Preparing Leaders for Strategic Sustainable Development: A Case Study of the Teach for Austria Leadership Education

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Abstract:
There is an urgent need to have leaders who are able to strategically transition society towards sustainability. Evidence shows that challenges are mounting up and become increasingly complex. Education for Sustainable Development (ESD) aims to educate leaders to become competent to lead within the sustainability challenge we are facing. This thesis explores how leadership education can prepare teachers to become leaders to enable Strategic Sustainable Development (SSD). Based on interviews with ESD experts, the research team identified eight key competencies for leaders to enable Strategic Sustainable Development and eight pedagogical approaches to train such competencies. In addition to that, the research team analyzed how the case study organization Teach for Austria (TFA) integrates the identified key competencies and pedagogical approaches. Recommendations are provided indicating TFA’s opportunities regarding a more thorough integration of the key competencies and pedagogical approaches into their leadership education. These recommendations were then made relevant to the broader leadership education context to prepare teachers to lead. The main outcomes of this thesis intend to serve as a guidance to enable leadership the world needs.

Keywords:
Leadership Education, Education for Sustainable Development (ESD), Key Competences for ESD, Pedagogical Approaches for ESD, Framework for Strategic Sustainable Development (FSSD), Teach for All
Statement of Contribution

We, Alejandra, Jana, Marc and Sophie, co-created our thesis with excitement, respect, honesty and willingness to learn. Our personal journeys and passion in the field of education shaped our collective drive to go deep and achieve our desired outcomes. With shared commitment, we followed our motivations, areas opportunities, strengths and desires to equally divide roles; realizing that we complemented each other in many ways. We inspired each other by sharing ideas, creating proposals and translating them into our thesis. We intentionally created a learning culture to embody the learnings about leadership and integrate a deeper level of ‘experiencing & knowing’ the work we were doing research about. Grounded in a practice of trust and empowerment, we experienced gratefulness towards each other.

Alejandra contributed by thinking critically about our research, constantly questioning our purpose and taking the big picture into account; thereby, greatly improving the quality of our thesis. Her easy-to-read storyline writing talents contributed to translating our work into clear and passionate writing. She contributed to the red thread of the introduction and discussion polishing final details to make sure there was a comfortable flow for the reader. Her sense of calmness and peace supported the team’s wellbeing and a healthy perspective. She welcomed trust and flexibility into the team. Her love and care helped shape a thriving team culture.

Jana contributed with an eagle perspective implementing emerging plans and ideas. Her eye for detail was key as she quickly identified blind spots and created transparency for our shared mental models. Having experienced the TFA training herself she was a key contact for the recruitment of interviewees and communication with Teach Austria. Jana held the overall red thread of the whole thesis paper; always pursuing the integration of the parts into one excellent whole. Jana was a role model with her dedication and proactivity, bringing academic rigor and writing skills. Her well-developed empathetic and cognitive qualities were highly valued.

Marc contributed with his can-do mentality, flexibility and openness to learn. His ability to stay calm and thrive under pressure was highly appreciated by the research team. His abilities to critically reflect on the ‘why’, and connecting the dots contributed to a high-quality convergence of discussions. He contributed with his technical skills with digital tools being a key asset for the thesis. Marc’s transparency and kindness were a grounding energy for the team. His simple and practical approaches to tasks brought an important balance to the team. Additionally, his passion for the research field was highly valued.

Sophie contributed her strong organizing and hosting skills to structure our collaborations well and move through them with ease, lightness and effectiveness. She continuously invited, empowered and challenged us to go out of our comfort zones, helping us all grow in different aspects. Sophie contributed with her out of the box mindset, holding responsibility of designing interviews, reaching out to contacts, structuring data results and other parts within the thesis. Sophie’s abilities to be productive, proactive and synthesize complex information into clear, simple and creative ideas was key. Her warm and loving approach was essential.
Acknowledgements

We, the research team, would like to express our gratitude to all of you who are reading this thesis. We hope this is a learning experience with inspiration and drive to apply the learnings in your own context. We are grateful for everyone we interacted with throughout the journey, those who listened to our passion, asked us questions and gave us inspiration on how to move forward. Thank you all.

Jayne Bryant, you were our primary advisor. We jumped in the air with excitement when we heard that we had the honor and joy to explore our thesis adventure with you. We enjoyed every conversation, smile, advise, and support you gave us. Your empathy and trust filled us with peace throughout the journey. Your horizontal, human-to-human approach helped us learn on many levels. We felt truly seen and empowered by you, thank you Jayne.

Merlina Missimer, thank you for being our secondary advisor. You were our sparring partner when extra clarity and support was needed. We are grateful for your expertise within the ESD field and the academic skills you possess. Your academic advice and sharp lens on our work were received with high gratitude, thank you.

Rebecca Laycock, we felt so lucky for the one-on-one and group conversations, teaching lessons and extra support you gave us. Experiencing how you combine your creative and academic qualities and observing how you are just being you in the academic world is a real gift and inspiration. It gave us guidance and freedom to be ourselves. Thank you, Bekki.

MSLS staff, what a team you are! Thank you for living up to a new paradigm of teaching. Your unconditional support and willingness to be our friends make MSLS flourish. We are grateful for having you, for your dedication to balance all the different needs and qualities that are needed within MSLS. You have empowered us to live the transformative journey that has truly shaped the quality of this thesis. Thank you.

MSLS peers, dear brothers and sisters who are rocking on this planet to make it a better place. Thank you for all the laughter, tears, walks, conversations, and activities that nurtured us. We are so grateful to have lived and learned together with you. The sense of community that we feel with you has shaped us as human beings highly influencing our thesis. Thank you.

TFA, thank you for saying “yes” to us! We are deeply grateful for your willingness and openness to work with us. Thank you for hosting us in Austria, for treating us kindly and gifting us precious time meeting and interviewing you. Experiencing TFA personally was one of the biggest highlights of our thesis journey. Your honest and insightful input was fundamental for the quality of our thesis. Thank you.

Walter Emberger, inspiring founder of TFA, thank you for taking your time to meet and support us on several occasions, to share your passion and dedication for TFA. Each moment with you was a spark of inspiration, thank you.

ESD Experts, interviewed participants, thank you for sharing your experience, knowledge and passion. Meeting you and listening to you strengthened our personal relation and passion towards our thesis and ESD as a research field. We hope to stay in touch with you. Thanks for creating such valuable work for the world and for giving us a glimpse into it.
Arnim Wiek, thank you so much for being such a key asset to our research! Your openness, warmth and willingness to support us personally shaped many steps in our thesis journey. You were an engine for us to move forward. Thank you, Arnim.

Life in general, thank you for the opportunity to feel joy and passion in such a deep process of growth. We are grateful to have lived a meaningful project, to keep nurturing the energy of life!

With Gratitude & Love to you all,

Alejandra, Jana, Marc and Sophie
Executive Summary

Introduction

Today, human beings are the only species that act against their own survival, damaging their life supporting system (Steffen et al. 2004); the socio-ecological system composed of society and the biosphere (Berkes and Folke 1998). The Earth’s natural ability to regenerate is being threatened through deforestation, antropological greenhouse gas emissions and the production of toxic chemicals, harming all living species (Robért et al. 2018); especially human beings (IPCC 2014). This current unsustainable societial design and the obstacles that occur in the transition towards a sustainable future are known as the sustainability challenge (Hjorth and Bagheri 2006). Antonio Guterres, Secretary General of the United Nations, calls for leadership to take action. Broman and Robért claim that the sustainability challenge is a question of whether “there will be enough leaders in time” (Broman and Robért, n.d.). Henry Kissinger, described a leader’s mission is to bring people from the place where they are to the place they have never been (Peleg 2013). As the sustainability challenge is global (Withaus 2012), we need to collectively decide what that place looks like (Senge 2005). The research team recognizes a critical leadership challenge within the sustainability challenge; understanding leadership as the ability to facilitate a collective transition towards sustainability. This thesis aims to address the sustainability challenge by contributing to solving the leadership challenge.

It can be argued that education is at the core of sustainable development (SD). Education means to support and guide learning processes (Barth and Michelsen 2013) and SD requires a collective learning process (idem.). The term Education for Sustainable Development (ESD) refers to building on people’s capacities to challenge the system and co-create a desired sustainable society (Barth and Michelsen 2013). Some key considerations of ESD are that it is value-driven and ever-evolving and therefore must allow for the development of competencies rather than a mere acquirement of knowledge (Barth and Michelsen 2013). Several authors have stressed the importance of competencies for SD (Wiek, Withycombe, and Redman 2011; Wals 2010). In this thesis the term ‘key competencies’ is used for that function. In the search of identifying key competencies for leaders to enable the transition towards sustainability, the research team used the Framework of Sustainability Research and Problem-Solving Competence (referred to as FSRPSC) as a base. In this thesis the term ‘pedagogical approach’ refers to how we learn and teach in the field of SD. There is currently a research gap on.

In this thesis, the research team gives recommendations on how key competencies for Strategic Sustainable Development (SSD) and pedagogical approaches can be integrated into an existing leadership education, in order to enable leaders to lead towards SD in a strategic way. The research team worked with Teach for Austria (TFA) as a case study organization. TFA is an Austrian non-profit organisation that promotes educational equality within Austria by educating teachers and is part of the international umbrella organisation Teach for All. To identify which key competencies and pedagogical approaches can prepare leaders to enable SD strategically, the research team used two frameworks: The Framework for Strategic Sustainable Development (FSSD) and the Framework of Sustainability Research and Problem-Solving Competence. The FSSD provides a systems perspective about the complex dynamics of sustainability challenges and allows to strategically approach opportunities to solve them. The Framework of Sustainability Research and Problem-Solving Competence includes five key competencies, which are considered essential for change agents in the realm of SD.
The intention of this research is to provide a recommendation to TFA and other leadership educations on how key competencies and related pedagogical approaches could be integrated. The primary research question (PRQ) and the secondary research questions (SRQ) are:

**PRQ:** How could leadership education prepare teachers to become leaders for strategic sustainable development?

**SRQ1:** What are key competencies for leaders to enable strategic sustainable development?

**SRQ2:** Which pedagogical approaches support the development of these key competencies?

**SRQ3:** How can these key competencies and pedagogical approaches be integrated into the TFA leadership education?

**Methods**

For this qualitative thesis, the research team worked together with TFA as a case study and experts in the field of ESD. The main source of the data collection were semi-structured interviews. As a pre-phase for designing and conducting the semi-structured interviews, the research team reviewed TFA documents and mapped the framework of sustainability research and problem-solving with the first three levels of the FSSD. This surfaced the gaps of the framework and provided inspiration for the semi-structured interviews.

10 semi-structured interviews were conducted with experts who are active in the field of ESD and holds different levels of expertise according to the SSD concepts. 20 semi-structured interviews were conducted with different stakeholders of TFA such as the founder, 8 trainers and 11 fellows. The interviews averaged a one-hour length and were transcribed. The research team received validation from the interviewees for their data to be used for the results of this thesis. The data from the semi-structured interviews was coded into two main overarching topics: key competencies and pedagogical approaches. First open and later axial coding methods were used to analyse the data into categories to answer the SRQs.

Literature Review was used as a background study to receive a general impression on what is currently there in the research field and to support the results from the semi-structured interviews. Simultaneously, documents of the TFA leadership education were analysed to
receive a better understanding on how the current TFA curriculum and education system currently function.

The recommendation for TFA and other leadership education emerged out of an integration of the results into the FSSD. To strengthen the validation and implementation of this strategic guidance, feedback from the founder of TFA, ESD researcher Arnim Wiek, TFA trainers and other ESD researchers were integrated in order to add rigor to the research results.

Results

SRQ1: Key Competencies for Strategic Sustainable Development

The review of the FSRPSC and the interviews with ESD experts resulted in the conclusion that eight key competencies are essential for SSD. The systems thinking, strategic, anticipatory, normative, interpersonal and integrated problem-solving competences emerged from the literature (Wiek. Withycombe, and Redman 2011; Wiek et al. 2015) and were considered to be essential by ESD experts. The intrapersonal and the implementation competences were found to be overarching additions to the FSRPSC.

Several interviewees see the need for an intrapersonal competence1 (I26, I23, I30, I25, I27). Suggested topics within this competence are how to deal with conflicts on the inside (I23, I25), emotional competence (I26) or critical emotional awareness (I25), self-care (I30), resilience (I27) and the ability to transform oneself (I23). The implementation competence was suggested by ESD experts as well (I26, I30). I30 criticized the strong focus on the thinking part of the FSRPSC; mentioning a need to add a competence focused on implementation. I26 mentioned the importance of hands-on skills and learning how to act. Additionally, Rieckmann talks about the importance of being able to plan and realize innovative projects (Rieckmann 2012).

Based on the data presented above, the research team designed an extension to the FSRPSC naming this the Framework of Key Competencies for SSD. This shows the relevance for the key competences for SSD in the transition towards sustainability; indicating the intrapersonal competence is overarching.

SRQ2: Pedagogical Approaches in support of these Key Competencies

The interviews with the ESD experts resulted in eight pedagogical approaches which can likely enable the development of the key competencies for SSD. Lifelong learning is a main aim of ESD (UNESCO 2014, 2009) and focuses on “learning to learn” with e.g. the abilities to “organise one’s own learning” and the “awareness of one’s learning process and needs” (The European Parliament and The Council of the European Union 2006). Social learning encompasses to learn through interacting with other human beings (Lipman 2011) and builds on the fact that more people possess far more knowledge and skills than one individual (Morgan 2009). Problem- / project-based and solution-oriented learning can be used to address real-life

1 The term 'intrapersonal competence' aligns with ongoing research being conducted at Blekinge Institute of Technology (BTH) and is consistent with the language used by the MSLS (Master’s in Strategic Leadership towards Sustainability) program team.
problems (Missimer and Connell 2012), enhance student engagement (Beringer 2007) by providing them opportunities to put their knowledge and skills into practice. **Active and experiential learning** puts an emphasis on the participation and responsibility of the learners for their own learning (Domask 2007). Students are engaged (Dengler 2008) and are learning by doing (Domask 2007). **Empowerment** can be understood as enabling someone to act (Global Action Plan 2009). The learners must feel that even though the sustainability challenge is big and complex, there is a chance to act. Therefore, education must be enabling and there is a need for a positive approach (Evitts, Seale, and Skybrook 2010). **Transformative learning** develops students autonomous thinking and empowers them to make their own interpretation of reality (Mezirow 1997). It allows for a change in deep values and beliefs (Sterling 2010). **Dialogue education** is designed to learn from each other by sharing life experiences (Vella 2002). **Theoretical learning** is an important basis (I21, I27) for other ways of learning by sharing theoretical content through e.g. holding lectures.

**SRQ3: Integration into the TFA leadership education**

The thorough analysis of TFA has shown that the organization is developing all of the mentioned competencies in one way or another and makes use of all of the suggested pedagogical approaches. Nevertheless, the research team provides TFA with a recommendation on further integration of the key competences and pedagogical approaches.

**Discussion**

**Recommendation for TFA structured with the FSSD**

<table>
<thead>
<tr>
<th>Potential Areas of Growth</th>
<th>Actions</th>
<th>Expected Outcome</th>
</tr>
</thead>
</table>
| **Systems level**         | 1. Stronger collaboration and communication with parents and other school teachers.  
2. Further development of the systems thinking competence.  
3. Incorporation of content knowledge about the socio-ecological system. | **1. Raise awareness and understanding of the socio-ecological system and empower fellows to become system leaders, fostering a transition towards sustainability.  
2. Fellows are prepared to have a positive impact on the systems level in the long term, even after their time with TFA.** |
| **Success level**         | 1. Integrate the key competencies for SSD into TFA’s current competency-based approach.  
2. Integrate sustainability within the vision of success through the integration of the 8 Sustainability Principles (explained in appendix). | **1. Fellows become long-term system leaders towards sustainability.  
2. TFA stakeholders become more aware of the sustainability challenge and take actions that are aligned with the sustainability boundary conditions.** |
| **Strategic Guidelines Level** | 1. Collectively backcast from the vision; mainly from the key competencies for SSD and the 8 SPs.  
2. Clearly and recurrently state the competences that are being learned to add consistency throughout the two-year program. | **1. A red thread and added consistency to competence development that supports the fellows’ learnings by helping them associate their experiences with clear and tangible outcomes.  
2. Fellows are able to transfer learning out of TFA context and to their future alumni work.** |
<table>
<thead>
<tr>
<th>Actions, Tools &amp; Methods Level</th>
<th>1. Provide information and examples on how TFA learnings can be used out of TFA context.</th>
<th>1. A stronger community of well-being where the support system for fellows is strengthened.</th>
<th>2. A more thorough development of competences for TFA fellows and trainers.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Developing the intrapersonal competence.</td>
<td>2. Experiencing connection with the socio-ecological system.</td>
<td>3. Adding diversity and guidance to group conversations.</td>
<td></td>
</tr>
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</table>

**PROQ: Applicability for other leadership programs**

The applicability of our case study to the larger field of leadership education is mainly targeted towards other leadership programs that prepare teachers to become the leaders this world need. The systems, success and strategic guidelines levels, shown above in Recommendation for TFA, are applicable for other leadership programs. We recommend leadership education to support multiple layers of the system, including the larger socio-ecological system. Furthermore, we suggest to collectively, including all stakeholders, develop a shared vision as the success level; integrating the key competences for SSD. As recommendations to prioritize actions for implementation, we propose to incorporate backcasting methods to relate actions to the bigger vision and also to have consistent competence development throughout the whole leadership programs.

The actions, tools and methods level is specifically tailored for TFA; however, it can be taken as an inspiration. In general, we recommend to adopt and use multiple pedagogical approaches found in this thesis parallely, in support of the development of the key competences for SSD. We also emphasize on creating diverse learning environments, including the interaction with nature and the collaboration of people with different backgrounds, values and worldviews. Two major topics that hold great opportunities for further research are the importance of the trainer and competence assessment.

**Conclusion**

This thesis provides a theoretical framework of eight key competences for SSD: Systems thinking, Strategic thinking, Anticipatory, Normative, Interpersonal, Integrated Problem-Solving, Intrapersonal and Implementation competence that should be developed in leaders to move society strategically towards sustainability. Furthermore, eight pedagogical approaches; Life Long Learning, Social learning, Problem- / Project-Based and Solution-Oriented Learning, Active and Experiential Learning, Empowerment, Transformative Learning, Dialogue Learning and Theoretical Learning, were suggested to develop the key competences to prepare leaders for strategic sustainable development.
Glossary

**Backcasting:** Backcasting is a strategic planning approach where a future vision based on scenarios or principles is developed and then measures are defined to step-by-step reach this future vision.

**Competencies:** The term competencies can be defined as skills, knowledge and attitudes.

**Education for Sustainable Development (ESD):** ESD is Education that fosters the development of competencies in learners, which are considered necessary for successful Sustainable Development.

**Framework for Strategic Sustainable Development (FSSD):** The FSSD is a scientifically rigorous conceptual framework designed to support society’s transition towards a sustainable society. It includes a definition of sustainability based on the mechanisms of destruction which are causing both ecological and social unsustainability, and a process supporting systems change, which is based on backcasting from these principles.

**Key competencies:** Key competencies are skills, knowledge and attitudes that are understood to be essential for leaders to enable successful Sustainable Development.

**Leadership challenge:** Enabling the leadership paradigm shift from individual to collective leadership and supporting human development to live up to this definition (the ability to facilitate a collective transition towards sustainability).

**Nested socio-ecological system:** A system that consists of the biosphere, the human-made society as well as their complex interactions. The term “nested” takes into account that society can only exist within the functioning ecological system.

**Pedagogical Approach:** A pedagogical approach is a way of enabling learning. It oftentimes consists of a multitude of different methods supporting the competence development of the learner.

**Sustainability challenge:** Today’s society is confronted with many connected social and ecological challenges which suggest that we are on an unsustainable path. These challenges stem from the way our societal systems have been designed and their negative impacts are increasing systematically. These developments are continuously weakening the capacity of the socio-ecological system to recover.

**Sustainable Development (SD):** SD is a term first named in 1987 by the Brundtland Commission report which defined SD as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”.

**Strategic Sustainable Development (SSD):** Fostering Sustainable Development while being strategic when choosing from different possible actions in order to move towards a more sustainable future (i.e. by using strategic guidelines such as backcasting).

