The Sustainable City Year Program Public Scholarship for Community Development

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Abstract

By 2050, an estimated 6.3 billion people or 66% of the world population will live in cities. Therefore, cities are in a high impact position regarding sustainability. The question is, how do we increase awareness of the sustainability challenge among these populations and gain citywide buy-in and multi-stakeholder collaboration to address this challenge? The Sustainable City Year Program (SCYP) at the University of Oregon offers one approach to tackle this issue by matching higher education institutions (HEI's), with local and regional cities to address their sustainability related needs through publicly engaged scholarship. The objective of this research was to examine how SCYP contributes to strategic sustainable development (SSD). Our research methods included a peer-reviewed literature review, semi-structured interviews, surveys and further document review. Our sources included SCYP co-founders, partner city program managers, strategic sustainable development experts, and municipal planners from around the world. Our research suggests that SCYP creates a subtle paradigm shift towards sustainability among partner city staff and community members while accelerating practical implementation of sustainability related projects. Furthermore, the added layer of SSD concepts can increase the efficacy of this approach and allow the model to embrace a larger systems level perspective over time.

Keywords

Sustainability Challenge, Sustainable City Year Program (SCYP), Strategic Sustainable Development (SSD), Publicly Engaged Scholarship, Municipal Planning

Statement of Contribution

This thesis topic was brought up by Nicholas Braun. Thomas Hutle and Milan Vonk joined him and produced this paper in a collaborative approach. The three group members share the interest for exploring practical ways of implementing ideas that create tangible outcomes.

Nicholas Braun has a background in leadership and outdoor education. His focus has been teaching technical skills in multiple outdoor pursuits, risk management, leadership coaching, and environmental studies on long-term wilderness expeditions around the world. The prudent planning and management skills he learned through his work were useful when it came to creating ideas for the strategic direction of the thesis project, including the concept for research design, development of interview questions, methods, and tables. Nick put a lot of energy in editing and adapting the flow of the thesis. He also contributed a significant part of the written content, including the description of the research methods and the SSD concept. Nick attended the annual conference of the Sustainable City Year Program (SCYP) in San Diego in March 2016 and managed to meet with two SCYP program founders and three city managers in person when he was in the United States, which clearly opened doors for our collaboration with SCYP.

Thomas Hutle worked as a consultant for start-ups and as a sports reporter. His academic background is in management and economics. The team could benefit from his skills as a journalist when it came to crafting survey and interview questions and making distinctions between important and less useful content. He transcribed interviews, wrote parts of the introduction and discussion, and essential parts of the phase I and phase III results. Thomas also reached out to SSD practitioners and has a good eye for the detail and therefore played an important role in the fine-tuning of the thesis, including formatting and graphs.

Milan Vonk was a sailor before coming to Karlskrona. He mainly worked as a Maritime Officer onboard merchant vessels. He brings a degree in Maritime Operations. Due to his experience on rough seas, and perhaps being Dutch, Milan never shied away from provoking and questioning old paradigms, which often helped the group to include other perspectives. Milan reached out to municipalities that worked with the Natural Step and fixed interviews with municipal practitioners. He also transcribed interviews, analyzed SSD concepts in various project reports, and added written content, such as parts of the phase II results.

Overall, the contribution of each team member came from a high commitment in time and flexibility. The team collectively did the literature review, coding of interviews, and made decisions regarding structure, focal points and strategy. On-going check-ins, a collaborative working style and a lot of time together as a group supported us to stay on the same page throughout the process. Thanks to an authentic and straightforward attitude of all three members, the American-Austrian-Dutch group managed to keep the balance between lively discussions and a positive working atmosphere. The joyful thesis-process included dinner and drinks together, lively debates about sailing, the MSLS program, the existence of bigfoot, sustainability, the meat industry or watching comedic episodes of George Carlin.

Nick Braun   Thomas Hutle   Milan Vonk

Acknowledgement

"Appreciation is a wonderful thing. It makes what is excellent in others belong to us as well."
- Voltaire

Our thesis process was a journey full of great learnings, many iterations, pleasant and unfortunate surprises, and numerous adjustments regarding research focus. Therefore, we would like to thank, first and foremost, our primary thesis advisor Rachael Gould, and our secondary thesis advisor Alexander Craig, who accompanied us through this journey. Both, Rachael and Alexander, provided us with profound feedback to our drafts, shared useful documents with us, and supported us with tips and tricks for writing an academic paper in our meetings with them.

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A sincere thank you goes to Courtney Griesel, Jim Huber, Courtney Knox-Busch and Bob Richardson from the SCYP partner cities in Springfield, Medford, Salem and Albany. Thanks to their openness, we gained a thorough understanding about the impact that SCYP has on communities. Thank you also to Dr. Robert Young, SCYP co-founder, who shared lots of interesting perspectives around public scholarship and the thinking behind starting the SCYP.

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Last but not least, we want to express our gratitude to Ronald Vonk who proof read this paper.

Executive Summary

Introduction

Our planet and society, collectively known as the socio-ecological system, is being systematically degraded at a rate and scale that requires immediate attention. Our ecological resources are being depleted by society and these anthropogenic pressures are creating extreme social dynamics that are eroding trust among one another, which is the foundation of a strong and healthy social fabric that society needs. Reversing this systematic decline of ecological resources and negative social barriers that prevent people from meeting their basic human needs is the sustainability challenge. City infrastructure and urban communities play a significant role in creating these impacts. As over half the world's population is estimated to live in cities, and urbanization is on the rise, cities are a strategic focal point for addressing the sustainability challenge.

Since combining economic, ecological and social aspects of society and nature is the challenge the world faces today, it can be effectively tackled through a holistic approach to education, which requires interdisciplinary and science-based research in sustainable development. Higher education institutions (HEI's) are uniquely situated at the junction of research, knowledge acquisition, and knowledge transfer, and therefore play a crucial role in addressing the challenge. As science is a universally agreed upon language around the world, it provides tested and validated information to use as a baseline for further assessment and decision-making. The scientifically founded sustainability principles of SSD, offer a well-grounded set of criteria to use as boundary conditions to guide academic thinking across disciplines to achieve sustainability. Casting specialized academic disciplines within these boundary conditions and taking a broad systems level perspective into account ensures that focused academic thought will lead in the right direction toward sustainability. Therefore, an SSD perspective can bring strategy and a scientific definition to the field of sustainability education.

As previously noted above, cities are rapidly growing as the Earth's population continues to rise. Therefore, taking a strategic approach to the development of these areas is essential for integrating sustainability at a systems level. An SSD planning approach in such municipalities would allow for a better overall understanding of the complex intertwined systems that converge in urban areas. This can play a valuable role in municipal strategic planning that helps break down large-scale sustainability planning challenges into small and achievable steps.

Furthermore, higher education institutions and communities have an inevitable relationship. Communities provide resources for universities to deliver quality education, and universities educate students who eventually work professionally within these communities. Historically, higher education institutions have focused on providing excellent theoretical education and research, but have lacked the integration of practical application. This has resulted in a gap between theory and practice and has left both communities and students in need of practical application of relevant knowledge that addresses current local, regional, and global needs. This is where the Sustainable City Year Program (SCYP) comes into play.

The *Sustainable City Year Program* (SCYP) is a relatively new academic model developed at the University of Oregon that is currently expanding domestically and abroad. This model brings the sustainability challenge that cities deal with in contact with universities. The program aims to bridge the gap between theoretical knowledge in academic courses and

practical application of solutions to sustainability related problems with a municipal partner, while providing mutual benefit for all stakeholders involved.

Research Purpose

Since proponents of the SCYP approach believe it has the potential to enhance student learning, improve local government efforts in addressing city-wide sustainability concerns, and help move society towards sustainability, the purpose of our research was to answer the following primary research question:

Primary Research Question (PRQ): *How does the Sustainable City Year Program contribute to strategic sustainable development?*

The results of our primary research question developed deeper understanding and perspective that informed the direction of inquiry to pursue the following secondary research question:

Secondary Research Question (SRQ): *How can strategic sustainable development concepts contribute to the Sustainable City Year Program?*

The aim of this research was to understand the Sustainable City Year Program at the University of Oregon and to further the discussion on how this model can be used as a leverage point to move society towards sustainability.

Methods

For this research we used the basic tenets of illuminative evaluation research of an innovative program described by Parlett and Hamilton to include: discovering how it works, how it is influenced by various school situations where it is applied, and what are considered to be the advantages and disadvantages of the program. Our data collection methods included interviews, surveys, and document review that occurred in three phases of research.

Phases I and II were designed to answer the primary research question utilizing support research questions to guide our inquiry. Phase I guided our research to understand the underlying sustainability premise of the program and the structure of how the program works. Phase II guided our research to understand how the SCYP experience impacts partner cities, the participating university, and the participating students. Each phase was intended to focus our research in order to extract contributions to SSD in the process.

Following the results of phases I and II, phase III emerged and was designed to initiate research that may lead to answers of the secondary research question. This phase also utilized support research questions to guide our inquiry. Our research focused on exploring the value of integrating SSD concepts into higher education, understanding the financial viability of using the FSSD in municipal planning, and exploring additional realized benefits of using the FSSD in municipal planning.

The Conceptual Framework

This research was cast within the strategic sustainable development (SSD) conceptual framework, which can be broken down into the following 4 categories:
- The Sustainability Challenge

- Sustainability Principles as Boundary Conditions
- The Framework for Strategic Sustainable Development
- The ABCD Strategic Planning Process

SSD is an evolving concept that provides context for the sustainability challenge, a clear definition of sustainability in the form of boundary conditions within which society can continue to function, a five level framework that helps solve complicated problems in complex systems, and a strategic planning process that helps identify prioritized actions for strategic stepwise implementation (Broman and Robèrt 2015).

Results

Phase I - The SCYP Design and Structure: Our research revealed that the University of Oregon has an understanding of the sustainability challenge and that sustainability awareness is embedded within the programming the university offers. SCYP recognizes the gap is not in the knowledge, but rather putting it into practice and stimulating behavior change. To that end, the program takes a vague approach to defining sustainability. From an SSD perspective, the intentional use of a broad definition of sustainability can be viewed as a strategic move on the part of SCYP in order to engage with communities at a level they will respond to. Therefore, exercising thoughtful communication around the sustainability concept and speaking the language of the partner city staff and community members allows the door to open and begins the stepwise process of integrating sustainability.

Structurally, the program brings together up to 500 students and multiple faculty that support local communities and partner cities throughout the region on an annual basis. Collectively, they provide 40,000 - 60,000 hours of work, integrating 10 - 12 disciplines engaging in approximately 25 projects per year. The partner cities identify 'sustainability related' project needs and the SCYP program staff match the proposed city projects with existing faculty and classes on an opt-in basis that express their interest to participate in the program. From an SSD perspective, the model design is a strategic attempt to make the most significant sustainability impact in regional cities that is possible within the constraints of the current university system.

Phase II - Impact of the SCYP Experience: Our research revealed the most significant impacts upon the partner cities were the more subtle and less tangible contributions to SSD. As the model is designed to create mutual benefit for all involved, an effective collaborative effort is required. This collaboration begins with developing a shared mental model for the partnership, which involves finding a common language to speak. Furthermore, it develops trust among students, faculty, city staff and community members, which is the critical component for a strong social fabric, and is a social sustainability achievement in and of itself. The trusting relationships allow all parties to feel empowered, energized and creative, which are essential characteristics needed to effectively address complex and challenging problems. Perhaps the greatest impact is the subtle paradigm shift the SCYP experience initiates among community members and city staff who may initially be resistant to integrating sustainability in their local community.

Regarding the impact upon the university, SCYP enables the integration of theory and practice to occur between higher education institutions and regional cities. This connection has internal and external impacts regarding sustainability. Internally, SCYP increases motivation to teach and bring forth the faculty's best work to transfer to students, who then take that knowledge and experience to the communities, which is a positive contribution to SSD, both in theory and

practice. SCYP has also lead to funding initiatives that may help sustain the education model itself and advance research on applied sustainability education. Externally, it increases the visibility and viability of the academic work taking place on campus and builds credibility, which leads to local communities increasing their support of the university. Furthermore, the national visibility of the program builds sustainability awareness by attracting new students and faculty across the nation to participate in addressing the sustainability challenge.

In terms of the student impact, our minimal results revealed that during the SCYP experience, students are exposed to 'reality' and learn how to contextualize their idealism in a way that they can actually apply their knowledge in the real-world, which is a critical skill when entering their professional careers in order to be effective change agents for sustainability. The experience builds confidence for students while simultaneously developing their professional networks that may foster a smooth transition from academia to the professional world. This can be viewed as a strategic educational approach to position students in empowering roles to affect further sustainability related change during their professional careers.

