a study by Sherman et al. (2008), and Lackéus (2013b), too, confirms the postulation of experiential learning fostering learning outcomes especially in terms of entrepreneurial competences. Learning environments that force students to act and to cope with the outside world are particularly suitable for fostering the capability to successfully manage ambiguous and uncertain situations and thus increase self-efficacy and team-work capacities.

5.4 State of Research on Entrepreneurial Programmes with an Experiential Learning Approach

Inferences on the impact of specific entrepreneurial programmes can only be drawn if valid and reliable studies with a verifiable methodological design and corresponding findings are conducted. A number of studies have shown that entrepreneurial programmes focussing on experiential and action-based learning and teaching approaches are considerably more successful than more traditional methods (Gielnik et al., 2015; Jones & English, 2004; Lepoutre et al., 2011; Mason & Arshed, 2013) as such methods enable participants to develop competences being transferable not only across the world of work but also across society. However, as a literature review on active learning methods by Bernstein (2018) revealed, significant long-term effects regarding students' performance are not secured if it comes to course examinations. Contrasting, though, are the results on qualitative variables, for example respecting student satisfaction, and noteworthy is the fact that positive results are gained when students are not left alone but are definitely involved by active participating in the respective learning setting. Furthermore, students benefit if active learning methods (such as simulations or discussions) are added by passive ones (such as lectures or reading).

Though, it is obviously important that the entrepreneurial programmes' focus should not only be on theoretical but also on practical aspects, such as creating or practising a business and also taking part in entrepreneurship-related competitions, thereby learning to become an entrepreneur by carrying out projects common in an entrepreneur's real and everyday life (Toutain, Fayolle, Pittaway, & Politis, 2017). Pursuing this approach implies the amalgamation of theoretical knowledge and practical applications in a learning process that is self-managed by the students to a large extent (Frank et al., 2005) following an action-oriented, project-based, student-centred and experiential learning approach.

Amazingly enough, however, teaching through entrepreneurship - and, thus, in a more learner-centred way - is a teaching method that is randomly discussed in entrepreneurship education articles (Sirelkhatim & Gangi, 2015) also due to the lack of measurable evidence when it comes to learning outcomes of experiential learning settings respecting entrepreneurship education (Mason & Arshed, 2013). A study on active learning and teaching methods in entrepreneurship education by Kepalienė, Žygaitienė, and Jakovleva (2016) among teachers and students of seventh to 12th grade in schools in Lithuania indicate that collaborative, problem-solving and experiential learning are the methods most frequently applied in school's entrepreneurship education. Still, assessment approaches dealing with experiential entrepreneurial programmes are rare and the need for respective research is evident (Lackéus & Williams Middleton, 2018), also in respect of the variation in data quality and the respective validity of conclusions been drawn. This is also one of the findings of a literature review by Scott, Penaluna, and Thompson (2016) on the effectiveness of experiential teaching methods in entrepreneurship education. There is a deficiency particularly in generalizable evaluative results when it comes to verify that desired learning outcomes are effectively achieved either by traditional (lecture-based) or experiential (action-oriented) approaches and the authors not only recommend to clarify definitions (e.g. in terms of domains) but also to conduct longitudinal studies that accompany students along their career paths and research on this topic including a mixed-methods methodology.

Apart from that, and as Peterman and Kennedy (2003) stated, there is indeed a desire on the part of the pupils on participating in entrepreneurship education

programmes as being a means to experience real-life situations. One possible way to foster entrepreneurship education is to offer these situations by way of entrepreneurship programmes helping to initiate, running and implementing student companies in schools. These programmes do not only provide knowledge and skills in terms of e.g. writing a business plan, how to target customers, or information on stocking and pricing, but also give opportunities to observe role models, to develop and strengthen so-called soft skills or competences such as motivation, perseverance, social responsibilities, self-efficacy or ethical and sustainable thinking and enable the participating students to reflect their activities.

5.5 State of Research on Entrepreneurial Programmes with an Experiential Learning Approach Exemplified by Student Companies at Schools

Arousing and promoting young people's interest in economics and economic education has long been recognised as necessary (e.g. Fix, 1989) and implemented in economic courses through "learning business by doing business" (Brodersen, 1985, p. 132). Since the 1980s, student companies have been found e.g. in Sweden, Belgium, France and also in Germany (Brzozowska, 2012). As one of the European Union’s objectives is that each student should have the opportunity to take part in a practical entrepreneurship project (Spilling, et al., 2015) and that key competences such as entrepreneurship must be strengthened (European Commission, 2006), mini-companies, with their cross-disciplinary approach, seem to be well-suited to reach these competence goals. Due to their conception, mini-companies are designed to be as close to a real company as possible. In the US and in Europe, the predominating programme in secondary schools in this respect is the JUNIOR Achievement Young Enterprise student mini-company programme (short JUNIOR)[8] (Oosterbeek, van Praag, & IJsselstein, 2010). Usually, in the course of a school year, students search for unmet market needs (either products or services), set up a business plan, establish their company, look for seed capital, develop and sell their products or services and finally shut down their mini-company. Thus, students become part of an active entrepreneurial process (from developing an idea up to the implementation of the product or service in the market) that can be individually

[8] Also see http://www.jaeurope.org/annual-report-2018

reflected as they can discover an authentic experience of a small start-up business and are thus inspired by own experiments and knowledge of comparable innovations elsewhere which they get introduced to by competitions and contests with other mini-companies. However, despite the intended authenticity, it has to be mentioned that student companies are not a one-to-one mapping of a real business, but simplifications, priorities and omissions take place, such as to define a delimited market, the waiver of corporate taxes and the lack of wage agreements (Penning, 2018).

Criteria for ensuring the development of entrepreneurial competences in these programmes include, for example, active learning, interdisciplinarity, collaboration with local enterprises (via mentors from these companies or institutions to share in the experiences of entrepreneurs, learn from contemporary business settings, and get consulting advice; Lindh & Thorgren, 2016), promotion of creative processes, and a focus on the creation of "financial, social or cultural wealth" (Ministry of Education and Research, Ministry of Local Government and Ministry of Trade and Industry, 2009, p. 18). But despite the fact that nowadays a lot of schools offer student companies programmes (for example 753 schools in Germany with 10.400 participants are taking part in a JUNIOR Achievement Young Enterprise student company programme in school year 2016/17[9]), little is known about its relation with students' development of entrepreneurial competencies and up-to-date longitudinal studies are missing (Egbert, 2014).

In the German context, there are just two empirical studies focussing on mini-companies dating back to 2007 and 2009 (De Haan et al., 2009; Knab, 2007), both addressing the promotion and the development of entrepreneurial competences, and only one study has been published in the last decade: the INMIT-Study examined changes in start-up behaviour after having participated in a student company or attended a project similar to a student company (Bundesministerium für Wirtschaft und Technologie, 2010).

In order to explore if student companies will improve the quality of school education, Knab (2007) carried out a survey by questioning teachers who accompanied student companies set in Berlin secondary schools in 2005. In addressing different aspects associated with student companies (e.g. supporting competences respecting

[9] Pressematerial: Das erreicht JUNIOR 2016/2017

career orientation, motivational character of mini-companies, potential connections between kind of school and work in a mini-company), findings show inter alia that the work in student companies should not be seen as a panacea but promotes the competences and thus the career prospects of the students and the existence of a motivating character of working in student companies, both for students and teachers.

In an explanatory study, De Haan et al. (2009) examined the extent to which student companies are used in different types of schools; the structure and organisation of the student companies or their level of professionalism; the aspect of sustainability in the student companies and the competences and learning motivations acquired by the pupils. The research encompassed a quantitative online-tool (questionnaire) and a qualitative part (interviews), the former answered by participants of 70 mini-companies from all over Germany, the latter conducted with both 20 teachers and 20 students. Respecting competences, findings of the research show the promotion of so-called 'soft skills' (e.g. increased punctuality, reliability, assumption of responsibility etc.) and social skills (e.g. the ability to work in a team), furthermore strengthening personal competences such as reinforcement of self-efficacy, self-motivation and dealing with failure, thinking ahead and self-acquisition of knowledge. Moreover, an increase in reflection on professional future and different career options could be detected. However, the authors explicitly refer to the exploratory character of the study and stress the need for more extensive studies using different research approaches and measurement tools.

Tasks and objectives of the INMIT-study (Bundesministerium für Wirtschaft und Technologie, 2010) were, among others, empirical inventories of start-up-related aspects and attitudes among young people toward starting a business as well as evaluations and effects of four exemplary entrepreneurship projects (JUNIOR and JUNIOR-Kompakt as representatives of mini-companies, Deutscher Gründerpreis für Schüler (DGPS) and Jugend gründet representing 'virtual' business game competitions with a fictional founding idea) in eight German federal states. The mixed-methods survey included an online and paper-pencil questionnaire for the students (treatment group n=1581, control group n=766, alumni n=442) and telephone interviews with teachers (n=193) (Bundesministerium für Wirtschaft und Technologie, 2010, p. 11). Overall, the students saw their greatest personal benefit from participating in an

entrepreneurship project in the improvement of interdisciplinary skills and the acquisition and improvement of economic and company-related knowledge as well as a means for career orientation. Teachers reported a strong enhancement in communication skills and ability to work in a team and self-confidence. As a result of the project experience and related to start-up a business, around 40 per cent of the young people interviewed stated that their basic propensity towards starting a business has changed positively. Teachers had a more positive view: Around half of the teachers surveyed believed that the entrepreneurship projects will have a positive effect on the interest of the participating pupils in starting their own business (Bundesministerium für Wirtschaft und Technologie, 2010, p. 40).

These results go in line with findings of the study conducted by Spilling et al. (2015) in Norway showing that participants of mini-companies are more often ready to become self-employed and to establish an enterprise in the future (meaning there is an impact on entrepreneurial intentions). This might be due to the fact that in mini-companies, students are fully integrated into a business process and can experience real business-related conditions within the school's protected framework: starting with the development of their own ideas, going over to the identification with the product or service and finally the (successful) implementation. In addition, "the benefit generally appears to be greatest for so-called generic entrepreneurial skills, for example, increased ability and confidence to take personal initiatives, an increase in creative and innovative skills, and that the entrepreneurship training was useful as a learning method during the education. It is particularly participation in education *through* entrepreneurship that provides a greater benefit in the form of such generic skills" (Spilling et al., 2015, p. 6). On the other hand, no correlations have been found on competences such as initiative taking or risk willingness. Furthermore, only a limited effect on academic performance was documented in upper secondary education, whereas the programme had a positive impact on academic performance in lower secondary education.

When Oosterbeek et al. (2010) conducted a research within the JUNIOR programme measuring entrepreneurial competences and intentions among participants of mini-companies, their findings turned out to be quite divergent to the latter study: the programme "does not have the intended effects: the effect on students' self-

assessed entrepreneurial skills is insignificant and the effect on the intention to become an entrepreneur is even significantly negative" (Oosterbeek et al., 2010, p. 443). The authors conclude that this might be due to the fact that the students got a more realistic perspective on an entrepreneur's work and tasks and what is necessary to start a business. Hence, these results are quite surprising as the programme's objectives are to provide the participants with an entrepreneurial mindset in terms of goal orientation, initiative, creativity, perseverance and self-efficacy, as well as with financial literacy in terms of developing financial independence, risk management, resilience, adaptability and some more – all in order to be best equipped to start a business (JA Worldwide, 2019). However, when Frank et al. (2005) examined if entrepreneurial orientation can be influenced by various education processes among different vocational and secondary schools in Austria, their study showed that participants of JUNIOR enterprises developed strong start-up inclinations. The authors trace this back to the school's orientation towards entrepreneurship and the resulting teaching methods and education processes but emphasize that - due to the heterogeneity in European school systems - the findings might not be transferable to other countries.

The only study on the long-term effects of this programme was conducted by Elert, Andersson, and Wennberg (2015) accompanying alumni during a period of 16 years after graduation. Results show that participation in student companies truly leads to an increase of probability to engage in starting a business and an increase of entrepreneurial income among the owners of these ventures. Hence, the authors state that there is a definite link between entrepreneurial intentions and entrepreneurial outcomes due to being engaged in the entire lifecycle of an enterprise that is performed during this kind of programme.

Underlining these results and the findings of Peterman and Kennedy (2003) about increased enterprise capability and a positive influence on the aspiration of later being self-employed among participants of a JUNIOR programme (Riese, 2011) was likewise the result of a longitudinal study by Athayde (2009, 2012), including a pre- and a post-test and a control group. Type of school, gender and ethnic and socio-economic background, however, moderate the impact as these are factors that also correlate with levels of enterprise aptitude. Cooperation, friendship and personal networks as well are issues that influence interaction (such as initiative or problem-saving abilities within

members of a mini-company) contributing to entrepreneurial skills and successful experience within a mini-company and thus constructive attitudes towards self-employment. It should be noted, however, that peer influence may also be counterproductive in the way that students who are friends with each other will not change their conceptions of themselves (also see Lackéus & Williams Middleton, 2018). These results were gained by a qualitative study conducted by Riese (2011) among 40 upper-secondary students in Norway who participated in a mini-company within a one-school-year period. Another study with secondary school students of a mini-company in Mälmö (Sweden) reported by Lackéus (2016) put the focus on various forms of value creation focused cases in a real-life setting. Even if more of a venture creation kind of educational practice, findings showed value creation in terms of economic value and enjoyment value (see Section 1), leading to "increased entrepreneurial passion and marketing skills" (Lackéus, 2016, p. 17) and "triggering high levels of student engagement, perceived relevancy and deep learning of both entrepreneurial and more cognitive competencies" (Lackéus, 2016, p. 21).

A common feature of these findings is the underlying concept of competences in the broadest sense of the term, i.e. not only focussing on knowledge but rather on transforming skills and knowledge into action, which are also referred to in economic literacy within the field of economic education. The mere possession of skills and knowledge does not make individuals competent, as competences are demonstrated only by actual behaviour (Man et al., 2002). Thus they are changeable, learnable and adaptable depending on the respective situation and such are always in a dynamic process. Adopting this perspective, the present empirical research was initiated to shed light on which and to what extent entrepreneurial competences will be developed by participating in a mini-company. This might be especially useful for further research on the intended and unintended effects of this specific entrepreneurial programme.

6 Three Papers on the Development of Entrepreneurial Competences among Participants of Student Companies

To gain insight into the development of entrepreneurial competences among participants of student companies, three papers were submitted.

The core of Paper 1 is set on entrepreneurial competences and if these competences can be promoted by a competence-oriented design of teaching and learning, especially within the context of economic education: “Kompetenzorientierung in der Entrepreneurship Education – Wie kann die unternehmerische Kompetenz operationalisiert werden?” (“Competence orientation in Entrepreneurship Education - How can entrepreneurial competences be operationalised?”). For this purpose, a competence framework was designed, based on a profound literature review on entrepreneurial competences. From a multitude of different competence areas, three levels of entrepreneurial competences could be identified: the economic level, the team level and the personal level. Several constructs are assigned to each specific level to be operationalized and to serve as a basis for further empirical research on the development of entrepreneurial competences.

Referring to this newly created framework, a research instrument to assess the development of the competences was designed and a quantitative study with a pilot-test and a pre-test/post-test design was conducted. Based on the framework, a questionnaire with items grouped into 15 factors that defined entrepreneurial competences was developed. To validate the questionnaire a pilot-test was administered which resulted in a shortening of items in the final version. At the beginning of the intervention (i.e. the founding of the student companies), the questionnaire was sent online to participants of JUNIOR mini-companies in Baden-Württemberg. At the same time, a paper-pencil-questionnaire was answered by a control group (not being involved in a specific entrepreneurial programme). The development of this research instrument and the resulting data for both, the pilot-test and the pre-test are discussed in Paper 2: “Entrepreneurial competences in student companies at school: Development of a research instrument”.

Built upon this validated and psychometrically sound research instrument, Paper 3 is concerned with the findings of the quasi-experimental study. By matching the results of the pre-test and the post-test of the experimental group (conducted shortly after the intervention, i.e. the liquidation of the student company) with the respective results of the control group, it could be demonstrated that students of the experimental group expand their entrepreneurial competences on an economic level, however, they show only limited developments on the personal and on the team level. These findings are set in relation to experiential learning settings and their expected outcomes: “Development of entrepreneurial competences in student companies – Evaluation of entrepreneurship education in German schools”.

Paper 1:

Kompetenzorientierung in der Entrepreneurship Education –

Wie kann die unternehmerische Kompetenz operationalisiert werden?

Grewe, U., Brahm, T. (2019). Kompetenzorientierung in der Entrepreneurship Education. In T. Bijedić, I. Ebbers, & B. Halbfas (Eds.), *Entrepreneurship Education* (Vol. 12, pp. 133–150). Wiesbaden: Springer Fachmedien Wiesbaden. https://doi.org/10.1007/978-3-658-27327-9_8

6.1 Paper 1: Kompetenzorientierung in der Entrepreneurship Education – Wie kann die unternehmerische Kompetenz operationalisiert werden?

Abstract

Unternehmerische Kompetenzen können von den Lernenden beispielsweise durch das selbstständige Erarbeiten von Lerninhalten oder den Einsatz von Schülerfirmen entwickelt werden. Dabei wird davon ausgegangen, dass die individuelle Entwicklung unternehmerischer Kompetenzen durch die kompetenzorientierte Gestaltung von Unterricht unterstützt und gefördert werden kann. Zunächst stellt sich aus theoretischer Perspektive die Frage, welche Kompetenzen im Rahmen einer Entrepreneurship Education zu entwickeln sind. Im Beitrag soll dazu ein neu entwickelter, theoretisch fundierter Kompetenzrahmen vorgestellt werden. Der Rahmen zeichnet sich dadurch aus, dass eine Vielzahl von Kompetenzbereichen des wirtschaftlichen Wissens und Handelns in drei Ebenen strukturiert wurden: die wirtschaftliche, die persönliche und die Team-Ebene. Die im Kompetenzrahmen generierten Konstrukte wurden für weitere empirische Forschung operationalisiert. Mit Hilfe einer quantitativen Befragung kann beispielsweise untersucht werden, ob eine Maßnahme der Entrepreneurship Education zur Entwicklung unternehmerischer Kompetenzen beiträgt.

1 Problemaufriss: Kompetenzorientierung in der aktuellen Diskussion um Entrepreneurship Education

Kompetenzorientierung ist in aller Munde. Man kann es bereits als „Buzzword“ bezeichnen (Pfadenhauer, 2013). Dabei geht es einerseits um eine kompetenzorientierte Ausgestaltung von Lernprozessen, andererseits aber auch um das Ergebnis des Lernprozesses, das sich in Kompetenzen (anstelle von formalen Qualifikationen) zeigt. Die Sinnhaftigkeit der vielfältigen Verwendung des Wortes Kompetenzorientierung wird umfassend diskutiert, soll aber an dieser Stelle nicht aufgegriffen werden (z.B. Ladenthin, 2011). Für den vorliegenden Beitrag wird stattdessen das Ziel verfolgt, Entrepreneurship Education aus dem Blickwinkel der Kompetenzorientierung zu betrachten und damit einen Beitrag zu einer theoretisch fundierten kompetenzorientierten Gestaltung von Entrepreneurship Education an Schulen zu leisten. Kompetenzorientierung kann deswegen als passend zur Entrepreneurship Education angesehen werden, da die Gründung eines Unternehmens

verschiedene Kompetenzen erfordert (z.B. Boyles, 2012; Egbert, 2014). Gleichzeitig ist es wesentlich, mit Hilfe von Entrepreneurship Education bereits an Schulen für Gründungen zu motivieren, da eine in den schulischen Curricula verankerte Entrepreneurship Education „die Neigung zu einer Unternehmensgründung […] und damit eine Kultur unternehmerischen Denkens und Handelns begünstigt“ (Bijedić, 2013, S. 242).

Beispielsweise macht der Global Entrepreneurship Monitor in seinem Länderbericht für Deutschland 2016 deutlich, dass Deutschland im Vergleich zu den innovationsbasierten Referenzwerten anderen Ländern hinsichtlich der gründungsbezogenen Rahmenbedingungen sowie bzgl. der außerschulischen und noch stärker bzgl. der schulischen Gründungsausbildung vergleichsweise schlecht abschneidet (Sternberg & Bloh, 2017, S. 22). Eine umfassende Entwicklung unternehmerischer Kompetenzen stellt eine Voraussetzung dar, um Unternehmensgründungen zu unterstützen (Braukmann, Bijedic, & Schneider, 2008). Entrepreneurship Education umfasst „alle Bildungsprozesse, die unternehmerische Kreativität, Innovationsfähigkeit, Selbstwirksamkeitsüberzeugung, Leistungsmotivation, rationalen Umgang mit Risiko und Verantwortungsbewusstsein fördern […]“ (Kirchner & Loerwald, 2014, S. 39). Sie kann letztlich dazu beitragen, Schüler*innen auf die Veränderungen in der Arbeitswelt von morgen vorzubereiten. Mögliche Wege einer methodischen Umsetzung von Entrepreneurship Education in Schulen stellen beispielsweise das selbstständige Erarbeiten von Lerninhalten oder der Einsatz von Schülerfirmen dar (Krämer, 2008; Mittelstädt & Wiepcke, 2013).

Im Einklang mit der Kompetenzorientierung wird dabei als bedeutsam erachtet, dass sich die Lernenden selbst organisieren und kognitive sowie motivationale Prozesse der Kompetenzentwicklung (weitgehend) selbstständig durchlaufen. Auch Erpenbeck und Sauter (2013) heben hervor: „Noch weniger können Kompetenzen ‚vermittelt‘ werden. Sie benötigen neben dem selbstaufgebauten Wissen individuell, in Form von Emotionen und Motivationen angeeignete ‚interiorisierte‘ Wertungen, die ein selbstorganisiertes, kreatives Handeln erst ermöglichen“ (Erpenbeck & Sauter, 2013, S. 191). Somit steht das Lernen als Prozess im Vordergrund, wobei sowohl die Verantwortung als auch die Selbststeuerungsfähigkeit der Schülerinnen und Schüler für diesen Lernprozess betont werden. In der Folge ist davon auszugehen, dass die

individuelle unternehmerische Kompetenzentwicklung durch die Gestaltung kompetenzorientierter Lernprozesse unterstützt werden kann.

Zunächst stellt sich aber die Frage, welche Kompetenzen im Rahmen von Entrepreneurship Education zu entwickeln sind. Dieser Artikel nimmt sich dieser Frage an und entwirft auf Basis einer Analyse der bisherigen theoretischen und empirischen Literatur einen Rahmen für die Operationalisierung unternehmerischer Kompetenzen. Somit wird ein Beitrag zu einer weitergehenden theoretischen Fundierung der Entrepreneurship Education geleistet. Darüber hinaus kann der entworfene Rahmen auch dazu genutzt werden, Lehrer*innen bei der Gestaltung kompetenzorientierter Entrepreneurship Education zu unterstützen.