**Sustainability Principles (SPs):** The eight SPs are principles developed based on scientifically rigorous research, defining the mechanisms of destruction, which cause unsustainability. They aim to be a guidance to prevent the further degradation of the socio-ecological system.
**Systems thinking:** Systems thinking is a way of perceiving the world without separating it in smaller parts. Instead, the observer focuses on the interactions between different complex systems in order to understand systems behavior.
List of Abbreviations

5LM: Five Level Model

ESD: Education for Sustainable Development

FSRPSC: Framework of Sustainability Research and Problem-Solving Competence

FSSD: Framework for Strategic Sustainable Development

IPCC: Intergovernmental Panel on Climate Change

OECD: Organization for Economic Co-operation and Development

SD: Sustainable Development

SDGs: Sustainable Development Goals

SSD: Strategic Sustainable Development

SPs: Sustainability Principles

TFA: Teach for Austria

UN: United Nations

WCED: World Commission on Environment and Development
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1 Introduction

1.1 The Sustainability Challenge

For decades, human beings have been acting against their own survival in an accelerating manner, damaging their life supporting system (Steffen et al. 2004); namely the socio-ecological system composed of society and the biosphere (Berkes and Folke 1998).

Since the industrial revolution, society has grown significantly, having an increasing impact on the functioning of the Earth’s system, particularly the climate (Steffen et al. 2004). Human activities are estimated to have caused approximately 1.0°C of global warming above pre-industrial levels (Masson-Delmotte et al. 2018). This is likely due to the burning of large amounts of fossil fuels, which results in continuous emissions of greenhouse gases. The Earth’s natural ability to regenerate is being threatened through deforestation and the production of toxic chemicals (Robêt et al. 2018), harming all living species; including human beings (IPCC 2014). According to the latest IPCC (Intergovernmental Panel on Climate Change) report, people with disadvantaged and vulnerable conditions face disproportionately higher climate-related risks. Limiting the human activities mentioned above could reduce the number of people susceptible to poverty by up to several hundred million by 2050 (Masson-Delmotte et al. 2018). Inequality, disease, malnutrition and lack of education (UNCED 1992) are some of the interconnected issues society is facing.

Availability of raw materials is shrinking as they are consumed in significant amounts by human societies (Bontempi 2017). It is likely that room to maneuver towards sustainability will further decrease while the human population will continue to grow and further drive resource consumption (Bradshaw and Brook 2014). Thus, it can be argued that society is on an unsustainable path, which cannot be continued. This current unsustainable societal design and the obstacles that occur in the transition towards a sustainable future are known as the sustainability challenge (Robêt et al. 2018). The challenge must urgently be addressed (Masson-Delmotte et al. 2018).

In order to effectively address the sustainability challenge, its high degree of complexity must be taken into account (Hjorth and Bagheri 2006). A system is more complex if more parts can be distinguished and more connections between them exist (Briceno 2006). Because of the multitude and highly interconnected parts within the socio-ecological system, it can be argued that it is not sufficient to address the different aspects of the challenge separately; it must be addressed in a systematic way (Hjorth and Bagheri 2006).

Antonio Guterres, Secretary General of the United Nations, lately highlighted that it is not too late to change directions. He called for leadership from politicians, businesses, scientists and civil society (United Nations 2018). Scientists have been broadcasting several of the above-mentioned information for decades. The technology and tools to make human actions towards sustainability effective are available. However, global leaders have so far refused to act (United Nations 2018). Broman and Robêt would agree that the sustainability challenge is a question of whether “there will be enough leaders in time” (Broman and Robêt, n.d.).

Leadership can be defined in many ways. Historically, leadership has been mostly associated with politics, the economy and the military (Peleg 2013). Henry Kissinger, an influential
American statesman, said that “a leader’s mission is to bring people from the place where they are to a place where they have never been” (Peleg 2013). This ideology has shaped the society we live in today; placing an emphasis on the power of a single person who carries the weight of bringing people to the place they alone envision (Hobbes 1996).

This perspective does not take the complexity of the sustainability challenges into account, where the knowledge and skills of many are needed to find the most suitable solutions (Kahane 2000; Senge, Hamilton, and Kania 2015). Therefore, as the society is redesigned, leadership must also be redefined. Considering the interconnectedness of the sustainability challenge (Broman and Robért 2015) and the need for everyone to take responsibility, leadership that is participatory, collaborative and seeks to get everyone on board is crucial (Senge 2005). Hence, we, the research team, understand leadership as the ability to facilitate a collective transition towards sustainability. This being said, we recognize a critical leadership challenge within the sustainability challenge. We associate the leadership challenge with the difficulties related to enabling leaders to live up to this definition. This thesis aims to address the sustainability challenge by contributing to solving the leadership challenge.

1.2 Sustainable Development and the need for a strategic approach

Sustainable Development (SD) is a term of many definitions. The World Commission on Environment and Development (WCED) was the first to use it in a public paper in 1987 and, thereby, brought about what is now commonly known as the Brundtland definition (Redclift 2005). It considers SD as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED 1987). This definition implies that SD is a balancing act that comes with making compromises between enabling a flourishing life for current generations and sustaining resources for later generations. However, it does not give any concrete information on what must be done in order to live up to this idea, but rather obscures the complexity of the sustainability challenge (Redclift 2005).

To gain more clarity on how SD can be pursued, several tools and concepts have been created; and agreements on common aims have been made. The Paris Climate Agreement of 2015, for example, was signed by almost all countries in the world. It calls for action to tackle climate change together, agreeing to “limit the temperature increase to 1.5 °C above pre-industrial levels” (FCCC 2015). Another well-known SD endeavor are the United Nations’ 17 Sustainable Development Goals (SDGs), which have been adopted by all UN member states. They e.g. strive to eliminate poverty, foster climate action, and promote a more sustainable economy (United Nations 2015). These ambitions, which are supported by many influential individuals, countries and organizations have proven useful to raise attention for sustainability issues (Sachs et al. 2017). However, there is a call for a new approach, “which goes beyond just recognizing the interdependency among social, environmental and economic goals” (Kumi, Arhin, and Yeboah 2014). The SDGs and the Paris Climate Agreement “require a new orientation of strategy and national planning” (Sachs et al. 2017). There are arguments that the SDGs have a sectoral perspective, which does not take into account their actual interrelatedness and interdependence. Thus, a more embedded approach is required to avoid trade-offs in the achievement of the SDGs and to address all of them fully (Boas, Biermann, and Kanie 2016).

To take the complexity of the sustainability challenge and the urgency of its implications into account, it can, thus, be argued that a strategic approach is needed for successful SD. Strategic in this sense can be understood as creating coordinated responses to the challenge, thereby
choosing wise actions based on a well-thought-out planning process, which takes system relationships into account (Robèrt et al. 2002). Such coordinated responses can prevent unintended consequences of SD efforts (K.H. Robèrt et al. 2018). Hence, the research team aimed to pursue SD from such a strategic lens. To do so, the Framework for Strategic Sustainable Development (FSSD) was used as a conceptual framework. The FSSD is explained in detail in chapter 1.5.1.

1.3 Education for Sustainable Development

It can be reasoned that education is at the core of SD. Learning can be defined as a process that enables long-term changes in behaviors of individuals (Barth and Michelsen 2013); this means the concepts of change and learning are closely interlinked. Since the sustainability challenge calls for a deep collective change in behavior (Cagle and Hutton, n.d.), SD requires a collective learning process. Education means to support and guide learning processes (Barth and Michelsen 2013). Therefore, because SD is a process of change and education is what supports that, it can be argued that education is at the core of SD. That being said, it is important to understand what is happening with Education for Sustainable Development (ESD) at the global scale.

There are different paradigms built around the concept of ESD (Sterling 2010). One is to look at it as education in sustainability. Here, sustainability is incorporated as a topic within education and factual information is provided (Barth and Michelsen 2013). Another is to integrate it as education for sustainability. In this approach, education emphasizes the aspects of learning that enhance the transition towards sustainability. Here, ESD advocates for the learning needed for sustainability, promoting individual and collective action. The latter paradigm acknowledges ESD as an opportunity to build on people’s capacities to challenge the system and co-create a desired sustainable society (Barth and Michelsen 2013). In this paper, the second approach is meant when ESD is referenced.

Some influential ESD approaches include the ones taken by the United Nations and the OECD. In Chapter 36 of Agenda 21 the United Nations portrays their main objectives for ESD. These include (1) improving universal access to basic education, (2) achieving public awareness and understanding of environmental and development needs in all societal sectors, (3) making environmental and development education programs accessible to all starting at primary school and (4) integrating environmental and development concepts into all existing educational programs (UNCED 1992). On the other hand, the OECD launched the Future of Education and Skills 2030 project where they seek to answer two main questions: “What knowledge, skills, attitudes and values will today's students need to thrive and shape their world?”, and “How can instructional systems develop these knowledge, skills, attitudes and values effectively?” They acknowledge education can make the difference as to whether people embrace the challenges they are confronted with or they are defeated by them (OECD 2018).

Some key considerations of ESD are that it is value-driven and ever-evolving; therefore, it must allow for the development of skills rather than a mere acquirement of knowledge (Barth and Michelsen 2013).

1.3.1 Leadership Education as a Leverage Point for Sustainable Development

Within ESD, leadership education plays an important role (Missimer and Connell 2012). As highlighted above, leaders must acquire the necessary skills, knowledge and attitudes to support
the transition towards sustainability. Leaders need to go through learning processes that enable them to facilitate the collective behavioral change needed. Shaping mental models of leaders is a critical leverage point in creating a sustainable society (Dyer and Dyer 2017).

In this sense the research team places an emphasis on leadership education. As reasoned above, rather than merely providing knowledge, leadership skills shall be developed to enable a transition towards sustainability.

1.3.2 Competence-Based Education for Sustainable Development

A competencies development approach to education can support effective learning (Mochizuki and Fadeeva 2010). This can be understood as learning that is able to be used in new situations. According to O’Sullivan et al. a competent person is one who possesses the knowledge, skills and attitudes required to perform effectively in an activity or task (O’Sullivan and Burce 2014). Competence-based education is focused on the ability to act and perform rather than the ability to recall information; it moves forward from theory based academic structures to performance-oriented learning (O’Sullivan and Burce 2014).

A competence-based learnings approach can be useful within the sustainability context. It promotes a learner-centered approach with ways to engage in problem-solving through gaining the ability to act in a meaningful way (Mochizuki and Fadeeva 2010). It also helps derive alternative goals for change processes respecting the autonomy of the individual and societal needs; promoting collective capacity to actively participate in transformational processes (Barth and Michelsen 2013). Thus, several authors have stressed the importance of competencies for SD, which can act as a guidance for the design of academic programs (Wiek, Withycombe, and Redman 2011; Wals 2010).

Literature names various definitions of competencies relevant for sustainability problem-solving; in this thesis the term “key competencies” is used for that function. The research team defines “key competencies” based on the chosen definition by Wiek et al. (2011) as “functionally linked complexes of knowledge, skills, and attitudes that enable successful task performance and problem solving with respect to real-world sustainability problems, challenges, and opportunities” (Wiek, Withycombe, and Redman 2011). The term key competencies is specifically defined as being crucial for sustainability efforts, meaning they can be distinguished from competencies relevant for any other academic field (Wiek, Withycombe, and Redman 2011).

In the search of identifying key competencies for leaders to enable the transition towards sustainability, the research team used the Framework of Sustainability Research and Problem-Solving Competence (FSRPSC) as a base² (Wiek, Withycombe, and Redman 2011). This framework is explained in detail in the next chapters.

1.3.3 Pedagogical Approaches for Sustainable Development

The UN Decade of Education for Sustainable Development (DESD) has taken a renewed approach placing attention on how we learn and teach about SD, rather than only on what we

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² A rationale for choosing this framework can be found in the conceptual frameworks chapter.
learn and teach (Missimer and Connell 2012). The term “pedagogy” can be defined as “the art, occupation or practice of teaching” (Oxford English Dictionary 2019). In this thesis the term “pedagogical approach” refers to how we learn and teach in the field of SD.

There is an increasing focus on determining which pedagogical approaches are supportive to develop skills, attitudes and knowledge for leaders in SD (Missimer and Connell 2012). It is acknowledged that there is no one correct pedagogy that should be used for ESD. To be able to accomplish high quality education for SD, it is crucial to combine different pedagogical approaches using a multi-method approach (UNESCO 2006).

Currently there is limited amount of research that focuses on the connection between how pedagogical approaches are delivered and how they may influence ESD competencies (Lozano et al. 2017). What isn’t often found either is a systematic approach to the development and use of ESD pedagogical approaches (Lozano et al. 2017).

How learners see the world and their place within it, are often changing when experiencing ESD (Lozano et al. 2017). The pedagogical approaches used in educational spaces are key to determine if that is achieved. It is crucial to provide leaders with a holistic sustainability education (Dyer and Dyer 2017) and within this to support them to develop their mind-set and actions (Lozano et al. 2017). Therefore, it can be argued that pedagogical approaches are a key element to develop the leadership capacity needed to tackle the sustainability challenge.

1.4 Case Study: Teach for Austria

This paper aims to give recommendations on the integration of pedagogical approaches and key competencies into an existing leadership education for it to prepare leaders to enable SD in a strategic way. Teach for Austria (TFA), an Austrian non-profit organization that promotes educational equality in Austria (Teach for Austria 2018b) is the subject of this case study.

1.4.1 ESD in Austria

Since this thesis focuses on an Austrian organization, the Austrian context in relation to ESD is considered. Three federal ministries of Austria have agreed on six elements of the Austrian Strategy for Education for Sustainable Development in 2008: (1) Establishment within the education system, (2) Partnerships and networks, (3) Competence development among teachers, (4) Research and innovation, (5) Scenario development, (6) Monitoring and evaluation (Austrian Federal Ministry of Agriculture, Forestry, Austrian Federal Ministry for Education, and Austrian Federal Ministry of Science and Research 2008).

According to a report that evaluated Austrian achievements in the field of ESD between 2005 and 2014 (Bouslama et al. 2015) based on the above-mentioned aims, there is still room for improvement on integrating ESD in Austria. The concept has been integrated into teacher education curricula and several seals of quality for schools, which promote sustainability-awareness, have been created. However, experts state that achievements are not sufficient and that the efforts to integrate ESD in Austria must be continued (Bouslama et al. 2015).

1.4.2 The umbrella organization: Teach for All

TFA is part of the larger Teach for All global community. This constitutes a network of 48 independent partner organizations similar to TFA as well as a global umbrella organization,
Teach for All and its partner organizations work for the common purpose of expanding educational opportunities for all children to fulfil their potential. The global network spans six continents (Teach For All 2019). The organizations focus on developing leaders who teach in classrooms of “under-resourced communities” and sharing solutions across nations through the network (Teach For All 2019). Successful endeavors of the TFA organization could therefore have a ripple effect on other organizations within the Teach for All network.

Teach for All partner organizations claim that they recruit and select leaders (so-called “fellows”) from different fields of expertise who commit two years of teaching in schools where it is needed most. The fellows receive training and ongoing coaching to develop the mindset and skills needed to become advocates for their students. After the teacher experience, Teach for All partners aim to continue to enhance the alumni’s leadership by nurturing connections among them to further support their impact in the system. Informed and enabled by their experience as teachers, alumni work in many different sectors (i.e. as policy makers, entrepreneurs, teachers) to disrupt the status quo and change the education system in their countries for the better (Teach For All 2019).

The aim of Teach for All to support leaders in driving measurable impact strongly aligns with the objectives of ESD. As mentioned in 1.3.1, leadership education can be understood as a leverage point for SD. It can be argued that ESD on the other hand can be a leverage point in support of leadership as it can provide leaders with the competencies needed to make a systematic change. Therefore, ESD can support Teach for All to make their alums more effective system leaders.

1.4.3 Teach for Austria (TFA)

TFA regularly exchanges knowledge and experiences with the network and has implemented the above-mentioned practices (Teach for Austria 2018d). Their country-specific vision is that by 2050, “every child has the chance to live a good life, no matter how much money or education its parents hold” (Teach for Austria 2018c). They foster this vision by developing the leadership capacity in their fellows to empower them to change the education system for the better (Teach for Austria 2018a). The research team, therefore, considers TFA fellows as potential leaders who can foster systems change towards sustainability.

1.5 Conceptual Frameworks

1.5.1 The Framework for Strategic Sustainable Development

The Framework for Strategic Sustainable Development (FSSD) is the result of a 25 year-long scientific consensus process, which included experts and SD practitioners from various fields of expertise (Robèrt et al. 2018). The framework facilitates a thorough understanding of the dynamics of the complex sustainability challenge from a systems perspective as well as related opportunities for solving it. It does so by providing a unifying and operational definition of sustainability, namely the Sustainability Principles (SPs), which have been derived from society’s current mechanisms of destruction of the socio-ecological system (Robèrt et al. 2018). The eight sustainability principles read as follows:

In a sustainable society, nature is not subject to systematically increasing (1) concentrations of substances extracted from the Earth’s crust, (2) concentrations of substances produced by society, (3) degradation by physical means (Broman and Robèrt 2015); and, in that society,
people are not subject to structural obstacles to (4) health, (5) influence, (6) competence, (7) impartiality, (8) meaning-making (Missimer 2015).

These principles serve as boundary conditions for the (re-)design of organizational structures and activities to prevent negative impacts on the socio-ecological system (Robèrt et al. 2018).

Another key element of the FSSD is its four-step operational procedure. This is called the ABCD: First, a future vision of sustainability within the boundary conditions of the SPs is co-created by the stakeholders of the SD endeavor (A-step), then they analyze the current reality (B-step), brainstorm creative solutions to move from B towards A (C-step), and develop strategic guidelines to identify the most strategic actions (D-step).

The FSSD integrates the sustainability context into the structure of another framework named the Five Level Model (5LM) (Robèrt et al. 2018). The 5LM consists of five levels: system, success, strategic guidelines, actions and tools. Table 1 shows how the FSSD integrates its content into the 5LM.

<table>
<thead>
<tr>
<th>Level</th>
<th>5LM</th>
<th>FSSD</th>
</tr>
</thead>
<tbody>
<tr>
<td>System</td>
<td>Information about the relevant systems, subsystems and their interactions</td>
<td>Understanding of the overall socio-ecological system and the sustainability challenge</td>
</tr>
<tr>
<td>Success</td>
<td>Definition of what success for the organization, tool or concept in question means</td>
<td>SPs as boundary conditions</td>
</tr>
<tr>
<td>Strategic Guidelines</td>
<td>Definition of how actions can be strategically prioritized so that the vision can be reached effectively</td>
<td>Backcasting and a decision structure allowing for strategic prioritization incl. questions about whether the action is a flexible platform for further steps towards success, about the pace of progress and the return on investment.</td>
</tr>
<tr>
<td>Actions</td>
<td>Concrete actions, which can help move towards the desired vision</td>
<td>Actions that help move towards a sustainable society</td>
</tr>
<tr>
<td>Tools</td>
<td>Methods/tools that support the planning process</td>
<td>Tools that help move towards a sustainable society</td>
</tr>
</tbody>
</table>

Strategic Sustainable Development (SSD) is, thus, taking into account all of the above-mentioned concepts. However, in synthesis, SSD means fostering SD while being strategic when choosing from different possible actions in order to move towards a sustainable future (e.g. by using strategic guidelines). Therefore, SSD in this paper refers to the strategic approach to enable the transition towards sustainability.

The FSSD can also be used to assess other tools and concepts. When used in this way, it serves as a structuring model to identify the tools’ contributions and gaps in relation to SSD (Broman and Robèrt 2015). Using the FSSD as a conceptual framework allowed the research team to conduct a review of the FSRPSC (described in 1.5.2) to identify whether its key competencies are sufficient to enable leaders to foster SSD.
1.5.2 Framework of Sustainability Research and Problem-Solving Competence

Before diving into the specifics of the framework, it is important to give a rationale for why the authors chose it over others. To begin, it has received an outstanding amount of attention in academia since it was first published, having been cited more than 900 times\textsuperscript{3}. Furthermore, its main aim is not to provide a loose list of competencies for sustainability problem-solving, but rather an integrated research and problem-solving framework for sustainability that serves as an organizing concept for the key competencies (Wiek, Withycombe, and Redman 2011). The decision of using this framework is based primarily in its solidity and how it aligns with the research aim of this thesis; which is supporting leadership education in the transition towards sustainability. It served as a strong basis for analyzing the Teach for Austria leadership education. In the following chapters, this framework will be abbreviated and referred to as FSRPSC (Framework of Sustainability Research and Problem-Solving Competence).