Phase III - Future Perspectives to Consider: Our research in phase III was an initial exploration of additional perspectives to consider that may support the SCYP approach. This section was intended to stimulate thought and motivate further research. However, some initial suggested conclusions include the following points.

Regarding the value of integrating strategic sustainable development concepts into higher education, the most tangible benefit was a clear scientific foundation that supports both faculty and students to put discipline specific topics in a sustainability context in a way that minimizes confusion and provides structure in a complex field of study.

In terms of the financial viability of using the FSSD in municipal planning, our research revealed that there is minimal clear hard data that directly supports the financial benefit of using this framework. This is primarily due to the complex nature of external factors that need to be considered, which are difficult to quantify in financial terms. However, the majority of our data sources reported receiving multiple alternative financial benefits by incorporating FSSD into their municipal planning experience.

Furthermore, our initial research regarding additional realized benefits of using the FSSD in municipal planning revealed that the framework allows for a bigger picture overview, which supports both design and prioritization of actions and projects. It is a tool that can easily be combined with other tools to increase sustainability success, it provides beneficial perspective during strategic planning, and it can serve as an education tool as well.

Discussion

In our discussion we explore how SCYP contributes to SSD and how SSD may further contribute to the SCYP approach. We discuss both sides of this relationship through the structure of the SSD conceptual framework previously introduced.

In essence, SCYP offers many strengths and effective contributions to SSD. The program has a recognition of the sustainability challenge and a vision of what it takes to get knowledge into practice while operating within the constraints of the higher education system. The tangible and subtle strategies of SCYP enable the program to integrate with local and regional communities in a collaborative effort that builds trusting relationships and lays the groundwork

for collectively addressing complex challenges. Although many partnership projects may appear to produce incremental change, they may also be viewed as stepping stones along a strategic stepwise process to achieve sustainability.

The value that an SSD perspective offers SCYP is clarity of a scientifically founded definition of sustainability that can guide the overall direction of municipal planning and the student project work. These concepts may be integrated into academic curricula and within the municipal planning approaches of the partner cities. This perspective in combination with SCYP's strategic practical approach can enhance the efficacy of achieving sustainable outcomes educationally, socially and ecologically.

Conclusion

SCYP integrates sustainability through a strategic approach in a thoughtful collaborative effort with regional partner cities. The program creates a healthy social fabric, built on trust, and engages multiple community stakeholders in a multidisciplinary educational process that develops solutions to community determined sustainability related needs. Furthermore, the program fosters a subtle community paradigm shift toward increased sustainability challenge awareness, openness to apply sustainable thinking to community needs, and motivation to address the sustainability challenge. The research also leads to the recommendation to apply the sustainability principles as boundary conditions for municipal planning of partner cities and within the academic curricula, such that all proposed project needs and solutions lead in the right direction in a stepwise process over time.

Glossary

Academic Term: An academic term is a portion of an academic year, when the educational institution holds classes. The schedules vary widely among universities. The University of Oregon operates with four terms per academic year.

Backcasting: A strategic planning method where planners first create a future vision of success, and then ask, "What do we need to do today to reach this vision?"

Biosphere: The biosphere is the global sum of all ecosystems, the place where life exists. It stretches approximately from the top of the lower atmosphere down to the bottom of the lowest layers of soil and ocean sediment where the Earth's crust begins.

Brundtland Report: A World Commission on Environment and Development report, which proposes a 'global agenda for change' and specifies how sustainable development can be achieved.

Earth Summit in Rio 1992: The United Nations Conference on Environment and Development (UNCED), also known as the Rio de Janeiro Earth Summit, Rio Summit, and Rio Conference. It was a United Nations conference held in Rio de Janeiro from June 3-14, 1992, designed to develop a global strategy to reduce human impact on the environment.

Prisoner's Dilemma: The prisoner's dilemma is a standard example of a game-theory construct about trust and behavior in game theory that shows why two completely "rational" individuals might not cooperate, even if it appears that it is in their best interest to do so. In 1950, Albert W. Tucker formalized the game with prison sentence rewards and named it, "prisoner's dilemma", whereas two people, charged with a joint crime, are held separately and both are asked if they confess their crime or not. Their answers will lead to varying effects on their time in prison, depending on what the other person's answer is.

Systems Thinking: The organized study of systems, their feedbacks, and their behavior as a whole. Systems thinking is the process of understanding how those things which may be regarded as systems influence one another within a complete entity, or larger system.

Tbilisi Declaration: The world's first intergovernmental conference on environmental education was organized by UNESCO in cooperation with the U.N. Environment Programme and was convened in Tbilisi, Georgia from October 14-26, 1977. The Tbilisi Declaration updated and clarified The Stockholm Declaration (1972) and The Belgrade Charter (1975) by including new goals, objectives, characteristics, and guiding principles of environmental education

Tenure: In the United States and Canada, tenure is a contractual right that grants a teacher or professor a permanent position or employment. It is given as a legal protection against dismissal without just cause. The purpose of tenure is to give teachers the freedom to pursue research and teach as they see fit without concerns of a political nature. It is often very hard to remove a tenured teacher, as severe misconduct must be proved. In general terms, tenure is a guaranteed job contract that is given to individuals who have over a period of between two and seven years, proved their skills. Therefore, a faculty member in a probationary position prior to tenure is said to be in a 'tenure-track appointment.'

The Natural Step: Founded in Sweden in 1989 as non-profit organization by scientist Karl-Henrik Robèrt, The Natural Step aims to accelerate the transition to a sustainable society. Today, The Natural Step has offices in 11 countries and numerous associates and ambassadors around the world.

The Natural Step Framework: The Natural Step Framework is a simple science-based framework for analyzing the complex issues associated with sustainable development. In 1989, Karl-Henrik Robèrt described the system conditions for sustainability based on science. He sent this description to 50 scientists, asking them to tell him what was wrong with his paper. On version 22, Robèrt had scientific consensus on what was to become *The Natural Step Framework*. When we talk about the framework for strategic sustainable development (FSSD) in our thesis, we talk about the Natural Step Framework

List of Abbreviations

BTH	Blekinge Institute of Technology
FSSD	Framework for Strategic Sustainable Development
HEI	Higher Education Institution
MSLS	Master in Strategic Leadership Towards Sustainability
PRQ	Primary Research Question
PSRQ	Primary Support Research Question
SCYP	Sustainable City Year Program
SRQ	Secondary Research Question
SSRQ	Secondary Support Research Question
SSD	Strategic Sustainable Development
UNESCO	United Nations Educational, Scientific and Cultural Organization
UO	University of Oregon

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1   Introduction

This section discusses the global sustainability challenge, the significant impact that cities make and the role that education can play in addressing this challenge. It provides a background argument for the value of a strategic sustainable development approach within education and municipal planning. Additionally, this introduction discusses the value of community engagement and public scholarship between higher education institutions and municipalities by describing key characteristics for effective collaboration to achieve sustainable outcomes. This section then introduces the *Sustainable City Year Program* education model that was developed at the University of Oregon, which leads to the primary research question of how this model contributes to strategic sustainable development and the secondary research question of how strategic sustainable development may contribute to the *Sustainable City Year Program*. Finally, the introduction concludes with the purpose, scope and limitations of our research.

1.1   The Sustainability Challenge and City Impacts

Throughout Earth's history prior to industrial times, human society played a relatively small role and had minimal impact upon the natural ecosystems within the biosphere. Currently, however, humanity has matched and even exceeded natural rhythms in terms of changing the biosphere and impacting natural Earth systems (Steffen et al. 2004). According to the 2004 International Geosphere Biosphere Programme (IGBP) Global Change report, over the past 150 years, human society is responsible for exhausting over 40% of known oil reserves and transforming approximately 50% of surface land resulting in significant negative impacts upon biodiversity, soil structure and nutrient cycling (IPCC 2014). Surface and underground freshwater resources have been contaminated and are becoming depleted due to human use, concentrations of greenhouse gases have rapidly increased furthering climate change impacts and coastal and marine habitats have been significantly altered (Steffen et al. 2004). The 2014 Intergovernmental Panel on Climate Change (IPCC) Summary for Policymakers report confirms the ongoing and increasingly severe consequences of human actions since the 2004 IGBP report (IPCC 2014).

City infrastructure and communities play a significant role in creating this impact. To date the earth's population almost reached 7.4 billion and it is estimated that 54% of people live in cities (United Nations 2014). Whereas in 1800 only 2% and in 1900 only 15% of the world's population lived in urban areas, rapid urbanization is happening in many parts of the world nowadays. Zhang (2015) estimated that by 2050 6.3 billion people will be situated in urban municipalities, which emphasizes the significant impact that cities have within the overall sustainability challenge (Zhang 2015).

Additionally, the demand for natural resources and changing climate conditions are pressuring society in ways that are yet to fully unfold. In the process, communities across the globe continue to experience desperate poverty, human rights abuses, corruption, discrimination, and lack of access to education. The 2014/15 State of the World's Human Rights Report highlights massive atrocities such as the war crimes committed by the armed group calling itself the Islamic State (IS, formerly ISIS) and the unraveling Syrian refugee crisis across Europe (Amnesty International 2015). These are just a couple examples of how anthropogenic pressure

upon the socio-ecological system that we are all a part of are contributing to severe social issues around the world.

1.2 The Role that Higher Education Can Play in Addressing the Sustainability Challenge

Education plays a crucial role in addressing the sustainability challenge, allowing multidisciplinary and interdisciplinary thinking, and to create the necessary behavior change needed within society (OECD 2009). Education as a key element for dealing with today's sustainability challenges has gained in importance on national and international agendas since The Earth Summit in Rio de Janeiro in 1992 (Martins et al. 2006). The roots of environmental education can be traced back as early as the 18th century when Jean-Jacques Rousseau stressed the importance of natural education or an education that focuses on the environment in his book *Emile, or On Education* (Tosato-Rigo 2012). Modern environmental education, however, has roots in the 1970s. The Tbilisi Declaration from 1977 stated that *environmental education* is important for the relationship between human behavior and nature, with the goal to better use natural resources in satisfying human needs (Jabareen 2012). Further developed in Rio in 1992, the term *sustainability* was adopted as the fundamental principle to support the development of mankind at all levels (Martins et al. 2006). This new discipline differs from environmental education in scope, content, concepts and strategies. Education for sustainability takes a broader perspective and includes social, political, and ethical issues, such as feminism, multiculturalism, democracy, civic engagement and human rights, and not just nature-oriented concerns and environmental anxieties (Jabareen 2012).

Combining economic, ecological and social aspects of society and nature is the challenge the world faces today - a challenge that can be effectively tackled through a holistic approach to education, learning and understanding (Martins et al. 2006). However, this requires interdisciplinary and science-based research in sustainable development. Therefore, higher education institutes (HEIs) play a crucial role. An OECD-report from 2009 highlights the importance of HEIs carrying the "Zeitgeist" of climate change knowledge and other sustainability issues (OECD 2009). Barth et al. (2007) found that HEIs contribute to a sustainable future through enabling people to not only acquire the latest knowledge, but also to reflect on future impacts of the complexity of behavior and decisions from a global perspective (Barth et al. 2007).

UNESCO has also acknowledged the need to use education at all levels to deal with the sustainability challenge. In 2002, the United Nations General Assembly declared the period between 2005 and 2014 as the *Decade of Education for Sustainable Development* (Jabareen 2012). With this, UNESCO views education as a motor of change and an opportunity "to enable citizens to face the challenges of the present and future and leaders to make relevant decisions for a viable world" (UNESCO 2005).

Martins et al. (2006) predict that, "in the future, environmental literacy will be a basic skill in a sustainable society, independent of the background, level of education or professional activity of its members. Sustainability must be at the core of academic curricula and will require a lifelong and worldwide commitment at all social and economic levels" (Martins et al. 2006, 36).

1.3　The Value of a Strategic Sustainable Development Perspective in Education

Given the inherent need for education that applies sustainability concepts, it is reassuring that the field is emergent and developing (Sterling 2004). Common concepts used in this field are Environmental Education (EE), Education for Sustainable Development (ESD), and Education for Sustainability (EfS). However, there is still confusion between the meaning of these terms (Jabareen 2012). According to Jabareen (2012), the confusion can be caused by three main problems: a lack of a conceptual framework, vague themes, and the inconsistent goals of sustainability education (Jabareen 2012).