Der Beitrag ist wie folgt aufgebaut: Zunächst werden in Kapitel 2 der aktuelle Forschungsstand zu den unternehmerischen Kompetenzen rezipiert, in Kapitel 3 werden bisherige Kompetenzmodelle vorgestellt. Darauf aufbauend wird in Kapitel 4 der neu entworfene Rahmen unternehmerischer Kompetenzen vorgestellt. Den Abschluss bildet eine kurze Diskussion der Anwendungsmöglichkeiten des Rahmens in Forschung und Praxis.

2 Entwicklung von Kompetenzen unternehmerischen Denken und Handelns – Aktueller Forschungsstand zur Entrepreneurship Education

Der demographische Wandel, der globale Wettbewerb und nicht zuletzt die Digitalisierung haben einen großen Einfluss auf die Entwicklung der zukünftigen Arbeitswelt. In der schulischen Bildung werden diese Veränderungen der Arbeitswelt in verschiedenen Fächern oder fachübergreifenden Lernangeboten berücksichtigt. Mit Blick auf die Veränderungen der Zukunftsbilder von Arbeit ist es erforderlich, einen Paradigmenwechsel im schulischen Bildungsprozess zu initiieren und zu implementieren. Das bedeutet konkret, Kompetenzen und Haltungen zu entwickeln, die über die traditionellen Vorstellungen von Arbeit hinausgehen und auch das lebenslange Lernen in den Blick zu nehmen, das heißt, dass Arbeitnehmer*innen bereit sind, sich veränderten Bedingungen nicht nur in der Arbeitswelt zu stellen, und in diesem Zusammenhang auch neugierig bleiben und sich aktiv weiterentwickeln.

Die EU verabschiedete schon im Jahr 2006 eine Empfehlung bezüglich des lebenslangen Lernens und führt dazu „acht Schlüsselkompetenzen auf, die in einer

wissensbasierten Gesellschaft“ notwendig sind, „um sich in einem sich rasch verändernden Umfeld anzupassen und Erfolg zu haben“ (Europäische Kommission, 2006, o.S.). Darin werden explizit die „Eigeninitiative und unternehmerische Kompetenz: die Fähigkeit, Ideen durch Kreativität, Innovation und Risikobereitschaft in die Tat umzusetzen, sowie die Fähigkeit, Projekte zu planen und durchzuführen“ aufgeführt (Europäische Kommission, 2006, o.S.). Dazu kommt folgende Forderung: „Schulen sollten Unterstützung und Anreize geboten werden, um sie so zu ermutigen, Aktionen und Programme zur Vermittlung unternehmerischen Denkens und Handelns einzuführen“ (Kommission der Europäischen Gemeinschaften, 2006, S. 6), da man „den Eindruck [gewinnt], dass die Lehrpläne des Sekundarbereichs Lehrer und Schulen nicht ausreichend motivieren, die Erziehung zu unternehmerischem Denken und Handeln zu vertiefen. Daher sind Unterstützung und Anreize von entscheidender Bedeutung“ (Kommission der Europäischen Gemeinschaften, 2006, S. 8).

Allerdings besteht eine Forschungslücke dahingehend, inwieweit diese Empfehlungen in Europa umgesetzt wurden. Während sich viele Studien mit Entrepreneurship Education an Hochschulen beschäftigen (Boyles 2012; Jaroschinsky & Rózsa, 2015; Kucel, Róbert, Buil, & Masferrer, 2016; Uebe-Emden, 2008), „existieren [bislang jedoch] nur wenige empirische Kennnisse über Entrepreneurship Education innerhalb allgemeinbildender Schulen, die pädagogische Maßnahmen evaluieren oder didaktische Entscheidungen forschungsbasiert legitimieren“ (Egbert, 2014, S. 161). Auch ist insbesondere die Frage offen, welche Kompetenzen durch Entrepreneurship Education in der Schule entwickelt werden (können). Ein möglicher Grund hierfür könnte sein, dass Entrepreneurship in Europa lange Zeit in den Curricula weder der Hochschulen noch der Schulen zu finden war: „In Europe, entrepreneurship is still trying to find its home. Activities are in place across Europe but efforts are fragmented and often driven by external actors instead of by the education system itself” (Wilson, 2008, S. 123). Im Gegensatz dazu ist Entrepreneurship Education in den USA aufgrund der historischen Entwicklung des Landes weiter verbreitet, auch wenn es dort ebenfalls nicht flächendeckend in den Curricula verankert ist[10].

Während der Forschungsstand zur Umsetzung von Entrepreneurship Education an Schulen im deutschsprachigen Raum als unzureichend zu bezeichnen ist, finden sich

[10] Wir danken einem anonymen Reviewer für diesen Hinweis.

in anderen Kontexten verschiedene Untersuchungen zur Entrepreneurship Education, von denen die für die Schule als relevant erachteten Ansätze im Folgenden kurz dargestellt werden. Dabei werden zunächst internationale und danach nationale Studien und Ansätze in chronologischer Anordnung dargestellt. Beispielsweise befragten Bonnett und Furnham (1991) 350 Schülerinnen und Schüler der 12. Klasse (16-19 Jahre) und stellten dabei fest, dass 93 % derjenigen (n=109), die an einem „Young Enterprise scheme“ (ungefähr vergleichbar mit einem Schülerunternehmen), teilgenommen hatten, „consider it to be a useful experience of running a business“ (Bonnett & Furnham, 1991, S. 474) und insgesamt 61 % „considered running their own business in the future. […] The chief reason given […] for wanting to run their own business was the freedom to be their own boss“ (Bonnett & Furnham, 1991, S. 474). Ein weiteres Ergebnis der Studie befasste sich mit der inneren Kontrollüberzeugung: „Those who have chosen to get involved in the Young Enterprise scheme have been shown to have a more internal locus of control and a stronger belief in hard work“ (Bonnett & Furnham, 1991, S. 476). Die Autoren stellen dabei abschließend die These auf, dass innere Kontrollüberzeugung durch ermutigende Situationen entwickelt werden kann, welche den Individuen helfen, den Zusammenhang zwischen Arbeitsaufwand, Leistung und Leistungserfolg zu erkennen (Bonnett & Furnham, 1991).

In einer qualitativen Studie zur Kompetenzentwicklung von Unternehmern in den Niederlanden (Mulder et al., 2007) stand im Zentrum, wie Entrepreneure ihre Kompetenzen einschätzen und wie deren Angestellte sowie externe Berater diese Kompetenzen bewerten. Dabei betonen sie, dass Kompetenz nicht als ein objektiver Maßstab gesehen wird, sondern als ein sozial und gesellschaftlich gestaltetes Gebilde. Ein Resultat dieser Studie ist, dass Kompetenzen unterschiedlich bewertet und eingeschätzt werden. In der Gesamtschau werden Lernbereitschaft, Self-Management, Planung, Marktorientierung, Ergebnisorientierung und Netzwerken übereinstimmend von allen Befragten als die wichtigsten Kompetenzen von Entrepreneuren genannt, während z. B. strategisches Management oder Personalführung am unteren Ende der Skala rangieren.

In einer Eurydice Umfrage (EACEA, 2012) wurden Daten von 31 europäischen Staaten zu Entrepreneurship Education an Schulen ausgewertet. In einem Drittel der untersuchten Staaten wurden praxisorientierte Implementierungsrichtlinien und auch

die zugehörigen Lehr- und Lernmaterialien entwickelt, dabei wurden auch die Lernergebnisse der Entrepreneurship Education definiert. „Many countries cover all three dimensions: attitudes, knowledge and skills and most of them at least two. However, no country has learning outcomes linked only to entrepreneurial skills, which indicates that the other dimensions are needed to build these skills" (EACEA, 2012, S. 29). So zeigen die erhobenen Daten beispielsweise, dass in den Ländern, in denen unternehmerische Kompetenzen in den Curricula der Sekundarstufen zu finden sind, auch gleichzeitig betriebswirtschaftliches Wissen gelehrt wird und dadurch eine Differenzierung nicht mehr möglich ist (EACEA, 2012). Die Studie zeigt auch auf, dass es in Deutschland aufgrund der länderspezifischen Bildungspläne keine nationale Strategie für Entrepreneurship Education in allgemeinbildenden Schulen gibt: „Entrepreneurship education is explicitly recognized in ISCED 2 and 3[11] as a sub-topic in the optional subject 'economics', in ISCED 2 also as a cross-curricular objective. In ISCED 2, students are introduced to entrepreneurship by setting up a model/mini-enterprise" (EACEA, 2012, S. 48).

Für den deutschen Kontext geht aus der von der Deutschen Bundesstiftung Umwelt geförderten Explorationsstudie „Nachhaltige Schülerfirmen" von De Haan, Grundmann, und Plesse (2009) hervor, dass ca. 25% der deutschen Schulen in der Sekundarstufe I und II eine Schülerfirma hatten (De Haan et al., 2009, S. 67). Dies entsprach zum damaligen Zeitpunkt ca. 1% der Schülerschaft in den Sekundarstufen. In den Ergebnissen der Erhebung wird deutlich, dass Praxisbezug, Erfahrungslernen und die Wahrnehmung der eigenen Stärken als besonders positive Aspekte von Schülerfirmen gesehen werden. Auch soziale Kompetenzen werden gefördert, z. B. Teamfähigkeit, Verantwortungsübernahme, Konfliktfähigkeit, sowie die personalen Kompetenzen wie Entscheidungen treffen, Planung, eigenständiges Handeln und Aneignung von Wissen, welche zu mehr Selbstbewusstsein und Selbstsicherheit führen. Durch die Teilnahme an einer Schülerfirma werden auch die Lernmotivation gefördert und die Selbstwirksamkeitserwartung der Schüler*innen gestärkt. Dies führt dazu, über die eigene berufliche Zukunft nachzudenken und unterschiedliche Ausbildungsoptionen zu prüfen. Bei dieser Studie wird jedoch auch deutlich, dass es weiterer Forschung hinsichtlich der Messung der Kompetenzen bedarf.

[11] Sekundarstufe I und II, Anmerkung der Verfasserinnen

In der vom Bundesministerium für Wirtschaft und Technologie in Auftrag gegebenen Inmit-Studie zu Entrepreneurship Education-Projekten an deutschen Schulen wurden die Entwicklung von Kompetenzen sowie die Veränderung der Gründungsbereitschaft durch die Projektteilnahme an einem Unternehmergeist-Projekt[12] untersucht (Bundesministerium für Wirtschaft und Technologie, 2010). Die Annahme, dass Wissen ein unabdingbarer Teil von unternehmerischen Kompetenzen darstellt (Erpenbeck & Sauter, 2013), wurde durch diese Studie bestätigt: „Mit deutlichem Abstand sehen die Schülerinnen und Schüler in der Verbesserung der überfachlichen Kompetenzen sowie dem Erwerb und der Verbesserung des wirtschafts- und unternehmensbezogenen Fachwissens ihren größten persönlichen Nutzen aus der Projektteilnahme [einem Unternehmergeist-Projekt, Anm. der Verfasserinnen]“ (Bundesministerium für Wirtschaft und Technologie, 2010, S. 42). Darüber hinaus wurden Handlungsempfehlungen, Vorschläge und Anregungen entwickelt, um unternehmerisches Denken und Handeln und die damit einhergehenden Kompetenzen (wie Teamfähigkeit, Kreativität, Motivation, Innovationsfähigkeit, Selbstwirksamkeitsüberzeugung) zu fördern und weiterzuentwickeln.

Die vorgestellten Studien zeigen auf, dass schulische Entrepreneurship Education im Hinblick auf die Entwicklung sozialer, personaler und fachlicher Kompetenzen als durchweg positiv eingeschätzt wird. Doch trotz dieser verschiedenen Ansätze zur Entwicklung unternehmerischer Kompetenzen stellen Retzmann und Hausmann übergreifend fest, dass „ein Messinstrument […] benötigt [wird], um mittels kontrollierter Interventionsstudien festzustellen, ob durch Maßnahmen der Entrepreneurship-Education überhaupt ein signifikanter Fortschritt in der Fähigkeit und ggf. der Bereitschaft zu unternehmerischem Denken und Handeln erzielt wurde. Schülerunternehmen […] binden zeitliche und personelle Ressourcen; daher ist die bildungsökonomische Frage berechtigt, welche Effekte sie im Hinblick auf die Befähigung zu unternehmerischem Denken (und Handeln) nachweislich erzielen […]“ (Retzmann & Hausmann, 2012, S. 63). Im Folgenden werden entsprechend bisher entwickelte Kompetenzmodelle dargestellt.

3 Bisherige Kompetenzmodelle unternehmerischen Denken und Handelns

[12] www.unternehmergeist-macht-schule.de

Bei der Entwicklung nationaler Bildungsstandards wurden Kompetenzmodelle von Klieme (2007) dadurch charakterisiert, dass sie „Inhalte und Stufen der allgemeinen Bildung“ konkretisieren (Klieme, 2007, S. 9). Viele Kompetenzmodelle basieren auf dem Kompetenzverständnis von Weinert (2001) der Kompetenzen versteht als „die bei Individuen verfügbaren oder durch sie erlernbaren kognitiven Fähigkeiten und Fertigkeiten, um bestimmte Probleme zu lösen, sowie die damit verbundenen motivationalen, volitionalen und sozialen Bereitschaften und Fähigkeiten, um die Problemlösungen in variablen Situationen erfolgreich und verantwortungsvoll nutzen zu können“ (Weinert, 2001, S. 27f). North, Reinhardt, und Sieber-Suter (2013) definieren Kompetenz als „ein in den Grundzügen eingespielter Ablauf zur Aktivierung, Bündelung und zum Einsatz von persönlichen Ressourcen für die erfolgreiche Bewältigung von anspruchsvollen und komplexen Situationen, Handlungen und Aufgaben. Kompetentes Handeln beruht auf der Mobilisierung von Wissen, von kognitiven und praktischen Fähigkeiten sowie sozialen Aspekten und Verhaltenskomponenten wie Haltungen, Gefühlen, Werten und Motivation“ (North et al., 2013, S. 43).

Bezüglich der Kompetenz des unternehmerischen Denkens und Handeln bestehen ebenfalls bereits Konzeptionen von Kompetenzmodellen, von denen ausgewählte im Folgenden dargestellt werden:

In einer konzeptionellen Arbeit setzen Man et al. (2002, p. 124) die Kompetenzen eines Unternehmers in Beziehung zum langfristigen Erfolg von Unternehmen. Dabei nehmen sie eine prozessorientierte Perspektive ein und sehen Kompetenzen als „higher-level characteristic encompassing personality traits, skills and knowledge“. Dabei wird Kompetenz ähnlich wie bei Euler und Hahn (2014) *„als innere Disposition“*[13] (Euler & Hahn, 2014, S. 84) gesehen, welche nicht unmittelbar beobachtbar ist, sondern sich erst im Handeln (hier im Unternehmenserfolg) zeigt. Davon abzugrenzen ist das „im angelsächsischen Bereich existierende[n] Verständnis von *Kompetenz im Sinne eines ausgeführten Verhaltens (performance)*[14]“ (Euler & Hahn, 2014, S. 84). Auch Man et al. (2002) gehen davon aus, dass der bloße Besitz von Kompetenzen nicht unweigerlich zu einem kompetenten Entrepreneur führt. Sie unterscheiden sechs unternehmerische Kompetenzbereiche:

[13] Hervorhebungen im Original
[14] Hervorhebungen im Original

„1. Opportunity competencies: Competencies related to recognizing and developing market opportunities through various means. 2. Relationship competencies: Competencies related to person-to-person or individual-to-group-based interactions, e.g., building a context of cooperation and trust, using contacts and connections, persuasive ability, communication and interpersonal skill. 3. Conceptual competencies: Competencies related to different conceptual abilities, which are reflected in the behaviors of the entrepreneur, e.g., decision skills, absorbing and understanding complex information, and risk-taking, and innovativeness. 4. Organizing competencies: Competencies related to the organization of different internal and external human, physical, financial and technological resources, including team-building, leading employees, training, and controlling. 5. Strategic competencies: Competencies related to setting, evaluating and implementing the strategies of the firm. 6. Commitment competencies: Competencies that drive the entrepreneur to move ahead with the business“ (Man et al., 2002, S. 132).

Dagegen untergliedern Mandl und Hense (2004) in lediglich vier Kompetenzbündel, die sich z. T. mit den von Man et al. (2002) definierten überschneiden: kognitive, motivationsbezogene, soziale und organisationale Kompetenzen. Sie konzipieren daraus ein Kompetenzmodell des unternehmerischen Denkens und Handelns. Unternehmerisches Denken und Handeln generiert sich hier aus z. B. Kreativität und Lernfähigkeit (kognitiv), Eigeninitiative, zielorientiertem Handeln und Risikobereitschaft (motivationsbezogen), Kommunikations- und Kooperationskompetenz und Verantwortungsbereitschaft (sozial) und strategischer Zielanalyse und Projektsteuerung (organisational).

Im Rahmen eines wissenschaftlich begleiteten Modellversuchs der Schumpeter Handelsakademie in Wien wurde das drei Ebenen umfassende „TRIO Modell der Entrepreneurship Education“ von Aff und Lindner (2005) entworfen. Auf der Ebene 1, Core Entrepreneurship Education, erfolgt die „Entwicklung und Umsetzung eigener Ideen für unternehmerische, berufliche und private Herausforderungen“ (Lindner, 2015a, S. 43). Diese Ebene umfasst auch, Geschäftsmodelle zu entwickeln und umzusetzen. Lindner nennt dies „ökonomische Ausbildungsphilosophie“ (Lindner, 2015b, S. 95). „Die Ebene II, Entrepreneurial Culture, betont die Förderung einer Kultur der Selbstständigkeit, der Offenheit für Neuerungen, der Empathie und Nachhaltigkeit

sowie einer ermutigenden Beziehungs- und Kommunikationskultur. Die Ebene III, Entrepreneurial Civic Education, hebt die Stärkung einer Kultur der Mündigkeit, Autonomie und Verantwortung für gesellschaftliche Herausforderungen hervor. Dies geschieht durch die Entwicklung gesellschaftlicher Ideen, deren Argumentation und das Engagement bei der Umsetzung“ (Lindner, 2015a, S. 42). Aff und Lindner (2005) zielen darauf, mit diesem Modell ein Entrepreneurial Mindset zu fördern, um Denkweisen und Haltungen für die Konzipierung und Umsetzung neuer Ideen aufzuzeigen, die nicht nur im Arbeits- und Berufsleben immer präsent sind. Entrepreneurship Education soll dabei fächerübergreifend und als Querschnittsaufgabe in allen Unterrichtsfächern als Unterrichtsprinzip verstanden werden (Ebene II) und fokussiert in der Ebene III die „Basistugenden einer dynamischen Zivilgesellschaft mündiger Bürgerinnen und Bürger“ (Lindner, 2015b, p. 96). Dieses (zu erlernende) Bewusstsein führt durch den Fokus auf Erfahrungslernen und den Praxisbezug zu einer Handlungskompetenz, die die kognitiven Kompetenzen in einem längerfristigen Prozess mit den situativen Anforderungen verknüpft.

Auch Boyles (2012) nimmt die kognitiven und die sozialen Kompetenzen (zusammen mit der Handlungsorientierung) auf und konzipiert ein Programm für „Undergraduate Entrepreneurship“ in den USA, in dem sie das im 21. Jahrhundert erforderliche Wissen, die Fertigkeiten und Fähigkeiten als Grundlage der unternehmerischen Kompetenzen nimmt. So basieren die kognitiven unternehmerischen Kompetenzen wie das Erkennen von Chancen, die unternehmerische Aufmerksamkeit oder die Fähigkeit, systematische Verfahren anzuwenden, auf Informations-, Medien- und Technologiegrundbildung und der Fähigkeit, daraus Wissen zu generieren. Boyles (2012) zählt jedoch auch das schöpferische Denken, welches u. a. den Einsatz neuer Lösungswege für komplexe Probleme beinhaltet, zu einem der Teilbereiche dieser kognitiven Kompetenzen. Soziale unternehmerische Kompetenzen (Beziehungsfähigkeit, Sozialkapital im Sinne von Bindungen, Normen, Vertrauen, und der Zugang zu Ressourcen) werden generiert aus der Fähigkeit zu kommunizieren, miteinander zu arbeiten und daraus Wert zu schöpfen. Die Fähigkeiten, Zeit und Ressourcen effektiv zu nutzen, Pläne zu entwickeln und umzusetzen, d. h. also die Leistungsfähigkeit und die Eigenverantwortlichkeit, führen zu

unternehmerischer Kompetenz und zeigen sich insgesamt in der (Eigen)Initiative, Selbstwirksamkeit und in proaktivem Verhalten des Entrepreneurs (Boyles, 2012).

Ein Modell für unternehmerisches Denken und Handeln wurde von Retzmann und Hausmann (2012) auf Basis eines Modells für ökonomische Kompetenzen (Seeber et al., 2012) entwickelt. Dieses generische Modell umfasst drei Kompetenzbereiche, die wiederum in jeweils drei domänenspezifische Teilkompetenzen untergliedert sind (Seeber et al., 2012, S. 88):

- Entscheidung und Rationalität (des Einzelnen): Situationen analysieren, Handlungsalternativen bewerten, Handlungsmöglichkeiten gestalten;
- Beziehung und Interaktion (mit anderen): Interessenskonstellationen analysieren, Kooperationen analysieren, bewerten und gestalten, Beziehungsgefüge analysieren;
- Ordnung und System (des Ganzen): Märkte analysieren, Wirtschaftssysteme und Ordnungen analysieren, Politik ökonomisch beurteilen und gestalten.