In order to transition towards sustainability, the FSRPSC states that there is a need to analyze the current complex problems, create rich pictures of the future (both of an envisioned sustainable one and a predictably unsustainable one), and develop intervention strategies in order to move towards the sustainable rather than to the unsustainable future. The key competencies must be understood as linked to this notion. The five key competencies of the framework are systems thinking competence, strategic competence, anticipatory competence, normative competence and interpersonal competence (Wiek, Withycombe, and Redman 2011). Systems thinking is the ability to collectively analyze complex systems across different domains and scales, considering e.g. cascading effects, inertia and feedback loops. Strategic competence is the ability to collectively design and implement interventions, transitions, and transformative governance strategies toward sustainability. Anticipatory competence is the ability to collectively analyze, evaluate, and craft rich pictures of the future related to sustainability issues. Normative competence is the ability to collectively map, specify, apply, reconcile, and negotiate sustainability values, principles, goals, and targets. Interpersonal competence is the ability to motivate, enable, and facilitate collaborative and participatory sustainability research and problem-solving. This includes advanced skills in communicating, negotiating, collaborating, leadership, trans-cultural thinking, and empathy (Wiek, Withycombe, and Redman 2011).

\textsuperscript{3} According to a google scholar search on the 29\textsuperscript{th} of May it was cited 954 times.
The dotted arrows in Figure 2 indicate the relevance of each key competence for the components in the framework (Wiek, Withycombe, and Redman 2011). This implies that if the competencies are acquired, the person is able to navigate towards sustainability.

It is important to highlight that this chapter presents the original framework created in 2011; extensive work has been conducted on top of this original piece (Wiek et al. 2015). The reason the original framework was used is because this paper was found during early data collection and used for interview design. Research led the team to the 2015 paper which adds a sixth competence, the integrated problem-solving competence (Wiek et al. 2015), taken into account in the results of this thesis.

1.6 Research Questions and Scope

The intended outcome of this research is to provide recommendations to TFA specifically, and to leadership education for educators more generally, on how key competencies relevant for SSD and related pedagogical approaches could be integrated into leadership education for teachers. The focus on leadership education for teachers is due to the chosen case study organization and the related limitations regarding the validity of the results for other organizations. Therefore, this study focused on the following Primary Research Question (PRQ) and three Secondary Research Questions (SRQ):

**PRQ:** How could leadership education prepare teachers to become leaders for strategic sustainable development?

**SRQ1:** What are key competencies for leaders to enable strategic sustainable development?

**SRQ2:** Which pedagogical approaches support the development of these key competencies?

**SRQ3:** How can these key competencies and pedagogical approaches be integrated into the TFA leadership education?

The outcomes of this thesis are not limited to TFA as a successful integration of the recommendations may be shared within the Teach for All network. In addition, the outcomes may also be useful for other leadership educations focusing on preparing teachers to become...
leaders for SSD. They shall also be of value for ESD researchers and practitioners working on key competence development and pedagogical approaches. Lastly, leaders and individuals (perhaps you) who would like to develop their key competencies to enable SSD could find some interesting insights in this thesis as well.

It is an important aim of the research team to provide inspiration and clarity for the readers to take the results of this thesis into practice. The research team intended to create an educational piece for the reader in a simple and elegant manner.

The following areas were excluded from the scope. To answer SRQ3, TFA’s current competencies trained and pedagogical approaches used for the 2-year fellow program were investigated. This includes only TFA’s own activities, and not any other educational trainings fellows may have received in their schools. The information was provided by TFA’s founder, several trainers and fellows from the previous two cohorts. Alums and other staff members’ perspectives as well as the student voice were excluded from the scope.

1.7 Limitations

The following limitations need to be considered. Even though best practices may be shared among other members of the Teach for All network, the applicability of the research findings to other social and cultural contexts cannot be guaranteed, since the case study organization is only operating in Austria. Also, the research team focused on key competencies and pedagogical approaches for ESD. It is important to highlight that there is not one right answer to the research questions above. Lastly, in order to define the success of implemented pedagogical approaches, there is a need to also question how key competencies can be assessed. This thesis does not provide an answer to this question.
2 Methods

In this chapter, the methods used to answer the research questions are outlined. Semi-structured interviews were the primary source of data, accompanied by a background literature review, a content analysis of TFA documents and two unstructured interviews to receive and integrate feedback on the research results. Before the semi-structured interviews were conducted, the two conceptual frameworks, the FSSD and the FSRPSC, were reviewed in order to gain a first idea on whether the FSRPSC includes all competencies relevant for SSD and to inform the interview questions. Semi-structured interviews were transcribed and coded. TFA documents were used to support the coding process. More details about the research design can be found in the appendix (Appendix A: Maxwell’s Model for Qualitative Research Design amended, Appendix B: Research Design Map) of this thesis.

2.1 Data Collection

The data collection process of this thesis is shown in Figure 2.1 and explained in the following chapters below. The figure includes the different data sources used for this research and indicates whether the data was used as a primary source (semi-structured interviews) or as a secondary source (literature, documents). The white and black bubbles in the figure show for which research questions each data was used. The pre-phase took place before the interviews were conducted and supported the preparation of the interviews. The feedback phase took place after the results of the other data sources were harmonized. The final recommendation to TFA and other leadership education for teachers is the answer to the PRQ.

![Figure 2.1 Data collection process](image)

2.1.1 Framework Review

The framework review was an essential first step to decide whether the FSRPSC is sufficient to train competencies that enable SSD rather than simply SD. It further served as an inspiration for the semi-structured interview questions related to SRQ 1. The FSRPSC was reviewed through the lens of the FSSD. This means that the research team structured the contributions and gaps of the framework within the 5LM, looking into how FSSD content is represented in the FSRPSC. The action and tools level were excluded for this purpose as the FSSD only adds to the first three levels, which is shown in chapter 1.5.1. The outcomes of this review informed the interview questions to answer SRQ 1 and the recommendation to TFA.
2.1.2 Semi-structured Interviews

Gathering data through interviews is the most common way of collecting information in qualitative research. Semi-structured interviews allow to have both a set of predefined questions and the flexibility to spontaneously react to the conversational flow. This approach allows for the resulting data to be comparable, but it is also flexible enough to let the interviewee guide the conversation (Savin-Baden and Major 2012). The research team conducted semi-structured interviews with active ESD experts and TFA representatives. In each interview at least two research team members were present, one of them took on the role of the interviewer and the other one was the observer. The interviewer used a pre-defined list of interview questions (Appendix F: Interview Protocol Examples), however, spontaneous questions were also asked from both the interviewer and the observer. After each interview the interviewer and the observer reflected on the skills of the interviewer and the general structure of the semi-structured interview. As a result, the interview questions were refined a few times throughout the interview process in order to improve them, but also to tailor them to the interviewees. The responsibility for holding the interviews was divided almost equally between the research team members.

**ESD Expert Interviews:** These semi-structured interviews served to expand on the key competencies of the FSRPSC and were the primary source to answer SRQ1 and SRQ2. The experts were selected based on the criteria that they had expertise in researching and/or teaching ESD, some but not all should be familiar with SSD concepts. Interviewees were identified through snowballing (Savin-Baden and Major 2012), which means that a few ESD experts known by the research team were contacted and asked to recommend further experts in the field. Recommended experts were then contacted via email and an online interview was scheduled, if the experts were available within the defined timeframe. In total, 15 ESD experts were contacted; 5 of them were not available. Besides the first few experts known by the research team, Arnim Wiek, Ph.D. was the only expert who was contacted directly as he developed the conceptual framework used in this thesis. All of the other interviewees were identified through recommendations. In total, 10 interviews with ESD experts were conducted between the 28th of March and the 9th of April 2019. Two of these interviews were conducted in person and eight were held online over Zoom or Skype via video-conferencing. A thorough list of interviewees including their job description can be found in Appendix D: List of Interviewees. Every interviewee signed an Informed Consent document (Appendix E: Informed Consent Example). All interviews were conducted in English. They lasted between 1 hour and 1.5 hours and were audio-recorded either with the research teams’ mobile phones and/or with the video-conferencing tool.

**TFA Interviews:** These semi-structured interviews served to obtain in-depth information about TFA’s current practice. They were the primary data source for answering SRQ3. The research team had three interview target groups: The founder, trainers and fellows. The founder helped to gain an understanding of the purpose of the TFA leadership education. Furthermore, the interviews with the trainers and fellows built on the insights gained from the document analysis and provided a more nuanced understanding of TFA’s practice regarding the key competencies and pedagogical approaches in question. For these interviews, 8 of the 10 current TFA trainers and 11 of the approximately 100 TFA fellows in the cohorts of 2017 and 2018 were interviewed to grasp different perspectives on the status quo. Both the fellows and trainers were contacted via Email. All trainers and fellows who were able to make time within the given timeframe were interviewed. The founder, 3 trainers and 6 fellows were interviewed in person between
the 4th and 8th of March 2019, all of the other trainers, fellows were interviewed via Skype or Zoom⁴ between the 11th and 22nd of March 2019. The interview procedure was the same as with the researchers, except for the additional precaution that always one German speaking research team member was present in each interview.

The triangulation of methods (trainer and fellow perspective as well as document analysis) used to answer SRQ 3 allowed for an understanding of the current situation of TFA from different perspectives.

2.1.3 Background Literature Review

In order to answer SRQ 1 and SRQ 2 in a more rigorous way, a background literature review was conducted. This background literature review was based on a database research in the BTH Summon library database independent from ESD expert suggestions and the review of papers suggested by ESD experts. In the case of SRQ 1 the paper that includes the FSRPSC (Wiek, Withycombe, and Redman 2011) was specifically important as the team looked into papers that built on it. In the case of SRQ 2 one paper (Missimer and Connell 2012) specifically supported the background literature review as its outcomes were used to structure the pedagogical approaches found in the interviews, and several sources were reviewed inspired by this paper’s reference list.

2.1.4 Feedback Correspondence

To add more rigor to the outcomes of this research, the last method used to collect data was feedback provided by ESD experts; namely researcher Arnim Wiek, Ph.D. and three other ESD experts, the TFA founder and two TFA trainers. With Arnim Wiek and the TFA founder, feedback was collected through unstructured online interviews about the results of this thesis. Unstructured interviews are conducted without interview protocols and rely upon a spontaneous generation of questions (Savin-Baden and Major 2012). Only a few questions were pre-defined and sent to the interviewees in advance of the interviews. They can be found in the Appendix F: Interview Protocol Examples. Their feedback resulted in final changes regarding the structure and readability of the thesis as well as in further transparency and criticism of the results in the discussion section of the thesis. The other ESD experts and trainers mainly gave overall feedback in a written form, supporting the validity of the thesis results. This step was essential to make sure the provided recommendation were relevant to TFA, the research field and other leadership education for teachers.

2.2 Data Analysis

2.2.1 Content Analysis

Content analysis is frequently used in qualitative research to analyze content (e.g. of documents) in order to find patterns of how specific terms are used (Savin-Baden and Major 2012). For the purpose of this study, an analysis of TFA documents laid the foundation for the design of the semi-structured interviews with TFA stakeholders and supported the analysis of

⁴ For more information on Skype: www.skype.com and Zoom: www.zoom.us
the TFA interviews as it helped make sense of the interview data (a list of analyzed TFA documents can be found in Appendix C: TFA Documents). It also helped to triangulate the data found in interviews with the TFA founder, fellows and trainers. The data was acquired through email correspondence with the TFA founder and certain trainers.

2.2.2 Transcription

The research team made use of two paid software services to auto transcribe a total of more than 35 hours of interview audio. This method was used to save time and human capacity of the research team. Interviews conducted with TFA representatives were transcribed using the chargeable Digital Anarchy plugin in Adobe Premier Pro CC. Temi, a professional transcription tool trusted by BTH was used to transcribe further interviews, due to more accurate outcomes. To ensure accuracy, quality and rigor of the transcripts, the researchers re-listened to all of the interview audios and manually corrected mistakes of the software. The interviewer of each semi-structured interview was also responsible for transcribing it. This decision was consciously made to make use of the context knowledge those who were present in the interview held. Furthermore, finished transcripts were sent to all TFA interviewees and to the ESD experts who requested it, for a final check on the content. Feedback received was integrated into the final transcription files before the transcripts were coded.

2.2.3 Coding

Coding is a way of making sense of data. When researchers code data they assign descriptive labels to their content in order to capture the meaning of it. By doing so, patterns that stand out in the generated data emerge. This allows to organize data into themes and to compare it. Coding, therefore, enables a thorough study of data (Savin-Baden and Major 2012).

For this research, the team coded the transcripts of ESD expert interviews with the aim to answer SRQ 1 and SRQ 2 and the transcripts of TFA interviews to answer SRQ 3. To do so, the two overarching topics were collectively predefined by the whole research team; i.e. pedagogical approaches and key competencies. These topics were then looked for in the different transcripts. The statements that were related to one of these topics were copied into a shared Excel document.

As a next step, open codes were created based on the data in the Excel sheet. This means that the data was conceptualized into a few words for each quote. The emerging codes were inductive codes, since they were created based on what the interviewees had said (Savin-Baden and Major 2012). One transcript was coded collectively to ensure that the whole team would conduct the same process. The transcripts were then divided, and every transcript was coded by one researcher.

In a final step, the research team together decided upon axial codes, which is a way of creating categories in order to cluster data that is related (Savin-Baden and Major 2012). For SRQ 1 the axial codes were the names of the five key competencies (e.g. systems thinking) to capture what ESD experts mentioned about these competencies. Then there was the axial code “others”, which captured competencies different from these five. The research team then collectively decided upon the two additional axial codes “intrapersonal competence” and “implementation competence”, which had emerged from the data collected within the “others” code.
In order to answer SRQ 2, the team was looking for pedagogical approaches. To do so, seven axial codes were defined based on a paper about pedagogical approaches in support of leadership in SD (Missimer and Connell 2012). Under the axial code “others” pedagogical approaches that did not fit within the seven pre-defined ones were collected. Based on the data from the interviews, one additional axial code was created, namely “theoretical learning”. Furthermore, one axial code was changed to incorporate “project-based and solution-oriented learning” as these topics had also emerged from the data.

To answer SRQ 3, the final axial codes of both SRQ 1 and SRQ 2 were used and slightly adapted to account for both the current state of TFA and their opportunities; the resulting axial codes were e.g. “systems thinking – current state” and “systems thinking – gaps & opportunities”. The data collected within the “opportunities”-codes was the foundation of the recommendation for TFA. Please see the thorough list of open and axial codes in Appendix G: Overview of the Codes.

2.2.4 Recommendation to TFA and other leadership education for teachers

In order to answer SRQ 3 and the PRQ, the FSSD and results of previously described methods were used. Using the FSSD allowed the research team to provide their recommendations to TFA and other leadership education for teachers in a strategic way. This was done by assigning the outcomes gained through the previous methods to the different levels of the FSSD in order to structure the information. To ensure a strategic approach towards SD, missing FSSD elements were integrated together with the research results.

2.3 Ethics

All interviewees were informed about the interview procedure and how their data would be used and signed an Informed Consent document. Since the Informed Consent document for the TFA interviewees had not stated that transcription tools would be used, they were all explicitly informed via Email about the use of the transcription software, which all of them approved in writing. All TFA interviewees and those expert interviewees who wished for it received the final transcript of their interview and were able to make changes to the transcript before it was coded. During the interviews, the research team took care of providing a convenient process for the interviewees and aimed to conduct the interviews with a professional (open, objective) and human (compassionate, respectful) verbal and non-verbal attitude. In addition, the research team offered to withdraw from the study at any time before the end of the research. Throughout the whole process, the data was saved only on Microsoft OneDrive, which had been approved as a save digital space for data by BTH, and the research team’s computers. All TFA interviewees as well as the experts who wished for it, were anonymized.

2.4 Strengths and Limitations

A limitation is that only 10 ESD experts were interviewed and most of them were located in Sweden. It is acknowledged that a broader sample of ESD experts – potentially from different continents - would have likely added to the diversity of responses. Nevertheless, there was diversity present regarding their nationalities.

A strength was the sample size for the TFA interviews which where triangulated with the documents, allowing for a thorough understanding of the organization’s current state. An
additional strength is that the research team received the opportunity to meet TFA members in person to gain a deeper understanding of the organization. A limitation was that only 2 of the 11 interviewed fellows were from the 2018 cohort, likely because the contact person had stronger connections with the 2017 cohort. However, curriculum-wise there was no significant shift in the curriculum between these two cohorts. Another limitation was that the mother tongue of the interviewees was mostly German, which could have potentially caused some misinterpretations of questions or answers. The above-mentioned measures were taken to limit this problem.

An additional strength and limitation regarding the TFA interviews is that one research team member is a TFA alumna. On the one hand, this helped the research team to better understand the information provided by TFA stakeholders. On the other hand, a certain bias based on previous involvement and personal experience with the organization must be acknowledged. The research team aimed to minimize the influence of this bias by always conducting interviews in pairs, and by inviting the interviewees to always speak as if the interviewers had no previous knowledge about the organization.
3 Results

Chapter 3.1 and 3.2 results stem from the interviews with ESD experts and literature. Chapter 3.3 results stem from interviews with TFA trainers, fellows, and founder. Interviewees will be named with ‘I’ and an ongoing number. The recommendations in chapter 4.1 are based on all of the interviews held.

3.1 Key Competencies for Strategic Sustainable Development

To answer SRQ 1: “What are key competencies for leaders to enable strategic sustainable development?” two steps were taken. First, the FSRPSC was reviewed through the FSSD lens. This informed the questions asked during the next step, the conduction of 10 interviews with ESD experts, and the answer to SRQ 3.

3.1.1 Framework Review

The intention of this step was to gain a critical perspective on how the FSRPSC approaches the transition towards sustainability; focusing on its contributions to and differences from the FSSD. In this process, the research team acknowledges what the FSRPSC intends to do and also what it does not; recognizing that differences are not necessarily gaps of the tool itself. This analysis only considers the original framework mentioned in chapter 1.5.2. The actions and tools levels of the FSSD were not considered since the FSSD does not add to them. Table 2 gives an overview of the findings, stating the guiding questions asked for each level in the first column.

<table>
<thead>
<tr>
<th>Level</th>
<th>Contributions</th>
<th>Differences</th>
</tr>
</thead>
<tbody>
<tr>
<td>System</td>
<td>Systems thinking competence</td>
<td>Does not intend to provide content knowledge about the socio-ecological system</td>
</tr>
<tr>
<td>Does the tool contribute to an understanding of the system as defined by the FSSD?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How does its understanding of the socio-ecological systems differ from an SSD perspective?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Success</td>
<td>Acquisition of key competencies imply an ability to navigate through the ABCD-process. Interconnectedness of competencies is detailed. Anticipatory, normative and interpersonal competence.</td>
<td>Non-intervention future scenarios are included linked to the anticipatory competence. Does not intend to say how competencies can be trained. Does not intend to provide boundary conditions for sustainability visions.</td>
</tr>
<tr>
<td>Does the tool’s definition of success cover the full scope of sustainability as defined by the 8 SPs?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If a user complies with the tool’s definition of success, how close can they get to addressing sustainability?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strategic Guidelines</td>
<td>Strategic competence. Comprehensive framework guiding on applicability of</td>
<td>Includes backcasting as one approach to sustainability problem solving.</td>
</tr>
<tr>
<td>Does the tool offer any guidelines for prioritizing strategic moves and decision-making processes?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
For the system level, the systems thinking competence contributes to the understanding of the socio-ecological system as it includes the ability to analyse complex systems across different domains and scales (Wiek, Withycombe, and Redman 2011). However, as a difference there is no knowledge included about the socio-ecological system itself. The FSRPSC includes the skills necessary to be able to comprehend content, but not the actual content. As an important note, the FSRPSC intentionally does not provide any specific knowledge for it to be widely applicable to many domains (Wiek, Withycombe, and Redman 2011).

For the success level, the framework provides a thorough picture of what must be done to navigate through the sustainability challenge; very similar to how the FSSD frames it with the ABCD. This is an important contribution, since if the users acquire the key competencies, they will likely be competent to address unsustainability and go through the stages of sustainability problem-solving (Wiek, Withycombe, and Redman 2011), hence also through the steps if the ABCD. The main difference here is that the FSRPSC includes non-intervention future scenarios within its framework; relating the anticipatory competence also to the prevention of harmful consequences. In addition, the framework provides an understanding of how the competencies are interconnected, supporting a successful integration of them. Nevertheless, it does not intend to address how the competencies can be trained. Additionally, the anticipatory, normative and interpersonal competencies imply the ability of co-creating a collective understanding of what success looks like; highlighting the importance of uniting values to be able to agree on what success means. As a contrast with the FSSD, the key competencies framework does not aim to provide boundary conditions for visions.