More specifically, these challenges are due to the complex, uncertain, and multidisciplinary nature of the concept (Jabareen 2012). Jabareen (2012) also concludes that the field lacks a comprehensive theoretical framework that explains the inherent scope, nature, and assumptions of sustainability education (Jabareen 2012). This indicates a need for a strategic approach, a generic and unifying framework, a vision with clear goals, and a scientifically-based definition of sustainability (Broman and Robèrt 2015). According to Tilbury (2005), many countries have adopted strategic frameworks to help them reorient Environmental Education practices towards sustainability in order to provide guidance for current and future initiatives (Tilbury et al. 2005).

A strategic sustainable development (SSD) perspective can bring strategy and a scientific definition to the field of sustainability education. The framework for strategic sustainable development (FSSD), is an overarching and unifying framework that operates within well-defined system boundaries, which are developed by scientists from different disciplines (Broman and Robèrt 2015). The strategic sustainable development concept could support a pedagogic model that aims to teach and work with sustainability. The value of this framework is that, throughout its two decades of existence, it has been continuously developed and tested between practitioners, scientists and students (Missimer 2015). The unifying and generic qualities of the framework for strategic sustainable development also involve analysis of additional frameworks, concepts, methods, and tools, to evaluate how they relate to and support the full scope of strategic sustainable development that the framework aims to cover (Broman and Robèrt 2015). The result is an encompassing and operational definition of sustainability, and a systematic approach to plan and act for fulfillment of the transition towards a sustainable society (Broman and Robèrt 2015). Incorporating such a strategic approach in sustainability education may bolster the value of the educational approach and yield effective results.

1.4　The Value of SSD Planning in Municipalities

It is clear that education is necessary to develop a whole systems perspective while confronting the sustainability challenge. Within that understanding, it is also beneficial to learn and use a strategic methodology while attempting to further sustainable development through an educational lens. Furthermore, it is equally important to approach the challenge strategically from within the various subsystems including municipal planning as well.

Interestingly, there are two things happening in parallel when it comes to urban development. By 2020, the number of cities with populations greater than one million will still be growing, and at the same time forecasts from UN-Habitat suggest that the bulk of new urban growth is taking place in smaller urban areas of less than 500,000 residents. Around seventy-five percent

of the global population will live in conurbations of this size in 2020 and beyond, which gives municipalities a key role in planning for sustainable development (UN-Habitat 2011).

The success of implementing strategic sustainable development planning in municipalities depends on various factors. They include:

> "the importance of a clear, shared vision and engaged politicians; the size and organizational structure of the municipality and its willingness and capability to act; the organization of the process and extent to which stakeholders have been involved; the need for clarity about financial aspects, such as planned financing of implementation; and the need for greater clarity concerning selection of targets and their relevance to global climate and energy trends" (Fenton et al. 2015, 213).

Once a municipality succeeds to include a strategic planning approach towards sustainability it can gain further value on different levels. One benefit would be a better overall understanding of complex systems such as a municipality with its great number of stakeholders and the growing number of people involved, as stated above. This better understanding is often the result of a well-arranged planning process from the current reality of a municipality towards its sustainability vision that allows participants to simplify, categorize and design actions within certain predefined boundaries. This helps to break down a large-scale challenge to various small and achievable steps (Robèrt 2000).

1.5 The Need for Community Engagement, Applied Learning and Public Scholarship in Higher Education

Higher education institutions (HEIs) are in a position to potentially play a key role when it comes to addressing the sustainability challenge. There is also value in taking a strategic approach in sustainability education curriculum and program design as well as in municipal sustainability planning. The question, however, remains, how do these concepts come together and complement one another?

There is an inevitable relationship between communities and higher education institutes (HEIs). According to Jacob et al. (2015), communities help provide necessary human resources for higher education systems to foster quality education. HEIs then train students who eventually fill job vacancies and establish their own businesses that support communities (Jacob et al. 2015).

However, Jongbloed at el. (2008) noticed a fundamental change in the social contract between science and higher education institutions on the one hand, and the state and local communities on the other hand. It is not enough anymore that HEIs only provide excellent education and research. Rather it is important to deliver those outputs in ways that are relevant to shaping the knowledge of society (Jongbloed et al. 2008).

Bernardo et al. (2012) believe that community engagement is not just a structural element in education, but rather it is a philosophical belief that fosters and progresses higher education learning for local, national and international communities (Bernardo et al. 2012). However, in reality the picture is often a different one. Karp (2012) identifies that communication between credentialed specialists and the complexity of communities within society is a casualty of the specialization era (Karp 2012). HEIs are pulled in two opposing directions at the same time.

They are expected to develop specialists with detailed and specific knowledge, and at the same time they are required to be relevant and engaged in applying that knowledge to society (Karp 2012). By analyzing public scholarship, Karp (2012) found that society is composed of people who live in complex and overlapping communities versus seemingly unrelated and independent communities (Karp 2012). Therefore, this highlights the need for HEI's to engage with communities through public scholarship in order to avoid going too deep into specialized work that may not be relevant and useful for society as a whole. Jongbloed at el. (2008) also argue that it is necessary in today's network society, that providers of higher education be in constant dialogue across community stakeholders and engage in close working relationships with them (Jongbloed et al. 2008).

Schlossberg and Larco (2014), founders of the *Sustainable City Year Program*, found two arguments for fostering community engagement in higher education (Schlossberg 2014 and Larco, 1-2):

1. "Communities have an unending list of 'real world' project needs.
2. Communities have 'citizens, including specialists who understand the complex and often competing demands of these projects, who can give honest feedback on a range of learning areas: from technical content to soft skills, such as public presentations, engaging with clients, cultural competency, accepting criticism, facilitating public process, and helping students fully understand the economic, social, and political constraints inherent in going from theory to practice.'"

Community engagement, through its various forms, is beneficial for all involved parties. Since universities can generate new knowledge through applied learning, they have the capacity to simultaneously respond to an expressed need of a community (Bernardo et al. 2014). For Bernardo et al. (2014), universities are even morally accountable to society, through scholarship, research and leadership with the communities they serve. This moral accountability includes the responsibility of using higher education for social transformation (Bernardo et al. 2012). Jongbloed et al. (2008) also recognize the pressure on universities to provide tangible benefits for society. They identify this pressure as being an opportunity rather than an unnecessary burden for HEIs in the rise of community engagement. According to Jongbloed et al. (2008), universities that are taking this new role seriously play a more broad and visible role in the educational, social and economic well-being of local communities and the nation (Jongbloed et al. 2008).

Despite all positive effects that emerge from community engagement and applied learning, these partnerships can be counterproductive if the university does not fully understand the dynamics of the communities with which it seeks to work, or if the educational institution is not flexible enough to adapt their agenda to the current needs of the communities (Bender 2008). This whole process requires leaders who are able to facilitate whilst respecting the cultural identities of both parties (Bernardo et al. 2014). This is where the *Sustainable City Year Program* education model comes into play.

1.6   The Sustainable City Year Program Description

The *Sustainable City Year Program* (SCYP) is a relatively new academic model developed at the University of Oregon that is currently expanding domestically and abroad. This model brings the sustainability challenge that cities deal with in contact with universities. The

program aims to bridge the gap between theoretical knowledge in academic courses and practical application of solutions to sustainability problems with a municipal partner, while providing mutual benefit to students and faculty at the university, and to regional municipalities (Schlossberg and Larco 2014).

The model consists of a city that applies to partner with the university for a full academic year. The university coordinates all relevant classes across multiple disciplines and elaborates their curriculum to incorporate the sustainability related needs that the partner city aims to work on through specific projects determined by the city. This becomes a university wide collaborative effort that aims to capitalize on the latest theory, best practices, curiosity, creativity and energy of students while applying this knowledge to real sustainability initiatives with the partner city. This model relies heavily on community engagement, applied learning and public scholarship as the backbone of success for the program (Schlossberg and Larco 2014).

"In my view, there is an urgent need to communicate with the public and help to explain where there is consensus, and where there are doubts about the issues of sustainable development."
<div align="right">- Jeffrey Sachs</div>

1.7   Research Purpose

The SCYP model intends to integrate and apply theoretical knowledge with real-world sustainability problems in small to mid-size regional municipalities through a large-scale collaborative effort with the University of Oregon. Proponents of this approach believe it has the potential to enhance student learning, to improve local government efforts in addressing city-wide sustainability concerns, and to help move society towards sustainability.

The purpose of conducting this research is to answer the following primary research question:

Primary Research Question (PRQ): *How does the Sustainable City Year Program contribute to strategic sustainable development?*

In order to answer this question, we first present the conceptual framework for strategic sustainable development to serve as a reference point for further assessment. Then, our research initially focuses on developing an understanding of the underlying intention and sustainability premise of SCYP, the structure of the model, and the impact that it produces. The consolidated results of the above research points identify how SCYP contributes to strategic sustainable development.

The results of our primary research question developed deeper understanding and perspective that informed the direction of inquiry to pursue our secondary research question:

Secondary Research Question (SRQ): *How can strategic sustainable development concepts contribute to the Sustainable City Year Program?*

In order to answer this question, we explored potential leverage points for integrating strategic sustainable development concepts into the municipal planning structure of the partner cities as well as how these concepts can be woven into the academic curriculum.

The aim of this research is to understand the Sustainable City Year Program at the University of Oregon and to further the discussion on how this model can be used as a leverage point to move society towards sustainability. This research may benefit universities currently working with or considering adopting the SCYP model, universities that are developing their own sustainability education programs, and universities that are working with a strategic sustainable development approach. Regional municipalities seeking new ideas, development strategies, and new ways to improve their efficiency may also find this research beneficial.

1.8   Scope and Limitations

The limited timeframe available for this study narrowed our research scope to focus on this particular version of SCYP at the University of Oregon and the associated partner cities. Taking the limited scope into account, we were interested in exploring how such a model may contribute more broadly to society's transition towards a sustainable future. The potential for significant social change through community engagement and public scholarship efforts fostered through this model, may be a powerful leverage point for integrating sustainability into university education and municipal planning. By focusing on one version of this model, we intended to extract the relevant learnings of such an educational approach. Therefore, other universities and communities may take these learnings into consideration when exploring the potential benefits and challenges of initiating or participating in a similar program and/or how such a model can build upon current programming and sustainability efforts at different institutions.

However, it is important to keep in mind that the results of this research indicate regional impacts that are determined by the level of investment of each partner city as well as by the various academic disciplines that choose to participate in any given year. Additionally, it is important to consider that the quality of student work may vary along the spectrum of poor to excellent, which also affects the overall impact of the partnership. Such variables may have significantly different implications depending on the context of the university/city partnership where this model is utilized. Therefore, this research is designed to highlight the impact of this approach in one particular context that can be used as a baseline assessment for the value of how this model contributes to overall strategic sustainable development, and how it can be applied in different educational and municipal planning contexts.

2   Methods

The research was conducted using an evaluation research approach, more specifically, it drew on elements of illuminative evaluation to meet our specific research needs. According to Savin-Baden and Major (2013) evaluation research is applicable when seeking to provide insight into educational purpose and practice regarding curriculum, philosophy and social implication (Savin-Baden and Major 2013). Illuminative evaluation aims to study an innovative program, how it works, how it is influenced by various school situations where it is applied, and what are considered to be the advantages and disadvantages of the program (Parlett and Hamilton 1972). This approach was clearly relevant for our assessment of the SCYP education model, and it was integrated into the research design.

2.1   Data Collection

There are many iterations of the SCYP model that are currently in use and developing across the United States, and some that are emerging internationally as well. Due to the limited timeframe available for this study, the scope of our research focused on the SCYP model at the University of Oregon where the concept was developed. Additionally, the three regional cities of Salem, Springfield, and Medford that participated as partner cities in the program between the years 2010 to 2014 were included in the study.

This research did not include the first partner city of Gresham as it was the pilot year for the program and we were unable to make contact with the city staff. Additionally, during the 2014/2015 academic year no publicly available project reports were produced. At the time of this research, the city of Redmond was actively engaged in the middle of their partnership year and they had not yet produced project reports, and Albany will be next year's partner. Therefore, these cities were not included in the study.

The methods of data collection included interviews, surveys, and document review. Of these techniques, interviews were the primary data source in this research. Savin-Baden and Major (2013) suggest that interviews are the most common qualitative data collection method and they are integral approaches in most qualitative research traditions (Savin-Baden and Major 2013). Interviews offer the researcher opportunity to establish rapport with the interviewee and to probe deeply into a participant's experiences. They allow for exploration of understanding, opinion, memory of events, attitude and emotion (Savin-Baden and Major 2013). A semi-structured interview approach was used to provide consistency across interviews while allowing for deeper understanding and clarification when necessary. Surveys were used to increase the breadth of the data collection and to support or negate the perceptions derived from the primary interviews. Document review was also used to provide background information and additional perspective.