Retzmann und Hausmann (2012) greifen dieses Modell auf und übertragen es auf die „Ausprägung der Fähigkeit zu unternehmerischem Denken von Schülerinnen und Schülern“ (Retzmann & Hausmann, 2012, S. 54), wobei sie die Kompetenz unternehmerischen Denkens von Schülern*innen wie folgt definieren: „Die Schülerinnen und Schüler verfügen über die Fähigkeit und Bereitschaft, in risikobehafteten, ökonomisch geprägten Situationen das Für und Wider ihres Handelns sorgfältig abzuwägen und die berufliche Selbstständigkeit bzw. Unternehmensgründung als mögliche Perspektive für die eigenen Person zu reflektieren“ (Retzmann & Hausmann, 2012, S. 57). Möglichkeiten zur Unternehmensgründung und die wirtschaftlichen Chancen und Risiken zu analysieren und zu gestalten sowie einen Businessplan zu entwerfen und Ressourcen zu managen werden dem Kompetenzbereich „Entscheidung und Rationalität“ nach Seeber et al. (2012) zugeordnet. Der Bereich „Beziehung und Interaktion“ geht auf Netzwerk und Stakeholder und die damit verbundenen Interessenskonflikte und Lösungsmöglichkeiten ein, wobei das „interne und externe Beziehungsgefüge des Unternehmens“ (Retzmann & Hausmann, 2012, S. 60) analysiert und durchdrungen wird. Wirtschaftliches Denken und Handeln bzgl. Marktstrukturen und -abhängigkeit, Grundsätze der Sozialen Marktwirtschaft und des Social Entrepreneurship sowie

rechtliche, ethische und nachhaltige Aspekte einer Unternehmensgründung werden im Kompetenzbereich „Ordnung und System“ verortet (Retzmann & Hausmann, 2012, S. 58).Mit diesen Kompetenzanforderungen, die ihren Ursprung auch in den Kompetenzen haben, die einem Unternehmensgründer oder Entrepreneur zugesprochen werden, werden Teilkompetenzen als theoretische Grundlage systematisiert, die zur Testung unternehmerischen Denkens und Handelns bei Schülern dienen können.

Bezüglich des kompetenten Handelns entwickelten Jaroschinsky und Rózsa (2015) beispielhaft ein Kompetenzmodell zur Entrepreneurship-Handlungskompetenz, das sowohl den Weinertschen Kompetenzbegriff als auch Definitionen nach Sonntag und Schaper (2016) und Pfäffli (2015) aufnimmt. Fachkompetenz wird hinterlegt mit Fachwissen über Gründungsmanagement, einem Businessplan, der Gründungsfinanzierung und dem Business Model Canvas; Sozialkompetenz zeigt sich in Team-, Kritik- und Kommunikationsfähigkeit sowie sozialer Verantwortung; Kreativitätstechniken, Analyse- und Transferfähigkeit und die Fähigkeit zur Informationsbeschaffung ergeben die Methodenkompetenz; Verantwortungs-bereitschaft, Flexibilität, Reflexionsfähigkeit und das Annehmen von Feedback als Kritikfähigkeit werden der Selbstkompetenz zugeschrieben. Diese vier Kompetenzen mit ihren entsprechenden Teilzielen führen dann zur Handlungskompetenz, in diesem Beispiel zur Erstellung eines Businessplans (Jaroschinsky & Rózsa, 2015).

Bacigalupo, Kampylis, Punie, und van den Brande (2016) stellten den „EntreComp: The Entrepreneurship Competence Framework“ als Ergebnis der 2015 durchgeführten „EntreComp Study“ vor, deren Ziel es war, die zentralen Elemente des Entrepreneurships als Kompetenzen zu identifizieren und in einem konzeptuellen Modell darzustellen (Bacigalupo et al., 2016). Hierbei werden den drei Kompetenzbereichen („Into action“, „Resources“, „Ideas and Opportunities“) 15 Kompetenzen zugeordnet, wie z. B. Erfahrungslernen oder Initiative ergreifen, Motivation und Durchhaltevermögen oder Selbstbewusstsein und Selbstwirksamkeit, Kreativität oder auch ethisches und nachhaltiges Denken (Bacigalupo et al., 2016, S. 6).

Der von Ortiz und Gottwald (2016) entwickelte „Steinbeis Unternehmens-Kompetenzcheck“ hat zum Ziel, „als strukturierte Grundlage Impulse zu einer gezielten und strategisch ausgerichteten Kompetenzentwicklung“ zu liefern (Ortiz & Gottwald,

2016b, S. 23). Die Autoren unterscheiden hier in individuelle Kompetenzen (z. B. fachlich-methodische Kompetenzen oder aktivitäts- und umsetzungsorientierte Kompetenzen) und organisationale Kompetenzen (z. B. dynamic capabilities oder resourced-based view) (Ortiz & Gottwald, 2016, S. 28), die zu einer ganzheitlichen Kompetenzanalyse zusammengeführt werden Der dabei verfolgte Ansatz besteht darin, personengebundene mit organisationalen Kompetenzen zu verbinden, die dann als Unternehmenskompetenzen definiert werden.

Die vorgestellten Modelle zu Entrepreneurship Education legen den Fokus auf einen handlungsorientierten Ansatz zur Entwicklung unternehmerischen Denkens und Handelns. Hierfür werden die relevanten Kompetenzen und ihre Teilkompetenzen identifiziert. Ausgehend von den bestehenden Kompetenzmodellen und mit Rückgriff auf insbesondere das Modell von Bacigalupo et al. (2016) wurde ein theoretisch fundierter Kompetenzrahmen entwickelt und operationalisiert. Das Modell von Bacigalupo et al. (2016) (Entrecomp Framework) wurde deshalb ausgewählt, weil es besonders umfassend und aktuell ist sowie empirisch fundiert. Darüber hinaus handelt es sich um ein auf das Individuum bezogenes Modell, was auch dem Fokus des hier vorgeschlagenen Kompetenzrahmens entspricht. Zur praktischen Untermauerung wurde auch auf das Modell von Ortiz und Gottwald (2016) zurückgegriffen, da dieses auch den organisationalen Rahmen unternehmerischer Kompetenzen berücksichtigt. Dieser Rahmen wird im Folgenden vorgestellt.

4 Entwicklung eines (empirisch überprüfbaren) Kompetenzrahmens

Für eine valide Erhebung der Entwicklung unternehmerischer Kompetenzen ist ein theoretischer Rahmen notwendig. Mit Hilfe eines solchen Rahmens (siehe Abbildung 1 am Ende des Kapitels) können die Kompetenzen und Teilkompetenzen operationalisiert und die Zusammenhänge dargestellt werden. Mittels des im Folgenden vorgestellten neu konzipierten Kompetenzrahmens, der die innere Struktur der zu messenden Kompetenzen erfasst, können die Teilkompetenzen differenziert erhoben werden. Hier wird deutlich, „wie die Bewältigung unterschiedlicher Anforderungen miteinander zusammenhängt und auf welchen und wie vielen Ebenen interindividuelle Unterschiede in Kompetenzen angemessen beschrieben werden können“ (Klieme, 2007, S. 11). Zum Beispiel kann die Kompetenz „Wirtschaftliches Wissen und Denken: Ökonomische und

finanzielle Konzepte verstehen“ durch verschiedene Teilkompetenzen abgebildet werden. Folglich ist die theoretisch fundierte Definition der zugrundeliegenden Teilkompetenzen ein wesentlicher Schritt, da diese in „der für ein Kompetenzkonstrukt interessierenden situativen Anforderungen notwendig oder förderlich sind, z. B. spezifische Fähigkeiten und Fertigkeiten oder bereichsspezifisches Wissen“ (Klieme, 2007, S. 13). Die Herleitung des hier vorgestellten Kompetenzrahmens wird im Folgenden dargestellt. Dabei ist nochmals zu betonen, dass der Kompetenzrahmen mit dem Ziel entwickelt wurde, anhand bestimmter Ausprägungen Kompetenzen von Schülerinnen und Schülern erheben und letztlich vergleichen zu können.

Das hier vorgeschlagene Modell wurde, wie oben kurz dargestellt, ausgehend vom „Entrepreneurship Competence Framework“ (Bacigalupo et al., 2016) sowie dem „Steinbeis Unternehmens-Kompetenzcheck“ (Ortiz & Gottwald, 2016). Dabei wurden auch die weiteren bereits bestehenden Kompetenzmodelle (Kapitel 3) einbezogen. Zunächst wurden die Kompetenzbereiche des unternehmerischen Denkens und Handelns gesammelt und in drei Ebenen gegliedert: die wirtschaftliche, die persönliche und die Teamebene. Die einzelnen Kompetenzbereiche und deren Teilkompetenzen sind hierbei nicht hierarchisch und isoliert voneinander zu betrachten. Stattdessen bedingen sie einander oder bauen aufeinander auf. In der Folge gibt es Kompetenzbereiche, die mehreren Ebenen zuzurechnen sind. Beispielsweise kann der Kompetenzbereich Kreativität sowohl der wirtschaftlichen als auch der persönlichen Ebene zugeordnet werden.

Bei der Konzipierung dieses Kompetenzrahmens wurde der prozessbezogene ressourcenbasierte Ansatz verfolgt, welcher „vermehrt den unternehmerischen Prozesscharakter in den Mittelpunkt der Überlegung“ (Wiepcke, 2008, S. 271) rückt. Hier wird der Fokus auf die Ausbildung von Ressourcen gelegt, die dem Unternehmen zukünftige Wettbewerbsvorteile schaffen können, das heißt auf die Entwicklung von Kompetenzen, um sich an zukünftige veränderte Rahmenbedingungen anpassen zu können. Gleichzeitig wurde auch der verhaltensbezogene Ansatz integriert, bei welchem bestimmtes – meist organisationales – Handeln oder Verhalten als unternehmerisch eingestuft wird: “At the outset we should discard the notion that entrepreneurship is an all-or-none trait that some people or organizations possess and others don’t. Rather, we

suggest viewing entrepreneurship in the context of a range of behaviour" (Stevenson & Gumpert, 1985, o.S.).

Diese Ansätze zugrunde legend finden sich auf der wirtschaftlichen Ebene des Modells die Kompetenzbereiche Visionen, Ressourcen aktivieren und einsetzen, Planung, Sicherheits- und Risikobewusstsein, Kreativität und ethisches und nachhaltiges Denken. Diese Kompetenzen sind Anforderungen an einen potentiellen Gründer, auf die vor allem in einer Gründungsphase zurückgegriffen werden kann und muss (Rathgens, 2012), da in dieser Phase „die Notwendigkeit strategisch-operativen Denkens" (Rathgens, 2012, S. 31) sichtbar wird. „Hier hat der Übergang von der Planung zur Umsetzung zu erfolgen, ohne dabei die strategisch-planerische Komponente zu vernachlässigen. Vor allem sind hier Produktivität und die Fähigkeit, Aufgaben und Ziele konsequent umzusetzen, gefragt" (Rathgens, 2012, S. 31) und auch Visionen werden hier benötigt: „[…] the entrepreneur goes from being just a visionary to a visionary with a business to run" (Encyclopedia of Small Business, o.J.). Die genannten Kompetenzen werden auf der wirtschaftlichen Ebene gruppiert, um zu zeigen, dass hier wirtschaftliche Zusammenhänge mit unternehmerischen Handlungen, wie z. B. auch Ressourcen verantwortlich nutzen, Risiken kalkulieren und managen oder Unternehmenskonzepte entwickeln, in Bezug gesetzt werden. Die Partizipation am Wirtschaftsgeschehen (und damit auch in der Gesellschaft), z. B. durch die Gründung von Unternehmen, setzt entsprechend Kompetenzen auf dieser Ebene voraus: dies soll exemplarisch am Beispiel der Ressourcennutzung (materieller, personaler oder auch finanzieller Art) deutlich gemacht werden. Eine nachhaltige und effektive Unternehmensstrategie kann nur dann erfolgen, wenn Ressourcen effizient genutzt werden (auf der wirtschaftlichen Ebene bedeutet dies, die vorhandenen Ressourcen zu managen und sie verantwortlich zu nutzen sowie neue Ressourcen zu generieren) (Bacigalupo et al., 2016). Der verantwortungsvolle Umgang mit Ressourcen wird durch die sich schnell ändernden Rahmenbedingungen in der heutigen Wirtschaftswelt (z.B. bei Koch, 2017): Entwicklung der Informationstechnologien, Ausbreitung des technischen Fortschritts, wachsende Mobilität des Kapitals) noch bedeutsamer und stellt eine Herausforderung dar, die handlungsorientiertes Arbeiten, Anpassung an Veränderungen, Probleme definieren und Auswirkungen einschätzen als Teilkompetenzen voraussetzt (Bacigalupo et al., 2016). Es stellt eine Grundvoraussetzung eines Gründers dar, dass er „in der Lage ist,

sich, seine Ressourcen und sein Umfeld in jeder Hinsicht kritisch und realistisch einzuschätzen“ (Rathgens, 2012, S. 38).

Die Kompetenzbereiche Eigeninitiative, Motivation und Durchhaltevermögen, Lernerfahrung, Selbstbewusstsein und Selbstwirksamkeit sowie Kreativität und ethisches und nachhaltiges Denken sind der persönlichen Ebene zugeordnet. Hier finden sich u. a. Verantwortung übernehmen, Belastbar sein, aus Erfahrungen lernen und die eigenen Stärken und Schwächen kennen. Diese Kompetenzen unterstützen darin, ökonomische Entscheidungen zu treffen. Lernerfahrungen zu reflektieren stellt eine Komponente der Lernkompetenz dar. Deren flexibler Einsatz bildet eine Grundvoraussetzung, um ökonomische Ziele effizient und anpassbar in innovative Prozesse umzusetzen. Die Förderung einer Kultur der Selbstständigkeit, der Eigenverantwortung und des Selbstbewusstseins im Sinne eines selbstständig handelnden und reflektierenden Individuums ist unverzichtbar für die ökonomische Bildung sowie eine funktionierende soziale Marktwirtschaft und stellt einen weiteren Baustein im Prozess des Verständnisses für ökonomische und finanzielle Konzepte dar (Lindner, 2015b). In der neueren Entrepreneurship-Forschung wurde der Begriff des „entrepreneurial spirit“ als „Schlüsselbegriff der Moderne“ (Euler, 2012, S. 72) etabliert. „Es ist demnach das selbstständige, selbstverantwortliche Individuum, das letztlich entscheidet, ob es im Rahmen seiner selbstbestimmten Lebensplanung auch Gründer eines Unternehmens sein möchte“ (Euler, 2012, S. 72).

Soziale Zusammenhänge und wirtschaftliche Beziehungen und Interaktionen, wie z. B. sich auf Herausforderungen fokussieren, erfolgreich kommunizieren, zusammenarbeiten und Vielfalt akzeptieren, sind den Kompetenzbereichen Chancen erkennen, Andere inspirieren und Teamfähigkeit auf der Teamebene zugeordnet. Hier werden Transferprozesse ersichtlich, die sich nicht nur auf Kommunikation beschränken, sondern die wechselseitige Umsetzung externen und internen Wissens und der damit verbundenen Herausforderungen in den Mittelpunkt stellen, um Zusammenhänge zu analysieren und Anforderungen für alle sichtbar zu machen. Unternehmerische Umsetzungskraft und Innovationsfähigkeit bedingen daher auch Teamfähigkeit und die dadurch resultierende Initiierung von Aushandlungs- und Umsetzungsprozessen. Dies wird auch als soziales Kapital bezeichnet, eine „ökonomisierte Auffassung von zwischenmenschlichen Beziehungen“ (Rueda Cevallos,

2011, S. 37) und ist „als wichtiger Faktor unternehmerischen Erfolgs zu betrachten“, zu denen auch „kulturelle Faktoren, gegenseitiges Vertrauen und sozialer Austausch“ gehören (Rathgens, 2012, S. 35).

Wirtschaftliche Ebene	**Wirtschaftliches Wissen und Denken:** Ökonomische Konzepte verstehen					
	Visionen ➢ Sich etwas vorstellen ➢ Strategisch und handlungsorientiert arbeiten	**Ressourcen einsetzen** ➢ Ressourcen managen ➢ Ressourcen und Eigentum verantwortlich nutzen ➢ Das Beste aus seiner Zeit machen	**Planung** ➢ Planen und organisieren ➢ Flexibel sein ➢ Strategien und Unternehmenskonzepte entwickeln	**Sicherheits- und Risikobewusstsein** ➢ Risiken kalkulieren und managen	**Kreativität** ➢ Probleme erkennen und Lösungen finden ➢ Ideen und Wert gestalten	**Ethisches und nachhaltiges Denken** ➢ Sich ethisch verhalten ➢ Auswirkungen einschätzen und nachhaltig denken
Persönliche Ebene	**Eigeninitiative** ➢ Verantwortung übernehmen	**Motivation und Durchhaltevermögen** ➢ Zielgerichtet sein ➢ Belastbar sein	**Lernerfahrung** ➢ Reflektieren	**Selbstbewusstsein und Selbstwirksamkeit** ➢ Stärken- und zielorientiert agieren ➢ Die eigene Zukunft gestalten		
Teamebene	**Chancen erkennen** ➢ Zusammenhänge analysieren ➢ Herausforderungen erkennen ➢ Anforderungen sichtbar machen	**Andere inspirieren** ➢ Erfolgreich kommunizieren ➢ Medien effektiv nutzen	**Konzepte schützen** ➢ Konzepte teilen und schützen		**Teamfähigkeit** ➢ Zusammenarbeiten in heterogenen Gruppen ➢ Netzwerken	

Abbildung 1: Kompetenzrahmen (eigene Darstellung)

Mit diesem Rahmen wird deutlich, dass für die Gründung eines Unternehmens vielfältige Kompetenzen notwendig sind. Dabei sind die Kompetenzen z. T. auf unterschiedlichen Ebenen anzusiedeln; gleichzeitig sind sie über mehrere Ebenen hinweg teilweise auch miteinander verbunden. Beispielsweise sind neben dem ökonomischen und finanziellen Wissen auch soziale Kompetenzen erforderlich. Dies findet sich auch in der Definition von Bacigalupo et al. (2016, S. 10) wieder: „Entrepreneurship is when you act upon opportunities and ideas and transform them into value for others. The value that is created can be financial, cultural, or social“. Dieses Zusammenspiel verschiedener (Teil-)Kompetenzen wird im Kompetenzrahmen dadurch ausgedrückt, dass zwar jede Komponente für sich eine bedeutende Grundlage für unternehmerische Kompetenz darstellt, es aber letztlich auf das Zusammenspiel aller Aspekte ankommt. Dies wird teilweise dadurch ausgedrückt, dass einzelne Teilkompetenzen auch mehrere Ebenen umfassen.

Das vollständig operationalisierte Instrument wurde bereits in Form einer ersten Pilotierung getestet. Dabei wurden Schülerinnen und Schüler der 11. Jahrgangsstufe an

baden-württembergischen Gymnasien, die an einem JUNIOR-Schülerfirma-Projekt im Schuljahr 2017/18 teilgenommen hatten, in einer Online-Umfrage befragt.

5 Gesamtreflexion und Ausblick

Im Beitrag wurde die Entrepreneurship Education aus dem Blickwinkel der Kompetenzorientierung betrachtet. Mit der überblicksartigen Darstellung der bisherigen Diskussion um Entrepreneurship Education sowie der systematischen Aufarbeitung bestehender Kompetenzmodelle wurde ein Beitrag zur theoriebasierten Entrepreneurship Education geleistet. Aufbauend auf dieser theoretischen Fundierung wurde der neu entwickelte Kompetenzrahmen eingeführt, der es zukünftig erlaubt, die unternehmerischen Kompetenzen innerhalb der Entrepreneurship Education empirisch zu erfassen. Im Rückblick auf den Prozess der Entwicklung des oben dargestellten Kompetenzrahmens lässt sich festhalten, dass die dort enthaltenen Kompetenzen auf den bestehenden Kompetenzmodellen (siehe Kapitel 3) aufbauen. Mit dem neuen Kompetenzrahmen wurden die drei Ebenen der unternehmerischen Kompetenzentwicklung (ökonomische, individuelle und Team-Ebene) integriert (Kapitel 4). Die einzelnen Dimensionen wurden zusätzlich durch Items operationalisiert, so dass ein theoretisch fundiertes Instrument entstanden ist, welches die Grundlage für zukünftige empirische Untersuchungen bieten kann. Eine solche Untersuchung kann durch Verfahren zur Selbsteinschätzung in Form von Fragebögen erfolgen. Auf Basis der bestehenden Operationalisierung der im Kompetenzrahmen genannten Konstrukte können Teilnehmer*innen an einer Maßnahme der Entrepreneurship Education mit einem Fragebogen die Ausprägung ihrer eigenen Kompetenz anhand verschiedener Items selbst einschätzen (z. B. auf einer mehrstufigen Antwortskala). Mit Hilfe einer solchen Selbsteinschätzung sind erste Rückschlüsse möglich, ob eine Maßnahme der Entrepreneurship Education zur Entwicklung unternehmerischer Kompetenzen beiträgt.

In der Gesamtschau zeigt der Beitrag, dass Entrepreneurship Education und Kompetenzorientierung sinnvoll zusammen gedacht werden können. Mit Hilfe des im Papier dargestellten theoretisch fundierten Kompetenzrahmens können zukünftige Untersuchungen von Entrepreneurship Education auch einen Beitrag zur weiteren Ausgestaltung beispielsweise von Schülerfirmen leisten.

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Paper 2:

Entrepreneurial competences in student companies at school:

Development of a research instrument

Grewe, U., Brahm, T. (to be submitted). Entrepreneurial competences in student companies at school: Development of a research instrument.

6.2 Paper 2: Entrepreneurial competences in student companies at school: Development of a research instrument

Abstract

Do entrepreneurship programmes support students to develop entrepreneurial competences? How can this development be measured? Up to now, hardly any instruments assess the competences developed in entrepreneurial initiatives. In particular, there is a lack of instruments to evaluate entrepreneurship education at schools. This study developed and validated a research instrument to investigate the entrepreneurial competences, using data from students participating in student companies at German schools. The research contributes to theory building regarding entrepreneurial competences by establishing a new theoretically founded framework. It also enhances our researcher understanding of the potential effects of entrepreneurship education.