For the strategic guidelines level, the strategic competence addresses working strategically and implementing the most effective ideas, which resonates with the FSSD. As a difference, the FSSD focuses more strongly on backcasting, while the FSRPSC is open to several approaches of problem-solving, taking backcasting as one of them, specifically within the anticipatory and normative competencies. The FSRPSC does not intend to provide guidance on decision-making to reach success; or on implementation of the competencies. Nevertheless, a contribution to strategic guidance is still acknowledged as it provides a comprehensive overview on where the key competencies are applied within the problem-solving process. This can guide practitioners in understanding where each competence is specifically relevant in each endeavor. Additionally, it is highlighted that the integration of competencies should be context-sensitive and flexible in deciding which aspects of the competencies shall be integrated. This is a big contribution to the field, since most other papers on competencies simply provide loose lists rather than an integrated framework (Wiek, Withycombe, and Redman 2011).

Having clarity on the contributions and differences between the FSRPSC and the FSSD allowed the research team to identify how complementary the two frameworks are. This led to the understanding that the FSRPSC highly contributes to a strategic transition towards sustainability. In this sense, the research team acknowledges the multitude of overlaps between the two frameworks. This helped conclude that the FSRPSC provides a thorough basis for the expert interviews.
It is important to mention that the team also conducted a similar process looking at the FSSD through the lens of the FSRPSC. This showed that the latter also holds important approaches that the FSSD does not take into account as comprehensively. This includes partly the interpersonal competence, and several pieces included in the anticipatory competence. It should be mentioned, however, at this stage, that the importance of the interpersonal competence is acknowledged by the FSSD through the ABCD process; specifically in the A-step where the collaborative aspect of creating a shared vision and in the C-step, where ideas shall be collectively created (K.-H. Robért et al. 2018).

### 3.1.2 Key Competencies for Strategic Sustainable Development

This section presents data gathered from the expert interviews which resulted in a framework designed by the research team, adapted from the original FSRPSC from Wiek et al. They add to the original FSRPSC reviewed above by suggesting additional key competencies. Several experts explicitly supported the FSRPSC and/or specific components of it (I21, I25, I26, I23). However, this chapter places attention on the criticism received to reflect how the additions to the framework were identified. Aside from the interviews, the researchers also conducted further literature research guided by recommendations of the interviewees. Insights of this literature study are mentioned to support the suggested framework additions.

*The Integrated Problem-Solving Competence:* The first addition is a sixth key competence named integrated problem-solving competence; which is an addition proposed by Wiek et al. (2015). The 2015 paper of Wiek et al. focuses on how to operationalize the competencies into curricula and courses; highlighting the importance of taking the whole process into account. Thus, the integrated problem-solving competence addresses that practitioners develop a thorough understanding not only of one or two of the competencies, but that they meaningfully use and integrate the five key competencies. It is related to the ability to apply different problem-solving frameworks to complex sustainability problems and develop viable solution options. Problem analysis, sustainability assessment, visioning and strategy building are some of the related activities within this competence (Wiek et al. 2015).

*General Framework Criticism:* The next additions are concluded by the research team. First, general and specific criticism about the original FSRPSC is shared as it provided the foundation for the additions. Generally speaking, the framework was criticized for being vague in its key competence descriptions, mentioning they overlap significantly (an Interviewee). Furthermore, some experts criticized that all competencies focus on cognitive/thinking abilities, except for the interpersonal competence (three Interviewees), which came along with the framework having “a weak side on the soft skills” (an Interviewee) and a lack of seeing “the person holistically and not just the brain” (another Interviewee).5

*Specific Key Competence Criticism:* In terms of specific criticism to the key competences some considerations came up. While the importance of the anticipatory competence was highlighted by some experts who considered it very relevant to deal with uncertainty and risks (I21, I22, I25), it was also mentioned that this competence should not only focus on the thinking part, but also on how to handle the emotions future thinking can trigger (I21, I25). An expert highlighted

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5 In this paragraph, all of the interviewees were anonymized in order to protect them.
the importance of creativity and innovation in this competence (I29). This resonates with Missimer’s and Connell’s findings (Missimer and Connell 2012) as well as with de Haan’s “Gestaltungskompetenz”, where the relevance of creativity, imagination and fantasy is stressed in relation to the act of thinking about the future (de Haan 2006). Even though this creativity aspect has been named in the FSRPSC, the listed concepts and methodologies don’t quite stress the importance of it (Wiek, Withycombe, and Redman 2011) and the later paper that aims to operationalize the key competencies, does not include creativity (Wiek et al. 2015). For the normative competence, I27 named the risk of potentially disengaging people who “think differently from us” and posed the question of how to create spaces where people who disagree can develop norms together? I30 mentioned that the normative competence overemphasizes the thinking part of the values and that the “heart-part” should be called out more.

Additional Key Competencies for Strategic Sustainable Development: This section proposes extending the FSRPSC with two more additional key competencies representing the seventh and eight key competencies. Both competence names stem from open codes and are a research team conclusion based on the critique mentioned above as well as data presented below.

The Intrapersonal Competence*: Several interviewees miss what we call the intrapersonal competence (I26, I23, I30, I25, I27). Suggested topics within this competence are how to deal with conflicts on the inside (I23, I25), emotional competence (I26) or critical emotional awareness (I25), self-care (I30), resilience (I27) and the ability to transform oneself (I23). When elaborating on what I26 named emotional competence, the importance of empathy and how to work with difficult emotions came up. She explained that several of her students were depressed or suffered from climate anxiety. This resonates with Rieckmann who names ambiguity and frustration tolerance as important skills (Rieckmann 2012). Critical emotional awareness as brought up by I25 means to be able to handle emotions that come up when dealing with the uncertain future in relation to the sustainability challenge. Critical emotional awareness is a must in order to understand one’s own unsustainable ways of regulating emotions (Ojala 2017). I30 highlighted that self-care can also be done collectively and I21 mentions the importance of addressing the tension between the individual and the collective. Sterling (2010) emphasizes developing resilient learners relating this to the ability to stay engaged in complex and unpredictable situations. In addition, I23 talked about intrapersonal aspects of leadership, which are related to personal transformation. Such internal aspects can also be found in the literature including the ability to reflect and self-evaluate, constantly renew one’s own energy, deal with complexity and uncertainty on a personal level, commit to learn, and keep a can-do-attitude (Missimer and Connell 2012). De Haan (2006) also named self-motivation and distanced reflection as internal competences.

The implementation competence: The implementation competence has been suggested by two experts (I26, I30). I30 criticized the strong focus on the thinking part of the framework; mentioning a need to add a competence focused on implementation. I26 also talked about developing hands-on skills and learning how to act rather than solely how to think. De Haan (2006) described the importance of implementation skills in his “Gestaltungskompetenz”

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* It is acknowledged that the term ‘intrapersonal competence’ also aligns with ongoing research conducted at BTH and that it is consistent with the language used by the MSLS (Master’s in Strategic Leadership towards Sustainability) program team.
framework and Rieckmann talks about the importance of being able to plan and realize innovative projects (Rieckmann 2012).

**Framework of Key Competencies for Strategic Sustainable Development:** Based on the data presented above, the research team designed an extension to the FSRPSC naming this the Framework of Key Competencies for SSD. The additional key competencies are situated within the FSRPSC visual, connecting them to where the research team concluded they are relevant. Interviews and literature consistently indicated how the intrapersonal competence is related to several of the rest of the competencies. Dealing with emotions related to the future can be linked to the anticipatory competence, dealing with complexity and anxiety about sustainability problems can be linked to systems thinking (as this is related to analyzing complex problems), identifying your own unsustainable behavior can be linked to normative competence, and the emphasis on empathy and the collective aspect of self-care can be linked to the interpersonal competence. Therefore, the intrapersonal competence is placed as an overarching competence.

Within the overarching intrapersonal competence, there is another overarching circle where we situate the implementation and the integrated-problem solving competencies. We identify the high resemblance between these two as complementary; therefore, their related placement. These are also overarching because the researcher team reasons that the ability to act applies to all of the competencies in order to transition towards sustainability and that integrated problem-solving is explicitly about integrating all of the other competencies.

![Diagram of Framework of Key Competencies for SSD](image)

*Figure 3.1 Framework of Key Competencies for SSD adapted from Wiek et al. (2011)*
3.2 Pedagogical Approaches in Support of Key Competence Development

To answer **SRQ 2: “Which pedagogical approaches support the development of these key competencies?”** 10 interviews with ESD experts were conducted. Furthermore, a background literature review embedded the findings into the broader research context; namely into the field of pedagogical approaches relevant for ESD. Therefore, this chapter gives a short literature-based definition and explanation of each pedagogical approach, followed by the related interview results. The main headlines are inspired by Missimer’s and Connel’s paper on pedagogical approaches that enable leadership for sustainable development (Missimer and Connell 2012). This paper was chosen as a structuring guidance, because of its very similar focus, namely on leadership education for SD. The interviewees did not only mention the pedagogical approaches they considered essential to develop the key competencies⁷, they also shared several examples of the pedagogical approaches, which are highlighted in bold.

3.2.1 Lifelong Learning

Lifelong learning is a main aim of ESD (UNESCO 2014, 2009), since “formal, non-formal and informal education” play a role in educating humans of all ages about SD (UNESCO 2014). It has also caught the attention of diverse bodies of the European Union, which has led the European Parliament and the Council to develop a framework, in which “learning to learn” was named as an important aspect of lifelong learning (The European Parliament and The Council of the European Union 2006). It encompasses e.g. the ability to “organise one’s own learning” as well as the “awareness of one’s learning process and needs” (Ibid.).

An example named by I27 that may support the aspect of lifelong learning is to **cultivate habits**, to practice skills regularly in order to develop them over time (I27).

In the literature it is highlighted that the learning experience is more likely to persist if a multitude of pedagogical approaches, including the below-mentioned ones, are used (Candy 1995).

3.2.2 Social Learning

Social learning encompasses to learn through interacting with other human beings (Lipman 2011). This provides several learning opportunities as more people possess far more knowledge and skills than one individual (Morgan 2009); and since SD requires many different competencies in concert, social learning seems more efficient (Missimer and Connell 2012). Furthermore, in groups there are several viewpoints which helps stimulate reflection, challenge assumptions and subsequently create a new understanding of the world (Morgan 2009).

The importance of engaging with other worldviews was also named by some interviewees; I23 mentioned that this helps learners question their own ways of making sense of the world, which

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⁷ It is important to highlight that the interviewees were only asked about pedagogical approaches in support of the original 5 key competencies (Wiek, Wittycombe, and Redman 2011). However, since some ESD experts had added to these key competencies, a few of them also shared pedagogical approaches that may support the intrapersonal competence or the implementation competence.
is needed for transformation to happen (I23). Taking care of diversity in learner groups is considered useful for ESD (I28, I23). It allows people to interact with others in a targeted way, who hold knowledge in different fields. Furthermore, it enables learners to experience other ways of thinking (I28). **Creating common spaces for conversations** in a diverse group helps to appreciate and understand other people's worldviews, without needing to agree with them (I27). I26 added that conducting group work can help develop learners’ interpersonal competence (I26). A useful tool in this context is feedback (I26).

This is again supported by literature; Barth and Michelsen (2013) mention that participatory methods are key aspects for social learning in SD, such as relational practices, reflection, feedback loops and collaborative group processes (Barth and Michelsen 2013).

### 3.2.3 Problem-/Project-Based and Solution-Oriented Learning

Problem-based learning is a pedagogical approach in which students learn by addressing real-life problems (Missimer and Connell 2012; Wiek et al. 2014). In this way, students can put their knowledge and skills into practice. Problem-based learning can enhance student engagement (Beringer 2007). It is mostly done in teams (Beringer 2007); and can, therefore, be considered connected to social learning. Project-based learning encompasses the utilization of real-world work on projects of limited duration in order to reach specific outcomes and facilitate learning (DeFillippi 2001). Since these two approaches are strongly related, and other papers also consider them collectively (Lozano et al. 2019; Barron et al. 1998; Wiek et al. 2014), they are not specifically distinguished in this thesis, even though it is acknowledged that there are some differences between them. Solution-oriented learning or (as applicable in the context of this paper) solution-oriented sustainability learning is very similar as well, since students are working on real-world sustainability problems with the aim of finding solutions, thereby engaging with stakeholders and working in teams (Wiek and Kay 2015).

Project-based learning & applied learning were named as important pedagogical approaches by some interviewees (I24, I26, I30). Since the interviewees’ description of applied learning included very similar aspects as their description of project-based learning (I24), it seemed most appropriate to group them together. I26 explains project-based learning as working on certain projects together with other people based on one’s own interest, potentially together with stakeholders from a certain community (I26). I24 highlighted how running social impact projects can significantly improve learners’ well-being as they see how their education has a positive impact in their community (I24). Likewise, according to I24, applied learning is holding the potential to apply the learners’ brainpower in such a way that students can make a genuine impact through their education, which can also maximize the positive impact educational institutions can have on society (I24). For the learners, project-based learning can be useful to develop the interpersonal competence (I26) and it can help them to be close to the actual practice (I30). Solution-oriented learning was also named as an important pedagogical approach (I24). I24 highlighted the importance of thinking critically about solutions rather than just problems. The interviewee explained that for a long time, sustainability education was very much focussed on deeply diving into the specifics of the problems humanity faces in the world.

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8 Later referred to as PPB and solution-oriented learning
but that this approach is not equipping learners with the skills necessary to develop solutions (I24).

### 3.2.4 Active and Experiential Learning

Active and Experiential Learning puts an emphasis on the participation and responsibility of the learners for their own learning (Domask 2007). Experiential learning is considered learning by doing (Domask 2007); active learning means that students are engaged rather than passive recipients of information (Dengler 2008). There are certainly broader and narrower definitions of experiential learning; one could argue that it encompasses almost any kind of learning to different degrees (e.g. from writing a paper to giving a presentation to conducting fieldwork) (Domask 2007). The same is true for active learning, which also includes for example group work and writing exercises (Dengler 2008).

Active learning was highlighted as a helpful pedagogical approach to develop the above-mentioned key competencies (I21, I22, I24, I25, I27). I24 explained it as creating a learning space where learners are actively engaged with the challenges society faces in order to develop skills and knowledge that are useful in their professional and personal lives (I24). This approach was understood as being strongly connected to reflective learning (I21, I27); ESD teachers are advised to “bring students in a position where they can actively learn and afterwards actively reflect on the learnings through writing or dialogue” (I21), because “when you just act, act and act without reflecting, no learnings will appear” (I21). The approach was also linked to student-led learning, where students are treated as colleagues (I25), because what active learning encompasses, according to I21, is practice, e.g. facilitation techniques (I21). An example for active learning is the **30-day-challenge**: “So that could be a bigger challenge for example or something more citizen oriented, right? Write to a politician every day or talk to people about climate change. And then we tried to really have them think about ‘how could we make that individual action into a collective action?’ And trying to go away from being this consumer to being more like a citizen” (I26).

Experiential learning has been mentioned as an important pedagogical approach (I21, I24, I25, I23, I30) to get participants out of their brains and allow them to embody their learnings (I21, I25). This can be done in very fun and playful ways (I21). In the ESD context, it could for example include the experience of how human beings are related to planet Earth by **engaging with other creatures or things**. One interviewee shared such an experience: “And so I engaged in this activity with the artefacts. So taking an artefact, it was a fossil trilobite, a pine cone, a sea shell, and some lichen from a tree. And this was passed around in a circle and you were asked to think about in relation to each object: ‘What does this creature need? What is it afraid of and what does it love?’ And so we came up with answers for each one of these things and we were able to sort of come to the conclusion that: ‘Hey, we're not so different from these things.’ I mean it was a bit more than that, but also, it involves more than just thinking very intellectually or in a more biological way” (I25). Other examples of experiential learning named were the **collective invention of rituals** similar to those ingrained in society such as graduation or wedding celebrations, but by asking questions such as “What kind of society do we want to live in? (.) What are the things we’re celebrating or mourning in the future?”. Each team would then receive the opportunity to engage with the rituals created by other teams and share their own ritual with the bigger group (I25). Another exercise is to **engage with pictures**; to “create a future” with these pictures, then reflect on how it feels to add or remove certain photos (I25). I21 also named engaging with pictures as a nice exercise, but in a different context. A close up of a picture could be shown and then learners discuss what they see. Then it is zoomed out, and
people see that the bigger picture shows something totally different (I21). This could give a nice basis for conversations about systems thinking. Another example of experiential learning is to make learners meet transformational leaders who already live and work more sustainably, e.g. they can be brought to a business organization that already works on changing the system they are part of, so that learners get the opportunity to experience a sustainability-driven working environment and to ask these leaders questions about the obstacles they faced and how they managed to overcome them. This makes learners see, but also feel what it takes and how it looks like to “do things very differently”. Such visits can be very successful and empowering for learners as they can then learn how to change a system by experiencing the change as opposed to just understanding it (I30).

**Backcasting and envisioning** are ways to work with the anticipatory competence (I26). I26 described that it is important to look at what is already working today with regards to sustainability and then envision a sustainable future. After envisioning how a sustainable future could look like, one can focus on how to get there (I26). With scenario planning learners could also develop the anticipatory competence (I23). Teachers could take students through different scenarios which are a bit more concrete. Before and after the exercise, the teachers could potentially test how well the learners are able to create scenarios of what the future may look like (I23). I30 also mentioned scenarios as a potential way to assess the learners’ competence.

### 3.2.5 Empowerment

Empowerment can be understood as enabling someone to act (Global Action Plan 2009). The learners must feel that even though the sustainability challenge is big and complex, there is a chance to act. Therefore, education must be enabling and there is a need for a positive approach (Evitts, Seale, and Skybrook 2010).

During the interviews, student-led learning has been highlighted as a very useful pedagogical approach (I21, I24, I25, I29, I28) for ESD. First, student-led learning allows for the learners to connect with what they are curious about, which can have a positive effect on their learning attitude (I21). In addition, according to I25 it is an answer to strong arguments in ESD literature stating that current didactic arrangements should be changed (I25). Student-led learning includes treating learners as partners or colleagues (I21, I24, I25) and acknowledges the knowledge and skills they already hold as well as allowing them to contribute with their competencies to the learning environment (I21). Examples of student-led learning, that were brought up by the ESD experts, are to make learners be in charge of coordinating courses (I28) or certain parts of courses (I25), thereby removing the authority of the teacher and flipping power dynamics so that learners can experience what it means to lead while potentially feeling uncomfortable (I28). This also allows for teachers to be learners too (I25). I28 highlighted the power of putting leaders in uncertain situations where they have to lead. This can increase the learners’ comfort with uncertainty and make them feel more empowered when dealing with difficult situations (I28). Other ways of student-led learning are to make students be mentors for younger students (I25) and to involve students in the evaluation and development of the respective educational program (I24, I25, I29). In this way, they are challenged to engage with what they are learning, why they are learning it and also with what they are not learning (I24).
3.2.6 Transformative Learning

Transformative or Transformational Learning is also a frequently discussed topic in ESD (Seatter and Ceulemans 2017; Mezirow 1997; Missimer and Connell 2012; Missimer and Valente 2012; Sterling 2010). It refers to a change in the students’ frames of reference\(^9\) (Mezirow 1997) or mental models\(^{10}\) (Missimer and Valente 2012) towards some that are more self-reflective, discriminating, inclusive and integrate experiences (Mezirow 1997). To do so, transformative learning builds on and challenges the learners’ previous knowledge and understanding; it develops their autonomous thinking and empowers them to make their own interpretations of reality (Mezirow 1997). This is considered important for SD as the complexity of the sustainability challenge requires new solutions (Seatter and Ceulemans 2017). According to Sterling (2010), transformative learning even allows for a change in deep values and beliefs. A change in mental models can for example be triggered through “disorienting events”, which are events that make humans question the effectiveness of their current mental models (Mezirow 1991). This can also enhance leadership skills (Missimer and Valente 2012).

Transformational learning was named a crucial element of ESD. According to the interviewees, it is about questioning underlying sense making structures (I23) and closely related to self-discovery (I28): “The only thing that will change your behavior, is if you go through a process where you feel you have discovered something for yourself” (I28). Learners should be able to make such learning achievements through their own effort. This also means that much responsibility needs to be given back to the learners, “and not just responsibility to pass the test, but to be given all of this knowledge and to actually have to take a stand in it. I think putting people in contact with any sort of pedagogical method where there's some self-discovery involved is the only thing that truly changes people. And then people need to know how to do that without us. If they are going to be leaders” (I28). According to I29, transformation within students only comes with learning, unlearning and relearning (I29).

Reflective learning was also mentioned as an important pedagogical approach (I21, I27, I26). The interviewees suggest that experiences need to be reflected to allow for deeper learning (I21, I27). Reflections could happen through writing exercises or dialogue (I21). Cycles of repetition are considered useful: “Back and forth between action and reflection” (I27). Reflective learning can also help to focus on the learners’ personal development, allowing them to go deep into who they want to be and what role they want to play in this world. In addition, reflective learning can play an important role in helping learners handle failure and create learnings from mistakes (I21). A useful tool for transformative learning are conflicts, since those hold opportunities to grow. They can help develop both the interpersonal and intrapersonal competence as they support learners to reflect on how they deal with their own growth processes and how they can collaborate effectively. According to I30, such learning moments need to be facilitated carefully but hold opportunities for deep growth in both the learners and their teachers (I30).