2.2   Research Phases

In order to answer the primary and secondary research questions and address the purpose stated above, the research approach was broken down into the following research phases. Phases I and II build upon each other to develop a logical understanding of the SCYP approach (phase I), and the impact of the SCYP experience (phase II). Each phase was composed of additional

support research questions that guided the focus of the research. Collectively, phases I and II formulate understanding of how SCYP contributes to strategic sustainable development, thus answering our primary research question.

Phase III emerged from the results of our primary research question and aimed to research additional perspectives to consider. Each support research question in this phase was geared toward exploring a potential leverage point for integrating strategic sustainable development concepts and their associated benefits into the SCYP model. Therefore, this phase sought to answer our secondary research question of how strategic sustainable development concepts may contribute to SCYP. Phase III did not produce an exhaustive list of potential leverage points, rather it was a cursory look into potential opportunities for future iterations of such a model. Further research would be valuable to explore more in-depth opportunities as well.
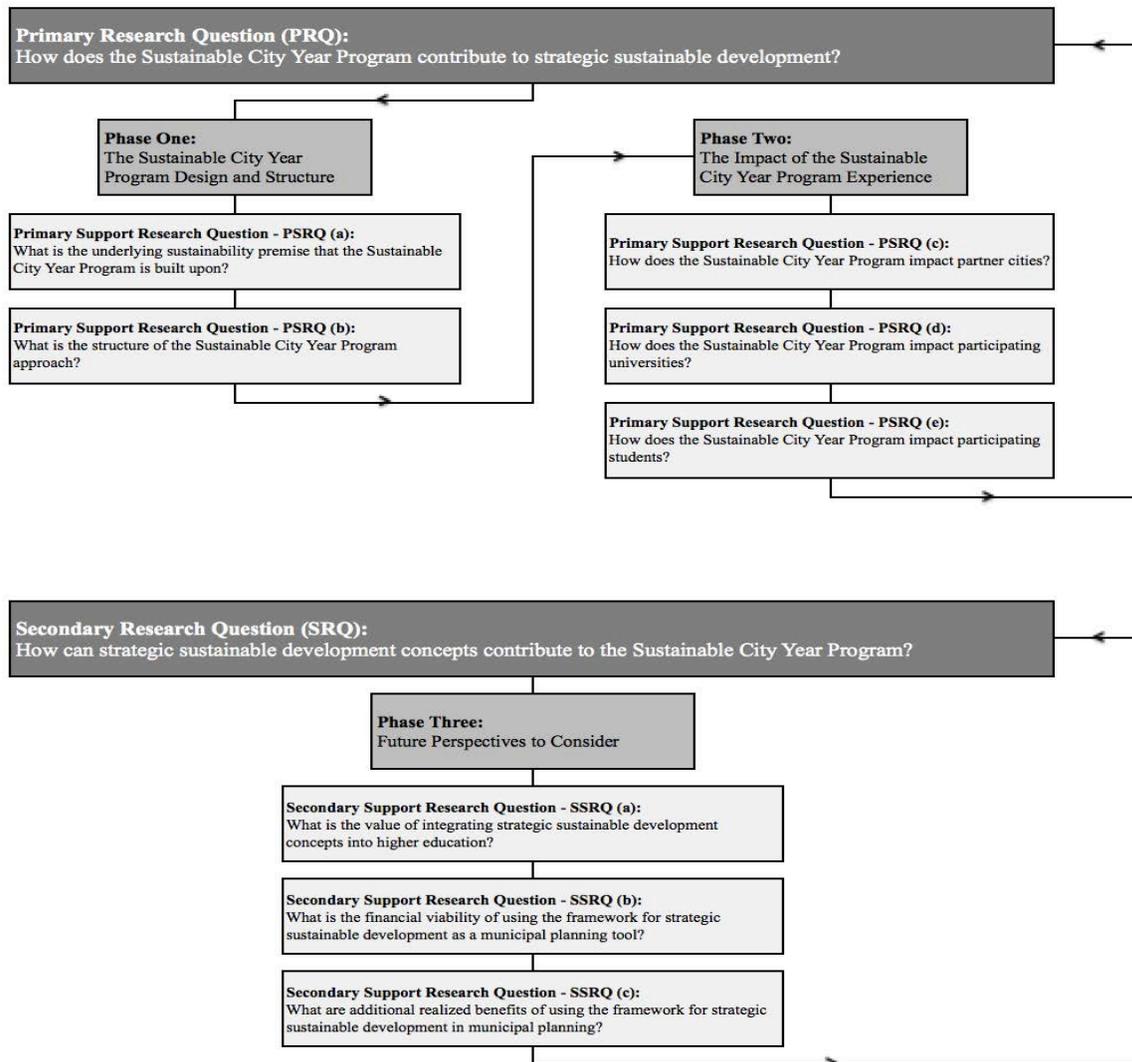
Figure 2.1. Research Design Overview

2.3   Phase I - The SCYP Design and Structure

This phase of research focused on developing an understanding of the SCYP model and the intentional thought process behind the model design. To achieve this understanding, we used the following research methods:

- New interviews with some SCYP co-founders were conducted, transcribed and coded and previously transcribed interviews were reviewed and coded as well. All results were clustered into themes.
- The SCYP Informational Podcast Series was reviewed.
- Lectures from the SCYP Conference were reviewed.
- Webpages and documents from the SCYP website were reviewed, coded and the results were clustered into themes.

The following is a source/methods matrix that identifies which sources and methods were used to answer each specific support research question. This matrix highlights the use of multiple sources and methods to triangulate the research, and therefore increase credibility.

Table 2.1. Source/Methods Matrix for PSRQ (a), and PSRQ (b)

Primary Support Research Question - PSRQ (a):
What is the underlying sustainability premise that the Sustainable City Year Program is built upon?

Methods / Sources	Interviews	Surveys	Document Review	Other
Sustainable City Year Program Co-founders	✔			
University of Oregon Office of Sustainability			✔	✔
University of Oregon Course Curricula			✔	
Sustainable City Year Program Faculty		✔		

Primary Support Research Question - PSRQ (b):
What is the structure of the Sustainable City Year Program approach?

Methods / Sources	Interviews	Surveys	Document Review	Other
Sustainable City Year Program Co-founders	✔			
Sustainable City Year Program Press			✔	✔
Sustainable City Year Program Podcast Series				✔
Sustainable City Year Conference Lectures			✔	✔

2.3.1   Method Details and Credibility

To answer PSRQ (a), we first explored this topic in interviews with two of the program co-founders. We initially sought out three of the five program founders, however we were only able to secure interviews with two of them, as the third founding faculty member was too busy to find time to speak with us. The interviews with the co-founders helped develop a general picture of the underlying sustainability premise of the program. However, we felt that we needed a more clear understanding so we explored the Office of Sustainability website at the University of Oregon. This webpage provided us with an additional university wide overview and sustainability stance that the university aims to uphold. Furthermore, we sought out the perspective of the director of the Office of Sustainability at the university through email correspondence to investigate how sustainability is being incorporated into the curriculum within each discipline. He directed us more specifically to individual departments and their faculty. It was difficult to gain access to speak with individual faculty. Therefore, this led us to conduct a document review of cross discipline curricula from the departments that typically work on SCYP projects. Additionally, the faculty survey that we sent out included a question

regarding the integration of sustainability into the curriculum. Although the results of this particular survey are weak since we received only five responses out of forty potential responses, the few responses we did receive also reflect some perspective on the underlying sustainability premise of the program.

To answer PSRQ (b), we first reviewed a previously transcribed interview with SCYP co-founder Marc Schlossberg that is cast within a larger report titled: *Community Engaged Design Education* written by Gilad Meron who participated in *The 2012 Fellowship for Social and Institutional Change* at Cornell University. Schlossberg gave us this report and his permission to use the transcribed interview within it. The interview focuses on how the SCYP model works. Another document titled: *A New, Radically Simple Model for Publicly Engaged Scholarship: The Sustainable City Year Program* written by program co-founders Marc Schlossberg and Nico Larco served as a foundational source of understanding to answer this support research question as well. SCYP also has an informational podcast series that is available on their website that we reviewed and used in conjunction with our other sources to develop a thorough understanding of the model design and structure. It is a series of 11 short podcasts that explain SCYP step by step how. In this podcast series, it is unclear who the primary source of information is. However, it appears to be the collective voice of SCYP staff and the podcasts confirm the statements and descriptions from our other sources. Additionally, we attended the annual Sustainable City Year Conference. The conference lectures on 'how to run a sustainable city year program' were reviewed and used in our assessment of how the program works. Collectively, these sources and data collection methods provided a thorough understanding of the model design and structure.

2.4   Phase II - Impact of the SCYP Experience

This phase of research focused on understanding the impact of the SCYP experience. More specifically understanding the impact upon the partner cities, the participating university and the participating students. This information was important to collect in order to be able to understand how this model contributes to strategic sustainable development by identifying strategic sustainable development concepts that are evident throughout the partnership experience, and furthermore, reflecting on how these impacts and concepts merge and ultimately support society's transition towards sustainability. To achieve this understanding, the following research methods were used:

- SCYP co-founders were interviewed, transcribed, coded and clustered into themes.
- The SCYP city managers were interviewed, transcribed, coded and clustered into themes.
- Student project reports and city strategic plans and council goals were reviewed and coded to identify from where and how the project ideas were determined and to identify strategic sustainable development concepts within the reports.
- Surveys were conducted among three target groups including city staff project leaders, SCYP participating faculty, and SCYP participating students. The results were analyzed, coded and clustered into themes.

The following is a source/methods matrix that identifies which sources and methods were used to answer each specific support research question. This matrix highlights the use of multiple sources and methods to triangulate the research, and therefore increase credibility.

Table 2.2. Source/Methods Matrix for PSRQ (c), PSRQ (d), and PSRQ (e)

Primary Support Research Question - PSRQ (c):
How does the Sustainable City Year Program impact partner cities?

Methods / Sources	Interviews	Surveys	Document Review	Other
Partner City Strategic Plans and Council Goals			✔	
Student Project Reports			✔	
Partner City Program Managers	✔	✔		
City Staff Project Leaders		✔		

Primary Support Research Question - PSRQ (d):
How does the Sustainable City Year Program impact participating universities?

Methods / Sources	Interviews	Surveys	Document Review	Other
Sustainable City Year Program Co-founders	✔			
Sustainable City Year Program Faculty		✔		

Primary Support Research Question - PSRQ (e):
How does the Sustainable City Year Program impact participating students?

Methods / Sources	Interviews	Surveys	Document Review	Other
Sustainable City Year Program Co-founders	✔			
Sustainable City Year Program City Staff	✔	✔		
Sustainable City Year Program Faculty		✔		
Sustainable City Year Program Students		✔		

2.4.1 Method Details and Credibility

To answer PSRQ (c), we started by conducting interviews with the SCYP partner city program managers from Salem, Medford and Springfield. These three interviews provided thorough perspectives on how the partnership impacted their respective cities. We then followed up the interviews with a survey for all city staff members that were project leaders on any SCYP project in each of these cities. We received 10 responses out of 32 potential responses. These survey responses provided additional insight and support for the perspectives that emerged from the interviews. Even though these survey results generally support the overall perspectives of the city program manager interviews, it needs to be noted that only 31% of those that received the survey actually responded. Therefore, the survey results do not necessarily reflect the opinions of the majority. To further clarify how the projects were determined, it became clear during the interviews that most project ideas evolved from each city's strategic plan or council goals during their partnership year. Therefore, we reviewed these documents along with the project reports written by the students to see how the projects were determined, how they fit into the bigger picture of each city's planning and project implementation process, and how the student project work contributed to that process. This background information provided additional insight to help answer the underlying question of how this work contributes to strategic sustainable development by understanding how these projects, both individually and collectively, fit into the perspective of global systems thinking.

To answer PSRQ (d), our primary data collection source was an interview with SCYP co-founder Marc Schlossberg. Our secondary source of information came from perspectives shared through the faculty survey. However, as previously mentioned, the faculty survey only had a 12% response rate with 5 out of 40 possible responses. Although the research may suggest some conclusions that can be inferred from these responses, this is not a highly credible research sample. Additionally, multiple attempts have been made to establish contact with upper administration staff at the University of Oregon to seek their perspectives on the impact of SCYP upon the university as a whole. However, we were unable to communicate directly

with them. Therefore, the results of this section should be understood more as potential implications for the university rather than highly confirmed impacts.

To answer PSRQ (e), our primary data collection sources were interviews with SCYP co-founders and interviews with the partner city staff program managers. These interviews provided the most thorough outside perspectives of the impact upon the students. The faculty survey also sought opinions from the faculty perspective. However, as stated above, the faculty survey only had a 12% response rate with 5 out of 40 possible responses. Although some conclusions may be gleaned from these responses, this is not a highly credible research sample.