Entrepreneurial competences in student companies at school: Development of a research instrument

Introduction

Entrepreneurship is an important pillar of the economy, and many countries try to support entrepreneurial initiatives. However, the number of start-up or newly established companies is decreasing, as documented by the annual Global Entrepreneurship Monitor (GEM). In the latest GUESS Study (2016), students from 50 countries were asked whether they are trying to start their own business or become self-employed (Sieger, Fueglistaller, & Zellweger, 2016, p. 17). The share of nascent entrepreneurs per country was 6.9 percent in Germany, in contrast to for example 59.5 percent in India or 17 percent in the USA, with an overall average of 21.9 percent. For countries with few natural supplies of raw materials (such as Germany), these numbers are rather worrisome. The economy is particularly dependent on entrepreneurship and a spirit of innovation because business start-ups serve as both an innovation driver and an economic factor: “Entrepreneurship holds the key to economic growth in a country” (Harkema and Schout 2008, p. 513), and “entrepreneurship plays a crucial role in competitiveness and well-being” (Sánchez, 2013, p. 447). Accordingly, applying entrepreneurship both to individuals and organisations, along with the corresponding

education, is of practical relevance for many countries all over the world, as numerous studies have shown (Birdthistle, Hynes, & Fleming, 2007; Busom, Lopez-Mayan, & Panadés, 2017; Wai Mui Yu, 2013; Fayolle, 2013; García-Rodríguez, Gutiérrez-Taño, & Ruiz-Rosa, 2018; Johannisson, 2016; Khan & Quaddus, 2015; Morris, Webb, Fu, & Singhal, 2013; Sánchez, 2013; Souitaris, Zerbinati, & Al-Laham, 2007). In order to foster entrepreneurship as a process as well, it needs to gain more importance and be anchored in the guiding principles of schools, colleges, and universities so that potential founders can be identified, motivated, and supported to use their capabilities and to act entrepreneurially. In terms of focusing on a sustainable future, entrepreneurship education may also foster personal and social responsibility, enhancing a culture of solidarity (Lindner, 2018). Consequently, the implementation of entrepreneurship within curricula at universities (and at schools as well) has increased in numbers during recent years (Fayolle, 2013; Peterman & Kennedy, 2003; Sánchez, 2013); however, especially regarding schools, "the impact of entrepreneurship or enterprise education […] on attitudes or perceptions of entrepreneurship has remained relatively untested" (Peterman & Kennedy, 2003, p. 129), and "there has been little rigorous research on its effects" (Peterman & Kennedy, 2003, p. 130) as well as "a notable lack of reliable data on the effects of entrepreneurial education, [although] there are many indications that entrepreneurship in education is worth investing in" (Harkema and Schout 2008, p. 525). Marques and Albuquerque (2012) concurred: "There has been relatively few studies conducted on the impacts of entrepreneurship education and training, namely on the development of entrepreneurial skills and values. […] Most of the research has tended to be fragmented and mainly with a descriptive orientation" (Marques & Albuquerque, 2012, p. 57; see also Samwel Mwasalwiba (2010).

Given the lack of research regarding the impact of entrepreneurship education, "little research is available concerning assessment and measurement of EE [entrepreneurship education] programmes and courses" (Fayolle, 2013, p. 696). In addition, hardly any instruments assess the competences developed in entrepreneurial initiatives. In particular, there is a lack of instruments for evaluating entrepreneurship education at schools (Volery, Müller, Oser, Naepflin, & del Rey, 2013) despite the number of studies offering conceptual frameworks and analysing the impact of entrepreneurial education programmes in higher education (see, for example, Charney

& Libecap, 2000; Duval-Couetil, 2013; Fayolle & Gailly, 2008; Fretschner & Weber, 2013; Oosterbeek, van Praag, & Ijsselstein, 2010; Shinnar, Hsu, & Powell, 2014; Vanevenhoven & Liguori, 2013).

As "EE should also focus on entrepreneurship competences and more specifically on soft skills such as relational, conceptual, organizing and commitment competences" (Fayolle, 2013, p. 697), this study aims to develop a research instrument to investigate the entrepreneurial competences to be developed in student companies. Such an instrument is of particular relevance because "emotional, social, and cognitive (ESC) competencies favour entrepreneurial success" (Bonesso, Gerli, Pizzi, & Cortellazzo, 2018, p. 1), and becoming familiar with the option of starting one's own business may serve as a potential career option as well. As a result, this research instrument advances research on entrepreneurship education, and the findings may help to further develop the evidence-based design of student companies.

Student companies are seen as one possible education programme to foster entrepreneurial thinking and action. "The learning environment [of student companies] is collaborative and [students] have an opportunity to test out their skills without encountering major risks. [… Student companies] provide a foundation for experiential learning; create a supportive environment within which to take risks and fail; aim to enhance entrepreneurial skills; and raise awareness, aspirations and knowledge about entrepreneurial activity" (Pittaway, Rodriguez-Falcon, Aiyegbayo, & King, 2011, p. 40). From a practical point of view, the study can be used as a basis to investigate the development of entrepreneurial competencies by specific entrepreneurial programmes. Thus, the main research question is whether entrepreneurial competencies will be developed and enhanced through educational programmes such as student companies by exploring if extra-curricular activities help develop enterprising skills. This article reviews the literature on the state of research on entrepreneurial competencies. The conception of a resulting competence framework and the development of a corresponding questionnaire are also presented. Finally, the methods of this study are introduced, followed by the results and a discussion.

State of research on entrepreneurial competences

As the purpose of this study is to shed light on which entrepreneurial competencies are developed and enhanced by taking part in an entrepreneurship programme, such as a student company, the state of research regarding entrepreneurial competencies will be explored in the following. An initial literature review carried out to clarify the specific competencies in the field of entrepreneurship revealed more than 100 competencies commonly related to entrepreneurs (for example, Arafeh 2016; Bacigalupo, Kampylis, Punie, & van den Brande, 2016; Bijedic 2013; Boyles 2012; Driessen and Zwart 2006; Lackéus 2013; Man, Lau, & Chan, 2002; Mitchelmore & Rowley, 2010; Wu, 2009). Some of these studies are briefly presented here.

Respecting entrepreneurial competences in general, several authors reviewed other studies. For example, in their literature review on entrepreneurial competences, Mitchelmore and Rowley (2010) stated that "there is a general consensus that entrepreneurial competencies are carried by individuals, who begin and transform their businesses" (Mitchelmore & Rowley, 2010, p. 97). They presented a summary of key competences associated with an entrepreneur's role proposed by different authors and focused on four aspects towards an entrepreneurial competence framework: entrepreneurial competences, business and management competences, human relation competences, and conceptual and relationship competences. Competences explicitly allocated to entrepreneurial competences are understood in terms of the identification and definition of a viable market niche, idea generation, recognition, formulation of strategies, and the taking advantage of opportunities (Mitchelmore & Rowley, 2010).

Another analysis of entrepreneurial competences by Wu (2009) drew attention in a pilot study to develop a competency model comprising 23 competences. Analytical thinking, commitment to learning, development of others, flexibility, information seeking, personal motivation, results orientation, relationship building, self-confidence, and self-control are just a few examples of these competences. Furthermore, "each competency is viewed as an independent attribute and each indicates five behavioural indicators" (Wu, 2009, p. 284).

Drawing on an extensive range of literature sources to assess entrepreneurial competences, Arafeh (2016) provided an in-depth analysis of the number of quantified entrepreneurial competences ranging from five to 25: "Most of them share

competencies like passionate, risk-taking, confidence, determination, disciplined, visionary, decision-making, and leadership" (Arafeh, 2016, p. 2). She then proposed a "softcomputing-based entrepreneurial key competencies' model (SKECM)" (Arafeh, 2016, p. 1) that had its origin in a model developed in the 1960s by David McClelland. This model is three-clustered (achievement, planning, power), identifying 10 cluster-corresponding entrepreneurial competences. These three clusters each focus on different competences: achievement focuses inter alia on persistence, opportunity-seeking, or the taking of calculated risks; planning addresses goal-setting, information-seeking, and systematic planning and monitoring; finally, power concentrates on persuasion and networking as well as independence and self-confidence (McClelland, 1962).

In 2018, the European Commission published an annex to the Proposal for a Council Recommendation on Key Competences for Lifelong Learning, updating the competences and defining the main aims of the reference framework elaborated upon in 2016 by Bacigalupo et al. One of the new key competences is entrepreneurship competence, which "refers to the capacity to act upon opportunities and ideas, and to transform them into values for others. It is founded upon creativity, critical thinking and problem solving, taking initiative and perseverance and the ability to work collaboratively in order to plan and manage projects that are of cultural, social or commercial value" (European Commission, 2018, p. 6). The competence is based on the aim that "everyone has the right to timely and tailor-made assistance to improve employment or self-employment prospects" (European Commission, 2018, p. 1). The authors also offered recommendations on how to support the development of key competences: "Specific opportunities for entrepreneurial experiences, such as mini companies, traineeships in companies or entrepreneurs visiting education and training institutions could be particularly beneficial for young people […]. Young people could be given the opportunity to have at least one entrepreneurial experience during primary or secondary education" (European Commission, 2018, p. 8).

Man et al. (2002) focused on a procedural approach and developed a conceptual model linking "the characteristics of small and medium-sized enterprises' (SMEs') owner–managers and their firms' performance together" (Man et al., 2002, p. 123). This model comprised four constructs, with one of them being entrepreneurial competences

from a process perspective. The authors stated that competences are “changeable and learnable, allowing intervention in terms of the selection and teaching of entrepreneurship” and that entrepreneurial competences “can be investigated from a process perspective, reflecting the actual behavior of the entrepreneur” (Man et al., 2002, p. 133). Thus, they identified, for example, using contacts, persuasive ability, communication, and decision skills; understanding complex information, risk-taking, innovativeness, and team-building; and evaluating and implementing the strategies of a firm as competences related to (successful) entrepreneurs. However, according to Morris et al. (2013), there has been neither empirical evidence validating these constructs nor insights into how to measure these competences. In response, Morris et al. (2013) conducted a Delphi study to measure entrepreneurial competences. By questioning entrepreneurs and leading entrepreneurship educators, they identified 13 core entrepreneurial competences.

This approach was also adopted by Driessen and Zwart (2006) in their model called Entrepreneur Scan (E-Scan): “E-Scan provides insight into necessary traits and capabilities for entrepreneurship” (Driessen & Zwart, 2006, p. 2). The model is based on four components that form a person’s competence (knowledge and experience, motivation, characteristics, and capabilities) and are transferred to entrepreneurial competences. These include, for example, market, environment, finances (knowledge), autonomy, power, interest in subject (motivation), achievement, affiliation, effectiveness, risk-taking (characteristics) and organization, financial administration, creativity, and flexibility (capabilities).

Meanwhile, Bijedic (2013) was concerned with the development of entrepreneurial personality within the framework of entrepreneurship education. In her longitudinal study, she found that entrepreneurial personality can be promoted through the acquisition of entrepreneurial action competence, for example by competences such as the internal locus of control, risk propensity, tolerance of uncertainty, or problem-solving orientation. She also concluded that characteristics of entrepreneurial personalities at different levels (affective, motivational, cognitive, and social level) influence entrepreneurial thinking and action (Bijedic, 2013).

Boyles (2012) adopted a knowledge, skills, and abilities (KSA) perspective and identified relevant connections between a core set of 21st-century KSA (“Information,

media, and technology literacy; inventive thinking; communication and collaboration; productivity and results", Boyles, 2012, p. 47) as well as cognitive, social, and action-oriented entrepreneurial competences. These include identifying opportunities and developing new ventures, creativity, curiosity, risk-taking, teamwork and collaboration, global awareness, flexibility and adaptability, and initiative and self-direction (Boyles, 2012).

In 2013, Lackéus developed and published a KSA-based framework for entrepreneurial competences. This framework was prepared by adapting the concept of entrepreneurial competences being defined as "knowledge, skills and attitudes that affect the willingness and ability to perform the entrepreneurial job of new value creation; that can be measured directly or indirectly; and that can be improved through training and development" (Lackéus, 2013a, p. 1). Hence, entrepreneurial competences are defined in terms of, for example, mental knowledge (referring to knowledge), marketing, strategy, opportunity identification (referring to skills) and passion, self-efficacy, pro-activeness, and perseverance (referring to attitudes).

The Danish Assessment Tools and Indicators for Entrepreneurship Education (ASTEE) project followed this KSA approach in a more specific way and defined "creativity, planning, financial literacy, resource marshalling, and teamwork [as] skills […] needed in different phases of an entrepreneurial venture" (Moberg et al., 2014, p. 16). This assessment of entrepreneurial competences and students' learning processes included entrepreneurial self-efficacy, entrepreneurial mindset, entrepreneurial knowledge, career ambition, and connectedness to education (that is, entrepreneurship education and teacher support). A large-scale test was carried out with 4900 respondents who were European students at the primary level (aged 10–11), secondary level (aged 16–17), and tertiary level (aged 20+). However, this study focused on the distinction of cognitive-oriented and non-cognitive-oriented entrepreneurial skills as well as how to teach and codify these skills in an entrepreneurial setting.

In 2016, Bacigalupo et al. developed the Entrepreneurship Competence Framework and pointed out that "the EntreComp Framework can be seen as a starting point for the interpretation of the entrepreneurship competence, which over time will be further elaborated and refined to address the particular needs of specific target groups" (Bacigalupo et al., 2016, p. 11). Entrepreneurial competences within the

competence area of “ideas and opportunities” include creativity, vision, and ethical and sustainable thinking; representative competences for “resources” are motivation and perseverance, self-awareness, and self-efficacy; and “into action” competences include taking the initiative, coping with uncertainty, dealing with ambiguity and risk, and focusing on planning and management (Bacigalupo et al., 2016).

Competence framework for this study

Based on the literature review respecting entrepreneurial competences, the competence framework for this study was developed in a multistage process: competences that were cited most often and hence considered to be important and characteristically for entrepreneurs were aligned with the Entrepreneurship Competence Framework (Bacigalupo et al., 2016) and a business competence check designed by Ortiz and Gottwald (2016) as well as with the goals of the student company’s registered charity IW JUNIOR gGmbH.[15]

The Entrepreneurship Competence Framework was chosen as it “offers a tool to improve the entrepreneurial capacity of European citizens and organisations. The framework aims to build consensus around a common understanding of entrepreneurship competence by defining 3 competence areas, a list of 15 competences, learning outcomes and proficiency levels, which current and future initiatives can refer to” (Bacigalupo et al., 2016, p. 2) in terms of the above-mentioned eight key competences for lifelong learning proposed by the EU in 2006 (European Commission, 2006).

However, to be able to use the potential of one's own corporate competence, it is necessary to be aware of one's own competences. In the context of the third Steinbeis Consulting Study and based on UKC[16]-Research (a tool for the holistic analysis of a company’s capabilities), Ortiz and Gottwald (2016) analysed the business capacities of the companies of business juniors in Baden-Württemberg, focusing on the entirety of the company's organizational competencies with their functional areas and hierarchical levels. The analysis focuses on four competence levels on which each company's

[15] JUNIOR gGmbH is an “initiative which offers students aged 15–18 the opportunity to experience running their own company for one academic year and to discover first-hand how a company functions” (OECD and European Commission 2018, p. 111)

[16] UKC: Unternehmenskompetenzcheck

competence profile is based: knowledge, innovation, implementation, and communication. These competences are each assigned two dimensions and several sub-dimensions, from a total of 24, which represent the core of the holistic competence analysis in the company and reflect all essential aspects of a company's competence profile.

Considering these two frameworks complemented by the goals of JUNIOR and compared to each other, the then-remaining 15 identified key competencies formed the first step in designing a feasible competence framework and research instrument. This framework includes three different levels (economic level, personal level, team level) and 15 competencies relevant for effective entrepreneurship.

Economic level	**Economic thinking and acting:** Understanding economic concepts					
	Visions ➢ Imagining s.th. ➢ Working strategically and action-oriented	**Using resources** ➢ Using resources and property responsibly ➢ Making the best out of one's time	**Planning** ➢ Planning and organizing ➢ Being flexible and able to adapt changes	**Security and risk awareness** ➢ Calculating and managing risks	**Creativity** ➢ Problem-solving ➢ Developing ideas and shaping values	**Ethical and sustainable thinking** ➢ Behaving ethically ➢ Assessing consequences and thinking sustainable
Personal level	**Initiative** ➢ Assuming responsibility ➢ Working independently	**Motivation and perseverance** ➢ Being target-oriented ➢ Being resilient	**Learning experience** ➢ Reflecting	**Self-awareness and self-efficacy** ➢ Acting strength-based and result-oriented ➢ Shaping one's own future		
Team level	**Spotting opportunities** ➢ Analysing interrelationships ➢ Making requirements visible ➢ Identifying challenges	**Inspiring others** ➢ Communicating successfully ➢ Using media effectively	**Protecting concepts** ➢ Sharing and protecting concepts		**Capacity for teamwork** ➢ Working together in heterogeneous groups ➢ Networking	

Figure 1: Competence Framework

Research methods

In order to validate the model and obtain relevant data as well as enhance the validity of the research, the study relied on a mixed-methods research design, consisting of both quantitative and qualitative research methods. In the quantitative approach, a questionnaire was used to gather data from students participating in student companies in Baden-Württemberg as part of their extra-curricular economic courses (grade 11 in secondary schools). It was based on the previously discussed framework, aiming to find and validate the elaborated factors and constructs. The instrument development used data from a pilot test in May 2017 and testing in November 2017.

Research instrument and questionnaire design

The survey was questionnaire-based in order to collect data about entrepreneurial competences and was distributed online. This approach allowed for reaching a large number of respondents and was faster to conduct than a postal survey; in addition, the data could be easily entered into SPSS to conduct various analyses. Furthermore, a questionnaire is an adequate means for acquiring insights into competences.

Participants. The pilot test of the survey was administered in May 2017 by email to participants in student companies during the 2016–2017 school year to test the scales and gather feedback on the survey design and comprehensibility. The survey was again administered to approximately 1.300 students in November 2017. On both occasions, the email explained the survey objectives and the confidentiality agreement and included a hyperlink to an online survey collection tool. One week before the closing date of the survey, a follow-up email was sent to all students in order to remind those who had not participated yet. Respondents were not compensated for their participation. Respondents were asked to self-assess their entrepreneurial competences from a range of competences presented using a five-point Likert scale (1 = does not apply at all to 5 = fully applies).

The sample of the pilot test included 163 students (87 female and 76 male students), ranging in age from 16 to 18 (M = 16,79; median = 17). These students were in grade 11 and located at different grammar schools in Baden-Württemberg.

In the main testing, 226 of 677 students completed the questionnaire, corresponding to an overall response rate of 17,38 percent. This sample ranged in age from 13 to 20 (M = 16,26; median = 16) and included 135 female students and 80 male students (11 non-response). The students were contacted at different grammar schools all over Baden-Württemberg.

Research instrument

The questionnaire included three sections:

- Entrepreneurial competences (as the key section);
- Questions on motivation in economic lessons and on individual interest in economics in general; and
- Profile of the student (gender, age, grade, type of school, last school year's marks in mathematics, German, and economics).

These variables were chosen according to the literature (Mohr 1999; Moberg 2014). Based on the previously outlined competence framework, survey questions were created for the self-assessment of students' entrepreneurial competences. The core of the questionnaire was based on a list of entrepreneurial competences gathered through a profound literature review and tested by way of a pilot test, as previously mentioned. In the pilot test, each student received the original 225-item survey. To assess scale properties, a series of factor and reliability analyses were performed to validate the scales (for further details, see below). Items that were not consistent within the rotated component matrix were deleted. This pilot test resulted in a shortening and modification of the original questionnaire to a final set of 139 items; this process also avoided increasing tardiness due to a large number of questions, increased precision and validity, and did not limit the questionnaire's reliability.

The remaining 139 items developed for the online questionnaire cover the 15 identified competences, with each of the competences subdivided into several theoretical constructs that were assessed using different statements. The following table provides an overview of the constructs and shows a sample item for each construct.

Table 1: Constructs and sample items

Level	Construct	Sample item
Economic Level		
Economic thinking and acting	Understanding economic concepts	"I can explain how market prices come about."
Visions	Imagining s.th.	"I can imagine my future."
Using resources	Managing resources	"It is important to share resources with others."
Planning	Planning and organizing	"I can create a strategy to achieve goals."
Security and risk awareness	Calculating and managing risks	"I can evaluate risks to take decisions."
Creativity	Problem-solving	"I can actively search for solutions.
Ethical and sustainable thinking	Behaving ethically	"I can investigate social and technical developments in relation to sustainability."
Personal Level		

Initiative	Assuming responsibility	"I can take individual and group responsibility."
Motivation and perseverance	Being target-oriented	"I can stay focused on my tasks."
Learning experience	Reflecting	"I can reflect on failures and learn from them."
Self-awareness and self-efficacy	Acting strength-based and result-oriented	"I do not let myself be disturbed even under heavy workloads."
Team Level		
Spotting opportunities	Analyzing interrelationships	"I'm interested in creation activity by looking at it as a whole."
Inspiring others	Communicating successfully	"I can communicate the vision for my venture in a way that inspires and persuades others."
Protecting concepts	Sharing and protecting concepts	"I can explain that ideas can be shared and circulated and can be protected by certain rights."
Capacity for teamwork	Working together in heterogeneous groups	"In group works I can contribute constructively."

Data analysis

Data gathered from the 226 useable questionnaires (pretest) were entered into SPSS for the respective analyses. To ensure the internal consistency of the scales, a factor analysis based on the factor-derived scale's responses was carried out, followed by the calculation of reliability estimates to measure the consistency of items within the same construct. The pretest's reliability analysis produced internal consistency values (Cronbach alpha), with estimates ranging between .643 ("Working together in heterogeneous groups") to .883 ("Communicating successfully") whereas the means ranged from 2.93 ("Sharing and protecting concepts") to 4.30 ("Working together in heterogeneous groups").

Measures

The questionnaire given to the students referred to all aspects gathered as part of the conceptual framework discussed earlier. The constructs, including a short explanation and a sample item, can be found in Table 1.

Results

Internal consistency

As shown in Table 2, some of the scales fell below the usual threshold of .70 for Cronbach's alpha, although they were still in a reasonable range, with most of the scales being above the threshold, thereby indicating good reliability. As Cronbach's alpha is used to estimate the reliability of a composite score, these results suggest that the items have good to relatively high internal consistency. Table 2 shows the number of items per scale and the values of Cronbach's alpha (for the main test) as well as the descriptive values of the scales.

Table 2: Reliability, standard deviation and means [17]

Level	Construct	# items	α	AV	SD
Economic thinking and acting	Understanding economical concepts	2	.666	3,4376	,74485
Visions	Imagining s.th.	4	.845	3,6029	,86885
	Working strategically and action-orientedly	5	.791	3,9148	,56783
Using resources	Using resources and property responsibly	4	.563	4,4170	,47855
	Making the most of your time	4	.827	3,6599	,73748
	Managing resources	5	.783	3,5688	,66413
Planning	Planning and organizing	3	.707	4,1942	,56236
	Being flexible and able to adapt changes	3	.816	3,8780	,73559

[17] Values are shown for the main study only.