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\(^9\) Frames of reference can be defined as „the structures of assumptions through which we understand our experiences” (Mezirow 1997).

\(^{10}\) Mental models can be defined as „constructed frameworks through which we analyze our everyday experiences” (Missimer and Valente 2012).
3.2.7 Dialogue Education

Dialogue education is designed for adults, as it builds on life experience (Vella 2002). It is assumed that adults can dialogue with everybody and, thereby, learn in relation to their life experience (Vella 2002). For dialogue learning to happen, teachers need to prepare a safe space for the learners (Vella 2002).

Interviewees have talked about the importance of listening in ESD (I26, I27). Activities such as active listening in pairs can be relevant to develop the “emotional competence” (I26). An example of this is what I26 calls **pair active listening**: After learners have experienced deep listening in pairs, they share their appreciation towards the other person. Such an exercise has the power to create a community of intimacy (I26). I27 also highlighted that dialoguing, opening up and deep listening can be continuously practiced (I27).

3.2.8 Theoretical Learning

Theoretical learning was not originally proposed by Missimer and Connell (Missimer and Connell 2012), but brought up by the interviewees. I21 and I27 considered holding traditional lectures and sharing theoretical content, e.g. about the science behind systems thinking as an important basis (I21, I27) for other ways of learning. Within theoretical learning, storytelling can be a useful tool. Telling a narrative about certain topics that shall be memorized by the learners can help them understand the content much better (I21). This is also supported by the literature (Franck and Osbeck 2018). Fact-based pedagogy has been mentioned as being useful in ESD (I25). To enhance the legitimacy of theoretical content in ESD, McGregor suggests to include alternative viewpoints that challenge mainstream approaches (McGregor 2013). Furthermore, Hensley emphasizes that theoretical learning in ESD might go beyond content and into meaning, believes and purposes (Hensley 2017).

3.2.9 Additional Findings about Pedagogical Approaches

According to interviewees, when it comes to pedagogical approaches, the “how” is often missing in empirical studies (I23, I30). It is important to look into how teachers can implement pedagogical approaches into their programs (I23) and to be more nuanced in how the different competencies can be integrated through the pedagogical approaches used (I30).

Furthermore, it is important to highlight that there is no one pedagogical approach that is better than the others (I23, I30). A balance between the cognitive and the empathy piece is needed and a mix of several different pedagogical approaches should be used. When diverse approaches are combined, different learning angles are possible and the diversity of the students is better taken into account (I23).

3.3 Integration of Key Competencies for Strategic Sustainable Development and Pedagogical Approaches in TFA Leadership Education

To answer **SRQ 3**: “How can these key competencies and pedagogical approaches be integrated into the TFA leadership education?” 20 interviews with TFA were conducted. In this chapter, the current integration of the key competencies for SSD as well as the mentioned
pedagogical approaches in the TFA leadership education are explained. In addition, opportunities for improvement as mentioned by the interviewees are described. In the discussion section below, a recommendation for an integration of key competencies for SSD and pedagogical approaches into the TFA leadership education is presented.

Figure 3.2 Explanation of relevant TFA roles

To allow for an easy comprehension of the next two chapters, Figure 3.2 explains the relevant TFA roles.

3.3.1 TFA and the Key Competencies for Strategic Sustainable Development

During the interviews, the research team asked about the organization's own competencies\textsuperscript{11} and the current integration of the 5 key competencies from the original FSRPSC described in the introduction. The other three key competencies (integrated problem solving, intrapersonal and implementation competence) were not explicitly asked for. This was due to the timing of the research process, i.e. the TFA interviewees needed to be interviewed before the ESD interviews took place, and the additional key competencies resulted from the ESD expert interviews. However, in order to answer SRQ 3, the competencies explained by the interviewees were clustered based on the 8 key competencies for SSD proposed in chapter 3.1. Some findings clustered below the intrapersonal competence are additions to what was brought up by the ESD experts.

Systems thinking competence integration: The training facilitates an understanding of the bigger system TFA is part of (117, I6, I9), namely the education system in Austria (I13, I19). It makes fellows aware of the different aspects of this system including politics, social gaps and inequality between kids as well as the children’s environment (I6). The fellows are provided with statistics about the educational injustice in Austria (I19). Furthermore, the training provides an understanding of the school system (I9), which fellows shall learn to manage (I17). It helps fellows comprehend that the parents, the teacher colleagues and other stakeholders are part of the educational system; and provides support to collaborate and solve problems with

\textsuperscript{11} TFA is intentionally teaching a set of four competencies, which they use to train their fellows (D1).
them (I6). TFA aims to make fellows understand “how all of these systems could work for us or against us and how we could intervene in them” (I9). The training places attention on the fellows’ role in the system and raises their awareness on how their actions can impact it (I12, I13). There is a focus on understanding the interrelationships between parents, peer groups and students. “You would talk a lot about the effect of parents on the students (...) if the parents have to work all day, they might not be able to help them with their homework. So, if I make homework be something that’s a big point in the grade, I actually grade the parents being home or not” (I1). Therefore, the trainers want the fellows to understand the context of the kids they are working with (I18) and the fellows learn to take different stakeholder perspectives and interests into account (I2, I6). They are trained to conduct stakeholder analysis (I14) and to do stakeholder mapping (I12). Additionally, the training supports an understanding of the classroom as a complex system itself (I13). Systems thinking can also be seen integrated into the vision project12. The vision project is making a little difference in the system which can potentially have impact on many different levels (I14).

Systems thinking competence opportunities: In terms of opportunities for systems thinking, there was considerable amount of data. There should be a stronger focus on the bigger education system in Austria (I5, I9, I13) and not just the school (I13). Some fellows would be interested in learning more about how the education system works (I5) and how they “could change more than just our direct surroundings” (I9). There is also an opportunity to focus more on the school as a system (I7, I18, I14), since this is also not heavily integrated at the moment (I18, I16). The training’s priority is mainly to prepare the fellows for the classroom (I12). Thus, it is very focused on making fellows good teachers, “to influence the academic levels of the pupils, their social skills, the ‘learn how you learn’ competencies of the children. (...) But I think there is so much more space to bring this system change thinking in” (I14). One of the fellows thinks they don’t get trained in making a system change at all, and acknowledges that changing the bigger system is much harder than changing the classroom and that there is a reasonable focus to prepare fellows to lead the classroom in the first year, but in the second year there is an opportunity to support fellows to change the bigger system (I7). “I personally think that TFA thinks: ‘Okay after the first year they learn it in the classroom and then they are off and they can do anything.’ And that’s not true. They really should do that how they did it in the first year. Like step by step in bringing the people to where they should be” (I7). A trainer mentions that fellows probably don’t work on the change systematically, but that this would be very important as it would allow to not only address “the symptoms” of the problems they aim to solve (I18). An important aspect that also needs more attention is the involvement of stakeholders such as other teachers (I2). Learning about the children’s personal backgrounds comes up later in the program, when a psychologist is invited as an external expert, and there is an opportunity to focus on this earlier; a fellow really missed this in the beginning of the program (I5). A trainer mentioned there is quite a big focus on the “bigger picture” in the beginning, but that this gets lost during the first year, and that it needs consistency throughout the whole two-year program (I14). In addition, it is not clear if all of the trainers are well equipped to teach about systems thinking and bring it forward to fellows (I18). A trainer suggests that systems thinking should not only be a theme supported by the trainers, but that the whole TFA organization should work

12 The vision project is a project, fellows work on during the first year in the fellow program. In this project, they create a vision with one of their classes, then think about how this vision would show in the classroom and plan how to move towards that vision (I18) and how to measure their progress (I1).
with the fellows to create an understanding of the big picture (I14). Systems thinking is considered an important area of opportunity as TFA intends to have systems thinkers in the long-term, who go out and utilize their fellow experience to cause change the education system (I18).

Strategic competence integration: The strategic competence is also partly integrated in the TFA leadership education. Fellows are trained to “plan backwards” (I6, I9, I1, I2), meaning to look at the desired end result, thinking about how to get there, and breaking the path down into steps until they reach the present (I1). This is mainly done when drafting lesson plans for the classroom (I12) and for the vision project (I12, I18, I2), but is considered a highly transferable skill (I12, I9); “to anything you want to plan and achieve in your life” (I9). During the vision project fellows also look at helping and hindering forces and measure their progress (I1). It can be assumed that TFA somewhat also takes into account the collaborative aspect of the strategic competence, because it was acknowledged that “everybody has a role in reaching the goal” (I2). There is an emphasis on the smaller scale of strategic thinking by doing it in class rather than focusing on the larger scale of the organizational strategic purpose of TFA, even though fellows also get in touch with that (I1). Furthermore, fellows are trained to first see and understand before they act (I17, I14), which can be interpreted as a strategic way of behaving.

Strategic competence opportunities: As opportunities for improvement, a trainer mentioned that the integration of the strategic competence is left to the fellow and depends a lot on the vision project they choose (I18). A fellow highlighted that there is a gap in applying strategic thinking in the school context. While there is a sense of “pulling in the same direction” within TFA, this is not necessarily true at school, where fellows work together with other teachers. It is acknowledged that strategic thinking becomes more complex there and that this would need more attention in the training (I2). Furthermore, there is missing consistency in teaching strategic thinking, because it is taught on several occasions in the first year, but this is not linked together and it is missing in the second year: “These are just separate modules and this I would improve (...) For example you have to make a module ‘strategic thinking’, put everything in [there] throughout the whole program” (I14). This also resonates with other trainers’ thoughts on making strategic thinking more explicit in the program (I12, I18) so “that the fellows know ‘Ahh, I’m doing strategic thinking here. It’s not only a classroom vision process’ (...) We could show on a stronger level that some of the trainings exactly hit this one competence” (I18). There is a further opportunity to implement exercises on the transferability of the skill to other contexts outside of the classroom (I12). Another trainer highlighted, however, that currently there is a lot of reactivity since the fellows “need to keep their heads above water” and that there is much room to become more strategic (I15) in general. Also, supporting the fellows’ strategy as alumni needs more attention (I19). Lastly, there is a missing collaborative approach to strategic thinking in the vision project: “To go out and draft this vision with your principal, together with your team teacher, together with your children, who you are doing it for. And that was the intention, but it doesn’t manifest in reality. Not at all at the moment” (I12).

Anticipatory competence integration: Several aspects of the anticipatory competence seem to be implemented in the fellow program. First, fellows learn to set high goals for themselves and for their students (I6, I19) and what the “psychology behind setting high goals” is (I5). They then do so both for the vision project (I6) and for their lesson plans (I19). Fellows learn to “be precise with the goals, saying when and how to achieve them” (I9), namely fellows learn how
to set SMARTi\textsuperscript{13} goals (I9, I11, I17). They practice creating goals tailored to the children, understanding that “not all kids have to achieve all high goals” (I1). They also learn to set goals taking context into account: “I think, especially with this setting goals, you really have to know your pupils. (...) You really have to get in exchange with [other teachers], too” (I14). In addition, there is an emphasis on positively framing the goals: “Setting high goals for me mostly means believing that my kids are able to change their lives” (I1). Anticipatory competence is also present, because fellows are taught to teach for the children’s future (I12, I13, I18, I9). The work they do is to create a desirable future for the children, rather than the “predictable” one they foresee based on statistics (I9, I12). There is anticipatory thinking when the fellows identify the necessary steps for the children to achieve their goals (I18). This is again linked to the vision project, where fellows create a picture of the future for their classroom (I14). Furthermore, fellows are thinking about what actions in the classroom can lead to successful lesson outcomes (I12), which can also be considered anticipatory thinking. Moreover, TFA holds a 2050 vision, they are collectively anticipating (I17): “We focus (...) on this normative aspect of having a vision where we all want to align and bringing that into the world” (I12). Fellows are also supported to create ideas (I14) and projects (I1) that contribute to this future vision (I14). Lastly, the language is very future oriented, “Everything they do is future oriented. They push you to think forward” (I1).

Anticipatory competence opportunities: The interviewees have named several opportunities regarding the anticipatory competence. There is a missing collaborative approach regarding the anticipatory competence (I14, I15, I18): “We don't have good tools for that yet, really. Collective action, collectively with the parents, the kids; with all the people involved in deciding where we want to go -- This has not happened, and we aren’t very well equipped. (...) integrating the parents and the kids more in our prediction for the future and into thinking about the vision (...) - it's not only important, it's essential” (I18). It was highlighted that specifically the integration of parents into conversations about future pathways would be crucial to be able to achieve the 2050 vision (I18). A fellow verbalized the need to teach anticipatory thinking to children: “I think we need to [think about their future] for them until they have the ability to do it for themselves. And we have to train them how to recognize that they have a future after school” (I9). Furthermore, fellows are very much focused on their daily work in classrooms, which reduces their capacity to engage in anticipatory thinking: “You can easily get kind of stuck in this day to day routines where you actually stop thinking in advance” (I6). A trainer also mentioned that fellows sometimes lose focus on the bigger goals and that there is a need to talk about the aims over and over again (I17). However, there seems to be room for improvement in communicating this competence as a fellow said it was never talked about during the training at all (I3). Moreover, there is a wish to offer a wider range of possibilities to develop the anticipatory competence (I10).

Normative competence integration: The normative competence is also partly represented in the TFA program. When fellows join the organisation, they know TFA’s values (I4, I2, I18, I19) and commit to live up to them (I19). A fellow explained that during the training, there is communication to portray a clear picture of what TFA stands for, values are agreed upon and talked about so that fellows also represent them (I1). A trainer highlighted that there are

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\textsuperscript{13} According to the TFA definition, SMARTi goals are Specific, Measurable, Ambitious, Realistic, Terminable and inspiring (D1).
discussions about values where everybody is included; asking questions such as: “Who are we as TFA? What’s important? Where do we want to go?” (I18). Even though the normative competence is not explicitly taught as it is not anchored in the curriculum, it is implicitly taught (I18, I12). I12 mentioned there is a collaborative approach, because “everybody is involved in decision making processes, which to me is some kind of teaching the idea behind [the normative competence]” (I12). One fellow mentioned that deciding upon common values for the classroom is part of the vision project (I9).

Normative competence opportunities: In terms of opportunities, it was mentioned fellows don’t explicitly learn how to guide value processes (I18). A trainer suggested that this competence could be integrated into the vision project of the second year (I12). However, they were unsure on how this process would look like and if it would be necessary to incorporate this competence (I12).

Interpersonal competence integration: The interpersonal competence is considered a strength of the program (I1, I6, I10, I12, I15, I16, I18). It is what fellows develop the most during the two years (I6). Fellows learn to engage all children in the classroom (I1, I3) and help them believe their participation matters (I1). They learn how to tailor the difficulty of the tasks according to their students’ abilities (I3). They are taught how to make kids curious, activate them to think (I13) and help them develop communication skills (I14). Fellows also learn about motivating and engaging their teacher colleagues and their principals (I13). In addition, fellows learn about classroom management (I14, I16, I17, I19, I10); they are taught to develop daily routines and rituals for kids to have structure and to create an atmosphere of learning (I14). Classroom techniques to involve not only the loudest students, but also the ones that don’t want to raise their hands (I10) are taught. Fellows develop their communication skills (I1, I6, I9, I10, I14). They learn to provide clear instructions and communicate rules in a positive way (I14), some interviewees named this “positive framing” (I1, I14). They learn to tailor communication to diverse audiences; “being aware different backgrounds require different ways of communication” (I1). Furthermore, there is a focus on developing a positive attitude and sense of belief (I3, I13, I14, I20): “Here at TFA I think there is a positive spirit; a sense of possibility, a growth mindset, to believe that the system can be changed” (I20). Fellows practice encouraging and inspiring children to do what they think they cannot do (I3). Fellows practice believing that every child can do anything (I9). They set high expectations for themselves and the children in a context where it is challenging to achieve those expectations (I15). This helps the fellows to build trustful relationships with the children (I6) and get to know them well, which is also highly encouraged by TFA (I7). In addition, their empathy grows through co-teaching; when fellows work together with other teachers (I10, I4). Collaboration is an important part of the training (I14): “I would expect every single fellow to be a very good facilitator of collective learning, collective decision taking, collective planning, [and] integrating different interests” (I18). The TFA training emphasizes the importance of cooperation (I12, I13, I15, I10). Fellows learn about building alliances (I6) and trust (I12) in school before taking actions (I6). Lastly, the program is considered a leadership program (I11, I14, I17, I18). A fellow defined leadership as “taking responsibility to affect change” (I11). In that sense, TFA proposes that through the practice in the school setting, leadership skills are developed (I15, I18).

Interpersonal competence opportunities: Nevertheless, some opportunities were highlighted. It can be integrated more, because the way fellows interact with students is considered “more important than all the other things” (I9). There could be a greater focus on preparing the fellows
for the difficult and emotional situations they might face in school, before they step into the classroom (15). This was missing in the beginning of the program, where there could have been more information on dealing with trauma, gender sensitive teaching, how to address forms of violence and psychological foundations (15). There could also be a stronger focus on communication with the parents: “How to involve them, engage them, communicate with them. Like this parent work is a big thing. I think there is so much space for improvement” (114).

Integrated problem-solving competence integration: The TFA program is not explicitly focused on teaching sustainability and in the interviews no questions were asked about this specific competence; thus, no information about the use of sustainability-related problem-solving frameworks were given. However, two fellows mentioned the strong connectedness between two specific TFA-skills, which to them is very evident in the training (11, 12). The research team, therefore, assumes that the organization aims to make connections between the skills they train obvious for the learners, which can be understood as a contribution to this competence.

Intrapersonal Competence integration: The training has a strong focus on self-reflection (11, 19, 10, 12, 14, 15, 16). The first part of the training is about understanding who the fellows are, why they are there (11), who they are as leaders (19, 15) and what they want to see in the children (114). There is also reflecting about the fellows’ own patterns (14), attitudes and challenges (116), looking at how they overcame them, the tools they used and what they learned from that (116). The fellows look into what it means for them to take responsibility in order to create change (115). The program also offers workshops such as mindfulness or teaching strategies to cope with difficult situations (14) and learn to handle stress and pressure (117). Furthermore, it was emphasized that the willingness to learn is very important in the training (112, 113, 115). During the program, fellows learn to establish learning habits (112). In addition, they are encouraged to lead their own learning, acknowledging “that you own this whole experience and not that it’s becoming an experience that is done to you and you are the spectator, it’s very much on you” (112). TFA names this skill “locus of control” (112). Fellows are trained to take on responsibility (11, 14, 10, 15) for their own and other people’s results: “It gives you the opportunity to take big challenges and this leads to self-confidence” (14). One fellow learned not to be afraid to speak in bigger groups anymore (110). Lastly, patience with their own actions is developed (12, 16).

Intrapersonal Competence Opportunity: There was one opportunity for improvement named, which regards the topic of self-care: “I don’t think for a long time you can work in such a way” (15).

Implementation Competence Integration: From the very beginning of the training on, the fellows learn how to implement what they learn by literally doing it right away (12). Interviewees expressed how setting goals and planning backwards from them leads to implementing effectively (11, 12). Routines were mentioned as being useful for effective implementation (11). Fellows learn how to make progress visible (11) and use tools to achieve their goals and vision (11, 15). Fellows are taught how to effectively intervene in the classroom (116), for example through non-verbal interventions (117).

Implementation Competence Opportunity: What is missing is the implementation at a bigger scale (14) and to do it collectively (112).

General opportunities for improvement: Interviewees identified general opportunities for improvement. There should be a clear red thread of the competencies developed throughout the
whole program (I14). The training needs continuity and a “master plan” for all competencies taught (I16). It could make learnings more explicit: “That fellows themselves understand what they are learning right now (…) if you don’t know what you are learning you can’t refer to it afterwards. Right? That's a little bit of a problem I would say” (I12). Furthermore, sustainability is a missing focus of the program (I15): “There is nothing explicit about sustainability in the training. Ecological no… and social I am not sure. At least not explicitly. I find it interesting how this could be incorporated” (I13). Furthermore, there is room for improvement when it comes to leadership (I18, I19, I3). Overall, there is a lack of focus, consistency and explicit approach to leadership (I3, I12, I18, I19). “Many fellows say that the leadership parts weren’t so clear to see and they wonder why it is a leadership program” (I19). The training needs to “very easily point out where leadership skills and teaching skills intersect and how they can be transferred to completely different settings” (I12). Sustainability could become an overarching theme, just like leadership (I20).