We also made multiple attempts to hear directly from participating students. However, the participating student perspective is also under-represented. We endeavored to conduct a student survey distributed through current participating faculty during the winter 2016 academic term. 4 of 13 faculty members were willing to distribute the survey, and one of those faculty ultimately decided against it based on the lack of Internal Review Board (IRB) approval, and ultimately this survey did not produce any responses. IRB approval is not required for research of this type in Swedish universities, and therefore it was not pursued. Further attempts were made to conduct a large-scale student survey endorsed by and distributed through one of the program co-founders. However, it proved difficult for the program staff to find the time to consolidate student rosters from previous classes over the years and to prepare the survey recipient list within our allotted timeframe for this study. Therefore, this survey was also not conducted and no results were documented. Our final attempt to conduct a survey for participating students was geared toward this year's classes only, as those rosters were more readily available to use for distribution. The intention was to do a collaborative survey with the program staff so that our research and SCYP would both benefit from the results. However, the extra time needed on the part of the program staff to design and distribute the survey also did not align with our research timeframe.

2.5 Phase III - Future Perspectives to Consider

This phase of research focused on gathering data that answers our secondary research question. The focal points of this research phase emerged over time as we collected the data in phases I and II. Based on the initial research results, we chose to explore three potential leverage points for integrating strategic sustainable development concepts into the SCYP model. These three areas are not an exhaustive assessment of how strategic sustainable development concepts can be integrated into the model, rather they are just a starting point for further considerations. The limited timeframe of this study did not allow for more thorough research. These three topics are intended to serve as a catalyst for further exploration. To address each secondary support research question and ultimately the overall secondary research question, the following research methods were used:

- Interviews with the strategic sustainable development concept co-creators were conducted, transcribed, coded and clustered into themes.
- Interviews and email correspondence with Blekinge Institute of Technology faculty were conducted, transcribed, coded and clustered into themes.
- A broad literature review focused on concepts for successful sustainability education.
- Interviews and email correspondence with global sustainability practitioners that use the framework for strategic sustainable development were conducted, transcribed, coded and clustered into themes.

- Municipality case studies from The Natural Step archives were reviewed.
- Interviews and email correspondence with global municipal planners that have used the framework for strategic sustainable development were conducted, transcribed, coded and clustered into themes.
- The most recent academic paper on strategic sustainable development was reviewed.

The following is a source/methods matrix that identifies which sources and methods were used to answer each specific support research question. This matrix highlights the use of multiple sources and methods to triangulate the research, and therefore increase credibility.

Table 2.3. Source/Methods Matrix for SSRQ (a), SSRQ (b) and SSRQ (c)

Secondary Support Research Question - SSRQ (a): What is the value of integrating strategic sustainable development concepts into higher education?				
Methods / **Sources**	**Interviews**	**Surveys**	**Document Review**	**Other**
Strategic Sustainable Development Co-creators	✔			
Blekinge Institute of Technology Faculty	✔			✔
Peer-reviewed Literature			✔	

Secondary Support Research Question - SSRQ (b): What is the financial viability of using the framework for strategic sustainable development as a municipal planning tool?				
Methods / **Sources**	**Interviews**	**Surveys**	**Document Review**	**Other**
Strategic Sustainable Development Co-creators	✔			
Sustainability Practitioners	✔			✔
The Natural Step - Municipality Case Studies			✔	
Global Municipal Planners	✔			✔

Secondary Support Research Question - SSRQ (c): What are additional realized benefits of using the framework for strategic sustainable development in municipal planning?				
Methods / **Sources**	**Interviews**	**Surveys**	**Document Review**	**Other**
Broman and Robèrt			✔	
The Natural Step - Municipality Case Studies			✔	
Global Municipal Planners	✔			✔

2.5.1 Method Details and Credibility

To answer SSRQ (a), we interviewed the founder and further co-creators of the strategic sustainable development concept and the founders of the Master's program in Strategic Leadership Toward Sustainability at the Blekinge Institute of Technology. Additionally, we surveyed the opinions of 109 faculty and staff at the Blekinge Institute of Technology across seven departments in the School of Engineering. We received seven responses. Furthermore, we conducted a thorough literature review to research widely agreed upon key components of a successful higher level sustainability education model. The intention of this research was to cross analyze and identify which strategic sustainable development concepts are largely accepted as essential components for effective sustainability education, and therefore highlight the value of the concept. The search criteria for this literature review included the following points:

(a) Screening different libraries, including BTH Library, Scopus, Eric, Web of Science and World Cat.
(b) Focus on articles that are cited by multiple scientific writers, which is important to support a sustainability education model with components that are widely recognized and accepted in the field.

(c) Balance between articles that were published before and after 2010. Older articles serve as a source for pioneer-knowledge in this relatively young field, and more recent articles capture the benefit of the latest information. This is especially relevant in a rapidly changing field such as sustainability education.

To answer SSRQ (b), we interviewed the founder and further co-creators of the strategic sustainable development concept as well as multiple sustainability practitioners that work with the framework to seek clear evidence of the financial benefit of using the framework for municipal planning. Furthermore, we reached out to 32 municipalities in eight different countries that have integrated the framework into their municipal planning. We received responses from nine of these cities (eight within Canada and one in the United States). Refer to Appendix A for a list of these municipalities. Additionally, we reached out to 11 different Natural Step offices around the world and we received two responses, one from Canada and one from Sweden. We also prepared a brief survey for municipalities that have used the framework that was distributed through a regional sustainability practitioner in western Canada, but we did not receive any responses to that survey.

To answer SSRQ (c), we sought further perspectives from the same research sample mentioned above regarding additional realized benefits of using the framework for strategic sustainable development in municipal planning.

3   The Conceptual Framework

This section is focused on developing an understanding of the strategic sustainable development concept to serve as a reference point for further assessment of the Sustainable City Year Program. To achieve this understanding, we reviewed and synthesized the most recent published academic paper written by the concept co-creators. This version of the paper titled: *A Framework For Strategic Sustainable Development* written by Goran Broman and Karl-Henrik Robèrt in 2015, reflects upon the 25-year learning process that has evolved into the concept known as strategic sustainable development.

3.1   The SSD Concept

The strategic sustainable development (SSD) approach is an evolving concept. Ongoing discussion and debate among scientists and practitioners in conjunction with assessment of practical application have led to the current design and various components that comprise the methodology known as strategic sustainable development.

The development of this approach has been guided by and rooted in thorough interdisciplinary literature review including the fields of Earth system science, resource theory, leadership theory, organizational change theory, economics, and sociology among other fields. Logic reasoning, hypothesis testing, modeling, action research, case study review, etc. are all methods that have been utilized throughout the development process (Broman and Robèrt 2015).

Strategic sustainable development can be broken down into the following 4 categories:

- The Sustainability Challenge
- Sustainability Principles as Boundary Conditions
- The Framework for Strategic Sustainable Development
- The ABCD Strategic Planning Process

3.2   Why Consider an SSD Approach?

According to Broman and Robèrt (2015), it is essential to establish a thorough understanding of the magnitude and urgency of the sustainability challenge as well as the benefits for taking a competent and proactive approach toward addressing the challenge. This understanding validates and clarifies the scale and rate of societal change that is necessary to make progress toward achieving sustainability (Broman and Robèrt 2015). Additionally, strategic sustainable development provides a methodical and scientifically grounded approach that is cast within ecological and societal boundaries that guide actions across disciplines and lead in the right direction (Broman and Robèrt 2015).

Broman and Robèrt (2015) identify that the observed problems we see in the world today are actually symptoms of an inherently unsustainable societal design and mode of operation. These indicate a systematically decreasing potential of human well-being. They believe it is also essential to understand the potential self-benefit of being proactive in working to reverse the systematic decline of the socio-ecological system (Broman and Robèrt 2015). Strategic sustainable development is designed to promote a complete understanding of the challenge, to

develop a common language that can be understood across cultures through a clear definition of sustainability, and to identify associated opportunities of proactively pursuing stepwise solutions to the global sustainability challenge (Broman and Robèrt 2015).

Backcasting is an essential strategic planning method that is embedded within the strategic sustainable development approach. According to Broman and Robèrt (2015), backcasting is a valuable technique for long term strategic planning in complex adaptive systems. Backcasting involves defining a future vision of success and then asking what needs to be done today in order to achieve that future vision (Broman and Robèrt 2015). Furthermore, they suggest that backcasting from principles (or boundary conditions) is a generic, intuitive and practical approach that allows for the most relevant actions to develop on an ongoing basis.

3.3   The Sustainability Principles as Boundary Conditions

In order to determine the boundary conditions or basic principles upon which sustainability can be achieved, the following question must be asked:

> "What are the essential aspects of the ecological and social systems that need to be sustained in order to not systematically undermine the capacity of people to meet their needs, now and in the future, and what are the overriding mechanisms by which these essential aspects can be degraded" (Broman and Robèrt 2015, 6)?

Natural and social science research identifies key areas that are essential to sustain. With that knowledge, it is necessary to determine the primary 'upstream' mechanisms of relevant causality chains where humanity can systematically degrade these essential areas. From that point, in order to derive principles for sustainability success, adding the term *'not'* to each mechanism of destruction results in the sustainability principles or boundary conditions within which society must operate to achieve sustainability (Broman and Robèrt 2015). There are three ecologically based principles and five socially based principles and they are listed below.

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.

And, in a sustainable society *people* are *not* subject to structural obstacles to…
4. … health.
5. … Influence.
6. … competence.
7. … impartiality.
8. … meaning-making.

This principle-based definition of sustainability establishes the necessary conditions for ecological and social systems to *not* be systematically degraded. They comprise the boundary conditions within which society, in the long term, can continue to function and evolve (Broman and Robèrt 2015).

3.4 The Framework for Strategic Sustainable Development (FSSD)

This leads to the framework for strategic sustainable development (FSSD), which is designed for the purpose of sustainable development planning based on future visions framed by a principled definition of sustainability (Broman and Robèrt 2015). With a clear understanding of the sustainability challenge, the potential benefits of proactively addressing the challenge, and a common language defined by scientifically grounded principles, we need a conceptual model to piece it all together. This model is composed of five different levels that work in conjunction with one another. It is not designed to be a linear progression, but rather a structure that allows for iterative adaptation on an ongoing basis. This is known as the framework for strategic sustainable development, and components of each level are described below.

Systems Level: Includes a big picture scientific understanding of the global socio-ecological system. From an organizational perspective, this level includes a systems-thinking understanding of relevant interdependencies, and how the organization is nested within value chains and key stakeholder networks (Broman and Robèrt 2015).

Success Level: Includes the definition of the vision that is framed within the sustainability principles since it only makes sense to cast a vision that can actually exist based upon the socio-ecological boundary conditions. From an organizational perspective, this level may include additional success criteria such as a core purpose and core values (Broman and Robèrt 2015).

Strategic Guidelines Level: Includes guidelines for how to approach the principle-framed vision in a strategic stepwise approach. The backcasting technique is realized at this level to generate ideas and actions. This level guides the process of prioritization taking into account feasibility, return on investment (financial, social, etc.), and considerations for a stepwise process (Broman and Robèrt 2015).

Actions Level: Includes the prioritized actions formulated into a strategic plan through the use of the strategic guidelines, backcasting, and the vision to inspire, inform and scrutinize them (Broman and Robèrt 2015).

Tools Level: Includes methods, tools and additional forms of support needed for decision-making, monitoring, and reporting to help ensure achievement of the vision (Broman and Robèrt 2015).

3.5 The ABCD Strategic Planning Process

The framework for strategic sustainable development (FSSD) serves as a shared conceptual model. However, in and of itself, it is not enough to achieve sustainability. The final step of the strategic sustainable development approach is the ABCD strategic planning process. This is an application procedure for organizations that operationalizes the FSSD by utilizing a structured workshop design that allows for the co-creation of strategic transitions and is designed to be used by strategic planning teams (Broman and Robèrt 2015). Similar to the FSSD model, this is an iterative process that can be enhanced by re-visiting previous stages as new ideas evolve. This process is comprised of the following four steps that are described below:

Step A: This step of the workshop begins with a description of the sustainability challenge and related opportunities, an explanation of the FSSD in general, and an overview of the ABCD

procedure. The planning team discusses the subject of the planning endeavor and design a preliminary vision of success cast within the sustainability principles. As mentioned previously, the vision may include the organization's core purpose, core values and overall desirable outcomes when the vision is achieved (Broman and Robèrt 2015).