	Developing strategies and business concepts	6	.844	3,5596	,65633
Security and risk awareness	Calculating and managing risks	4	.738	3,7319	,57323
Creativity	Problem-solving	4	.755	4,0602	,59650
	Developing ideas and shaping values	2	.682	3,7146	,61939
Ethical and sustainable thinking	Behaving ethically	3	.718	3,8153	,75219
	Assessing ethical impacts and thinking sustainably	5	.781	3,8221	,27548
Personal initiative	Assuming responsibility	3	.736	3,9867	,73657
Motivation and perseverance	Being target-oriented	5	.733	3,8440	,65257
	Being resilient	3	.790	3,7581	,68236
Learning experience	Reflecting	3	.674	3,9742	,62692
Self-awareness and self-efficacy	Acting strength-based and result-orientedly	6	.827	3,9218	,65436
	Shaping one's own future	2	.573	3,9027	,65780
Spotting opportunities	Analyzing interrelationships	3	.726	3,6308	,80955
	Spotting challenges	3	.728	3,6719	,68570
	Making requirements visible	3	.665	4,0688	,59717
Inspiring others	Communicating successfully	7	.883	3,9142	,66183
	Using media effectively	4	.857	4,0060	,70291
Protecting concepts	Sharing and protecting concepts	3	.789	2,9275	,90701
Capacity for teamwork	Working together in heterogeneous groups	6	.643	4,2606	,44621
	Networking	3	.648	3,6364	,56800

Discriminant validity

As Campbell and Fiske (1959) pointed out, "*discriminant* validation as well as convergent validation is required [for the validation of test interpretations]. Tests can be invalidated by too high correlations with other tests from which they were intended to differ" (Campbell & Fiske, 1959, p. 81).

In the first exploratory factor analysis (principal component analysis with Varimax rotation), a 40-factor structure emerged based on the Eigenvalue-greater-than-1 method. Although most items could be allocated to the theoretically expected factors; 31 items had to be discarded due to confusion with other factors. These items were not deemed necessary to reflect the complexity of the construct; accordingly, they were deleted and not used in further analyses. The remaining items loaded on 26 different factors with some cross-loadings, mostly indicating the theoretically assumed relations among the factors.

Construct validity

Using confirmatory factor analysis (CFA), the model was tested separately for each of the three levels (individual, team, and economic level). For each level, a g-factor solution was compared to a solution based on the number of theoretically assumed factors (with the three conceptual levels—economic, team, and individual—as reference points). Analyses were carried out with data from both studies and brought similar results. In the following, the results of the main study will be reported. For each level, the analyses showed that a g-factor solution was not indicative. Instead, for the individual level, a 6-factor structure yielded reasonable results (CFI = 0.901; RMSEA = 0.068; SRMR = 0.053). For the economic level, the expected 13-factor structure brought mediocre results for the CFI, but good results for the RMSEA and the SRMR (CFI = 0.887; RMSE = 0.047; SMSR = 0.056). For the team level, the expected 7-factor structure showed reasonable results (CFI = 0.906; RMSE = 0.056; SMSR = 0.056). All in all, the confirmatory factor analyses supported our theoretical assumptions. For the individual and team levels of the instrument, the indexes are within the respective thresholds of the indexes (Hu & Bentler, 1998; Schreiber, Nora, Stage, Barlow, & King, 2006). Only for the economic level was the value of CFI below the usually assumed threshold, although this might be due

to the fact that this model is rather big and that CFI is sensitive to the number of parameters estimated—that is, it pays a penalty for every parameter estimated.

Discussion and conclusion

Hardly any validated instruments to assess entrepreneurial competences have been developed through entrepreneurial programmes (Fayolle 2013; Egbert 2014). At the same time, we need to "formulate and evaluate the competencies that students should acquire in an entrepreneurship course" (Volery et al. 2013, p. 443). This study sought to contribute to the literature on entrepreneurship education by developing a theoretically founded instrument to determine students' entrepreneurial competences. This study identified 15 entrepreneurial key competences and, accordingly, developed an instrument with 26 individual factors on three levels. In contrast, the ASTEE project (Moberg et al., 2014) focused on the distinction between cognitive-oriented and non-cognitive-oriented entrepreneurial skills. The main benefit of our new framework is that it was based on a sound review of different conceptual frameworks. Second, it distinguished three levels (economic, personal, and team) and their corresponding competencies and took into account the interdependency among the competencies. The instrument was developed with a pilot and a main study and involved students in schools. Both studies showed that the instrument developed proved to be reliable and valid. Accordingly, the instrument advanced the framework designed by Bacigalupo et al. (2016), which "has not yet been adapted to, or tested in real settings" (Bacigalupo et al., 2016, p. 7). This user-friendly and validated assessment tool is necessary to get access to tangible information to be applied to entrepreneurial programmes in order to change and adapt these programmes not only in the short term, but also in the long run. The assessment instrument may help teachers decide which content to highlight as part of their entrepreneurial course programmes in order to further enhance the development of students' competences. Further insights into the impact of entrepreneurial education programmes will help "inform the development of effective entrepreneurial programs" (Morris et al., 2013, p. 365). Thus, the instrument can have a practical impact on the context of fostering entrepreneurial mindsets. Furthermore, at a broader theoretical level, the findings also have implications for the emerging research on entrepreneurial programmes or interventions, and the empirical evidence

from this study provides a foundation for research on long-term impacts of entrepreneurship education. By pointing out the relevant competences fostered by entrepreneurial programmes, this study will also help set the standards for the desired learning outcomes because, currently, there are no common standards yet due to the heterogeneity of existing entrepreneurship programmes.

As competences are "changeable and learnable" (Man et al., 2002, p. 133), are "developed (rather than bestowed) over time" (Morris et al., 2013, p. 363), and are said to be "improved through training" (Lackéus, 2013, p. 1), programmes that focus on specific opportunities for developing entrepreneurial competences represent a means to encourage students to work on competence-related (economic) fields. The collected data with the adequate number and variety of variables can also be used to gain insights into individual vocational preferences for students at both the secondary and university levels, which goes along with the aim of the European Commission that everybody should get adequate assistance for vocational orientation (European Commission, 2018). The more information acquired about the development of entrepreneurial competences, the more recommendations can be given to organisations and (educational) institutions to develop effective entrepreneurial education programmes, as the development of entrepreneurial skills is of great importance not only for a country's economic well-being, but also for transferring knowledge and fostering competences necessary for today's society, social behaviour, and the labour market. The ability to think, act, and make decisions in not only entrepreneurial ambience, but also entrepreneurial conditions will lead to more sustainable learning and thereby "improve competitiveness, social integration and economic growth" (Marques & Albuquerque, 2012, p. 65). Hence, the societal and economic impacts of encouraging potential entrepreneurs must not be underestimated.

Limitations of the study and future research suggestions

Despite the strengths of this survey, as previously detailed, there are certain limitations to this study that should be noted. First, the data from this study are based on self-reported measures, thereby showing the usual problems of self-reported data; however, in this case, some of the constructs were conceptualized as self-reports (for example, self-efficacy). Nevertheless, a second source of data would be particularly

useful for other variables, such as the extent of economic competences. Second, this study was conducted with participants of a particular kind of student companies only, without considering various other entrepreneurial programmes. Thus, there is a limitation in terms of generalizability, particularly with respect to other entrepreneurial programmes. In order to develop the research instrument, this limitation leads to a reduction of variance in the data. Third, the study's results are limited as well because most of the participants were taking part voluntarily and due to self-motivation and interest. As a result, the sample may suffer from a self-selection bias. Another limitation is that other competences might also be developed in such programmes, such as mathematical competences. It would also be interesting to analyse the impact that these competences have on vocational orientation or even on becoming self-employed.

Notwithstanding these limitations, a number of future research questions will emerge. First, the instrument should be used more frequently as well as in other samples in order to further establish its reliability and validity and to strengthen the generalisation of results. This may comprise students from other institutions (for example, higher education) or different nations or countries so that future research would be extended to an international basis. Furthermore, research on long-term effects of entrepreneurship education and training can demonstrate the likelihood of not only becoming an entrepreneur, but also founding a start-up; thus, it could provide a more objective measurement of the success of EE. Moreover, further studies are needed to explore, more specifically, different forms of entrepreneurial learning as well as assess variants of the programmes offered in terms of the duration of the programme or voluntary versus mandatory participation.

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Paper 3:

Development of entrepreneurial competences in student companies –

Evaluation of entrepreneurship education in German schools

Grewe, U., Brahm, T. (2020). Development of entrepreneurial competences in mini-companies at schools. Education + Training, https://doi.org/10.1108/ET-08-2019-0186.

We would like to thank JUNIOR gGmbH for providing access to the participants of the JUNIOR student companies as well as the teachers and participants of the control group.

6.3 Paper 3: Development of entrepreneurial competences in student companies – Evaluation of entrepreneurship education in German schools

Abstract

Development of entrepreneurial competences in mini-companies at schools

Purpose: Entrepreneurship is not only seen as an important factor for economic growth and welfare but also as a vehicle of societal development and change, both at the regional, national and international level. Thus, entrepreneurship education at schools plays an increasingly important role, linking policy, businesses, education and science. However, research on entrepreneurship education programmes, especially on mini-companies which rely on an experiential learning setting, is still a young field and shared frameworks concerning entrepreneurial competences and longitudinal research designs are missing. This paper addresses to this research gap by analysing whether students who participate in a mini-company develop entrepreneurial competences.

Design/methodology/approach: The study is conducted in a quasi-experimental design, building upon a validated and psychometrically sound research instrument that is based on a newly designed entrepreneurial competence framework. In total, 100 pupils from grammar schools in Baden-Württemberg, Germany, participated in the experimental and control group at both time points.

Findings: Our results show that students expand their entrepreneurial competences on an economic level. In comparison, they show only limited developments on the personal and on the team level. Our findings have important implications for the further development of entrepreneurship education programmes as well as on the interaction between schools and (regional) entrepreneurs, business partners and enterprises.

Originality/value: This study is the first quasi-experimental study upon the development of competences in mini-companies conducted in Baden-Wuerttemberg, Germany, highlighting the need for further research on entrepreneurship education programmes.

Keywords: entrepreneurship, entrepreneurship education, student company, mini-company, entrepreneurial competences

Introduction: Relevance of Entrepreneurship Education

Entrepreneurship is not only an important factor of societal development and change, but also a vehicle for economic growth and welfare, especially for regional development (Peterman and Kennedy, 2003; Dodd and Hynes, 2012; Lackéus and Williams Middleton, 2015; Leitch *et al.*, 2012). Accordingly, entrepreneurship education has become more prevalent at all levels of education (Kepalienė *et al.*, 2016) since it is assumed to improve entrepreneurial intentions and attitudes (García-Rodríguez *et al.*, 2019; Souitaris *et al.*, 2007; Walter and Dohse, 2012). In line with this, the "[s]ense of initiative and entrepreneurship" (European Commission, 2006, n.p.) is one of eight key competences for lifelong learning. Also, the World Economic Forum focused on entrepreneurship education and on how to bring it into school curricula by fostering entrepreneurship content through experiential learning techniques and proposing that these should be one of the basics in the training of aspiring teachers (Wilson *et al.*, 2009). Furthermore, the Global Entrepreneurship Research Association (2018) recommends creating entrepreneurship programmes for school students by simulating real-life situations and that these programmes should be part of a structured curriculum.

Despite the growing interest in entrepreneurship education, research on the effects of participating in entrepreneurship education programmes at schools has only recently emerged. One important pillar of entrepreneurship education programmes at schools are so-called student or mini-companies[18] (Happ *et al.*, 2016; Schuhen, 2009; König *et al.*, 2013). These mini-companies enable learners to move a business idea from a concept to reality, thereby unleashing their entrepreneurial mind-set and spirit by founding and running their own company for (usually) one academic year.

With this paper, we aim to contribute to the literature on entrepreneurship education by investigating students' competence development in these student companies. We see mini-companies a first step for familiarizing students with entrepreneurship. However, they are not only a valuable method for developing entrepreneurial intentions but above all provide an important space at schools for students to develop both economic and social competences (Athayde, 2009; Peterman and Kennedy, 2003; Souitaris *et al.*, 2007). Accordingly, our research question is: Do

[18] In the following, we will use the terms student company and mini-company interchangeably.

pupils participating in mini-companies develop (entrepreneurial) competences? For this purpose, we conducted a quasi-experimental study including a pre-/post-test design. Based on a comprehensive review of the literature (Grewe and Brahm, 2019), this study is based on a three-dimensional model of entrepreneurial competences consisting of economic competences, team competences, and personal competences. These three dimensions each include different competences such as planning and risk taking (economic dimension), motivation and self-efficacy (personal dimension) as well as teamwork and inspiring others (team dimension) (see also Appendix A).

In the following, we will introduce experiential learning as the theoretical foundation of student companies, followed by the state of research. Thereafter, the methods and results of our study will be described. The paper concludes with a discussion and reflection of our results, limitations, and implications.

In addition to the theoretical contribution of the paper, we aim at developing practical implications from our research. Mini-companies in schools can also be seen as a possibility for regional entrepreneurial ventures to engage with pupils and to support the school–company interaction on a regional level, as the regional context (e.g. also the number of regional start-ups) is likely to have an impact on entrepreneurship education and vice versa (Walter and Dohse, 2012). Furthermore, participating in a mini-company and knowing about one's own strengths and weaknesses may also be seen as a chance for career orientation. Thus, entrepreneurship education could lead to an increased youth employability by supporting students in their vocational choice and opening entrepreneurship as a potential career (Walter and Dohse, 2012).

Experiential learning as theoretical foundation for student companies

Over the last three decades, the number of entrepreneurship education programmes in schools and higher education institutions has been growing (Duval-Couetil, 2013; Fayolle, 2013; Fayolle *et al.*, 2006; Henry *et al.*, 2005; Jones and English, 2004; Kuratko, 2005; Peterman and Kennedy, 2003; Piperopoulos and Dimov, 2015; Rideout and Gray, 2013; Sánchez, 2013). Common objectives of all these programmes include, for example, developing business knowledge, increasing the ability to plan and organize as well as solve problems and learn from failure, developing the capability to make decisions and work under pressure, encouraging the development of independence, fostering

creativity and innovation as well as self-awareness and self-efficacy, and assuming responsibility (Fayolle, 2013; Garavan and O'Cinneide, 1994; Jones and English, 2004; Lackéus, 2013; Man *et al.*, 2002; Moberg, 2014). Moreover, entrepreneurship education is said to foster career orientation (Klapwijk and Rommes, 2009; Barba-Sánchez and Atienza-Sahuquillo, 2018). To reach these goals, participatory learning processes are needed. Accordingly, entrepreneurship programmes often build upon experiential learning theory, including concrete experiences and active experimentation: Participants take an active role and their interests guide the learning process; thus, affective and conative areas interplay with each other and make multiple forms of learning possible (Birdthistle *et al.*, 2007; Kyrö, 2015; Lackéus and Williams Middleton, 2018; Wood, 2003). Such experiential learning aims at the development of competences and strengths rather than on the transmission of information (de Haan *et al.*, 2009; Hamer, 2000). Consequently, such learning requires a different learning environment (e.g. outside the classroom) that fosters peer learning and group work, idea generation, and the implementation of creative ideas (Jones and English, 2004; Svensson, 2018).The holistic approach of experiential learning serves as a framework for innovative learner-centred education (Holman *et al.*, 1997; Kolb, 2014; Kolb and Kolb, 2005) and is, thus, also used as an underpinning for student companies.

According to experiential learning theory, effective learning, however, only takes place if learners reflect on their experiences which then leads to new ideas being tested, thereby leading to further experience (Kolb, 2014). Being personally involved in concrete experience, and thus getting the chance to create and test new ideas and theories, can support students' development of entrepreneurial thinking and acting (Raposo and do Paco, 2011). This was also shown for the Integrative Business Experience (IBE) programme in several American universities: the evaluation of this programme which takes up all four steps of Kolb's learning cycle shows that students are highly engaged and motivated in creating and implementing a real business setting with concrete and active experience accompanied by reflection and conceptual approach (Michaelsen and McCord, 2011). Also, Walter and Dohse (2012), who examined active modes of entrepreneurship education versus reflective ones within a regional context, found that active and action-oriented entrepreneurship courses provide students with a positive

relation towards the exploitation of opportunities and self-employment intentions and may even serve as a career orientation or alternative.

State of research on entrepreneurial programmes

A number of conceptual frameworks for entrepreneurship education have been developed in order to overcome the lack of theoretically sound foundation, both with a focus on assessing and evaluating entrepreneurship education programmes and on designing, comparing or improving the design (Fayolle and Gailly, 2008; Fayolle *et al.*, 2006; Fayolle, 2013; O'Connor, 2013; Draycott and Rae, 2011), but there is still no common framework available for entrepreneurship education programmes (Kyrö, 2015; Thrane *et al.*, 2016). In their systematic literature review, Pittaway and Cope (2007) pointed out that research on entrepreneurship education is needed in terms of evaluation, empirical, comparative and longitudinal studies, and common typologies and taxonomies to improve evidence and evaluate the impact of entrepreneurship education programmes. Moreover, little is known about the relationship of entrepreneurship education with students' development of entrepreneurial competences (Egbert, 2014). In the German context, for instance, only one study has examined changes in start-up behaviour after students completed a project similar to a student company (Bundesministerium für Wirtschaft und Technologie, 2010).

Also, in the international context, longitudinal studies which explore the development of entrepreneurial competences are missing. A notable exception is the YES[19] project, a mixed-methods longitudinal study conducted by Geldhof *et al.* (2014) with students of colleges and universities in the US focusing on aspects related to developing entrepreneurial intent and capacity. Preliminary findings of this study suggest that entrepreneurial intent is predicted by orientation towards innovation, entrepreneurial role models (e.g. the parents) and the capability of self-regulation. Unfortunately, final results of this study are not available.

Analysing approximately 400 articles focusing on entrepreneurship education, primarily in higher education, Fayolle *et al.* (2006) also concluded that there is a lack of research respecting assessment and measurement; they called for future research on

[19] YES (Young Entrepreneurs Study)

entrepreneurship education interventions as well as more profound research methodology in terms of pre-/post-test designs using treatment and control groups. Samwel Mwasalwiba (2010) reviewed 108 articles focussing on entrepreneurship education; of all these articles, only 17 of those measured the impact of entrepreneurial programmes on students (not necessarily within schools). As the methodological design and the theoretical foundations varied (e.g., entrepreneurial intentions, venture creation, or perception of desirability and feasibility), the studies' results were difficult to compare with each other. The only consensus found was that entrepreneurship education has some positive impact. By examining 88 articles on empirical studies on entrepreneurship education, Blenker *et al.* (2014) designed an integrated methodological framework that identifies strengths and weaknesses of different methodological approaches and encompasses four elements. This framework is meant to offer some kind of tool-kit for researchers and future research questions. In order to provide an instrument to better compare the various programmes, Thrane *et al.* (2016) developed a conceptual framework for entrepreneurship education, building on experiential learning. Entrepreneurial opportunities (in the sense of entrepreneurial activities) should be offered such that students can reflect upon their personal development when involved in entrepreneurial projects and where failure is accepted as a part of the learning process. The underlying assumption is that being responsible for and running an own entrepreneurial project leads to permanent entrepreneurial learning. Lackéus and Williams Middleton (2018) followed the same approach with respect to venture creation programmes emphasizing that authenticity and concreteness of an entrepreneurial project result in solid development of entrepreneurial competences.

Focussing on entrepreneurial programmes on school level, however, a study by Moberg (2014) with students of lower secondary level stressed that entrepreneurial interventions are dependent on students' educational level: The earlier the intervention takes place and the more focused it is on education through entrepreneurship, the more likely it is that non-cognitive entrepreneurial skills are fostered and effective in the long run. This was also the result of a randomized field experiment conducted by Rosendahl Huber *et al.* (2012) among children aged 11 to 12, with practically oriented lessons dealing with a company's business circle from founding up to liquidation (similar to a

student company, but only lasting for two to four weeks). The programme's evaluation of an immediate effect of entrepreneurship education on entrepreneurial skills revealed a substantial positive effect, especially on the development of non-cognitive skills. When simulating the roll-out of a small business within a study with primary school pupils in rural Spain, however, Barba-Sánchez and Atienza-Sahuquillo's (2016) findings showed an increase in entrepreneurial competences such as teamwork or personal initiative and a promotion of entrepreneurial intentions. However, as findings from the Teen Entrepreneurship Education at secondary schools in Hong Kong show, applying entrepreneurial knowledge and conceptual learning to real situations is only successful if it is not treated as an isolated event but is rather an integral part of the school's curricula, even if this is a challenge for educational institutions and requires more institutional resources (Wai Mui Yu, 2013).

In summary, some studies have shown that entrepreneurship education programmes indeed have a positive impact on various competences related to entrepreneurship and on students' personal development (Athayde, 2009; Peterman and Kennedy, 2003; Souitaris *et al.*, 2007). Programmes that are more experiential and action based as well as more intensive (and therefore also more time consuming) are considerably more successful (Gielnik *et al.*, 2015; Lepoutre *et al.*, 2011). One of these programmes, i.e. mini-companies, are at the centre of the present study.

Based on the theoretical argumentation and the above-mentioned findings, the following hypotheses were derived:

H1: Entrepreneurship education in the form of participation in mini-companies (EEMC) contributes to the acquisition of entrepreneurial competencies
H1a. EEMC fosters the development of economic competences.
H1b. EEMC fosters the development of personal competences.
H1c. EEMC fosters the development of team competences.
H2. EEMC are more effective in fostering entrepreneurial competences in comparison to regular economic classrooms.

Context of our research

Within the scope of interdisciplinary and experiential entrepreneurial projects, the student mini-company programme JUNIOR is one of the most often executed programmes in the US and Europe (Oosterbeek *et al.*, 2010). In 2018, 28.272 JUNIOR mini-companies were generated, involving 344.754 students, 17.431 teachers, and 8.408 schools in 40 countries of Europe[20] (Germany: 132.567 students and 9.680 mini-companies[21]). The nine months-long programme of JUNIOR mini-companies is accompanied by a teacher (who is responsible for the intervention) and in most cases by a business mentor and consists of 5 steps: idea creation and founding of the company, organisation of different departments, acquisition of seed capital, execution and administration of production, marketing and sales, and finally the closing of the company. The aim is to teach entrepreneurship through the experience of being an entrepreneur and creating an environment in which students are enabled to start their own business and learn from failure (as failure is a part of the learning process) without having to fear failure (even if the mini-company makes a loss instead of profit, there will be no negative consequences), thereby developing entrepreneurial competences. However, there are only few studies (Volery *et al.*, 2013; Wai Mui Yu, 2013; Vanevenhoven and Liguori, 2013; Athayde, 2009; Spilling *et al.*, 2015) that investigate the effects of such a programme on the secondary-school-level. Furthermore, these studies mostly investigate the effects on entrepreneurial intentions and not on the development of entrepreneurial competences (which is the goal of the present study). Moreover, most research is conducted in the US and focuses on university graduates as nascent entrepreneurs (Matlay, 2006).