### 3.3.2 TFA and Pedagogical Approaches in support of Key Competence Development

This chapter gives an overview of the current pedagogical approaches and methods trained in the TFA leadership education according to the interviewees. In addition, the chapter includes some concrete examples that showcase how they are integrated. The pedagogical approaches and methods used by TFA were organized in a table and related to the pedagogical approaches described in SRQ2. This can be found in Table 3.2, where the connections are highlighted with a grey background color. In this chapter, the methods, which were understood to touch on more than three different pedagogical approaches of SRQ 2 are described in chronological order of the TFA leadership education. Connections to the pedagogical approaches of SRQ 2 are highlighted in brackets.

**The Leadership Lab:** During the summer, when fellows are prepared for the classroom, the leadership lab is used as a pedagogical approach. With this method, fellows are thrown into an experience [empowerment, active & experiential learning] that is aimed to stir their emotions and surface group dynamics (I12). According to a trainer, the power of this approach is that every fellow would make their individual experience, which allows them to later learn – once the experience is reflected upon – that everybody is different (I12) [social learning, transformative learning]. The leadership lab was explained by a trainer: “Somebody from staff basically would stand in front of the crowd and say something along the lines: 'Aaah yeah, leadership… today is full of leadership and when we talk about leadership, then the question is: ‘How do we start talking about leadership? So you got 60 minutes’, and then full stop. So for one hour and the whole group would basically fall into this abyss of meaninglessness, basically not knowing at all what to do and you would see all kinds of group dynamics coming up, all kinds of biases, all kinds of patterns, individual patterns and the most interesting part of it is that it is an experience of real life” (I12). Another trainer mentioned that creating such a complex scenario without giving the fellows any guidance can let them experience the value of the models and frameworks they had learned before (I17).

**The Summer Weeks:** Before fellows start as teachers in the schools, they teach for two weeks during the summer in order to practice in a real school situation (I9, I14, I16) [active & experiential learning, empowerment]. During these two weeks, they give one lesson to actual students every day (I14) [social learning]. They need to prepare lesson plans including lesson goals for each of these classes (I9, I14) [PPB and solution-oriented learning] and after each lesson they talk to their coaches about what worked well, what did not work well and why (I9, I14) [dialogue learning]. This is a chance for the fellows to experience which techniques they
had learned actually work well for them [lifelong learning]; it’s a chance to explore and experience the practice (I1).

**Table 3.2 TFA Pedagogical Approaches and Methods clustered based on SRQ 2 results**

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<tr>
<th>Pedagogical Approaches and Methods used by TFA / Pedagogical Approaches found in SRQ 2</th>
<th>Lifelong Learning</th>
<th>Social Learning</th>
<th>PPB-and-Solution-oriented Learning</th>
<th>Active &amp; Experiential Learning</th>
<th>Transformative Learning</th>
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<td>Creating habits (I12)</td>
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<td>Community sharing &amp; support (I12, I13, I14, I16, I17, I2, I6)</td>
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<td>The vision project (I1, I9, I13, I14, I16, I19)</td>
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<td>The walk of privilege (I9, I15)</td>
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<td>Role play (I3, I5, I9, I12, I14, I15, I16, I17)</td>
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<td>Learning circles (I1, I3, I6, I10, I14, I15, I19)</td>
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<td>Summer weeks (I1, I14, I16)</td>
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<td>2-year classroom experience (I1, I3, I5, I12, I14, I15, I16)</td>
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<td>Internship opportunity (I6)</td>
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<td>Workshops14 (I2, I5, I6, I10, I14, I15)</td>
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<td>Lesson planning (I10, I14, I19)</td>
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<td>Leadership lab (I12, I17)</td>
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<td>Think, pair, share (I9)</td>
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<td>Role-modeling (I10, I15, I17)</td>
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<td>Theoretical teaching / learning (I1, I2, I5, I6, I10, I14, I15)</td>
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<td>Reflective learning (I3, I6, I9, I12, I13, I14, I15, I16, I17)</td>
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<td>Coaching (I1, I5, I6, I12, I13, I14, I15, I17)</td>
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<td>Self-study incl. digital learning (I2, I5, I10, I15, I17)</td>
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<td>Adaptive Leadership Model based on Heifetz (See understand act) (I10, I15, I17)</td>
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<td>WOOP15 (I12)</td>
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14 Not all of the workshops use all of the highlighted pedagogical approaches. There is a chance for fellows to choose between workshops; according to the interviewees TFA offers workshops about e.g. storytelling (I15), violence in classrooms (I5), emotions (I6) and conflicts (I5, I6); fellows can follow their individual interests (I6, I10, I15).

15 WOOP stands for ‘wish, outcome, obstacle, plan’ – for more information see: [http://woopmylife.org](http://woopmylife.org)
The 2-Year Classroom Experience: The core of the program is to situate fellows in schools, where they teach children for two years [empowerment]. According to interviewees, this is when they really learn by doing (I3, I12, I14, I15), and actively apply and develop their leadership skills by teaching in challenging classrooms (I15, I16) [active & experiential learning]. Fellows learn from occurring problems: “There are so many challenges that add just additional barriers to the development of these kids”; an example being classrooms full of refugees that barely speak German but need to be somehow taught by the fellows (I5) [social learning, PPB and solution-oriented learning]. Fellows work in the classrooms and receive regular feedback from their coaches (I1) [dialogue learning]. A trainer explained that fellows constantly have experiences in their classrooms, which they then reframe or reflect upon with their trainers from a leadership tools perspective (I12) [transformative learning]. This gives them the chance to look at what they need to change in order to master the classroom work even better (I12) [lifelong learning].

The Vision Project: The vision project [PPB and solution-oriented learning; active & experiential learning] has already been mentioned briefly above. This is what it looks like: First, the fellows choose a challenging classroom in the schools they work at (I16). Then, they set goals for this classroom (I1, I8, I16); namely they decide upon which specific skills they would like to focus on developing with their students (I13, I16) [empowerment], e.g. teamwork (I9) or self-organization (I13) [lifelong learning: Learning to learn]. They think about potential hindrances and alliances that could hinder or support the development of these goals (I1). They create a roadmap on how to realize the goals including a timeline (I16) and a plan on how to measure their progress (I1, I13, I16). They learn how to communicate their vision (I13). Some interviewees talked about the importance of creating this vision together with other people (I1, I19), specifically together with the children they teach (I9, I19) [social learning].

Reflective Learning: This pedagogical approach is highlighted explicitly as it is apparently immanent throughout the whole TFA leadership education (I3, I12, I14, I16, I17). TFA builds much on reflective learning as they believe that humans don’t learn from experiences, but from reflecting on them (I16, I17). For example, fellows do a task and then analyze how it went (I6, I15) [active & experiential learning] and how to do it even better (I12), they are being motivated to learn about their strengths and weaknesses and to build on their potentials (I15) [transformative learning, lifelong learning]. According to a fellow, trainers ask a lot of uncomfortable questions that make them reflect upon their behavior (I9) [dialogue learning]. Trainers in general guide fellows with a lot of reflective questions (I14, I15), e.g. they ask them about their attitudes as teachers (I14).

Coaching: In the TFA leadership education fellows are continuously being coached (I1, I17) [dialogue learning], which is perceived well by the fellows according to an internally conducted rating of the program (I17). First, there is a lot of supervision and extensive feedback by trainers during the education prior to the fellows’ work in the classroom (I5). During the first year at school, coaches visit the classroom approximately 5 times (I6). Fellows receive feedback and tips from their coaches on how to (better) use certain tools and techniques (I1, I3, I13, I14, I15, I17) and are supported to find out which techniques work for them (I1) [active & experiential learning]. Then they are sent back to practice (I13). This gives the fellows clarity for the next steps (I17). Furthermore, the coaches talk with fellows about current problems and challenges they have in their work as a teacher (I15, I17) [PPB and solution-oriented learning]. This is not limited to classroom problems, for example, they support them also when it comes to the collaboration with teacher colleagues (I17) [social learning]. A trainer highlighted that these
coaching conversations are very personalized and focused on what the fellows need at that moment (I17). Another trainer mentioned that he/she perceives the role of a coach as helping the fellows to find the answers themselves (I13) [empowerment, lifelong learning]. Coaches believe in their fellows (I17); the coaching approach used is based on “potential-focused pedagogy” (I12, I15, I17), meaning that the person who is being coached knows best what he/she needs in order to become better (I17). A fellow said that the coaches help them appreciate the small steps that have already happened, since fellows tend to overlook them (I1); they remind the fellows of the purpose of their work (I13) and challenge their high expectations (I12). Another fellow highlighted that having an external perspective has been highly valuable for him/her (I9).

General opportunities for improvement: The TFA interviewees identified general opportunities for improvement that are linked to certain methods and pedagogical approaches. Such as, providing regular network events where the fellows know who to contact for certain situations and contexts (I13), provide focus groups for the teachers to give and receive support from each other in the school system (I4). Another opportunity was to consistently integrate the adaptive leadership model (see - understand - act) in formal sessions to keep reminding the fellows to have a learning attitude within challenging situations (I15), as well as integrating practical skills consistently until the end of the 2-year curriculum in learning circles (I9). Providing emotional support, rather only regarding methods, straight from the beginning of the curriculum (I2) and individual support for all who are facing challenges or performing above average (I15) is seen as a great opportunity for improvement within TFA. Another opportunity is implementing guided and structured group dialogues (I7) and offer small group dialogue to make sure there is space for everyone’s need and not just for the loudest ones (I15). An opportunity TFA is currently working on is implementing digitalization projects where the fellows can make their own learning choices on when to do what. This holds the opportunity to provide also a clear and transparent structure to see the whole TFA leadership education (I16).
4 Discussion

4.1 Recommendation for TFA

In this chapter we, the research team, provide a recommendation to TFA on how they could integrate the key competences and pedagogical approaches into their leadership education based on the results found above. The recommendation is presented using the FSSD levels, which served as a supporting structure to provide a comprehensive recommendation looking at TFA more holistically. Recommendations are structured starting with opportunities, followed by the actions proposed and expected outcome. This stems from results and also our own thought process of analysis.

4.1.1 System

Teach for Austria leadership education currently integrates three levels of systems into their training: The classroom, the school system (including headmasters, teachers, parents and children) and the Austrian education system. TFA covers the classroom level thoroughly throughout the trainings. Based on the identified opportunity to work further within the school system level, we recommend to adopt a stronger focus on the collaboration and communication with parents and also with other school teachers. Overall, results showed an opportunity to gain a better understanding of how the bigger system functions; how and where to create change within the broader system was expressed to be important for several TFA interviewees. Considering TFA is aware of the broader system and currently incorporates it into the training to a certain extent, we see a potential to go deeper into the larger system. The development of the systems thinking competence could support TFA leadership education fulfil this potential; preparing leaders to have a positive impact on the systems level in the long-term. Additionally, based on the identified opportunity of incorporating sustainability, we recommend to expand on the current system levels and incorporate content knowledge about the socio-ecological system and the SPs into the TFA education. This would raise awareness and understanding about the larger socio-ecological system and related sustainability challenge, and empower fellows to become system leaders fostering a transition towards sustainability.

4.1.2 Success

Results showed that Teach for Austria is working towards their vision of success where every child has the chance to live a good life by 2050. Their aim is to prepare fellows to be successful teachers, as well as successful leaders in the long run in order to cause change in the education system. TFA prepares fellows to become teachers by consistently equipping them with useful tools and methods for their work in the classrooms. Also, in order to achieve their vision of success, TFA has a solid support system that supports the development of fellows. Strong relationships of trust accompany them throughout the whole program, mainly through coaches and peer groups. However, there is a potential improvement in preparing the fellows to become leaders. In order to support TFA achieve its own idea of success, we suggest an integration of the key competences for SSD proposed in this thesis. This should include an understanding of the framework of key competences for SSD to not only integrate the competences but integrate them understanding their placement within the big picture of sustainability problem solving. This could help TFA leadership education support the fellows to become long-term leaders after the TFA experience. TFA is already using a competency-based approach to education, therefore
we see this could be a transition towards a more comprehensive set of competencies for leadership development. Based on results, we recognize TFA is already incorporating many of the key competences for SSD, however we provide recommendations on what TFA could do to address the opportunities. This is included in the Actions/Tools section where we specify on actions that could be taken. Additionally, there was consistent data reflecting a missing focus on sustainability. We suggest to integrate sustainability within their vision of success, mainly through the integration of the SPs. This is further specified in the action/tools section.

4.1.3 Strategic Guidelines

We interpret that results show how TFA is strong with utilizing opportunities, but lacks a strategy on how to prioritize actions. TFA employees often take on responsibilities for tasks, but the decision-making process seems to be scattered, meaning that they are not collectively following strategic decision-making guidelines. Back casting is one technique that supports strategic decision-making and TFA is already practicing it. TFA back casts from their bigger 2050 vision while fellows back cast from their visions in classrooms. However, we see a potential opportunity for fellows to additionally back cast from the suggested areas within the success level; mainly the key competences for SSD and the SP’s. Here we mention suggested prioritized actions that support the achievement of the actions mentioned in the actions/tools sections. This includes adding consistency to the competence development throughout the program, making the competences explicit, and adding transferability of the competences to make them applicable out of TFA contexts. For consistency, we suggest to implement all competencies that are being taught in a consistent way throughout the two-year program. This could support the fellows’ learning as they could refer to what they have learned by having a clear red thread of the competences developed throughout the whole TFA leadership education. Connected to consistency, we suggest to clearly and recurrently state the competences that are being learned, to make them explicit. Similarly, this could support the fellow’s learning as it could help them associate their experience with clear and tangible outcomes. For transferability, we suggest to provide leaders with information on how their learnings can be used out of TFA contexts. One way to potentially achieve a successful transfer of the developed competencies into the broader system after the TFA program, is to balance the focus between short term and long-term needs of the fellows.

4.1.4 Actions, Tools & Methods

We suggest several actions for TFA to better integrate the key competences for SSD. For the systems thinking competence, there is an opportunity for fellows to learn a step by step process on how to create change systematically in the educational system while involving different stakeholders (other teachers). Therefore, we suggest to develop the competence of system thinking within each TFA employees, including the trainers, so the whole TFA organization is able to act with the competence of system thinking. Additionally, to integrate it consistently throughout the 2 years curriculum while inviting experts in this field from beginning to end of the program. As an expected outcome, this could result in having long-term systems change in the educational system. For the anticipatory competence, there is an opportunity to integrate a collaborative approach with a wide range of approaches. A related action we heard in the interviewees, which we also recommend, is to think collectively about the envisioned future and goals involving different stakeholders (children, parents) and keep having those collective conversations. Also, for the fellows to teach anticipatory competence to the children in the classroom. Connected to opportunities mentioned in interviews, this could support TFA to achieve the 2050 vision collectively while staying awake to the bigger goal instead of just
focusing on the daily routines. It could also result in children at school feeling supported to recognize they have a future after school. For the normative competence, there is an opportunity to learn how to guide value processes while teaching. Therefore, integrating the normative competence into the vision project during the second year of the TFA program is a suggested action. As an expected outcome, the fellows can further develop guiding learning processes where values are being implemented. In terms of the interpersonal competence, there is space to better prepare the fellows for difficult and emotional situations in the classroom straight from the beginning of the TFA leadership program. A proposed action we heard and connect to this opportunity is to provide a foundation of how to deal with trauma, violence, gender sensitivity, psychological foundations involving multiple stakeholders (children, parents) at an earlier stage of the program. This could enable fellows to better communicate and engage with different stakeholders who deal with challenging situations. Within the intrapersonal competence, there is an opportunity to better support fellows’ self-care. We recommend to provide guidance, tools and reflective questions towards the fellows, trainers and all TFA employees on how to nurture and develop self-care. As an expected outcome the fellows, trainers and all TFA employees would better practice how to take care of themselves which could result in having a stronger community of well-being where the support system for the fellows is strengthened. Therefore, potentially allowing fellows to lead the classrooms and the system in a more sustainable way.

We consider the pedagogical approaches can be seen as tools to reach the vision of success. We suggest simple tools to further finetune TFA’s rich method arsenal of pedagogical approaches. First, we acknowledge what TFA is already doing in this regard. The TFA leadership education has a strong focus on applying pedagogical approaches on active & experiential learning. They are striving in student-led and reflective learning. Trainers and leaders treat each other like equals and partners. Leaders often create their own learning journey by back-casting from their self-defined goals and work strategically towards those goals. Trainers act as guides that support leaders on their journey by providing them with useful tools and methods that help them to find their own path in challenging and uncertain realities. Additionally, trainers act as pillars of emotional stress, encourage leaders by building on their potential and ask key reflection questions for fellows to learn from their actions. What could potentially be a valuable pedagogical approach within experiential learning, is for leaders to get in touch with the earth and experience how the ecological system functions. An example for this includes outdoor activities that allow the interaction between the human being and nature. This pedagogical approach could be connected to the theoretical learnings approach by sharing theoretical and fact-based content about the socio-ecological system and the SP’s. TFA organizes regular networking and community building events to support social learning. Social learning is maximized by letting a diverse community with different backgrounds, worldviews and visions listen, discuss and work together in groups as equals. Even though fellows come from different backgrounds and TFA organizes multiple group discussions, their worldviews and visions often correlate. Additionally, group conversations regularly seem to drift off topic, and not every fellow’s voice is heard. We therefore suggest being more open for diversity in the initial selection process of fellows, as well as to give more guidance in group discussions to keep the focus on the learnings and provide an opportunity for all opinions to be voiced. Having mentioned some potential areas of improvement, we still acknowledge that TFA is successfully combining multiple pedagogical approaches parallelly to guide fellows to become leaders.

The opportunity to integrate sustainability leads us to recommend to incorporate sustainability content specifically through the incorporation of the Sustainability Principles (SP’s). TFA leadership education could provide a clear definition of sustainability through the understanding
of the ecological and social SP’s. These could serve as boundary conditions of their envisioned future; understanding boundary conditions as conditions that must be complied with in order to achieve success. As an expected outcome, the integration of the SP’s could support the fellow’s and potentially other TFA staff to better work towards a sustainable future; understanding what must be followed in order to achieve this. This would prepare fellows to become sustainability leaders taking actions that are aligned with the sustainability boundary conditions. The explanation of the SP’s can be found in Appendix H.

Lastly, the abundant leadership development practices that are in place and the opportunity to integrate leadership more explicitly and consistently shows a potential to go further with leadership. Therefore, we recommend to clearly express how the teaching and leadership skills are interlinked with each other and can be integrated in different settings. The key competences for SSD could facilitate this process of integration by aiming for competences that are not only related to the classroom but that holistically take the human being into account. A suggested outcome heard in the interviews that could result from this action is having sustainability and leadership as an overarching theme within the TFA leadership education.

As points to look into further, we highlight the importance of the trainer and the importance of competence assessment. These were two points that came up in the interviews that were not included within our scope. We still acknowledge them as fundamental for the achievement of success. Therefore, we recommend to further look into them.

4.2 Applicability for other leadership education

This chapter discusses the applicability of the above-mentioned recommendation for other leadership programs, thereby adding insights to the Primary Question: “How could leadership education prepare teachers to become leaders for strategic sustainable development?”

It is important to acknowledge that the reference on teachers to become leaders is mainly due to the fact that our case study was focused on the development of the fellows who are teachers. Therefore, the applicability of our case study to the larger field of leadership education is mainly targeted towards other leadership programs that support the development of teachers. This does not include the public sector of education that does not encompass leadership education. It is mainly intended for organizations similar to TFA who aim to develop leadership abilities for people who are also educators.

From the FSSD levels mentioned above in the Recommendation for TFA chapter, we highlight that the ones that are mainly applicable for other leadership programs are the systems, success and strategic guideline levels. The action/tools level is mostly applicable specifically for TFA only as it is based on their own strengths and opportunities; however, it can be taken as an inspiration.

In terms of the system level, we recommend leadership education to support an understanding of multiple layers of the system, like TFA does, considering the classroom, the school and the country level. In addition, we recommend to always incorporate the larger global socio-ecological system including content knowledge (such as the SPs) to facilitate the leaders’ understanding of the sustainability challenge.