Step B: During this step, workshop participants assess the current situation of the organization in relation to the vision created in step A. The goal is to identify current challenges and assets that hinder and support the transition towards the vision. The assessment should reveal how the organization contributes to society's violation of the sustainability principles and how their current assets contribute to society's compliance with the sustainability principles. It is important at this stage to identify relevant subsystems and the associated dependencies (Broman and Robèrt 2015).

Step C: This step is an opportunity for active brainstorming to identify possible solutions to fill the gap that is created between steps A and B. Participants list all possible ideas to address challenges and capture opportunities that lead toward achieving the vision. It is important to include ideas that utilize the existing assets as well. The ideas should be scrutinized with respect to the vision within the sustainability principles (Broman and Robèrt 2015).

Step D: During this step the workgroup applies strategic guidelines to prioritize proposed actions established in step C into a strategic plan. At a basic level the planning team should use guidelines that help identify actions that are flexible platforms that can lead to further actions over time. This develops a strategic stepwise process that supports society's transition towards sustainability and takes the organization to their sustainability framed vision. Additional prioritization considerations include striking a good balance between the pace of progress towards the vision and return on investment to ensure continued success (Broman and Robèrt 2015, 8). Cross discipline and sector collaboration is required during this step. This allows for resources, values, and preferences to be weighed against each other and in relation to the sustainability principles through strategic dialogue and leads to the most effective strategic planning decisions (Broman and Robèrt 2015).

3.6   Summary

In summary, the strategic sustainable development concept includes an understanding of the global sustainability challenge and the sustainability principles that serve as boundary conditions for a clear definition of sustainability. This concept also includes a 5 level framework for strategic sustainable development and a strategic planning process that puts it into practice.

4 Results

4.1 Phase I Results - The SCYP Design and Structure

This phase of research was divided into two primary support research questions with the intention to understand the underlying sustainability premise of SCYP, the design of the model and the overall approach. This understanding was used to clarify how this educational approach contributes to SSD. For detailed methods used in this phase, refer to methods section 2.3.

4.1.1 Primary Support Research Question - PSRQ (a)

What is the underlying sustainability premise that the Sustainable City Year Program is built upon?

Definition of Sustainability: When asked about the underlying sustainability premise of SCYP, co-founder Marc Schlossberg explained that SCYP is based on a rather broad definition of sustainability, which was an intentional decision. Co-founder Robert Young confirmed this perspective by describing that all the faculty in the SCYP had a different approach to sustainability, "It wasn't that we got together and said this is the definition of sustainability. That was defined by each of us in our own classes." Furthermore, these statements are supported by the faculty survey. From the faculty that responded, three of four see that using current best practices in their specialty is the most effective way to move towards a sustainable society. One of four stated that they focus on the task at hand in order to not get caught up in 'sustainability jargon.' No one marked the option "I start from a clear definition of sustainability and develop solutions from there."

The Gap: The point of view of the two co-founders is that the gap we are facing is not sustainability knowledge, but rather the application of that knowledge into practice. Therefore, Schlossberg argues that putting too much emphasis and time into the framing and moral cause behind sustainability agendas can demotivate and distract from getting into action. This, according to Schlossberg, is primarily because behavior change for humans usually doesn't happen based on moral issues. He adds, "we need people to put the knowledge that exists into practice, and once we do that, then we can argue about technical details or the purity of the term sustainability." He goes even a step further when highlighting that webinars, lectures or academic journals have minimal impact on creating behavior change and adapting practices in the short term. Therefore, he describes the role of SCYP as an accelerator of the implementation of sustainability knowledge into practice by helping communities and local government officials understand how to translate big sustainability concepts into practical everyday decisions that they have to do. Young confirmed this perspective by saying that the SCYP founders wanted to take an active role in exploring what it would look like to redesign and reinvent disciplines like commerce, agriculture, architectural design and engineering, rather than just talking about the terrible things that multinational corporations are doing. For Young, the overarching theme among various faculty at that time was to get started with designing a society whose principle aim was liberating rather than conquering the planet.

The Approach: According to Schlossberg, the hands-on sustainability approach of SCYP is built upon the transfer of the newest knowledge from students into communities – with the clear aim to catalyze communities to put new ideas in the public domain and pushing for the

betterment of society. This includes the bigger idea of sustainability as one key aspect of the process. Young also pointed out that the overall objective behind starting SCYP was to use the research that faculty and students did for social transformation. Schlossberg stated that SCYP provides the conduit for the passion and idealism of students to break through the walls of the university in a way that is effective for making real change, by not getting stuck in sustainability jargon. Another argument by Schlossberg that supports the careful way of communicating the term sustainability is that SCYP wants to make new ideas accessible for cities in a non-threatening way, both for city staff and community members. In doing so, SCYP creates participation towards sustainability without people even knowing they are part of it in first place. However, for Schlossberg sustainability is a constant factor - even though it may not always be visible in the form of a clear framework.

When asked about benefits of an approach with sustainability principles and system boundaries, Young replied that there are advantages in this method, especially when it comes to focus clearly on certain topics. At the same time, he explained that SCYP had to start *prior* to that stage. Young stated, "It was too early to discuss closed loop materials management or zero emissions energy productions - we first had to get that dialogue started. We had to get [local government and communities] started in thinking that energy conservation or biodiversity are fundamental design principles. Once you do that, then you can have a discussion about limits."

Sustainability at the University of Oregon: Young shared a saying that colleagues had at the time when SCYP was founded:

> "If you were into literature, the place to be was Paris in the 1920s, because all the great writers were there. But if you were into sustainability the state of Oregon was the place to be at that time. We had incredible depth in sustainability, architecture, planning, political science, and landscape architecture, we were all over it."

Upon review of the University of Oregon (UO) website, we confirmed that Young's statement remains valid. The UO's host city of Eugene, Oregon is described as "a center of environmental activism" (University of Oregon 2016b). Environmental issues feature in courses across campus at UO, from business to architecture to sociology to marine biology. Furthermore, UO offers an Environmental Leadership Program, that partners students with nonprofits, government agencies, and businesses to address local environmental needs. In addition to multiple student groups devoted to sustainability UO offers a residence program for undergraduates called Community for Ecological Leaders, and the School of Law developed the Environmental and Natural Resources Law Program (University of Oregon 2016b). Additionally, they offer a graduate certificate program in sustainability that incorporates the use of The Natural Step Framework (also known as the strategic sustainable development concept) among other sustainability frameworks in a course called *Sustainability Frameworks, Indicators and Plans*) (University of Oregon 2014). According to the Office of Sustainability at UO, their definition of sustainability mimics both, the Brundtland Report definition and the triple bottom line concept, which requires a balance between economic success, environmental conservation and social equity to meet the needs of future generations.

Contribution to SSD: It is clear that UO has an understanding of the sustainability challenge and that sustainability awareness is embedded within the programming the university offers. SCYP recognizes that the gap is not in the knowledge, but rather putting it into practice and stimulating behavior change. From an SSD perspective, the intentional use of a broad definition of sustainability is a strategic move on the part of SCYP. The SCYP staff are aware

that many regional communities may not be directly open to the concept of sustainability. They understand the need to engage with communities at a level they will respond to. Therefore, exercising thoughtful communication around the sustainability concept and speaking the language of the partner city staff and community members allows the door to open and begins the stepwise process of integrating sustainability.

4.1.2 Primary Support Research Question - PSRQ (b)

What is the structure of the Sustainable City Year Program approach?

Our research revealed the following explanation of SCYP. According to Schlossberg, SCYP was founded in 2009 by five faculty members of the University of Oregon with diverse backgrounds from landscape architecture, planning, and urban architecture. SCYP attracts up to 500 students that support local communities and partner cities throughout the region on an annual basis (Schlossberg 2014, 2). For more information about partner cities refer to Appendix B. 40,000 - 60,000 hours of work, divided between 10-12 disciplines and about 25 projects per year encouraged the New York Times to name SCYP as, "perhaps the most comprehensive effort by a U.S. university to infuse sustainability into its curricula and community outreach" (University of Oregon 2016b).

Why Does SCYP Make Sense? According to Schlossberg, SCYP is a simple model for bridging the gap between universities and communities (Schlossberg 2014, 1). He explains that universities have faculty who are experts in a variety of fields and students who are idea generators and fresh thinkers, and both are open for discussion with cities. Communities likewise have two primary assets that are of interest for universities. They typically have a never ending list of 'real world' projects that often lack staff to work on them, and they have citizens, including specialists, with lots of expertise and skill sets that help to understand the complex nature of these projects (Schlossberg 2014, 2).

Young sees the program somewhere in the middle between the old belief that academia is smart and grassroots is stupid, and the postmodern view which states that hierarchies know nothing and everything has to come from the people. Young discussed the thought process of the co-founders before SCYP was established. He said they wondered if both, universities and cities, have something to offer. They further explored if they could develop partnerships around each [city] project where there is a faculty member and a municipal staff member with the students in between. He described that if students have two mentors, an academic intellectual and someone who is in practice, and they both guide the process, then they may actually come up with something that's good.

The SCYP founders recognize that knowledge is not the problem, because both, the expertise and energy to tackle the needs of communities already exists - the barrier, however, is how to put this knowledge into practice. For Schlossberg, SCYP plays the role of matching those needs in a clever, trusting and impactful way (Schlossberg and Larco 2014, 2). A podcast on the SCYP homepage states that the trick to solve the university-community partnership puzzle is to match a city's needs with a university and its resources while utilizing the current administrative structures of both institutions (Tietge 2016).

The Goals of SCYP: According to Schlossberg, SCYP aims to direct the energy of a whole university, in this case the University of Oregon, towards one partner city for a full academic year. In doing so, the goals of this initiative are:

1. To develop projects across academic and city departments.
2. To involve students and their up-to-date knowledge in a meaningful way.
3. To provide real services and impact in local communities.

Schlossberg describes that the real goal of SCYP is to permanently change the way universities interact with communities. He suggests that it is *not* unrealistic, but rather that it can happen, and that is has been done. Schlossberg further explains that you just need champions, people who believe in it and who will work for it.

How does SCYP Work? SCYP basically matches a multidisciplinary set of courses to a community-identified set of projects over an academic year. According to Schlossberg and Larco, the program is essentially a 3-step process (Schlossberg and Larco 2014, 7):

1. The city expresses interest to participate, demonstrates financial commitment to the process, and applies to the program.
2. Faculty express interest to work with the city and go through a matchmaking process to align academic expertise and community need.
3. Appointed program managers at the university and the partner city coordinate the necessary logistics for the program to run smoothly.

For a detailed explanation of this process and the associated costs see Appendices C and D.

The Challenge: Schlossberg indicates that SCYP faced many institutional difficulties prior to getting the program approved by the university. This includes the challenge of getting tenure-track professors to commit to such a program. This is particularly difficult due to the fact that this collaborative type of work is time intensive and does not translate into publications or grants, and thus does not reflect well with tenure review boards. Young confirmed this perspective and stated that the time he put into SCYP, including meetings, organizational work, and travelling to the partner cities resulted in slower progress of published works. According to Young, services and personal commitment in projects like SCYP are the least important category to get tenure. The fact that such tasks are not built into the faculty reward system is one of the reasons why academia has all this socially relevant knowledge, but is not particularly activist.

Furthermore, according to Schlossberg, there are examples of similar programs at other universities that tried to force this type of education into curriculum. Faculty who didn't want it reacted immediately, and most of these programs failed even before these initiatives really got started. Schlossberg and Larco describe that in order to overcome these obstacles, SCYP chose the approach of asking professors to voluntarily point their course projects toward real issues from the partner cities. Therefore, SCYP included classes that already exist and that already have an applied learning component. By pointing all of these separate classes to the same city on a completely voluntary basis, SCYP did not need approval from anyone. According to Schlossberg and Larco, another big benefit was that no new courses or curriculum had to be created, since everything was built on already existing classes, existing instructors, existing curricula and an opt-in, bottom-up university model. Schlossberg explains that this allows for up to 30 different courses to participate in the program each year. Therefore, the model is adaptable to many different types of institutions regardless of their conscious commitment to publicly engaged scholarship (Schlossberg and Larco 2014).

Contribution to SSD: SCYP aims to get knowledge into practice and to look at old problems in new ways. According to SCYP staff, this ideally happens through projects that advance the

city's plan during their partnership year while simultaneously meeting the educational needs and abilities of up to 500 students on an annual basis. From an SSD perspective, this model appears to expand intersystem thinking and practical application of knowledge, which is essential to achieve progress toward sustainability. Instead of the university focusing solely on developing theoretical knowledge, SCYP is an avenue for the university to connect with larger municipal and industry sector systems, in a way that necessitates practical thinking. The model has also been strategically designed to utilize the existing university structure, classes, and faculty, which is an effective and efficient use of resources that minimizes the overall burden on the university, and yet, enables a high level of publicly engaged scholarship. Furthermore, the matchmaking process strategically matches academic resources with relevant city needs, and this may be viewed as part of the prioritization process. The collaborative effort between faculty, students, city staff, and community members builds a network of trust among all the key stakeholders of the process, which is fundamental for social sustainability and essential for further strategic collaboration. Furthermore, the evolving relationships and challenging projects create meaning for students and participating community members. Overall, from an SSD lens, the model design is a strategic attempt to make the most significant sustainability impact in regional cities that is possible within the constraints of the current university system.