Research Design

In consequence, the following research was conducted in grades 11 and 12 of grammar schools in southern Germany, employing a quasi-experimental design. Students of the experimental group participated in a 9-month programme ("JUNIOR") to found a student company. The control group consisted of students who did not participate in a student company but who did take part in a regular economic class. At the beginning

[20] http://www.jaeurope.org//annual-report-2018, p.15
[21] JUNIORgGmbH, 13.03.2019

and end of the school year, we administered a pre- and post-test, respectively, in the form of a questionnaire to all students (i.e. the researchers were not involved in the intervention itself, only in designing and analysing the results of the questionnaire). In order to maintain to ethical codes and practice, the email that accompanied the online questionnaire explained the survey objectives and the confidentiality agreement and that participants were not compensated for taking part in the survey. This information was also given in the paper-pen-version for the control group. Before starting the survey, the participants signed an informed consent to participate.

The questionnaire consisted of psychometrically validated scales to assess students' entrepreneurial competences in three competence levels: economic, team, and individual competences (Grewe and Brahm, 2019).

Participants

The participants of the experimental group were recruited through convenience sampling using the database of JUNIOR gGmbH, the organizer of the mini companies. Of the 677 students, 53 completed both questionnaires (t1 in November 2017 and t2 in July 2018), corresponding to an overall response rate regarding both time points of 7.83 percent. This sample ranged in age from 13 to 20 (M = 16.26; median = 16) and included 36 female students and 15 male students (2 non-responses regarding their gender). The students studied at different grammar schools all over Baden-Württemberg. For the control group, four economic classes at three different grammar schools were contacted. Due to data protection guidelines, it was not possible to recruit the control groups at the same grammar schools as the experimental group. The sample of the control group consisted of 47 students (ranging from 16 to 18 years, M = 16.85; median = 17; 29 male and 18 female students) who participated both in the pre- and post-test.

Research instrument

The questionnaire included three sections: (1) entrepreneurial competences (as the key section), (2) questions on motivation in economic lessons and on individual interest in economics in general; and (3) profile of the student (gender, age, grade, type of school, last school year's marks in mathematics, German, and economics). These variables were chosen according to the literature (Moberg, 2014; Mohr, 1999). Based on a

comprehensive competence framework (Grewe and Brahm, 2019), survey questions were created for the self-assessment of students' entrepreneurial competences. The core of the questionnaire was based on a list of entrepreneurial competences gathered through a profound literature review and psychometrically tested by way of a pilot test. The students answered 139 items on a continuous 5-point Likert-type questionnaire (from 1 = does not apply at all to 5 = fully applies) covering 15 competences, with each of the competences subdivided into several theoretical constructs that were assessed using different statements. Scales were developed by the authors themselves. To ensure the internal consistency of the scales, a factor analysis was carried out, followed by a reliability analysis to assess the consistency of items within the same construct. The instrument proved to be reliable and valid. Internal consistency values (Cronbach's alpha) were mostly above the common threshold of 0.7 (see Table 1). Both exploratory and confirmatory factor analyses showed the expected factor structure.

Table 1 provides an overview of the constructs and shows a sample item and Cronbach's alpha for each construct.

Table 1: Constructs and exemplary items

Level	Construct	Exemplary item	Cronbach's Alpha (t1)
Economic Level			
Economic thinking and acting	Understanding economic concepts	"I can explain how market prices come about."	.666
Visions	Imagining s.th.	"I can imagine my future."	.845
Using resources	Managing resources	"It is important to share resources with others."	.783
Planning	Developing strategies and business concepts	"I can create a strategy to achieve goals."	.844
Security and risk awareness	Calculating and managing risks	"I can evaluate risks to take decisions."	.738
Creativity	Problem solving	"I can actively search for solutions.	.755
Ethical and sustainable thinking	Behaving ethically	"I can investigate social and technical developments in relation to sustainability."	.718
Personal Level			

Initiative	Assuming responsibility	"I can take individual and group responsibility."	.736
Motivation and perseverance	Being target-oriented	"I can stay focused on my tasks."	.733
Learning experience	Reflecting	"I can reflect on failures and learn from them."	.674
Self-awareness and self-efficacy	Acting strength-based and result-orientedly	"I do not let myself be disturbed even under heavy workloads."	.827
Team Level			
Spotting opportunities	Analysing interrelationships	"I'm interested in creation activity by looking at it as a whole."	.726
Inspiring others	Communicating successfully	"I can communicate the vision for my venture in a way that inspires and persuades others."	.883
Protecting concepts	Sharing and protecting concepts	"I can explain that ideas can be shared and circulated and can be protected by certain rights."	.789
Capacity for teamwork	Working together in heterogeneous groups	"In group works I can contribute constructively."	.643

Note: Values for Cronbach's Alpha for t2 are comparable to those of t1

Data analysis

Data were analysed using SPSS. As it is often the case with self-reported data, about half of the constructs did not comply with the assumptions of non-normality. Thus, we interpreted each difference with caution in the following.

A *t*-test for paired samples was employed to compare the pre- and post-test (t1 and t2) to determine whether students in the student companies developed their entrepreneurial competencies when participating in the experiential learning process. Here the differences are calculated between two average (mean) scores measured at the scale level (Faherty, 2008; Field, 2018). To assess whether students in the student companies (i.e., experimental group) developed differently in terms of entrepreneurial competences from those in the control group, we conducted several MANOVAs in order to identify differences between the groups among a combination of dimensions and across several dependent variables simultaneously (Field, 2018). The results are presented next.

Results

First of all, we would like to address our first hypothesis which asked whether participation in mini-companies supports the development of entrepreneurial competences. Our descriptive results and respective *t*-tests showed that students developed throughout their participation in the mini-company in many dimensions of entrepreneurial competences (see Appendix A), however, not in all constructs. Thus, we can partially confirm our Hypothesis 1. As the results of the t-tests show, students who participated in the experimental group made significant progress in the following constructs of the economic level: “Understanding Economic Concepts”, “Working strategically and action-oriented”, ”Developing strategies and business concepts”, “Calculating and managing risks”. Thus, Hypothesis 1a can also be partially, but not fully confirmed that students who participate in mini-companies develop economic competences. Regarding the personal level of economic competences, students only developed significantly ($T = -2.652$, $p < .005$) in the construct “Self-awareness and self-efficacy”, in particular regarding their capacity to “act strength-based and action-oriented”. Thus, also Hypothesis 1b that participation in mini-companies can foster the development of personal competences can only be partially confirmed. Regarding the team level, the t-tests showed that none of the assessed team competences were significantly developed by the participants in mini-companies. Thus, Hypothesis 1c has to be declined.

In a second step, we analyzed whether students who participated in mini-companies developed differently from those who participated in regular economic classes. The results of the multivariate analyses showed significant interaction effects in only three different constructs, all of which occurred at the economic level: “Developing strategies and business concepts” had a medium effect of Eta squared 0.055, “Calculating and managing risks” a small effect of Eta squared 0.034, and “Understanding economic concepts” had again a medium effect of Eta squared 0.068 (see Table 2). Thus, Hypothesis 2 can be partially confirmed, however, only with regard to the economic level of entrepreneurial competences.

Table 2. Results of the MANOVA regarding the economic level of entrepreneurial competences.

Construct	Experimental group		Control group		Main effects		Interaction effects	
	Mean t1	Mean t2	Mean t1	Mean t2	Sign.	Eta²	Sign.	Eta²
Developing strategies and business concepts	3.3082	3.6258	3.4113	3.4234	0.011*	0.064	0.019*	0.055
Calculating and managing risks	3.6604	3.8349	3.8511	3.8457	0.084°	0.030	0.067°	0.034
Understanding economic concepts	3.1415	3.6698	3.4681	3.5426	0.001**	0.113	0.009**	0.068

° p<0.1 * p<0.05 **p<0.01

For the constructs “Imagining”, “Working strategically and action-oriented”, “Managing resources”, “Making the best of one’s time”, “Shaping one’s own future” and “Sharing and protecting concepts”, the students in both the experimental and control groups developed (although some effects were only marginally significant), and there were no interaction effects visible, so they are not shown in Table 3.

Table 3. Results of the MANOVA regarding the main effects on different entrepreneurial levels

Construct	Experimental group		Control group		Main effects	
	Mean t1	Mean t2	Mean t1	Mean t2	Sign.	Eta²
Imagining (Economic level)	3.226	3.382	3.218	3.516	0.013*	0.061
Working strategically and action-orientedly (Economic level)	3.721	3.902	3.553	3.573	0.071°	0.033
Managing resources (Economic level)	3.432	3.600	3.239	3.391	0.035*	0.046
Making the best of one’s time (Economic level)	3.508	3.654	3.429	3.560	0.069°	0.034

Shaping one's own future (Personal level)	3.802	4.038	4.223	4.383	0.003**	0.086
Sharing and protecting concepts (Team level)	2.698	2.994	2.312	2.384	0.066°	0.034

° p<0.1 * p<0.05 **p<0.01

In sum, compared to the students in the regular economic class, students who participated in the mini-company programme did not develop differently regarding entrepreneurial competences on the personal or team level. Nevertheless, they significantly differed regarding their development of economic competences.

Discussion

The aim of the study was to examine whether participating in an entrepreneurship education programme is beneficial for the development of entrepreneurial competences - that is, to identify the effectiveness and benefits of a mini-company programme run at school. The results confirm those of previous studies that entrepreneurship education has a positive impact on students (Birdthistle *et al.*, 2007; Lackéus and Williams Middleton, 2018; Rosendahl Huber *et al.*, 2012; Samwel Mwasalwiba, 2010; Thrane *et al.*, 2016) while contrasting with those of studies showing no effects (Oosterbeek *et al.*, 2010; Peterman and Kennedy, 2003). Although students in the student companies in our study developed statistically significantly on all levels of entrepreneurial competence (i.e. on the economic, the personal and the team level), they outperformed the students in the control group only on the economic level. Accordingly, the results of this study are not in line with the results of the studies by Souitaris *et al.* (2007, p. 566) that "inspiration […] is the programmes' most influential benefit" , and the studies of de Haan *et al.* (2009) and Rosendahl Huber *et al.* (2012), which found effects particularly on non-cognitive and social skills. Surprisingly, our study did not support the findings of Spilling *et al.* (2015) in terms of an increase in creativity or innovation or in competences said to be fostered by entrepreneurial programmes, such as decision-making, self-awareness, and self-efficacy, or marshalling resources in the face of risk (Fayolle, 2013; Garavan and O'Cinneide, 1994; Jones and English, 2004; Lackéus, 2013; Man *et al.*, 2002). On the other hand, our findings concur with the findings of Fayolle *et al.* (2006), who also showed

a significant effect on the students' entrepreneurial intentions but only a small effect on students' self-efficacy.

As the programme we assessed follows an experiential learning approach with personal involvement in concrete experience leading to developing and fostering entrepreneurial thinking and acting (Raposo and do Paco, 2011), the results indicate that this programme seems to have a positive influence on students' economic competences which are future requirements for founding a start-up business or for future employers (Jones and English, 2004). They may also serve as a vocational orientation and, thus, contribute to youth employability.

As the study by Hamer (2000) showed, experiential learning helps learn factual information and experiential learning techniques foster definitional knowledge, such as applying concepts to specific tasks and applying economic knowledge. This may explain why we did not find much difference between the experimental and control groups in terms of the development of personal and team competences (for example, reflecting or working in teams). Furthermore, in the experimental group students were all participants of a particular entrepreneurial programme (JUNIOR). Taking part in such an entrepreneurial programme is a voluntary decision based on self-motivation and interest; this preselection might imply that the students were focused on economic competences rather than personal or team development. Taking into account that entrepreneurship might be seen as a continuous cycle of doing, testing, learning, experimenting, and applying (Neck and Greene, 2011), our study then shows that students above all developed economic competences by participating in a mini-company and being actively engaged in entrepreneurial activities. The students' development at the economic level may be seen as an indication that experience is a gateway to and source of learning (Peterson and Kolb, 2017) which in our case led to a more profound understanding of economic concepts.

Nevertheless, the study's findings show entrepreneurial learning and competences outcomes which are linked not only to a special subject, but also to a wide array of different subjects, hence are interdisciplinary and might in the future be applied across personality building and life or career opportunities (Hannon, 2018).

Conclusion: Limitations, practical and research implications

Although the study contributes to our understanding of the development of entrepreneurial competences in mini-companies, it faces several limitations. First, the data are based on the students' self-assessment, so there might be a bias due to an overly positive assessment of personal performance. Second, the study was conducted only with participants from JUNIOR mini-companies in Baden-Württemberg (Germany) grammar schools. This leads to a reduction of data variance and, thus, to limitations regarding generalizability. In order to get more generalizable results, it would be indispensable to increase the number of participants (of the experimental group as well as of the control group) responding to both the pre- and post-test. By then applying the propensity-score-matching method which matches an experimental group and the control group according to several covariates (Huber *et al.*, 2017), an extremely effective possibility for the analysis of causal effects in non-experimental investigations could be achieved (which was not possible with our data). In addition, our survey focused only on entrepreneurial competences, meaning that the development of other competences (e.g., mathematical or linguistic competences) was not measured and we could not triangulate with other data. Furthermore, the survey took place shortly after the intervention; thus, care should be taken regarding conclusions about the long-term nature of the effects. Finally, we could not control for external influencing factors, such as regional-level differentiation (Leitch *et al.*, 2012), social interactions and mutual networks (Toutain *et al.*, 2017), cultural environment, institutional facts and support, and contextual school influences in terms of teachers offering this extracurricular project, composition of the students within the mini-company, or social factors - all of which may be significant elements affecting the development of entrepreneurial competences. Nevertheless, our study contributes to the method of mini-companies which could also affect the regional context in terms of cognitive resources at regional levels (Dodd and Hynes, 2012).

In conclusion, the present study opens several fields for future research: As there are numerous different programmes for entrepreneurship education building upon experiential learning theories, further research could look into the effects of different programmes, supporting practitioners in further developing them. Future research could then also control for the programmes' duration as well as distinguish between voluntary and compulsory participation. Using a randomized field trial, our understanding of competence development could be enhanced to determine if this development traces back to either the participation

(e.g., in a mini-company) or the participant him- or herself. By using other methods, future (longitudinal) studies could also focus on very specific competences, such as self-efficacy or teamwork ability, to make the individual development process visible. Due to the fact that we could not assess social interactions, additionally further qualitative research is needed to have a more detailed look into how participants in student companies interact with each other, especially if it comes to teamwork skills. Furthermore, long-term studies are warranted to investigate the effects of entrepreneurship onto actual (regional) start-up activity as business start-ups serve as both innovation drivers and contribute to a region's economic growth (Audretsch *et al.*, 2010; Harkema and Shout, 2008; Lindh and Thorgren, 2016). It is also warranted to further investigate the effects of graduate employability (Pittaway and Cope, 2007) and also on youth employability. Finally, more insights are needed regarding the requirements for educators and teachers in charge of entrepreneurship education as it seems necessary for them to internalise entrepreneurship and thus acting as role models in a very authentic way (Hannon, 2018).

Overall, our research is a valuable contribution to the literature on entrepreneurship education, specifically student companies at secondary schools, and will support organizations to further develop their educational design for student companies Our findings could also enable policymakers to create entrepreneurial learning settings and environments that might help students to develop the relevant competences required in future and to encourage them to enrol in such entrepreneurial programmes.

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Appendix A: Students' development of entrepreneurial competences in the experimental group (mini-companies)

Level	Construct	Mean t1	Mean t2	Standard dev. t1	Standard dev. t2	T	p
Economic level							
Economic thinking and acting	Understanding economic concepts	3.1415	3.6698	.81676	.95547	-4.578	.000
Visions	Imagining s.th.	3.2264	3.3821	.93832	.80950	-1.388	.171
	Working strategically and action-orientedly	3.7208	3.9019	.50587	.51980	-2.623	.011
Using resources	Using resources and property responsibly	4.3627	4.4020	.53692	.63063	-.407	.686
	Making the best out of one's time	3.5080	3.6538	.77811	.68448	-1.460	.150
Planning	Planning and organising	4.0865	.4.1090	.48225	.63562	-.246	.806
	Being flexible	3.7115	3.7885	.67326	.77552	-.694	.491
	Developing strategies and business concepts	3.3082	3.6258	.66938	.61664	-3.326	.002
Security and risk awareness	Calculating and managing risks	3.6604	3.8349	.50262	.58413	-2.268	.028
Creativity	Problem solving	4.0785	4.1538	.66018	.59646	-.905	.370
	Developing ideas and shaping values	3.2549	3.5196	.88528	.95373	-1.723	.091
Ethical and sustainable thinking	Behaving ethically	3.7276	3.8974	.78869	.68134	-1.638	.108
	Assessing consequences and thinking sustainably	3.6792	3.7660	.54820	.64299	-.950	.346
Personal level							
Initiative	Assuming responsibility	3.8239	3.9308	.75278	.79356	-.858	.395

Motivation and perseverance	Being target-oriented	3.8113	3.8491	.58100	.59343	-.471	.640
	Being resilient	3.5346	3.5912	.77167	.83626	-.460	.647
Learning experience	Reflecting	3.9245	4.0377	.62580	.51747	-.647	.520
Self-awareness and self-efficacy	Acting strength-based and action-orientedly	3.8019	3.8522	.67071	.66800	-2.652	.011
	Shaping one own's future	3.8019	4.0377	.63047	.58711	-.858	.395
Team level							
Spotting opportunities	Analysing interrelationships	3.4967	3.6209	.76702	.74839	-1.049	.299
	Identifying challenges	3.4167	3.5962	.71667	.63430	-1.484	.144
	Making requirements visible	3.9872	4.0641	.64663	.80315	-.671	.505
Inspiring others	Communicating successfully	3.6937	3.8077	.74504	.66037	-1.205	.234
	Using media effectively	3.8510	4.0721	.80480	.66113	-1.930	.059
Protecting concepts	Sharing and protecting concepts	2.6981	2.9937	.95242	1.01798	-1.951	.056
Capacity for teamwork	Working together in heterogeneous groups	4.3113	4.3302	.38541	.35278	-.384	.702
	Networking	3.4025	3.5346	.74351	.78811	-1.466	.149

7 General Discussion

Entrepreneurship education plays an essential role in economic, social and personal development. Both research and policy have been aware of its importance. Still, there is the need for identifying the factors that contribute to successful entrepreneurship education and to decide which theoretical models and good practices should be chosen to be implemented into economic education within schools' curricula as this implementation will proceed in future (Bank & Retzmann, 2012). Consequently, empirical evidence on the impact of innovative learning approaches to meet the needs of a competence-oriented economic education is indispensable and empirical evidence on how competence-oriented designs of learning processes can support and promote an entrepreneurial mindset within entrepreneurship education is necessary. Within a competence-oriented didactic of entrepreneurship education, the focus is on learning as a process in which learners organise themselves, reflect on their experience, and cognitive and motivational processes of competence development run largely independently. Next, experiential learning and practical relevance lead to action competence that links cognitive competencies with situational requirements in a long-term process (Kolb, 2014; Lackéus, 2013; Pittaway et al., 2011; Wing Yan Man, 2012). In the field of entrepreneurship education, entrepreneurial programmes with an experiential learning approach and thus being competence-oriented are on the rise (see Section 5.4). However, empirical evidence on the development of entrepreneurial competences among students taking part in an entrepreneurial programme with an experiential learning approach remains scarce. Before investigating this development though, it is central to know about which competences are said to be entrepreneurial. To address this question, a profound literature review was carried out in order to create a research instrument emerging in a framework that was also based on a sound review of different conceptual frameworks. This first step was followed by the operationalisation of the designed instrument and the data obtained were analysed using SPSS. In the next section, the findings of the three papers will be summarized and presented in a broader research context and it is explained how the instrument offers the possibility to present empirical findings on student companies regarding the development of entrepreneurial skills (Duval-Couetil, 2013; Fayolle, 2013; Egbert, 2014; OECD/EU, 2018; Penning, 2018).

7.1 Discussion of the Findings

Serving as a basis for the presented empirical study, Paper 1 makes a unique contribution to research by providing a coherent theoretical framework that can be used for a valid analysis of the development of entrepreneurial competencies. The framework captures the internal structure of competences and with its help, competences and sub-competences can be operationalised and interrelationships can be analysed. On the basis of the framework's constructs, educators, as well as participants in an entrepreneurship education programme can use a questionnaire to assess the development of their own competence using various items (e.g. on a multi-level answer scale). In this way, Paper 1 paves the way for answering the research questions aligned in Section 1 and the instrument offers the possibility to present empirical findings on student companies regarding the development of entrepreneurial skills (Duval-Couetil, 2013; Egbert, 2014; Fayolle, 2013; OECD/EU, 2018; Penning, 2018).

As entrepreneurial competences also encompass interdisciplinary competences such as creativity, ethical and sustainable thinking, perseverance, self-efficacy, ability to work in a team or ability to communicate (see for example Kirchner & Loerwald, 2014), the framework and the respecting self-assessment instrument can likewise serve as an additional benefit for career orientation. This has become all the more pertinent in light of a constantly changing world, where individuals have to face changing conditions in the world of work and where it is crucial to think about one's own professional future and examining different training options. Being aware of one's own competences will give insights into one's individual vocational preferences and support the vocational choice. As entrepreneurship education and its respective programmes are also said to foster career orientation (Klapwijk & Rommes, 2009; Knab, 2007; Mason & Arshed, 2013), self-employment or starting a business as a possible alternative to being an employee can be reflected upon. Hence, the developed competence framework can serve in a simplified form as an instrument to support students in career orientation by enabling the students to reflect on their own strengths and weaknesses and thus to make a free choice of career. By this way, youth employability may be increased (Walter & Dohse, 2012) and drop-out rates in trainings and university studies may be diminished. Hence, in the broadest sense, the competence framework may also have an influence on aspects of the national economy.

When it comes to educational processes at schools, the framework and the user-friendly assessment tool is being flagged as a solution for teachers to decide not only on the contents

of economic courses but also on which content of a specific entrepreneurial programme should be set store on. This is all the more relevant when it is taken into account that evaluations have mainly taken place in the context of funding programmes or initiatives and the focus is on the presentation of results but not empirically proven (Penning, 2019). With the help of such a self-assessment instrument, first conclusions can be drawn as to whether an entrepreneurial programme contributes to the individual's development of entrepreneurial competences and especially which of these competences should be fostered in future. Thus, a solid measure of competences is provided and teaching and learning processes can then be reviewed and modified.