For the success level, we would like to recommend leadership programs to develop their own vision of success asking themselves what success looks like for them. This should be done
collectively including all stakeholders of the organization in order for the vision to be shared. Within this, we recommend their vision of success to integrate developing successful teachers and successful leaders interconnectedly. In order to facilitate a definition for what this might mean in practice, we recommend to incorporate the key competencies for SSD; implying that the development of these key competences would support the development of successful leaders. The key competences for SSD are the systems thinking, strategic, anticipatory, normative, interpersonal, integrated-problem solving, implementation and intrapersonal competences. For a detailed explanation on them please refer to chapter 1.5.2 within the introduction and chapter 3.1.2 within results. Similar to the recommendations to TFA, we suggest this should go hand in hand with an understanding of the Framework of Key Competences for SSD (found also in chapter 3.1.2) to not only integrate the competences but integrate them understanding their placement within the big picture of sustainability problem solving; taking the intrapersonal competence as overarching and so on. This recommendation implies that the leadership programs should take a competency-based approach to their education if they are not doing so yet. Additionally, we also find applicable that leadership programs integrate the SP’s as boundary conditions of their vision of success in order to prepare teachers to become leaders taking actions that respect the sustainability boundary conditions. The explanation of the SP’s can be found in the appendix.

Strategic guidelines can serve as guiding recommendations in order to prioritize actions for the implementation of our recommendations. First, we recommend to incorporate back casting methods into their leadership education, where actions are taken considering how they relate to the vision. This means that after having clarity on their shared vision, leadership programs should ask themselves what do we need to do today to reach our vision of success? We also highly recommend to prioritize on the usage of multiple pedagogical approaches parallelly. We also find applicable to recommend to the broader leadership education field to prioritize consistency of the competences throughout their programs, to make the competences clearly explicit for the learners to relate to them, and to make them transferable to other contexts.

For the action and tools level, we highly recommend to adopt the pedagogical approaches found in this thesis, in support of the development of the key competences for SSD. The pedagogical approaches are lifelong learning, social learning, problem-/project-based and solution-oriented learning, active and experiential learning, empowerment, transformative learning, dialogue education and theoretical learning. We want to emphasize on the importance of using multiple pedagogical approaches parallelly, as we understand that the interconnection between all of them is what facilitates the development of the key competences for SSD. Within active and experiential learning, we highlight the importance of outdoor activities that allow the interaction between humans and nature. This could inspire leaders about the importance of the environmental factors for sustainable development. We also emphasize on creating diverse learning environments. Collaboration between diverse backgrounds, values and worldviews could open up new perspectives for leaders. This could provide them with a wider spectrum when in search for solutions to challenges in the classrooms. We would also like to mention here the importance of the trainer who facilitates the leadership education; this was expressed during our interviews but not included within our scope. Nevertheless, we acknowledge this as crucial for the achievement of success. Additionally, we suggest to incorporate sustainability content into their curriculum integrating the principled definition of sustainability (SPs). This would prepare the teachers to become leaders taking actions that are aligned with the sustainability boundary conditions. Furthermore, we emphasize on the importance of interlinking teaching and leadership skills; understanding teaching as a pedagogical approach
of a real-life context to practice leadership. The actions suggested to TFA are generally not intended for other leadership programs as they are based on TFA’s specific context. However, we recommend that others take them as inspiration on what they could integrate, looking at their own opportunities and adopting what is relevant for their own context. Finally, we also suggest to take TFA’s current integration of the key competences and pedagogical approaches as an inspiration on how other leadership education could enhance their programs.

4.3 Interpretation of Results

4.3.1 Key Competencies for Strategic Sustainable Development

To summarize the results of sub-research question 1 “What are key competences for leaders to enable strategic sustainable development?”, the key competences for SSD are the systems thinking, strategic, anticipatory, normative, interpersonal, integrated-problem solving, implementation and intrapersonal competences.

We interpret that the results indicate the FSRPSC is overall missing the heart and the hand competencies. The Framework of Key Competencies for SSD intends to fill those missing pieces through the intrapersonal (heart) and implementation (hands) competencies.

We consider the addition of the competencies is as important as the placement of them within the framework. We highlight it is crucial to understand the intrapersonal competence as overarching, emphasizing that the internal state of the leader is the base upon which the other competences can be developed. Similar to the implementation competence, which should be incorporated into all of the others to be able to put them into practice. We recognize that this last point is mainly our own interpretation since more data could be found in support of the placement of the implementation competence.

We identify overlaps between integrated problem solving and implementation competence since they have similar intentions of adding practicality to the rest of the competences. However, we decided to keep both as we consider the implementation competence is more explicit about the hands-on approach and the integrated-problem solving specifies about using all other competences in concert.

Within the framework we reason the Sustainability Principles could be included within various of the key competences as knowledge. They could promote an understanding to create visions within the normative competence and facilitate the ability to analyze complex sustainability problems within the systems thinking competence. We would like to acknowledge this is only recommended as one of the methodologies within the competences, and not as exclusive content knowledge.

Additionally, it is important to note what we do not intend to do with the Framework of Key Competencies for SSD. We do not intend to provide a specific definition on the additional key competences, indicate how to train them, implement or assess them. We acknowledge the importance of these areas of focus. However, this framework is merely an indication of what the key competencies for SSD are and how they are relevant in the transition towards sustainability.
Lastly, taking Arnim Wiek’s intention of using all of the competencies in concert into account, we highlight the importance of using a thorough rather than a pick and choose approach, when working with competencies for SSD.

4.3.2 Pedagogical Approaches in Support of Key Competence Development

To summarize the results of sub-research question 2 “Which pedagogical approaches support the development of these key competencies?” the pedagogical approaches in support of key competence development are lifelong learning, social learning, active and experiential learning, problem-/project-based and solution-oriented learning, empowerment, transformative learning, dialogue education and theoretical learning.

Overall, it needs to be mentioned that the literature study conducted in order to find these pedagogical approaches was a background literature review and was, therefore, not thorough enough to cover all potential pedagogical approaches that can support key competence development. In addition, since we used the paper of Missimer and Connell (2012) as a basis both to look for additional information about the pedagogical approaches and to organize the information received from the interviewees, there is a perspective bias towards the pedagogical approaches we suggest. We acknowledge that without this paper, we might have named or clustered the resulting pedagogical approaches slightly differently. However, it is also interesting to mention that it was possible to cluster almost all of the received information about this topic within the pedagogical approaches suggested by Missimer and Connell, which can be understood as a support of their findings. The only pedagogical approach that was added by us based on the information received by the interviewees is theoretical learning, which admittedly is not necessarily specifically supportive of key competence development, but rather a very general pedagogical approach. However, we also acknowledge that it was important for some ESD experts to highlight that teaching knowledge is a key basis for more action-oriented pedagogical approaches to be successful.

Furthermore, we would like to recognize that some pedagogical approaches overlap in some ways (e.g. social learning and dialogue education or empowerment and transformative learning) and it was not always completely clear where to capture the different interviewee statements. Even though we as a research team found a consensus on how to cluster the findings within the pedagogical approaches mentioned above, it is likely that other researchers would have clustered these findings somewhat differently. In addition, while conducting the literature review, it became obvious that there is a multitude of potential other pedagogical approaches, which could likely also support the key competence development, but were not mentioned by the ESD experts (e.g. online learning (Dengler 2008)). Since the interviews were our main source of research, we focused and aimed to give more information about the pedagogical approaches that emerged within our interviews. We acknowledge that the relatively small amount of ESD experts is not enough to claim thoroughness.

However, what the research on pedagogical approaches in support of key competence development can add to the current literature are several examples on how different pedagogical approaches could be integrated. The research provides further support for the importance of learner-led methods, where learners are empowered to take responsibility already during their studies, since this was stressed by several different ESD experts. The results suggest that pedagogical approaches should be integrated based on the idea that teachers and students are partners, inviting the learners to have an active attitude and involving them in designing and evaluating their own learning environment. Allowing for such a responsibility transfer from
teachers to students would potentially require not only a mindset shift in educators, but also severe changes in curriculum design in order to give more power to the student voice within institutional structures. It was also highlighted that giving the students learning opportunities to directly practice is key, be it through PB- and solution-oriented learning or through active & experiential learning. Outcomes suggest that these pedagogical approaches allow students to embody their learnings and implement them in reality. Such approaches have the potential to also motivate students as they can already have an impact during their studies.

Another important outcome of this thesis is the (admittedly loose, but existing) connection of these pedagogical approaches to the FSRPSC (Wiek, Withycombe, and Redman 2011). Even though the data does not allow to reason that specific pedagogical approaches train a specific key competence, the questions we asked made ESD experts elaborate on specific pedagogical approaches useful to develop the systems thinking, strategic, anticipatory, normative and interpersonal competences. Therefore, it can be reasoned that the pedagogical approaches found likely support these five competencies, which we consider relevant for SSD. Since the FSRPSC is not a loose list of competencies, but rather aims to provide a holistic view on what it takes to be an SD change agent, finding pedagogical approaches in support of the competencies of this framework, can somewhat be seen as a systematic approach to the search of pedagogies in support of SD. However, we would like to highlight the limitation that we did not present the researchers with the thorough framework of key competences for SSD, but rather listed the FSRPSC, which makes us assume that our results for this section are not as thorough and systematic as they would have otherwise been.

At the same time, this also surfaces another weakness of this study. The previous point means we asked about the original five key competencies rather than the eight key competencies for SSD, since the same interviews that resulted in additional key competencies were also the basis for the pedagogical approaches. Therefore, the pedagogical approaches may not be sufficient to develop all eight key competencies. Even though the intrapersonal competence may be well developed through transformative learning and empowerment approaches, and the implementation competence may be well trained through active & experiential and PB & solution-oriented learning as well as social learning, the integrated problem-solving competence might not be addressed well enough by the suggested pedagogical approaches. Therefore, there is a need for further research to find out how integrated problem solving can be taught.

To sum up, we consider it critical to mention that a mix of different pedagogical approaches is important, and that teachers should align this mix in a way that the pedagogical approaches have the potential to develop all of the proposed key competencies for SSD. At the same time, we highlight that not all of the approaches need to be used in order for the education to be in support of key competence development, since there likely exist several other useful pedagogical approaches. However, rather than randomly choosing a few pedagogical approaches, we highlight the importance of selecting wisely, designing the education in a way that allows for a thorough and comprehensive competence development. The pedagogical approaches identified are not a final answer and there is more rigorous research needed to validate the findings of this thesis. Further research is also suggested to find out how to develop the integrated problem-solving competence.
4.3.3 Integration of Key Competencies for SSD and Pedagogical Approaches in TFA Leadership Education

Current Integration of Key Competencies for SSD: We would like to discuss about the clustering process of the data into the 8 key competencies for SSD. As mentioned, the interview questions only included the 5 key competencies of the FSRPSC. Even though a definition of each key competence was provided in all interviews, we recognize that the interviewee’s knowledge about the competencies might have been limited. In addition, the connection of interviewee statements with the further 3 key competencies we did not explicitly ask for, this association originates mainly from our own sense-making. Therefore, the results are influenced by both the interviewees’ associations of the original 5 key competences and also by our own reasoning based on our understanding of the key competences for SSD. In this sense, we acknowledge the subjectivity that comes with human sense-making.

Data gathered reflects that all of the key competencies for SSD are currently incorporated in TFA leadership education to some extent. Some competencies show to be more present than others. While strategic thinking, anticipatory and interpersonal competence were very present, systems thinking appeared to have many opportunities for improvement. Improving systems thinking was one of the biggest opportunities for the training; considering the amount of related statements received. There was a consistent emphasis on how the training focuses much more on developing the fellows as teachers than as system leaders. We find this as a key opportunity because of how it aligns to TFA’s purpose of creating not only teachers but also leaders. Additionally, the normative competence was mainly associate to how TFA values are present and overall a lack of clarity on how it could be implemented was shown.

In terms of general opportunities, we identified recurrent areas worth synthesizing. The first pattern is about the opportunity to have a bigger focus on the school system; this was expressed for systems thinking, strategic thinking and the interpersonal competence. It was repetitively mentioned that the relationship between fellows and parents could be put more attention. Second, the opportunity to have a more collaborative approach; this came up for strategic thinking and the anticipatory competence. This was mainly related to the opportunity to work collaboratively in the vision project where future thinking could be approached together. Third, the opportunity to add consistency to the development of the competencies throughout the program; meaning that there is currently a scattered approach and no clear red thread. This showed up especially for systems thinking, strategic thinking and the interpersonal competency. The last pattern found is to make the competency development explicit; which was expressed for systems thinking and strategic thinking.

Finally, we emphasize on the leadership and sustainability opportunities. It was consistently expressed that leadership needs a stronger focus and a red thread throughout the program. The contradiction between the training being a leadership training and it not explicitly developing leadership competencies was constantly voiced. Additionally, we conclude that sustainability is not explicitly present in the training.

Current integration of Pedagogical Approaches to develop Key Competencies for SSD: Again, we would like to highlight that the clustering of pedagogical approaches and methods used by TFA with the pedagogical approaches found as an answer to SRQ 2, was due to our sense-making process. We aimed to minimize the related subjectivity by conversing about the table shown in the results section and making sense of it together. However, it must be acknowledged
that some pedagogical approaches and methods used by TFA might have been clustered differently by other researchers.

Furthermore, we would like to highlight that the received data was very rich and that there would have been the chance to elaborate in much more detail on each of TFA’s pedagogical approaches and methods. However, we decided to focus on explaining those that were reasoned to integrate several pedagogical approaches in more detail rather than giving only an overview of many.

What stood out of these results is that TFA uses all pedagogical approaches proposed in SRQ 2 in one way or another and that they are particularly strong in providing opportunities for social learning and active and experiential learning. It also became evident that TFA already uses several tools, which were mentioned multiple times by interviewees, that allow for empowerment and transformative learning.

4.4 Limitations of the study design

4.4.1 Methods

This thesis is not based on a comprehensive literature review that included all papers about competencies and pedagogical approaches for ESD. Our focus was placed on interviews. We prioritized methods due to the time constraints of this master thesis considering it didn’t allow to conduct a thorough literature review in addition to the 30 interviews that were conducted. Therefore, we included some relevant articles as a background literature review in the results of this thesis in order to better interpret the results of the interviews and put them into a broader perspective. The thesis is holding thereby a limitation of showing all the previous work and research that is present in the academic ESD research field.

A general strength was that we consistently conducted dialogued reflections after each semi-structured interview to continuously improve our skills as interviewers and thus potentially improving the quality of the interviews. We also created templates and guidance documents for the interviewer and observer to conduct the interview in a prepared and confident way. Those activities supported our skill development. Another strength is that we received and implemented feedback from multiple participants supporting the validity of the thesis. We also sent out interview transcriptions to interviewees and integrated their comments to validate data. In terms of our collaboration, all team members took ownership for all phases of the research project which created a shared mental model and a collective leadership working style. Each research team member transcribed & coded for example the interviews they conducted. This supported self-reflection on our interview styles and also decreased the possibility of misinterpreting data. However, interviews were only transcribed by one team member. We could have added rigor if more than one person coded each interview. Another limitation in general about the methods is that we used transcription tools which created potentially less embodiment of the data than would have been possible manually. Next to this, we could have planned more time to create a shared mental model about the coding themes used to analysing data to raise precision and efficiency.

4.4.2 Results and Discussion

In terms of the limitations of our results we acknowledge several important aspects. We acknowledge the importance of the trainers’ abilities to train the competencies; generally
speaking, the importance of the educators who prepare leaders (their attitude, the embodiment of what they teach, etc.) needs to be highlighted next to key competences and pedagogical approaches used. This was excluded from our research but acknowledged in this paper. Another key aspect which was not included in our scope, but was named by several interviewees as an important factor, is competence assessment. Because of the exclusion of these two points, looking into key competencies and pedagogical approaches only will likely not be sufficient to enable leadership education to develop SSD leaders.

In addition, when it comes to the applicability of this research to other leadership education, there is an opportunity to receive further feedback on our recommendations from both academia as well as practitioners and to integrate these suggestions in order to make the outcomes more relevant for other organisations. As our findings are based on the case study of TFA and not the larger Teach for All network, we acknowledge that our findings might need further elaboration in order to add network wide rigor. Therefore, recommendations presented in this paper might not be concrete enough, lacking specific guidance for other leadership education.

One challenge presented in our research includes ESD experts using different wordings to define similar pedagogical approaches as well as competencies. This made analysing the transcripts a complex task which means our coding processes were influenced by our own sense making; hence another limitation we acknowledge.

Furthermore, it became clear that a successful implementation of pedagogical approaches depends on many additional factors such as personality, background and current mood of the teacher, as well as the learning context and the student needs. Therefore, we acknowledge these external factors highly influence quality of the pedagogical approaches and consider them a limitation to be able to guarantee effectiveness.

4.4.3 SD and SSD

SSD was very present in this research and vividly discussed. First, the proposed framework of key competencies for SSD is an attempt to integrate an SSD lens into the landscape of sustainability competencies. The conducted research has its merits, but we also acknowledge certain gaps regarding the SSD lens of the study. The critical framework review of the FSRPSC was crucial to identify that the framework is in many ways already in its original version (Wiek, Withercombe, and Redman 2011) highly successful in proposing key competencies in a strategic way; namely through its approach to not only proposing a list of key competencies, but to be thorough and holistic in providing a framework that integrates key competencies into the bigger picture of the sustainability problem-solving process. Led by these insights, we reasoned that the FSRPSC is indeed a framework not only suitable for SD, but also for SSD. Thus, already using the original FSRPSC for this study could arguably be seen as a sufficient answer to SRQ 1. The research we conducted on further key competencies and the proposal of the two additional key competencies is not necessarily an addition to a more strategic approach towards competence formulation. In a way it can be argued that making the framework even more holistic by proposing key competencies not yet fully covered by the framework is an addition to its thoroughness, thus, also to its ability to enable SSD. However, we acknowledge that this connection is quite loose, and that it also lacks credibility, since only a few of the ESD expert interviewees were familiar with SSD concepts, thus, their recommendations for additional competencies were targeted more towards improving a framework for SD rather than for SSD.
The identification of pedagogical approaches in support of key competence development was then simply a follow-up on the conversations about the FSRPSC. Since we questioned about pedagogical approaches linked to the FSRPSC, it can be argued that the pedagogical approaches mentioned can likely support the development of SSD-related competencies. Does this make the pedagogical approaches themselves strategic? Clearly not; but we understand pedagogical approaches as tools – thus, in this thesis, we identified several potentially useful tools to work towards key competence development. What makes the proposal of these pedagogical approaches strategic is their integration into the FSSD, where advise is given on how to decide which tools to use.

This leads to the last piece – the recommendations given to TFA. Here, we integrated the findings into the FSSD in order to provide a strategic guidance for the organization. We acknowledge that this guidance would be more thorough and tailored, if we had also conducted an analysis of the TFA organization as a whole rather than simply looking into the key competencies and pedagogical approaches. However, since this was the focus of the thesis, the FSSD still provided a basis to present the outcomes in a way that can enable strategic implementation of the findings.

4.5 Recommendations for Further Research

This thesis attempts to deliver possible ways on how to train and integrate all key competences for SSD in a strategic way. Findings in SRQ 2 however do not cover all needs relevant to implementing pedagogical approaches successfully. In order to prepare leaders to enable SSD, we suggest further research about the implementation of pedagogical approaches.

As mentioned before, the assessment of competence development is critical and also challenging. Therefore, we recommend further research on how to assess the competencies.

We recognize value in looking into the applicability of our findings for other leadership education. Closely related to this study would be research on how the findings are applicable to other Teach for All organizations. This could support leadership development in Teach for All partners which could potentially have a large influence on schools all around the world.
5 Conclusion

The sustainability challenge requires a transformation of global leadership towards one that is more inclusive and collaborative. Only a shift in the way society is led can cause a societal redesign towards sustainability. Therefore, leaders must be prepared to lead in a different way and gain the key competencies necessary to foster the needed transition. Leadership education must prepare leaders to develop these key competencies. Pedagogical approaches are a useful tool to do so, even though it must be acknowledged that other aspects such as the attitude of the teacher and the way key competencies are assessed at educational institutions also influence key competence development.

The aim of this thesis was to identify the key competencies for SSD, pedagogical approaches that can enable key competence development and to give a recommendation to the case study organisation, TFA, on how to integrate the key competencies and pedagogical approaches found. This recommendation should then be validated for other leadership education for teachers. The following eight key competencies were identified and integrated into the framework of key competencies for SSD: systems thinking, strategic thinking, anticipatory competence, normative competence, interpersonal competence, integrated problem-solving competence, intrapersonal competence and implementation competence. Eight pedagogical approaches were identified to be in support of key competence development: lifelong learning, social learning, active and experiential learning, problem- / project-based and solution-oriented learning, transformative learning, empowerment, dialogue education and theoretical learning. The team looked into the key competencies TFA develops and how they do it in order to give a useful recommendation on a further integration. The recommendation was presented in an FSSD structure to ensure a holistic guidance. Then, the applicability of this recommendation for other leadership education for teachers was discussed.