4.2   Phase II Results - Impact of the SCYP Experience

This phase of research was divided into three primary support research questions with the intention to understand the impact of SCYP upon the three key stakeholder groups involved with this approach: the partner cities, the participating university, and the participating students. This understanding was used to clarify how this educational approach contributes to strategic sustainable development. For more details on sources and methods used in this phase, refer to methods section 2.4.

4.2.1   Primary Support Research Question - PSRQ (c)

How does the Sustainable City Year Program impact the partner cities?

Document Review: This document review focused on the the Salem Council goals, the Springfield Fire and Life Safety Strategic Plan, the Springfield Council Goals, and the Medford Strategic Plan documents for the relevant timeframe of each city's partnership year with SCYP. It also included each individual project report produced by the students for each partner city. These documents were reviewed to identify the relevant themes, goals, and objectives within each city that the SCYP projects relate to. The following table demonstrates which student project reports align with each city goal. By assessing the student project reports and the city planning documents, we were able to deduce how these projects meet the 'sustainability related' criteria for SCYP, and we were able to identify SSD concepts within the reports as well.

Table 4.1. Objectives Analysis of Project Reports of Salem, Oregon

Partner City Project Reports	Strategic Plan or Council Goal Objectives				
	Livable Community	Safe Community	Inclusive Community	Healthy Environment	Vibrant Economy
Salem, Oregon					
Advancing Sustainability by Fostering Civic Engagement	✔		✔		
Integrating Riverfront Park with Pringle Creek	✔				
Controlling Congestion Through Parking Policy	✔				
Cultural Mapping - A Civic Engagement Study	✔		✔		
Development Proposals for Three Targeted Sites in Salem	✔				✔
Downtown Parks Connectivity Analysis with GIS	✔				
Downtown Circulation Study	✔				
Efficient Public Lighting Options	✔	✔			
Engaging the Latino community	✔		✔		
Housing for the Salem Housing Authority	✔				
Minto-Brown Island Park Citizen Communications Strategy	✔				
Minto-Brown Island Park Studio	✔				
Waterfront Development: Building Design Proposals	✔				
Waterfront Development: Urban Design Proposals	✔				
Bicycle Transportation	✔	✔			
Civic Center - Interior Architecture	✔				
North Downtown Riverfront Redevelopment Concept Plan	✔				
Salem Strategic Economic Prosperity Plan					✔
Salem Target Industry Analysis					✔
Salem Transportation Industry Analysis	✔	✔			✔
South of Mission (Salem, Or.)					✔
Environmental Law: Building, Graywater, and Stormwater				✔	
Green Cities				✔	
Industrial ecology				✔	
Salem Police Station		✔			

Table 4.2. Objectives Analysis of Project Reports of Springfield, Oregon

Partner City Project Reports	Strategic Plan or Council Goal Objectives				
	Livable Community	Safe Community	Inclusive Community	Healthy Environment	Vibrant Economy
Springfield, Oregon					
Booth-Kelly Mixed-Use District	✔				
City Wayfinding Report	✔				
A Plan for the Implementation of Bicycle Networks	✔				
Recommendations for Buildings, Electricity, and Transport	✔			✔	
School from Bench to building - A New K-8 School	✔				
Springfield Public Library Research	✔				
Springfield Public Library	✔				
Strategic Public Relations Plan- Springfield Public Library	✔				
Springfield's Adopt-A-Waterway Program	✔				
Willamalane Center Riverfront Development	✔				
Student Apartment Price Models	✔				
Student Composition in United Way of Lane County	✔				
Urban Ecological Design - Booth-Kelly-Eco-District	✔				
Waremart Site Redevelopment concept Plan	✔				
A Spatial Analysis of Lane Transit District in Springfield	✔				
Connecting Bikes to Transit in Springfield	✔				
Lane Transit: Expansion Communication Assessment	✔				
The Nicolai site Redevelopment Plan - Four Visions	✔				
Springfield Signage	✔				
Cultural Mapping in Laura Street and Brattain			✔		
Cultural Fieldwork in Downtown Springfield			✔		
Dorris Ranch - Business Planning and Strategy Project					✔
Economic Analysis of Local Street Improvement Value					✔

Table 4.3. Objectives Analysis of Project Reports of Medford, Oregon

Partner City Project Reports	Strategic Plan or Council Goal Objectives				
	Livable Community	Safe Community	Inclusive Community	Healthy Environment	Vibrant Economy
Medford, Oregon					
Activity Center Identification in Medford, OR	✔				
An Analysis of Medford's Parks & Recreation Department	✔				
Rogue Valley Transportation district Public Relations Plan	✔				
Public Engagement with Diverse communities (2013)			✔		
Public Engagement with Diverse communities (2014)			✔		
The Effect of Neighborhood Watch Programs on Crime		✔	✔		
The Jackson County Health Site Redevelopment Plan	✔				✔
Open Space Protection - Legal and Planning Strategies				✔	

The partner city strategic plan and council goal objectives are generally aligned with the triple bottom line approach to sustainability. The livable, safe, and inclusive community objectives reflect a focus on social equity while the vibrant economy objective aligns with fostering economic development, and the healthy environment objective indicates a focus on environmental protection. However, in our review of these documents, it is unclear exactly how the city council developed their plan and what criteria were used in their planning process. Therefore, it is difficult to determine how and to what extent the council goal objectives may contribute to the systems thinking and boundary conditions approach of SSD.

A detailed analysis of each individual report revealed that some projects employ key aspects of SSD to varying degrees. For example, the *Industrial Ecology* project in Salem is described in the report as applying the following concepts (Orit and Howard-Grenville 2010, 8):

1. "A systems perspective that encompasses attention to the life cycle of products, processes, and facilities.
2. A focus on multiple levels of activity – facility, firm, region, supply chain, consumption – and their interactions.
3. A multidisciplinary approach that places the analysis of industrial metabolism within a social, political, and technological context."

The *Energy and Climate Change Recommendations* report in Springfield was based upon the book *Reinventing Fire: Bold Business Solutions for the New Energy Era* by Amory Lovins and the Rocky Mountain Institute (RMI). This book offers a roadmap to move America off of most fossil fuels by the year 2050 by making principle based decisions. Lovins (2011) suggests the general principles of reduce use, modulate demand, and optimize supply (Lovins 2011). This reflects a backcasting from principles approach to this project. Additionally, it demonstrates systems thinking through evaluating and making recommendations across the energy sector in Springfield by focusing their research and suggestions across the three municipal industries of building, electricity and transportation. There is no clear definition of sustainability implicit in these principles, however, it can clearly be inferred that greenhouse gas emission reductions is a clear sustainability goal that aligns with the sustainability principles of SSD.

The *Public Engagement with Diverse Communities* project in Medford reflects awareness and action based upon the social sustainability principles of SSD. This project was an effort to integrate minority populations in the public planning process of their own communities. It was geared toward identifying and removing the social barriers that prevent their participation and improve meaning making opportunities within the community for all residents.

For more details of which SCYP projects in each partner city reflect systems thinking, boundary conditions awareness, a backcasting approach and/or address ecological or social sustainability concerns, refer to Appendix E.

SCYP City Program Manager Interview Results: In addition to the document review, we also focused on interviews with the city staff that acted as the primary point person for the city during their partnership with SCYP. These interviews were conducted with city staff from Springfield, Medford, and Salem. They were transcribed and then coded for themes that describe the impact that the SCYP experience had upon each of these communities. These themes were then cross referenced to identify commonalities between the different city perspectives. The following are synthesized and combined results from each interview categorized under each coded theme. Individual city perspectives that were not found to be in common with the other partner cities are referenced in the text.

Why be Involved with SCYP: The partner city SCYP program managers commented on multiple reasons why it is worth getting involved in the program. Each city was attracted to the fact that there was something in it for everyone. Most departments within city governments had a need that SCYP could influence in a positive way. It was also healthy and inspiring for the staff, students and communities that were involved. The SCYP model is designed with a willingness to find mutual benefit for all stakeholders in the process, which provides a value-add proposition for the university and its students, the local city governments, and the communities as well. According to all three program managers, marketing, publicity and an opportunity to leverage this partnership to showcase small to medium sized cities is another reason to participate. The SCYP experience increases resource efficiency (financial and human) and thus, has the ability to get city projects that are sitting on the shelf moving toward implementation. Additionally, all program managers recognize that this partnership helps create public process, encourages community involvement, and allows the community to dream big.

Perceptions of Sustainability - Speaking a Common and Useful Language: Each SCYP city program manager had similar thoughts regarding the term 'sustainability' and the implications of its use during the partnership. These perceptions, and adaptations to them played a role in forming the communication structure and engagement approach during their partnerships with SCYP. All the partner cities approached the term 'sustainability' with a very broad context in mind, and each program manager commented that using the term 'sustainability' was not a good choice. Reasons for this included general resistance to the term, the conservative political divide among the communities and city councils, and the occasional backlash associated with environment-based decision making. A common thread across all city perspectives is that there can be a 'language problem' associated with the wrong terminology, which indicated a need for the university staff and students to work with and speak the language of their clients, which in this case is the cities. This involved adopting the city perspectives on sustainability, which included terms and phrases such as: efficiency, resiliency, livability, the triple bottom line (economy, environment and society), and the environment-economy-community-education loop. The overall commonly accepted and useful language was the 'business case' for the decisions being made.

Challenges: When the city staff were asked about the greatest challenges they dealt with, they only had a few points to mention. Two common themes were convincing other city staff of the value of the partnership and getting their willingness to participate. Some local consultants and other businesses also expressed concerns that this partnership may be taking work away from them. There were additional individual challenges that were discussed as well. Medford staff

identified that some student designs were too expensive to implement. Salem staff noted the challenge of overcoming the burden of their prep work and coaching needs. Springfield staff commented on the fact that academic idealism does not always address real-world needs, and at times that created some frustration between faculty, students and city staff.
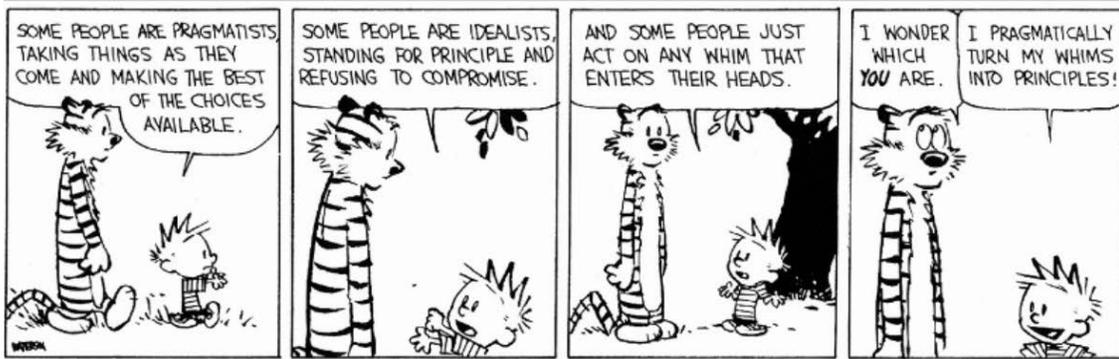

Figure 4.1. Calvin and Hobbes Comic Strip (Watterson 1995)

Benefits: Each city staff program manager highlighted several benefits that their city received. One of the most significant benefits that stood out across all the partner cities was the level of engagement between the city staff, the community, and the students. The community kickoff event initiated the collaboration and was described as having the following impacts:

- It created a fun and vibrant exchange between the city staff, community members and students. The city was alive.
- It stimulates creativity and engagement.
- The Salem city program manager stated, "as a city staff member I became a new person with energy, excitement and enthusiasm!"
- The Medford city program manager stated, "I always felt energized. It is easy to be pessimistic about the world and the future and even youth … and then you meet with these students and I always came away thinking, we are fine. We will do fine. We've got problems, but we also have really smart and committed, energetic people - the next generations will be the leaders. I always felt really happy and energized."