While Paper 1 was concerned with the question of how entrepreneurial competences can be operationalised and the competence framework developed was delineated, Paper 2 and 3 add to previous research on entrepreneurship education by presenting the findings of the empirical study. Despite the fact that the results of some studies on entrepreneurial programmes indicate that in some programmes there is an increase, for instance, in entrepreneurial attitudes and intentions (see for example Athayde, 2009, 2012; Barba-Sánchez & Atienza-Sahuquillo, 2016; Volery et al., 2013; Welsh et al., 2016), these studies do not include the assessment of entrepreneurial competences gained when partaking in such a programme. This dissertation makes a significant contribution to this gap in research as it is focused on entrepreneurial competences with an emphasis on their respective development.

To examine if entrepreneurial competences are developed and enhanced by participating in a student company, we used data from an intervention that took place as an extra-curricular economic course in terms of a student company. To get the relevant data we designed an online-questionnaire based on the competence framework presented in Paper 1, including pre-test and post-test measures. Due to the quasi-experimental longitudinal study conducted among participants of these student companies and incorporating a control group of students only taking part in a regular economic class, new insights were achieved about competences related to entrepreneurship. The results of the study revealed that the development of entrepreneurial competences actually took place. Thus, the instrument presented can give an answer on research question 1: "How can entrepreneurial competences be operationalized?". More precisely, students in the experimental group improved their competences throughout all dimensions of entrepreneurial competences, and by this,

research question 2 “Which competences do students develop through student companies in entrepreneurship education?” is given an answer.

However, the improvement on the personal and on the team level of the experimental group is comparable to the improvement in the control group and thus, we cannot say whether the improvements among the experimental group are a result of the participation in student companies. Consequetnly, the results of the study are in divergent to the results of the studies by Souitaris et al. (2007), De Haan et al. (2009) and Rosendahl Huber et al. (2012) which in particular found either improvement of social skills through student companies or no effects when participating in student companies (Oosterbeek et al., 2010).

On the other hand, however, students who participated in a mini-company, definitely profited from the intervention on the economic level, here especially in the constructs ‘Understanding economic concepts’ (related to the competence of ‘Economic thinking and acting’), ‘Developing strategies and business concepts’ (related to ‘Planning’) and ‘Calculating and managing risks’ (related to ‘Security and risk awareness’). These findings give an answer in which competence areas do pupils develop entrepreneurial competences when participating in student companies and are in line with the results of the studies by Knab (2007) and Birdthistle et al. (2007), which also identified the impact of student companies on economic skills.

The results of this study thus give evidence of a positive influence of the intervention and underline the effectiveness of a student company as an entrepreneurial programme – but only in terms of developing economic competences. Taking a closer look at these competences, the results may indicate that economic knowledge which is applied in a student company will lead to strengthening economic competences in order to be able to cope with the economic challenges that are related to run a business. The results though support the hypothesis that action-oriented and experiential learning leads to positive changes in economic competences. The economic theory of business is put into practice by offering competence-oriented economic learning opportunities and students are faced to manage real economic situations and to react on them as a result of practical experience. Respecting economic competences, the findings underline the findings of a study by Sherman et al. (2008), even if the degrees differ between the levels of economic, personal and team competences.

Nevertheless, the results are rather surprising, as they do not go in line with the designated aims and scopes of student companies such as changes in socioemotional skills or in entrepreneurial performance and mindset (Valerio et al., 2014, also see Section 5.4.1). Compared with the assumption that one major advantage of participation in student companies is the acquisition of social competences in an action-oriented and authentic context (Döring, 2001), the findings of the present study rather indicate that participating in student companies is an opportunity to enhance economic content knowledge. Thus, by highlighting the effects of the development of entrepreneurial competences when partaking in a student company, the framework and the resulting instrument to assess this development do not only offer criteria for evaluating entrepreneurial programmes but also for recommendation on further elaboration of these programmes and - in the long term - the instrument can contribute to further developing the evidence-based design of mini-companies.

7.2 Strengths and Limitations of the Present Dissertation and Implications for Future Research

As delineated above, the present dissertation contributes to the research and empirical foundation of entrepreneurial competencies in entrepreneurship education. When interpreting the findings, however, the resulting strengths and limitations should be acknowledged.

The major strength of this dissertation is the creation of a newly designed competence framework in accordance with a validated instrument: for the first time, a tool in the shape of a questionnaire was designed to assess the development of entrepreneurial competences, based on a sound framework. This tool can be used to find evidence of an actual development both in regular economic courses and in (extra-curricular) entrepreneurial programmes and may give insights into how and when competences are developed. It can be applied in a wider context to assess the effects of economic education on entrepreneurial competences, independently of institution (primary/secondary school or higher institution) and thus participants' age or educational level, or kind of programme (e.g. student company, business game, simulation, role play, case study, competitions; Kirchner & Loerwald, 2014). The research gap respecting the assessment of outcomes in terms of (entrepreneurial) competences which has been identified by various researchers could thus be narrowed.

What is more, the framework and the related questionnaire include several elements of the frameworks and models presented in Section 3. Such, for example, the development of entrepreneurial competences (e.g. European Commission, 2012; Lindner 2018; Bacigalupo et al., 2016) is linked with learning to understand entrepreneurship, becoming an entrepreneneur and thus becoming entrepreneurial, and by examining students participating in a mini-company, the entrepreneurial learning process is implied (Thrane, Blenker, Koorsgaard, & Neergard, 2016). The theory-pracice matrix by Neck et al. (2014) where theory is put into action is included in the framework and the instrument as well as educational interventions leading to the development of entrepreneurial competences (Lackéus, 2015, Pittaway & Cope, 2007). Based on the results of the study, it can be stated that by differentiating the entrepreneurial competences into an economic, a personal and a team level, there are implications on the above-mentioned models in the way that a more differentiated depiction would now be possible.

Next, the empirical study included pre- and post-test measures to examine the developments and thus a longitudinal data set was used and determination of statistical correlations was possible as well as greater objectivity and comparability of the results. Compared with the effects of the control group that did not receive this intervention (here: a mini-company) the effects in the experimental group were assessed. Moreover, the analyses concentrated on the individual outcomes of the students. To achieve valid and reliable results, appropriate state-of-the-art statistical procedures were applied such as explorative factor analyses, comparative factor analyses, t-tests, analysis of variance (ANOVA) and multivariate variance analysis (MANOVA). Internal consistency values (Cronbach's alpha) were usually above the common threshold of .7 and both exploratory and confirmatory factor analysis showed the expected factor structure. Hence, the instrument proved to be reliable and valid and such it can be used both to assess the entrepreneurial competences and the participant's learning progress. By this way, researchers' claim for up-to-date longitudinal and empirically validated studies (e.g. Geldhof, Porter et al., 2014; Glaub & Frese, 2011) also in the German context of entrepreneurship education within the topic of economic education (e.g. Egbert, 2014) could be met up to a certain degree.

Another strength is assigned to the topic of career orientation (see for example Klapwijk & Rommes, 2009; Knab, 2007). If the framework and the related instrument are used to illustrate which competences are developed and promoted in which entrepreneurial

programmes, it is possible to select those programmes that explicitly focus on either economic, personal or team competences. These can then be compared with the required competences of different occupational fields and systematic career guidance can be provided and support offers can be designed and implemented.

However, the current results should not be looked at without pointing out limitations to the research. Even if external validity is given in a way that the intervention took place in a real-life setting and was not conducted in the laboratory, it means that control for external influencing factors is missing. Probable significant elements affecting the development of entrepreneurial competences such as social interactions and mutual networks (Toutain et al., 2017), cultural environment, institutional facts and support, and contextual school influences in terms of teachers offering this extracurricular project, the role and entrepreneurial experience of the teachers (see Section 7.3), composition of the students within the mini-company, or any other social factors could not be taken into account and by this, it is difficult to disentangle the concealed mechanisms running in the background.

Limitations are also given in terms of the test design, as data were collected by means of a largely standardised questionnaire using students' self-reports: there is a reduction of data variance and therefore limitations regarding generalizability as data are exclusively based on the students' self-assessment (i.e. there might be a bias due to an overly positive assessment of personal performance) and outcomes are very much influenced by the participants' individual profile such as gender, age, personal characteristics or experience.

Furthermore, as partakers of the study decided voluntarily to participate in a student company, preselection in terms of self-motivation and interest can take place and can, therefore, lead to distortions in the results. That is, it cannot be excluded that the partaking students were more interested in economic topics right from the very beginning of the intervention and such showed initial commitment. On the other hand, this goes with all interventions that are not compulsory. Future research might such be directed in terms of differentiating between voluntary or compulsory participation in an entrepreneurial intervention.

Next, no other sources were used such as, for instance, observations. This was not only due to the fact that observations are highly intensive in resources (whether in terms of time, finance or personnel) but also because data were gained on-line anonymously and couldn't

be matched to individual observation. On the other hand, the approach of a mixed-methods-study with data from quantitative and qualitative surveys would offer the possibility to illuminate research topics from different perspectives and to answer questions that could not be answered by a mere quantitative or qualitative analysis (Leech & Onwuegbuzie, 2009).

What is more, the limited sample size of only 53 students taking part in both pre-test and post-test do not allow to draw a general conclusion. With a small sample, the corresponding probability distribution may not be sufficiently well approximated and thus, more reliable results can be expected from relatively large sample sizes (Moosbrugger & Kelava, 2012). Further research should involve a larger sample to minimize random effects.

Moreover, the study was conducted with participants from mini-companies in Baden-Württemberg grammar schools only. Hence, the regional effect (Baden-Württemberg as a rather industrialized federal state) should be kept in mind as well. Intensifying the interaction between schools and regional entrepreneurs and enterprises and support by mentors from local and regional businesses sharing their experience with participants of mini-companies is more likely to acquire in an area highly populated by small and medium enterprises than in a more rural surrounding (Walter & Dohse, 2012). Economic experience and advice can such be transferred faster and more easily. Thus, generalizing the results to other federal states of Germany or even other countries is not feasible. To gain more generalizability, further studies should focus on national and international data analysis, including both urban and rural areas.

What is more, the present study is based on data of participants of one specific entrepreneurial programme (here: a JUNIOR student company). Other programmes offered in this field (e.g. business@school, student cooperatives, NFTE[22])[23] were not taken into account and different programmes' features respecting design, content, target audience or general conditions such as financial or personnel equipment influence the outcomes in varying degrees. Thus, research on the comparability of different programmes respecting entrepreneurial competences also in triangulation with regular economic courses is needed to get reliable and valid findings on the quality of the interventions. This goes in line for further research needed related to the duration of a programme, as well as to different programmes with different objectives being offered at different types and levels of schools or even universities. A majority of entrepreneurial programmes have not yet been empirically

[22] NFTE: Network For Teaching Entrepreneurship

[23] For more information on entrepreneurial programmes offered in Germany see https://www.unternehmergeist-macht-schule.de/DE/Initiativen/initiativen_node.html

evaluated and giving evidence of their benefits is crucial (Glaub & Frese, 2011). Conducting studies in these fields would also add to a substantial examination of the designed research instrument and thus to verify its validity and reliability.

As the survey focused on entrepreneurial competences only, there was no assessment of possible developments of other competences (e.g. mathematical or linguistic competences) and triangulation with other data didn't take place. Further research on these correlations would make the individual development process visible and provide insights into possible interdependencies of specific competences and would then possibly result in a shift of targets and expected outcomes both in economic courses and in entrepreneurial programmes. Policy, governments and providers of entrepreneurial programmes investing in research on evaluations of the relevant programmes can then help to improve and increase evidence-based studies on the increasing numbers of entrepreneurship education interventions. The expansion of entrepreneurship-oriented programmes is to be encouraged, but as valid and reliable findings on relevant outcomes are difficult to compare with each other due to various intentional, sociological and methodological approaches, providers of entrepreneurial programmes are confronted with divergent findings likely to be puzzling. Identifying evaluation criteria and improve and further develop the programmes with clear targets and explicitly defined contents is challenging, however.

Care should also be taken regarding conclusions about the long-term nature of the presented effects as the post-test took place shortly after the intervention so that only a snapshot was captured. Following the students over a longer period of time after the intervention and assessing their subsequent professional career would shed light on the longitudinal effects of the relevant programmes (see for example Elert et al., 2015). Research of this kind could such shed light on the question whether participation in student companies or any other entrepreneurial programmes is actually long-lasting (Lepoutre et al., 2011) and might lead to increased start-up activity. This is a major aspect for rural areas or less developed countries where economic and organisational development is substantial and enlargement of venture creation is needed to improve social and economic infrastructure (Gielnik et al., 2015).

7.3 Implications for Future Policy and Practice

This dissertation gives valuable insights into the development of entrepreneurial competences and the findings have implications for future research as well as for educational policy and practice. In a constantly changing society, the traditional educational system needs to be continuously but carefully adapted to meet future challenges. Schools play an important part within the entrepreneurial society by cooperating with (regional) companies and institutions, chambers of crafts and chambers of industry and commerce, labour offices and various associations. Strengthening the link between the school and the entrepreneurial world should, therefore, be fostered and supported by policy to promote entrepreneurship and develop entrepreneurial competences.

7.3.1 Implications for Future Policy

To avoid stagnation in curricula development, rethinking in respect of cooperation amongst all those involved in entrepreneurship education is needed: "Entrepreneurship requires a co-ordinated approach because of its horizontal nature. Policy should embrace all the influential elements within the relevant policy areas, to allow these to act in a mutually reinforcing way" (Commission of the European Communities, 2003, p. 22). Different ministries and local and regional authorities are asked to identify common priorities and key objectives of entrepreneurship education in order to define common guidelines with a coherent methodology. This is needed to design curricula conforming the institutionalization of entrepreneurship education (Farny, Frederiksen, Hannibal, & Jones, 2016) and including determined areas for entrepreneurship education also in terms of creating experiential learning settings and environments that foster entrepreneurial learning (such as student companies). For this, "a holistic program of institutional development that includes curriculum development, faculty development, student development, administrative and staff development, and resource development [is needed]. Programs in these areas need to be coordinated around an institutional vision and mission to promote learning" (Kolb & Kolb, 2005, p. 209). This vision includes for example cooperation instead of competition, value creation instead of growth compulsion, resource creation instead of use and waste of resources, and participation and empowerment instead of externalization (Glauner, 2018, p. 26). For policymakers, it would be a first step to incorporate entrepreneurship education and relevant entrepreneurial programmes as an obligatory element in schools' curricula by

assuming a “whole school approach” (Gibb, 2008, p. 18). This involves, however, more financial and personnel resources as, for instance, smaller sizes of classes are required (and such the number of teachers has to be increased) and the equipment of schools and classrooms have to be adapted to experience-based entrepreneurial programmes. But then again, this approach is necessary in order to reach policy goals respecting both current pedagogical approaches and fostering entrepreneurship and entrepreneurial spirit and mindset and the development of entrepreneurial competences, also in regard to economic growth. What is more, by placing more emphasis on the importance of entrepreneurship education at schools, the foundation to foster university students’ entrepreneurial competences is laid.

Still, not much is currently known about links and possible synergies between entrepreneurship education at school and graduate entrepreneurship at university. In future research, programmes and trainings administered at schools with positive impacts not only on students but also on society and on stakeholders could be compared with those performed at universities and findings might then pave the way to extensive research on the complete educational process of entrepreneurship on the educational, social and economic level. However, this requires an exchange of the necessary statistical data. By this, emphasis would be also laid on the cross-sectoral work between students, teachers, university lecturers and researchers and external partners. Taking up these issues and thinking broader, studies combining findings on an international level may lead to an international and interdisciplinary exchange of research and provide an extensive view on entrepreneurship education and its different approaches enabling to exchange best practices models and to disseminate to policy and practitioners alike. Concepts resulting from the researches’ findings could be applied to relevant interventions to best support students on their entrepreneurial way from early stages at school to graduate entrepreneurship at university. As a result, coming generations are encouraged to contribute to an entrepreneurial culture from the very beginning and to be a significant part of an innovative, creative and sustainable society in a globalized world.

7.3.2 Implications for Teacher’s Training and Practice

The findings of the present study may also be seen as a point of reflection on the appropriate environments and parameters of entrepreneurship education. Policymakers, teachers,

students, authorities and other stakeholders are asked to reflect upon an efficient entrepreneurship education and how it will be perceived in future. In order to ensure the greatest possible success of the learning processes, the design of the learning environment, an arrangement of teaching methods and techniques as well as learning materials and media, which simultaneously reflect the temporal, spatial and social learning situation, is of great importance. Herewith, learning processes are conceived as an active and self-controlled unit of experience and learning should take place in multiple contexts and under multiple perspectives and social contexts (Kaiser, Kaminski, & Brettschneider, 2012).

In this way, pedagogical approaches such as holistic learning and experiential learning (see Section 5.4) that will contribute to iterate students' active experiences need to be shifted from a marginal pedagogical approach to a central one. Providing entrepreneurial work-related activities to support learning by doing and action-oriented teaching and learning also means a fundamental rethink in the requirements for educators in charge of entrepreneurship education who are seen as a critical element of effective entrepreneurship education (Hytti & O'Gorman, 2004) since a student's entrepreneurial mindset can partly be influenced by the teacher (Kristová & Malach, 2017).

It is not only that teachers need training in project management and basic business knowledge, but also training offers are needed that promote both scientific and didactic competences (Penning, 2019) since "[y]oung people can learn economics best when taught by knowledgeable teachers using well developed curriculum materials" (Clark, Schug, & Harrison, 2009, p. 1). What is more, there must be a change of attitude and behaviour among the teachers. Teacher-active classroom teaching moves to student-active learning and the teacher's role transfers from the lecturer conveying knowledge to a more facilitative role integrating all elements of entrepreneurial learning (Bernstein, 2018; Garavan & O'Cinneide, 1994; Neck & Corbett, 2018; Pretorius, Nieman, & van Vuuren, 2005). Teachers now act as a 'coach' where on the one hand supervision and intervention is minimized, on the other hand advice is given "in the form of suggestions and options, with the student making the choices of how to proceed" (Hytti & O'Gorman, 2004, p. 18), while the focus is on the student's needs and potential. Training for teachers and educators is therefore necessary in teaching approaches respecting experiential learning in order to cope and to keep up with current trends in didactics and methodology which goes for almost all entrepreneurial programmes offered. Neck and Corbett (2018, p. 25) confirm this attitude: "Having a professional trained

educator is key […]. If you want learning to be constructivistic, it is no place for amateurs. […] Either we commit to significant professional training so we can deliver truly experiential ('progressive') learning or else we fool the students and ourselves OR we go back to more behavioristic learning tools".

However, it is not only the pedagogical aspect the focus should be put on but also the aspect concerning how entrepreneurship education for teachers can be fostered and enterprise-related teacher training can be provided. Fenton and Barry (2011, p. 459) conclude that "[e]nthusiastic lecturers, with credibility and experience of enterprise development, are a crucial factor in the success of entrepreneurship education: such teachers are able to instil enthusiasm for entrepreneurship amongst students" and Hannon (2018, p. 717) states that "[e]ntrepreneurship educators need to become *entrepreneurial* entrepreneurship educators – acting as role models, practicing what they preach, if we are to gain credibility and respect with our learners". To equip teachers with the necessary expertise as entrepreneurship educators it is necessary that teachers have basic knowledge of entrepreneurship, possess entrepreneurial competences (Kristová & Malach, 2017), ideally having work experience in an enterprise, are open to innovation, have a positive attitude towards and passion for entrepreneurship (Commission of the European Communities, 2003), and are able to implement a successful teaching infrastructure related to entrepreneurship education in schools (Ruskovaara & Pihkala, 2013). As teacher's training takes place at universities and universities are part of the entrepreneurial society, university curricula have to be adapted to current needs and changes respecting teachers involved in entrepreneurship education. Integrating a compulsory internship for these teachers, offering programmes such as student companies in higher education and thereby offering experienced-based and action-oriented teaching approaches, business games or best practices, and promoting co-operation between the future teachers and the business sector as integral parts of the curriculum will help to develop not only entrepreneurial competences but an entrepreneurial mindset among the soon-to-be teachers for entrepreneurship education.

In summary, this dissertation contributed to better understanding of the entrepreneurial learning process and the importance of entrepreneurship education programmes with a holistic and experiential learning approach. However, it also showed that much more investigation and research is needed respecting these programmes and their

expected effects on students and it underlined the importance of incorporating scientific findings into practice. Based on scientific research, educational policy reforms can then be designed and implemented for the long term, incorporating all those involved in entrepreneurship education.

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9 Appendix

EBERHARD KARLS UNIVERSITÄT TÜBINGEN

Wirtschafts- und Sozialwissenschaftliche Fakultät

JUNIOR Wirtschaft erleben

Kompetenzentwicklung in Schülerfirmen

Schülerfragebogen 2017

Liebe Schülerinnen und Schüler,

bevor Sie mit dem Ausfüllen des Fragebogens beginnen, möchte ich Sie bitten, einen Code zu generieren. Dies ist für die spätere Datenanalyse wichtig, dabei ist aber weiterhin gewährleistet, dass Ihre Antworten anonym bleiben.

Generieren Sie den Code bitte folgendermaßen:

Code aus dem ersten Buchstaben des Mädchennamens der Mutter, dem ersten Buchstaben des Vornamens der Mutter und den ersten zwei Ziffern des Geburtstags der Mutter.

Bitte generieren Sie Ihren persönlichen Code:

☐ – ☐ – ☐☐

1 2 3

1.) Erster Buchstabe **des Mädchennamens Ihrer Mutter** (z.B. „K“ für Klein)

2.) Erster Buchstabe des **Vornamens Ihrer Mutter** (z.B. „A“ für Anna)

3.) **Tag ihrer Geburt** (z.B. „04“, wenn Ihre Mutter am 04.09.1960 geboren ist)

Ute Grewe M.A.
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ute.grewe@uni-tuebingen.de

Liebe Teilnehmerinnen und Teilnehmer an einer JUNIOR-Schülerfirma,

Als wissenschaftliche Mitarbeiterin am Lehrstuhl für Ökonomische Bildung und Wirtschaftsdidaktik an der Eberhard Karls Universität in Tübingen schreibe ich meine Doktorarbeit über Kompetenzen, die durch eine Teilnahme an einer Schülerfirma entwickelt werden.

Die Befragung erfolgt selbstverständlich anonym. Alle Ihre Angaben werden ausschließlich für wissenschaftliche Zwecke verwendet und streng vertraulich behandelt.

Ihre Teilnahme ist natürlich freiwillig. Da ich jedoch nur dann aussagekräftige Ergebnisse erhalte, wenn möglichst alle Schülerinnen und Schüler, die ausgewählt wurden, den Fragebogen beantworten, bitte ich Sie nochmals herzlich um Ihre Unterstützung.