The proposed key competencies framework gives an overview of what competencies should be developed in leaders to move society strategically towards sustainability. However, there is more rigorous research needed to underpin this proposal. The pedagogical approaches suggested are widely supported by the literature and can be seen as great tools to develop the key competencies; a mix of different pedagogical approaches is essential. The recommendation to TFA is very much tailored to what was found in the interviews. However, it was possible to derive several insights for other leadership education, e.g. to integrate the development of the eight key competencies as an organizational aim.
6 References


Sachs, Jeffrey, Guido Schmidt-Traub, Christian Kroll, David Durand-Delacre, and Katerina


7 Appendices

Appendix A: Maxwell’s Model for Qualitative Research Design amended

Maxwell’s Model (Maxwell 2013) has been amended to the purpose of this thesis:

**Research Aim:**
Provide recommendations in order to enhance the ability of leadership education to prepare teachers to become leaders for Strategic Sustainable Development (SSD).

**Conceptual Frameworks:**
- Framework for Strategic Sustainable Development (FSSD)
- Framework of Sustainability Research and Problem-Solving Competence

**Research Questions:**
- PRQ: How could leadership education prepare teachers to become leaders for SSD?
- SRQ 1: What are key competencies for leaders to enable SSD?
- SRQ 2: Which pedagogical approaches support the development of these key competencies?
- SRQ 3: How can these key competencies and pedagogical approaches be integrated into the TFA leadership education?

**Methods:**
- Framework review
- Semi-structured interviews
- Transcription & Coding
- Content Analysis
- Background literature review

**Validity:**
- Transcription sharing
- Triangulation of audience & methods
- Feedback integration
Appendix B: Research Design Map

The research team clearly structured their tasks including data gatherings, their analysis and university deliverables.
**Appendix C: TFA Documents**

The documents were used to prepare for the interviews and to triangulate information. They did not serve as a primary data source, but only to support information that was given by the TFA interviewees.

<table>
<thead>
<tr>
<th>#</th>
<th>Document Name</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1</td>
<td>“Das Teach for Austria Workbook”</td>
<td>This is a workbook, fellows receive to keep track of their practice. It includes the main competencies trained and a multitude of tools that can be used with the children in the classrooms. This document was used to inform the semi-structured interviews and to triangulate the outcomes of them.</td>
</tr>
<tr>
<td>D2</td>
<td>“TFA Curriculum Sommerakademie 2012”</td>
<td>This document is a curriculum of the 6 week long summer academy. However, it is an outdated version and was solely used as a preparation.</td>
</tr>
<tr>
<td>D3</td>
<td>“Übersicht Fellow Programm 2012-2015”</td>
<td>This document is an overview of the 2 year fellow program and includes the topics the fellow program covers, structured by the main competencies that are being developed. It was used to triangulate the interviews together with the TFA Workbook. However, the research team was informed that this document did also not cover completely up-to-date information.</td>
</tr>
</tbody>
</table>
# Appendix D: List of Interviewees

<table>
<thead>
<tr>
<th>Number</th>
<th>Role &amp; Name (if applicable)</th>
<th>Region / Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>I1</td>
<td>Fellow</td>
<td>Teach for Austria, Cohort 17</td>
</tr>
<tr>
<td>I2</td>
<td>Fellow</td>
<td>Teach for Austria, Cohort 18</td>
</tr>
<tr>
<td>I3</td>
<td>Fellow</td>
<td>Teach for Austria, Cohort 17</td>
</tr>
<tr>
<td>I4</td>
<td>Fellow</td>
<td>Teach for Austria, Cohort 17</td>
</tr>
<tr>
<td>I5</td>
<td>Fellow</td>
<td>Teach for Austria, Cohort 17</td>
</tr>
<tr>
<td>I6</td>
<td>Fellow</td>
<td>Teach for Austria, Cohort 17</td>
</tr>
<tr>
<td>I7</td>
<td>Fellow</td>
<td>Teach for Austria, Cohort 17</td>
</tr>
<tr>
<td>I8</td>
<td>Fellow</td>
<td>Teach for Austria, Cohort 17</td>
</tr>
<tr>
<td>I9</td>
<td>Fellow</td>
<td>Teach for Austria, Cohort 18</td>
</tr>
<tr>
<td>I10</td>
<td>Fellow</td>
<td>Teach for Austria, Cohort 17</td>
</tr>
<tr>
<td>I11</td>
<td>Fellow</td>
<td>Teach for Austria, Cohort 17</td>
</tr>
<tr>
<td>I12</td>
<td>Trainer</td>
<td>Teach for Austria</td>
</tr>
<tr>
<td>I13</td>
<td>Trainer</td>
<td>Teach for Austria</td>
</tr>
<tr>
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<td>Trainer</td>
<td>Teach for Austria</td>
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<tr>
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<td>I16</td>
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<tr>
<td>I17</td>
<td>Trainer</td>
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<tr>
<td>I18</td>
<td>Trainer</td>
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<tr>
<td>I19</td>
<td>Trainer</td>
<td>Teach for Austria</td>
</tr>
<tr>
<td>I20</td>
<td>Founder</td>
<td>Teach for Austria</td>
</tr>
<tr>
<td>I21</td>
<td>ESD researcher</td>
<td>Sweden</td>
</tr>
<tr>
<td>I22</td>
<td>ESD educator</td>
<td>Sweden</td>
</tr>
<tr>
<td>I23</td>
<td>Merlina Missimer, ESD researcher</td>
<td>Blekinge Institute of Technology, Sweden</td>
</tr>
<tr>
<td>I24</td>
<td>ESD program manager</td>
<td>UK</td>
</tr>
</tbody>
</table>

60
<table>
<thead>
<tr>
<th>I25</th>
<th>ESD project coordinator</th>
<th>Sweden</th>
</tr>
</thead>
<tbody>
<tr>
<td>I26</td>
<td>Sachiko Ishihara, ESD researcher</td>
<td>Uppsala University, Sweden</td>
</tr>
<tr>
<td>I27</td>
<td>Marco Valente, ESD expert</td>
<td>Sweden</td>
</tr>
<tr>
<td>I28</td>
<td>Lakin Anderson, ESD researcher</td>
<td>Uppsala University, Sweden</td>
</tr>
<tr>
<td>I29</td>
<td>Shepherd Urenje, ESD program specialist</td>
<td>Uppsala University, Sweden</td>
</tr>
<tr>
<td>I30</td>
<td>Arnim Wiek, ESD researcher</td>
<td>Arizona State University, USA</td>
</tr>
</tbody>
</table>
Appendix E: Informed Consent Example

Informed Consent for Participation in Semi-Structured Interview (ESD Expert)

The aim of our master thesis (Strategic Sustainable Development (SSD) Competencies and Pedagogies in Teacher Trainings) is to enhance the ability of teachers to lead towards sustainability. Our intention is to support the preparation of teachers by helping them to become change agents equipped with the right competencies (attitudes, skills and knowledge) to support a transition towards sustainability and to understand which competencies and pedagogical approaches are crucial in supporting this.

We have chosen to work with Teach for Austria as their operation and intention to train fellows (purpose-driven individuals who are trained to become leaders) align well with the desired outcome of this research project, which is to identify competencies and pedagogies that could support short term teacher trainings to develop education for SSD.

- I,...................................................voluntarily agree to participate in this semi-structured interview to support this research.
- I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences.
- I understand that I can withdraw permission to use data from my interview within two weeks after the interview, in which case the material will be deleted.
- I have had the purpose and nature of the study explained to me in writing and I have had the opportunity to ask questions about the study.
- I agree to my interview being audio-recorded.
- I understand that all information I provide for this study will be treated confidentially.
- I understand that signed consent forms and original audio recordings will be safely stored until the exam board confirms the results of this dissertation.
- I understand that under freedom of information legislation I am entitled to access the information I have provided at any time while it is in storage as specified above.
- I understand that I am free to contact the research team to seek further clarification and information at any time.
- I agree that the research team is using a Transcribe Program which is GDPR compliant for safe privacy data protection.
- I agree with the following box(es) that is/are ticked off:

| I wish to review the notes, transcripts, or other data collected during the research pertaining to my participation. |
| I agree to be quoted directly. |
| I agree to be quoted directly if my name is not published and a made-up name (pseudonym) is used. |
| I agree that the researchers may publish documents that contain quotations by me. |

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This research is conducted by:

......
......
......

If you have any questions, please contact:
......

MSc in Strategic Leadership towards Sustainability
Blekinge Institute of Technology, Karlskrona Sweden

Signature of research participant

--------------------------------------------------------  ---------------
Signature of participant                                Date

Signature of (one) researcher

On behalf of the research team I confirm that the participant is giving informed consent to participate in this study.

--------------------------------------------------------  ---------------
Signature of researcher                                  Date
Appendix F: Interview Protocol Examples

INTERVIEW PROTOCOL (Fellows)

Research Project: Strategic Sustainable Development Competencies and Pedagogies in Teacher Trainings. A case study of TFA.

<table>
<thead>
<tr>
<th>Time:</th>
<th>Date:</th>
<th>Location:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviewer:</td>
<td>Observer:</td>
<td>Interviewee:</td>
</tr>
</tbody>
</table>

Interview Procedure: Introduction of the research project including the purpose, how the semi-structured interview will be conduct and recorded, sharing that the given data will be confidential.

Informed Consent: Please read and sign the informed consent document to show your commitment to participate.

Questions:

1. What inspired you to be involved with TFA?
2. Which competencies [knowledge, skills and attitudes] do you learn during the fellow training, how and when are they trained? (indicate template)
   - During the online campus?
   - During the summer academy?
   - During the workshops throughout the 2 years? (tailor to participant)
3. How & when do you learn the following competencies? (indicate template)
   - Setting high goals
   - Activate and involve
   - Plan backwards
   - Implement effectively
4. What (other) pedagogies are being used in the fellow training?
5. What do you learn about the following competencies in the fellow training & what are the opportunities for improvement?
   - What have you learned about systems thinking? (systems are related to each other/complex/non-linear cause effect)
   - What have you learned about strategic thinking? (collectively design a step-by-step process/plan to reach your goal & to implement)
   - What have you learned about anticipatory competence? (Collectively analyse, evaluate and create pictures of the future)
   - What have you learned about normative competence? Collectively map values, principles, goals, and targets; whole organization’s aim)
   - What have you learned about interpersonal competence? (Motivate-facilitate collaborative & participatory problem solving (leadership, collaboration, communication, empathy skills)
6. What opportunities for improvement do you see in the fellow training?
7. What do you honour in your role as a teacher (something they need)?

Closing: Thank you for participating in this interview. We appreciate your time and willingness to collaborate. Your information is very helpful and valuable for the results of our Thesis. We may contact you for clarification later in the process when needed. Please feel free to contact us if you have further questions by e-mailing to (vrodijsophie@hotmail.com)
Interview Protocol (Researcher)

Research Project: Strategic Sustainable Development Competencies and Pedagogies in Teacher Trainings. A case study of TFA.

Time: Date: Location:

Interviewer: Observer: Interviewee: Previous Work:

Interview Procedure: Share Introduction of the research project including the purpose, how the semi-structured interview will be conducted and recorded, sharing that the given data will be confidential.

Informed Consent: Give a summary of the Informed Consent, let the participant read and sign to show their commitment to participate.

Questions:

1. What makes you passionate to be active in the field of Education for Sustainable Development?
2. What is your story, what have you experienced and done in this field?
3. Looking into the current field of Education for Sustainable Development:
   - What are your thoughts on what is challenging/what are the gaps in ESD?
   - Which thoughts are you holding on opportunities for ESD?
4. What are your thoughts on the need for a strategic approach towards ESD?
   - Is it needed?
   - How could it add value?
   - How could it look like?
5. When you think of Wiek’s key competencies for sustainability education, are there any relevant competencies for ESD that aren’t covered?

- Systems thinking: ability to collectively analyze complex systems across different domains and across different scales, thereby considering cascading effects, feedback loops, nonlinear cause and effect.

- Strategic thinking: ability to collectively design and implement interventions, transitions, and transformative governance strategies toward sustainability: step by step reaching goal and implementing the goal.

- Anticipatory competence: ability to collectively analyze, evaluate, and craft rich “pictures” of the future related to sustainability issues and sustainability problem-solving frameworks.

- Normative competence: ability to collectively map, specify, apply sustainability values, principles, goals, and targets.

- Interpersonal competence: ability to motivate, enable, and facilitate collaborative and participatory sustainability research and problem solving. (skills in communicating, collaborating, leadership, trans-cultural thinking, and empathy)

6. What is the value of a competencies approach to Education for Sustainable Development?
7. Which competencies (skills, attitude, knowledge) do you think are crucial for (teachers who intend to be...) sustainability change agents?
   a. Which skills?
   b. Which attitudes?
   c. Which knowledge?
8. Which pedagogical approaches do you think are crucial for (teachers who intend to be...) sustainability change agents?
9. Looking into how to bridge the competencies with the pedagogical approaches: Which pedagogical approaches might support implementing the following (Wiek) competencies?
   - systems thinking
   - strategic thinking
   - anticipatory competence
   - normative competence
interpersonal competence

10. What are your personal aspirations to contribute in your field during the upcoming 5 years?

11. Which suggestions are you holding what might be supportive for our Thesis? (Articles, People who to meet, What to do with our Thesis, How to spread our Thesis to the world, Anyone who would be great to give feedback on our last Thesis Draft)

12. Would you like to stay in touch/ receive our Thesis/share our Thesis to your network?

UNSTRUCTURED FEEDBACK INTERVIEWS

Pre-defined interview guidance for Arnim Wiek, Ph.D.:
The parts that we are specifically seeking feedback on are the following:
- Results parts: 3.1, 3.2, 3.3.
- Guidance for Teach for Austria and other leadership educations parts: 4.1 and 4.2.

Pre-defined interview guidance for TFA founder:
The parts that we are specifically seeking feedback on are the following:
- Results part: 3.3.
- Guidance for Teach for Austria and other leadership educations parts: 4.1 and 4.2.
**Appendix G: Overview of the Codes**

**Key Competencies Code Clustering for the two additional competencies of SRQ 1**

<table>
<thead>
<tr>
<th>Axial codes</th>
<th>Open codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrapersonal Competence</td>
<td>Emotional competence</td>
</tr>
<tr>
<td></td>
<td>Critical emotional awareness</td>
</tr>
<tr>
<td></td>
<td>Self-care</td>
</tr>
<tr>
<td>Implementation Competence</td>
<td>Implementation competence</td>
</tr>
<tr>
<td></td>
<td>Hands-on skills</td>
</tr>
<tr>
<td></td>
<td>How to act</td>
</tr>
<tr>
<td></td>
<td>Resilience</td>
</tr>
<tr>
<td></td>
<td>Personal transformation</td>
</tr>
</tbody>
</table>

**Pedagogical Approaches Code Clustering for SRQ 2**

The open codes emerged in the ESD expert interviews and were clustered below the pedagogical approaches found in the literature (axial codes).

<table>
<thead>
<tr>
<th>Axial codes</th>
<th>Open codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lifelong Learning</td>
<td>Establishing Habits</td>
</tr>
<tr>
<td>Social Learning</td>
<td>Diversity and Worldviews</td>
</tr>
<tr>
<td>Problem-, Project- and Solution-oriented Learning</td>
<td>Group work</td>
</tr>
<tr>
<td>Active &amp; Experiential Learning</td>
<td>Project-based Learning</td>
</tr>
<tr>
<td>Transformative Learning</td>
<td>Applied Learning</td>
</tr>
<tr>
<td>Empowerment</td>
<td>Active Learning</td>
</tr>
<tr>
<td>Dialogue Learning</td>
<td>Experiential Learning</td>
</tr>
<tr>
<td>Theoretical Learning</td>
<td>Backcasting</td>
</tr>
<tr>
<td></td>
<td>Envisioning</td>
</tr>
<tr>
<td></td>
<td>Scenario Planning</td>
</tr>
<tr>
<td></td>
<td>Transformative Learning</td>
</tr>
<tr>
<td></td>
<td>Reflective Learning</td>
</tr>
<tr>
<td></td>
<td>Conflict Learning</td>
</tr>
<tr>
<td></td>
<td>Student-led Learning</td>
</tr>
<tr>
<td></td>
<td>Listening</td>
</tr>
<tr>
<td></td>
<td>Sharing theoretical content</td>
</tr>
<tr>
<td></td>
<td>Storytelling</td>
</tr>
<tr>
<td></td>
<td>Fact-based pedagogy</td>
</tr>
</tbody>
</table>
## TFA Competence Code Clustering for SRQ 3

The axial codes in the left column form the basis for the writing structure of the chapter. The open codes emerged from the data.

<table>
<thead>
<tr>
<th>Axial Codes</th>
<th>Open Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Systems Thinking Competence – current state</strong></td>
<td>Understanding the school system</td>
</tr>
<tr>
<td><strong>Systems Thinking Competence – gaps &amp; opportunities</strong></td>
<td>Understanding the education system</td>
</tr>
<tr>
<td>Involvement of whole TFA staff in teaching systems thinking</td>
<td></td>
</tr>
<tr>
<td><strong>Strategic Competence – current state</strong></td>
<td>Plan backwards</td>
</tr>
<tr>
<td><strong>Strategic Competence – gaps &amp; opportunities</strong></td>
<td>Strategic thinking integration depends on fellow</td>
</tr>
<tr>
<td>Vision project misses collaborative approach</td>
<td></td>
</tr>
<tr>
<td><strong>Anticipatory Competence – current state</strong></td>
<td>Setting high goals</td>
</tr>
<tr>
<td><strong>Anticipatory Competence – gaps &amp; opportunities</strong></td>
<td>Support for future &amp; projects</td>
</tr>
<tr>
<td>Normative Competence – current State</td>
<td>Fellows are recruited by values</td>
</tr>
<tr>
<td>------------------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>Normative Competence – gaps &amp; opportunities</td>
<td>Fellows don’t learn how to guide values process</td>
</tr>
<tr>
<td>Interpersonal Competence – current state</td>
<td>Interpersonal competence is a strength</td>
</tr>
<tr>
<td></td>
<td>Trustful relationships</td>
</tr>
<tr>
<td></td>
<td>Interpersonal competence should be integrated more</td>
</tr>
<tr>
<td></td>
<td>Leadership improvements</td>
</tr>
<tr>
<td>Intrapersonal Competence – current state</td>
<td>Self-reflection</td>
</tr>
<tr>
<td></td>
<td>Patience</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Intrapersonal Competence – gaps &amp; opportunities</td>
<td>Missing self-care</td>
</tr>
<tr>
<td>Implementation Competence – current state</td>
<td>Implement effectively</td>
</tr>
<tr>
<td>Implementation Competence – gaps &amp; opportunities</td>
<td>Implementatio n in bigger scale</td>
</tr>
<tr>
<td>General Competencies Opportunity</td>
<td>Red thread</td>
</tr>
</tbody>
</table>
# Appendix H: 8 Sustainability Principles (SPs)

## Ecological

In an ecologically sustainable society, nature is not subject to systematically increasing...

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>![Icon]</td>
<td>...concentrations of substances extracted from the Earth's crust.</td>
</tr>
<tr>
<td>2</td>
<td>![Icon]</td>
<td>...concentrations of substances produced by society.</td>
</tr>
<tr>
<td>3</td>
<td>![Icon]</td>
<td>...degradation by physical means.</td>
</tr>
</tbody>
</table>

## Social

In a socially sustainable society, there are no structural obstacles to...

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>![Icon]</td>
<td>...health.</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>...influence.</td>
</tr>
<tr>
<td>6</td>
<td>![Icon]</td>
<td>...competence.</td>
</tr>
<tr>
<td>7</td>
<td>![Icon]</td>
<td>...impartiality.</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>...meaning-making.</td>
</tr>
</tbody>
</table>
Appendix I: Key Competencies in Sustainability by Wiek et al. (2015)

Systems thinking competence

The ability to collectively analyse complex systems across different domains and across different scales, thereby considering cascading effects, feedback loops, nonlinear cause and effect.

Futures thinking or anticipatory competence

The ability to collectively analyse, evaluate, and craft rich pictures of the future related to sustainability issues and sustainability problem-solving frameworks.

Values thinking or normative competence

The ability to collectively map, specify and apply sustainability values, principles, goals, and targets.

Strategic thinking or action-oriented competence

The ability to collectively design and implement interventions, transitions, and transformative governance strategies toward sustainability: step by step reaching goal and implementing the goal.

Collaboration or interpersonal competence

The ability to motivate, enable, and facilitate collaborative and participatory sustainability research and problem solving (skills in communicating, collaborating, leadership, trans-cultural thinking, and empathy).

Integrated problem-solving competence

This competence is complementary to the five competencies and covers the ability to make use of the other 5 competencies’ simultaneously.