Ihre Antworten auf die Fragen können nicht richtig oder falsch sein. Es geht um Ihre Auffassungen, Meinungen und Gewohnheiten. Wenn Sie sich in Ihren Antworten nicht ganz sicher sind, ist das nicht schlimm. Die meisten Fragen können und sollen „aus dem Bauch heraus“ beantwortet werden.

Das Ausfüllen des Fragebogens wird ca. 20 Minuten in Anspruch nehmen.

Vorweg bedanke ich mich schon einmal ganz herzlich für Ihre Bereitschaft zur Teilnahme an dieser Befragung.

Ute Grewe

ute.grewe@uni-tuebingen.de

Verantwortung in einem Team übernehmen, zusammenarbeiten, selbstständig arbeiten und aus Erfahrungen lernen sind Eigenschaften, die nicht nur in einem Unternehmen benötigt werden. Wie schätzen Sie sich ein?

	Trifft gar nicht zu	Trifft wenig zu	Trifft teils-teils zu	Trifft ziemlich zu	Trifft völlig zu
Ich übernehme gerne die Verantwortung für mich und andere.	○	○	○	○	○
Ich übernehme die Verantwortung für das, was ich tue, auch wenn es falsch war.	○	○	○	○	○
Ich übernehme gerne Aufgaben und Verantwortung in der Gruppe.	○	○	○	○	○
Ich bearbeite Aufgaben selbstständig.	○	○	○	○	○
Ich kann mir eigenständig neue Kenntnisse aneignen.	○	○	○	○	○
Ich helfe anderen, selbständig zu arbeiten.	○	○	○	○	○
Ich akzeptiere andere Kulturen.	○	○	○	○	○
Ich sehe Vielfalt in meinem Team als Bereicherung an.	○	○	○	○	○
Ich kann anderen gut zuhören.	○	○	○	○	○
Ich kann gut nachvollziehen, was andere fühlen und meinen.	○	○	○	○	○
Ich freue mich über gemeinsame Erfolge.	○	○	○	○	○
Ich kann meine Interessen in der Gruppe zurückstellen.	○	○	○	○	○
Bei Gruppenarbeiten beteilige ich mich aktiv.	○	○	○	○	○
Ich nehme Hilfe von anderen an.	○	○	○	○	○
Es fällt mir leicht, mit anderen in Kontakt zu kommen.	○	○	○	○	○
Ich kann meine Kontakte nutzen, um die richtigen Mitglieder zur Mitarbeit in meinem Team zu finden.	○	○	○	○	○

	Trifft gar nicht zu	Trifft wenig zu	Trifft teils-teils zu	Trifft ziemlich zu	Trifft völlig zu
Ich kann mein Netzwerk dauerhaft in meine Aufgaben mit einbinden.	○	○	○	○	○
Ich kann Gründe für Niederlagen identifizieren.	○	○	○	○	○
Ich kann Kritik annehmen.	○	○	○	○	○
Ich kann konstruktives Feedback geben.	○	○	○	○	○
Ich kann aus Verbesserungsvorschlägen lernen.	○	○	○	○	○
Ich kann beim Lernen überprüfen, ob ich es richtig mache.	○	○	○	○	○
Ich kann aus Misserfolg und Kritik lernen und das Gelernte bei späteren Aufgaben einsetzen.	○	○	○	○	○
Ich kann verschiedene Berufsarten nennen.	○	○	○	○	○
Ich kann beschreiben, welche Qualifikationen für unterschiedliche Berufe benötigt werden.	○	○	○	○	○
Ich kann meine Fähigkeiten in Bezug auf eine berufliche Selbstständigkeit einschätzen.	○	○	○	○	○

Möchten Sie noch etwas hinzufügen?

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_____

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Zu Ihrer individuellen Persönlichkeit gehören auch Ihre Stärken und Schwächen und Ihre Ziele. Bitte schätzen Sie sich selbst ein.

	Nie	Selten	Gelegent-lich	Oft	Immer
Ich kann eigene Wege entwickeln, um etwas Neues zu erreichen.	○	○	○	○	○
Ich kann Entscheidungen treffen, auch wenn mir nicht alle Informationen vorliegen.	○	○	○	○	○
Ich kann Risiken beschreiben, die mit einer Aufgabe zusammen hängen.	○	○	○	○	○
Ich kann Risiken abwägen, um Entscheidungen zu treffen.	○	○	○	○	○
Ich kann eine Strategie entwickeln, um Risiken zu verringern.	○	○	○	○	○
Ich kann meine Ziele nennen.	○	○	○	○	○
Ich setze mir eigene Ziele.	○	○	○	○	○
Ich kann dazu beitragen, meine Ziele zu erfüllen.	○	○	○	○	○
Ich kann Dinge, in denen ich gut bin, nennen.	○	○	○	○	○
Ich bin mir meiner Stärken bewusst.	○	○	○	○	○
Ich glaube an meine Fähigkeit, das zu erreichen, was ich möchte.	○	○	○	○	○
Auch wenn es schwierig ist, glaube ich an meine Fähigkeit, trotz Hindernissen das auszuführen, was ich mir vorgenommen habe.	○	○	○	○	○

Was mir sonst noch dazu einfällt:

_____

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_____

Im Folgenden geht es um Ihre Fachkenntnisse und Ihr Verhalten in der Schülerfirma. Schätzen Sie selbst möglichst ehrlich ein!

	Trifft gar nicht zu	Trifft wenig zu	Trifft teils-teils zu	Trifft ziemlich zu	Trifft völlig zu
Ich möchte zeigen, was ich kann.	○	○	○	○	○
Ich fühle mich durch Herausforderungen motiviert.	○	○	○	○	○
Ich kann andere dabei unterstützen, motiviert zu bleiben.	○	○	○	○	○
Ich kann mich gut selbst motivieren.	○	○	○	○	○
Ich kann mir meine Zukunft gut vorstellen.	○	○	○	○	○
Ich kann ein einfaches Zukunftsszenario für mich entwickeln.	○	○	○	○	○
Ich kann meine Zukunftsvorstellung anderen erklären.	○	○	○	○	○
Ich kann verschiedene Zukunftsszenarien für mich miteinander vergleichen.	○	○	○	○	○
Ich finde selbstständig neue Lösungswege für Aufgaben.	○	○	○	○	○
Ich kann Arbeitsschritte selbstständig umsetzen.	○	○	○	○	○
Bei der Bearbeitung einer Aufgabe kann ich einen Handlungsplan erstellen, der andere mit einbezieht.	○	○	○	○	○
Ich kann eine einfache Kostenplanung für ein Produkt aufstellen.	○	○	○	○	○
Ich kann den Finanzbedarf für ein neues Produkt abschätzen.	○	○	○	○	○
Ich kann grundlegende Begriffe zum Thema „Geld“ nennen.	○	○	○	○	○
Ich kann erklären, wie Marktpreise zustande kommen.	○	○	○	○	○
Ich kann eine Gewinn- und Verlustrechnung aufstellen.	○	○	○	○	○
Ich kann eine einfache Bilanz erstellen.	○	○	○	○	○

Ich kann die Bilanzzahlen eines Unternehmens mit denen der Konkurrenzunternehmen vergleichen.	○	○	○	○	○

Haben Sie noch Fragen oder Anmerkungen?

_____

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Nun haben wir Aussagen zu Situationen zusammengestellt, die Sie auch aus Ihrem täglichen Leben kennen. Wie schätzen Sie sich ein?

	Nie	Selten	Gelegent-lich	Oft	Immer
Ich kann auch unter Zeitdruck gut arbeiten.	○	○	○	○	○
Ich lasse mich auch bei hoher Arbeitsbelastung nicht aus der Ruhe bringen.	○	○	○	○	○
Ich kann mich konzentriert mit einer Aufgabe beschäftigen.	○	○	○	○	○
In Stresssituationen erbringe ich gleichbleibende Leistungen.	○	○	○	○	○
Ich überlege mir vorher, wie ich am besten eine Aufgabe bearbeite.	○	○	○	○	○
Ich kann ausgehend von einem Problem einen Plan erarbeiten, um dieses Problem zu lösen.	○	○	○	○	○
Ich kann von meinem Ziel ausgehend rückwärts planen, um eine Strategie zu erarbeiten.	○	○	○	○	○
Ich kann Verbindungen zwischen verschiedenen Sachverhalten herstellen.	○	○	○	○	○

Was ich noch hinzufügen möchte:

_____

_____

_____

In einem Unternehmen wird es immer wichtiger werden, sich ethisch zu verhalten und Verantwortung nicht nur gegenüber der Umwelt zu zeigen. Dazu gehört auch, Ziele festzulegen und ein nachhaltiges Unternehmenskonzept zu entwickeln.

	Trifft gar nicht zu	Trifft wenig zu	Trifft teils-teils zu	Trifft ziemlich zu	Trifft völlig zu
Ich kann mir Ziele setzen.	○	○	○	○	○
Ich kann alternative Ziele beschreiben.	○	○	○	○	○
Ich kann eine Strategie entwickeln, um eine Zielerreichung zu fördern.	○	○	○	○	○
Ich kann für meine Idee ein einfaches Geschäftsmodell entwickeln	○	○	○	○	○
Ich kann aus einem Geschäftsmodell ein Unternehmenskonzept entwickeln.	○	○	○	○	○
Ich kann mein Unternehmenskonzept bei unvorhergesehenen Herausforderungen anpassen.	○	○	○	○	○
Ich kann wichtige Meilensteine festlegen, um meinen Fortschritt bei einer Aufgabe zu kontrollieren.	○	○	○	○	○
Ich kann einen Plan entwickeln, der die Zielerreichung kontrolliert.	○	○	○	○	○
Ich kann erkennen, wie Wert bei den verschiedenen Teilen einer Wertschöpfungskette hinzugefügt wurde.	○	○	○	○	○
Ich kann verdeutlichen, dass Konzepte gebraucht werden, während die Rechte der Urheber gewährleistet werden.	○	○	○	○	○
Ich kann verschiedene Urheberrechte nennen.	○	○	○	○	○
Ich kann das geeignetste Lizenzrecht für ein Produkt auswählen.	○	○	○	○	○
Ich kann Verhaltensweisen erkennen, die ethisches Verhalten zeigen.	○	○	○	○	○
Ich lege einen Schwerpunkt darauf, dass ethisches Verhalten in meiner Umgebung respektiert und gefördert wird.	○	○	○	○	○
Ich ergreife Maßnahmen gegen unethisches Verhalten.	○	○	○	○	○

Haben Sie noch Anmerkungen?

Im Folgenden finden Sie Aussagen zum Planen und Organisieren. Inwieweit stimmen Sie den Aussagen zu?

	Nie	Selten	Gelegent-lich	Oft	Immer
Ich kann einen einfachen Plan ausführen.	○	○	○	○	○
Ich kann einen Handlungsplan mit notwendigen Schritten erstellen, der zu einer Zielerreichung führt.	○	○	○	○	○
Ich bin offen für Planänderungen.	○	○	○	○	○
Ich kann verschiedene Aufgaben in eine sinnvolle Reihenfolge bringen.	○	○	○	○	○
Ich kann bei einer Arbeitsaufgabe Schwerpunkte setzen.	○	○	○	○	○
Ich bin offen gegenüber Veränderungen.	○	○	○	○	○
Ich kann mit Veränderungen gut umgehen.	○	○	○	○	○
Ich kann Veränderungen während eines Prozesses mit einbeziehen.	○	○	○	○	○
Ich kann Gründe für Veränderungen angeben.	○	○	○	○	○
Ich kann Beispiele für nachhaltiges Verhalten geben.	○	○	○	○	○
Ich kann soziale und technische Entwicklungen in Bezug auf Nachhaltigkeit untersuchen.	○	○	○	○	○
Ich kann die Auswirkungen einschätzen, die mein Verhalten auf meine Umgebung hat.	○	○	○	○	○
Ich kann die Folgen meiner Entscheidungen einschätzen.	○	○	○	○	○
Ich besitze die Fähigkeit, Situationen so einzuschätzen, dass daraus Konsequenzen gezogen werden können.	○	○	○	○	○

Möchten Sie noch etwas hinzufügen?

Nun geht es um verschiedene Eigenschaften, die Personen kennzeichnen. Wo würden Sie sich einordnen?

	Trifft gar nicht zu	Trifft wenig zu	Trifft teils-teils zu	Trifft ziemlich zu	Trifft völlig zu
Ich habe Interesse daran, Neues zu lernen.	○	○	○	○	○
Ich kann aktiv nach Lösungen suchen.	○	○	○	○	○
Ich erkenne ein Problem, wenn es sich zeigt.	○	○	○	○	○
Ich kann verschiedene Ansätze beschreiben, um ein Problem zu lösen.	○	○	○	○	○

Was möchten Sie noch hinzufügen?

_____

_____

_____

Auch den Begriff der Wertschöpfung kennen Sie schon aus dem Unterricht:

	Nie	Selten	Gelegent-lich	Oft	Immer
Ich habe eigene Ideen, die ich umsetze.	○	○	○	○	○
Ich kann mit anderen zusammen Ideen entwickeln.	○	○	○	○	○
Ich kann verschiedene Methoden beschreiben, um den Wert einer Idee zu überprüfen.	○	○	○	○	○
Ich kenne verschiedenen Vorgehensweisen, um aus neuen Produkten mehr Wert zu schöpfen.	○	○	○	○	○

Hier ist Platz für Ihre Fragen oder Anmerkungen:

Kommunikation ist ein wichtiger Bestandteil in der Beziehung zu Ihren Mitmenschen. Bitte schätzen Sie sich ein.

	Trifft gar nicht zu	Trifft wenig zu	Trifft teils-teils zu	Trifft ziemlich zu	Trifft völlig zu
Ich zeige Begeisterung für Herausforderungen.	○	○	○	○	○
Wenn ich von einer Sache überzeugt bin, kann ich andere dafür begeistern.	○	○	○	○	○
Ich kann anderen gegenüber meine Idee klar darstellen.	○	○	○	○	○
Ich kann meine Idee so beschreiben, dass sie andere motiviert.	○	○	○	○	○
Ich kann eine schwierige Diskussion aufrechterhalten.	○	○	○	○	○

Möchten Sie noch etwas hinzufügen?

Unabhängig von einer Schülerfirma werden Sie oft auch unterschiedliche Medien benutzen, um Ihre Idee oder Ihre Argumente anschaulich darzustellen.

	Nie	Selten	Gelegent-lich	Oft	Immer
Ich kann andere überzeugen, da ich eine Vielzahl von Argumenten anbringen kann.	○	○	○	○	○
Ich kann Verhandlungen führen, die der Unterstützung meiner Ziele dienen.	○	○	○	○	○
Ich kann erklären, wie verschiedene Medien genutzt werden können, um unterschiedliche Zielgruppen zu erreichen.	○	○	○	○	○
Ich kann vielfältige Medien nutzen, um eine Idee erfolgreich zu kommunizieren.	○	○	○	○	○
Ich kann unterschiedliche Medien zielgruppengerecht verwenden.	○	○	○	○	○
Ich kann mit verschiedenen Medien arbeiten, um die Ergebnisse meiner Arbeit darzustellen.	○	○	○	○	○

Ressourcen verantwortlich zu nutzen und wissen, wo Sie für ein Problem Unterstützung bekommen können, sind Dinge, die Ihnen auch im täglichen Leben begegnen.

	Trifft gar nicht zu	Trifft wenig zu	Trifft teils-teils zu	Trifft ziemlich zu	Trifft völlig zu
Ich erkenne, wenn ich Anforderungen an mich noch nicht erfülle.	○	○	○	○	○
Ich kann erklären, dass unterschiedliche Gruppen verschiedene Bedürfnisse haben.	○	○	○	○	○
Ich kann Projekte entwerfen, die zukünftige Bedürfnisse aufzeigen.	○	○	○	○	○

	Trifft gar nicht zu	Trifft wenig zu	Trifft teils-teils zu	Trifft ziemlich zu	Trifft völlig zu
Ich weiß, dass Ressourcen nicht unbegrenzt sind.	○	○	○	○	○
Es ist wichtig, Ressourcen mit anderen zu teilen.	○	○	○	○	○
Ich kann die notwendigen Ressourcen, die ich brauche, um meine Idee in die Tat umzusetzen, bekommen.	○	○	○	○	○
Ich kann einen Plan entwickeln, um mit begrenzten Ressourcen bei meiner Aufgabe auszukommen.	○	○	○	○	○
Ich schätze den Wert meines Eigentums.	○	○	○	○	○
Ich gehe verantwortlich mit meinem Eigentum um.	○	○	○	○	○
Ich finde Möglichkeiten, um Ressourcen effizient zu verwenden.	○	○	○	○	○
Ich kann innovative Wege finden, um Ressourcen zu schonen.	○	○	○	○	○
Ich kenne Unterstützungssysteme, die mir helfen.	○	○	○	○	○
Ich kann die richtigen digitalen Unterstützungssysteme auswählen, die mir bei meiner Zielerreichung helfen.	○	○	○	○	○

Gerne können Sie hier noch etwas anmerken:

_____

_____

_____

Nun haben Sie es gleich geschafft!
In diesem letzten Block geht es noch darum, wie Sie mit Herausforderungen und Ihrer Zeit umgehen.

	Nie	Selten	Gelegent-lich	Oft	Immer
Ich kann Herausforderungen in meiner Umgebung erkennen, zu denen ich eine Lösung beitragen kann.	○	○	○	○	○
Ich finde alternative Lösungen, um Herausforderungen zu begegnen.	○	○	○	○	○
Wenn etwas funktioniert, ist es mir wichtig zu wissen, warum es funktioniert.	○	○	○	○	○
Es macht mir Spaß, eine Aufgabe in verschiedene Teile zu zerlegen und die Zusammenhänge darin zu verstehen.	○	○	○	○	○
Es gelingt mir oft, ein schwieriges Problem dadurch zu lösen, dass ich die Zusammenhänge ordne.	○	○	○	○	○
Ich erkenne verschiedene Rollen, die unterschiedliche Gruppen in meiner Umgebung einnehmen.	○	○	○	○	○
Ich weiß, dass meine Zeit eine knappe Ressource ist.	○	○	○	○	○
Ich kann den Zeitbedarf für unterschiedliche Aufgaben abschätzen.	○	○	○	○	○
Ich nutze meine Zeit effektiv, um mein Ziel zu erreichen.	○	○	○	○	○
Ich kann einen Zeitplan aufstellen, damit ich mein Ziel im vereinbarten Zeitrahmen einhalten kann.	○	○	○	○	○
Ich kann anderen dabei helfen, ihre Zeit effektiv zu nutzen.	○	○	○	○	○

Hier ist Platz für weitere Ergänzungen:

Hier nun die letzten Fragen zum Unterricht, dabei geht es um Ihre Motivation im Wirtschaftsunterricht.

Im Wirtschaftsunterricht der letzten zwei Wochen…

	Trifft gar nicht zu	Trifft wenig zu	Trifft teils-teils zu	Trifft ziem lich zu	Trifft völlig zu
…hatte ich keine Lust, etwas zu tun.	○	○	○	○	○
…versuchte ich mich zu drücken.	○	○	○	○	○
…war mir alles egal.	○	○	○	○	○
…habe ich nur durch Druck von außen (Lehrer, Eltern usw.) etwas getan.	○	○	○	○	○
…habe ich nur etwas getan, wenn der Lehrer mich dazu aufgefordert hat.	○	○	○	○	○
…habe ich mich nur angestrengt, um keinen Ärger zu bekommen.	○	○	○	○	○
…versuchte ich alles so zu erledigen, wie es von mir erwartet wurde.	○	○	○	○	○
…machte mir das Lernen/Arbeiten richtig Spaß.	○	○	○	○	○
…faszinierten mich Sachen so, dass ich mich voll einsetzte.	○	○	○	○	○
…verging die Zeit wie im Flug.	○	○	○	○	○

Welche Aussagen treffen auf Sie zu?

	Trifft gar nicht zu	Trifft wenig zu	Trifft teils-teils zu	Trifft ziem lich zu	Trifft völlig zu
Mit Fragen der Wirtschaft beschäftige ich mich in meiner Freizeit.	○	○	○	○	○
Zu sehen, was in der Wirtschaft passiert, finde ich spannend.	○	○	○	○	○
Es ist mir persönlich wichtig, wirtschaftliche Zusammenhänge zu verstehen.	○	○	○	○	○

Könnten Sie sich vorstellen, ein Unternehmen zu gründen? Dazu hier noch zwei Fragen:

Ich habe **momentan** die Absicht, allein oder mit anderen zusammen ein Unternehmen zu gründen:

❑ja ❑ nein

Ich habe **zukünftig** die Absicht, allein oder mit anderen zusammen ein Unternehmen zu gründen:

❑ja ❑ nein

Falls Sie eine der beiden Fragen mit „ja“ beantwortet haben, beantworten Sie bitte noch die folgenden fünf Fragen (bitte jeweils nur ein Kästchen ankreuzen):

Wie schwer glauben Sie wird es sein, ein Unternehmen zu gründen?

Sehr schwer ◄——————————————————► sehr einfach

❑ ❑ ❑ ❑ ❑

Wie sicher sind Sie, Erfolg zu haben?

Sehr sicher, erfolgreich zu sein ◄——————————————————► sehr sicher, zu scheitern

❑ ❑ ❑ ❑ ❑

Wie sehr denken Sie, werden Sie überarbeitet sein?

Sehr überarbeitet ◄——————————————————► überhaupt nicht überarbeitet

❑ ❑ ❑ ❑ ❑

Wissen Sie genug über eine Unternehmensgründung?

Ich weiß alles ⟷ ich weiß nichts

❑ ❑ ❑ ❑ ❑

Wie selbstsicher fühlen Sie sich dabei?

Sehr selbstsicher ⟷ Sehr unsicher

❑ ❑ ❑ ❑ ❑

Zum Schluss noch einige Daten zu Ihrer Person:

Ihr Geschlecht?

○ Weiblich
○ Männlich

Wie alt sind Sie?

Welche Schulform besuchen Sie?

○ Gymnasiale Oberstufe in einer Gemeinschaftsschule
○ Allgemeinbildendes Gymnasium
○ Berufliches Gymnasium

Welche Klasse/Stufe besuchen Sie aktuell?

Verraten sie mir bitte noch Ihre Zeugnisnoten des letzten Schuljahres für die folgenden Fächer?

Mathematik……

Deutsch……

Geographie/Wirtschaft/Gemeinschaftskunde……

Wirtschaft……

Vielen Dank für Ihre Mitarbeit!!!!!

Ute Grewe M.A.
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