Furthermore, there was a massive presence of interested students exploring these cities for the first time. This new lens of looking at what seems to be an 'old city' to longtime residents and city staff generated new perspectives and re-ignited a new sense of awareness, pride and value among the community members and city staff. The students were able to break through the general lack of community involvement. The cities were able to receive positive feedback that their residents are happy through indirect communication with students, when the city did not have the resources to engage with the community at such a large scale. According to these interviews, this large-scale collaboration drew the communities out and they felt valued, as the students sought out *their* perspectives and ideas on what *they* thought was needed or what *they* would like to see happen in *their* community.

According to the city program managers, the student project work influenced the staff in many ways as well. Most notably, staff were exposed to new ideas and innovative thinking. They began approaching their own projects in new and different ways. They became more motivated to think more broadly and long term. Overall, the city staff and local government became less risk averse for ideas, and they became more open to perspectives they would not have explored before participating with SCYP.

The SCYP experience was also discussed in comparison to a traditional consultancy relationship. The common perception was that the difference with SCYP is that you don't get exactly what you want, but rather you get *more* than you ask for. It opens up a lot of new ideas and perspectives, and then the city has options to discuss and use in their decision-making. Another common benefit is that SCYP is a great tool that can be used to stimulate city projects that have been 'stuck' due to financial or human resource constraints, and therefore get them moving forward again. Student project reports have been used to leverage funding through grant proposals for project implementation, and they often produce a solid foundation of ideas and information (without draining funding) that the city staff can build upon and use to take the projects to the next level. The level of project implementation varies widely across each partner city. Some projects have been implemented immediately, others were used to leverage funding, and some ideas were used for concept images for public display to generate interest and open up public discussion. Additionally, some student project work continues to be at the root of many city projects even three to four years later.

There were also some city specific comments regarding benefits. City staff in Medford identified that the city embraced a new role of being community educators in addition to their specific jobs. They also noted that during the SCYP experience, academia meets the real world, and the dynamic tension between the two encourages positive change for both parties. To sum it all up, city staff in Salem relayed a comment from their former city manager who stated that the SCYP partnership moved the city at least two years further than they could have without the student capacity, because it is 80,000 hours of extra work.

City Staff Survey Results: We prepared a brief survey that was sent out to 32 city staff. We received 10 responses and the result of their perspectives are discussed below. For graphic representation of the survey results see Appendix F.

The city staff survey suggested how the SCYP experience impacts their individual work, department related work, and community involvement. On an individual basis, 40% of the respondents indicated that they did not significantly alter how they approach their project work based on the collaboration with SCYP. However, 20% indicated that this experience encourages them to be more willing to listen to and explore different ideas and approaches to respond to community needs. Additionally, another 40% commented that they were amazed by the ideas generated by students, and that these ideas opened up new ways to approach their projects. In terms of department related impacts, 20% of respondents indicated that the student report was an excellent idea and implementation began immediately. 90% commented that the student reports produced great ideas and they were used to inform project related decision-making, and 30% noted that student project reports were used to leverage funding for future implementation. In terms of community involvement impacts, 80% of respondents noted that the SCYP experience had the community engaged with students sharing their perspectives and ideas. 20% also noted that the community is more engaged and participatory in local government and that the community is self-organizing and taking action on addressing their concerns.

Contribution to SSD: Gaining insight regarding the impact that SCYP has upon the partner cities elicited additional perspectives on how the program contributes to SSD. From a more specific and structural approach to SSD, the SCYP approach involves the use of strategic planning within the municipalities, backcasting from principles in individual projects to propose solutions, systems thinking and some boundary conditions awareness. Although these techniques are utilized, they are not consistently applied across all projects. Furthermore, the project reports can be viewed as flexible platforms that may open new doors and lead toward

sustainability in a stepwise process that is relevant to the partner city needs. However, and perhaps more importantly, there are more subtle and less tangible contributions. First of all, the SCYP experience is built upon creating mutual benefit for everyone that is involved. From an SSD perspective, all stakeholders in the process should know and understand the mutual benefit that that everyone gains by addressing sustainability. In the SCYP context, educational, social, and ecological benefits are gained along with resource efficiency and a strong social fabric based on trust that develops through the collaborative effort. Part of building this trust, is learning to speak a common language and developing a shared mental model for the partnership. The engagement between the faculty and students on the university side and the city staff builds trust and develops relationships that lead to all parties feeling empowered, energized, and more creative, which are necessary characteristics for addressing complex challenges in sustainability. The students seem to have an ability to break through the general lack of community involvement, creating significant civic participation, which is also necessary to achieve significant change toward sustainability. The additional role that developed through the SCYP experience of city staff becoming community educators takes advantage of the collective intelligence gained in the process and further disperses that knowledge within the communities. The SCYP collaborative effort instigates change in community and city staff behavior, which can be viewed as the beginning of a subtle paradigm shift toward sustainability. This is seen in the form of city staff engaging in innovative ideas, adapting their thinking, and being open to new approaches, which is happening in communities that may otherwise be hesitant to consider sustainability in their municipal planning.

4.2.2   Primary Support Research Question - PSRQ (d)

How does the Sustainable City Year Program impact participating universities?

This section is based on an interview with SCYP co-founder Marc Schlossberg as well as additional limited faculty perspectives derived from the faculty survey. For more details on specific methods see methods section 2.4.

Combining Theory and Practice: Schlossberg identified a gap between the knowledge that exists in the universities and putting big and important concepts into practice in reality. By engaging the students in a real world setting, SCYP releases the passion, idealism and knowledge that develops within the university and it takes it outside the walls and off the campus in a way that is effective for making change. In essence, the SCYP program expands the learning environment and connects university curriculum with reality beyond the university setting.

Administrative Impacts: According to Schlossberg, SCYP has gained in visibility that has risen all the way to the top of the university. This created a chain reaction of interest at the university where faculty, staff, and administration became excited and curious about SCYP. Since the program spans multiple university departments and several community stakeholders, the model allows for collaboration in a way that universities tend to talk about, but rarely carry out. These efforts are recognized by the upper administration and university fundraisers, and they have led to SCYP becoming one of ten clusters identified by the university administration to be a strategic area of investment for research. Although the funding has not yet come through, this cluster will make it financially possible for the SCYP to have five of their own dedicated staff members that work solely for the program, and therefore can lead to positioning the university in a national space in a unique way.

Outreach, Enrollment, and Faculty Recruitment: Schlossberg noted that due to the unique program and increased visibility, SCYP has become a significant reason why prospective students and new faculty apply to the University of Oregon. SCYP was invited to do a formal presentation about the program to the office of registrar, to inform and prepare the office to discuss the program with prospective students and to use for their outreach efforts. This indicates that SCYP is proving to be a valuable marketing tool and enrollment driver for the university. SCYP has also developed an annual conference for university staff that currently run a similar program and for those that are considering developing a program. Furthermore, this conference has served as a catalyst for the Educational Partnerships for Innovation in Communities Network (EPIC-N). This is a network of universities implementing the SCYP approach, now known as the "EPIC Framework," which is being adopted and adapted by universities across the U.S. and internationally.

University Faculty Survey Results - Fac*ulty Motivation:* We prepared a five-question survey that was distributed to 40 SCYP participating faculty members. We only received five responses, and therefore the results from the faculty survey are very weak. However, one question from the survey focused on how participating with SCYP impacts faculty motivation and desire to teach. Therefore, the few responses we received do suggest relevant impacts for this section. The results are as follows.

Question: Does working on an SCYP project increase your motivation and desire to teach?

Two of five faculty indicated the answer, "Yes. It is more interesting, engaging and realistic. Therefore, it empowers me to be an excellent professor." Another two faculty indicated, "Yes. It is definitely worth it, but it is difficult to handle the extra workload." There was only one response that indicated, "I've had students work with service learning clients for years. SCYP is no different, really, so it's difficult to answer the question." Overall, these answers suggest that teaching SCYP courses increases motivation and desire to teach, even though it requires extra effort.

Contribution to SSD: Our research on the impact upon the participating university revealed some additional perspectives on how SCYP contributes to SSD. Connecting theory and practice is a critical step in achieving sustainability in any context. SCYP enables this combination between higher education institutions and regional cities. This connection increases the visibility and viability of the academic work taking place on campus and builds credibility, which leads to local communities increasing their support of the university. Within the university context, SCYP has led to internal funding initiatives that may help sustain the education model itself and advance research on applied sustainability education. Furthermore, the national visibility of the program builds sustainability awareness by attracting new students and faculty across the nation to participate in addressing the sustainability challenge. Lastly, the increased motivation to teach and bring forth the faculty's best work to transfer to students, who then bring that knowledge and experience to the communities, is a positive contribution to SSD, both in theory and practice.

4.2.3 Primary Support Research Question - PSRQ (e)

How does the Sustainable City Year Program impact participating students?

This section reveals perspectives from the faculty survey as well as perspectives from interviews with the SCYP city program managers and SCYP co-founders. We were unable to

gather additional perspective directly from the students. For more details on the methods used to answer this question see methods section 2.4.

As mentioned previously, we prepared a brief faculty survey, that was endorsed and distributed by SCYP co-founder Marc Schlossberg to 40 SCYP faculty. Two of the questions provided data regarding the SCYP's impact on students. We received five responses and therefore the validity of this survey is weak. However, the results of these initial impressions suggest that participation in SCYP classes does improve student engagement and outcomes achieved in classes. For graphic representation of this data refer to Appendix G.

Student Impact Themes: In addition to this survey data, a few more themes regarding the impact upon students emerged through our interviews. These themes include gaining access to professionals and interdisciplinary work, receiving appreciation and affirmation for quality work, expanding job opportunities, developing professionalism, community and government engagement, and gaining experience addressing real-world sustainability related challenges. The interviews indicated that students strongly benefit from having access to professionals in various fields and from the interdisciplinary work that some projects required. The implementation of their project ideas also offers indirect recognition of the value of their work. According to the faculty survey, these experiences increase student motivation and engagement and they lead to higher student outcomes in classes. SCYP co-founder Young commented that SCYP helps students to understand that governments are actually capable of doing a lot. He points out that students learn during the SCYP experience that it is often a question of a lack of resources - but once the resources are there, governments can get things done, which fosters a stronger belief in and appreciation for quality city management.

Combining Theory and Practice: Furthermore, the interviews demonstrated that the combination of having real-world issues to tackle and to simultaneously have the opportunity to implement knowledge into actual practice is highly beneficial for students. For Schlossberg, putting things into practice is a better factor for motivation than a clear definition of sustainability. He stated that students are being taught an understanding that it doesn't matter if the client understands things like the underlying sustainability principles as much as it matters if they put the ideas into practice regardless of the motivation behind it.

Professionalism and Career Opportunities: Finally, the interviews clearly indicate that the SCYP experience serves as a stepping stone for further job opportunities for many of the students. Schlossberg states that the experience students gain presenting their work and ideas to the mayor, to the city staff, and to the public at large along with experience working in teams and engaging with a range of community stakeholders all looks good on their resumes and is highly valued in the professional world. The SCYP city program manager of Salem thinks this real world and practical experience makes students more marketable. In Springfield, the SCYP city program manager further noted the possibility of including the project experience in one's application portfolio motivated students to produce valuable work, and that SCYP offered the opportunity for partner cities to present themselves as potential places for professional careers post-graduation for the students.

Contribution to SSD: Our minimal research results that reflect the impact upon participating students, adds further perspective to SSD contributions. During the SCYP experience, students are exposed to 'reality' and learn how to contextualize their idealism in a way that they can actually apply their knowledge in the real-world. This is a critical skill when entering their professional careers in order to be effective change agents for sustainability. The SCYP engagement experience also increases the meaning-making of a student's educational

experience, which helps them understand why they are studying and how their knowledge applies. This experience builds confidence for students while simultaneously developing their professional networks that may foster a smooth transition from the academic to the professional world. This can be viewed as a strategic educational approach to help position students in empowering roles to affect further change during their professional careers.

4.3   Phase III Results - Future Perspectives to Consider

This phase of research explored potential avenues and benefits of integrating the concept of strategic sustainable development into the Sustainable City Year Program. As previously discussed, this phase emerged from the results of phases I and II and led to the following secondary research question.

Secondary Research Question (SRQ): *How can strategic sustainable development concepts contribute to the Sustainable City Year Program?*

This final phase of research was divided into three secondary support research questions with the intention to explore initial ideas and additional perspectives to consider. This research is by no means a comprehensive assessment. The results of this phase will hopefully serve as a catalyst for further research. For more details on sources and methods used in this phase, refer to methods section 2.5. The initial research results for each support research question are discussed in the following sections.

4.3.1   Secondary Support Research Question - SSRQ (a)

What is the value of integrating strategic sustainable development concepts into higher education?

To answer this support research question we took a look at the Blekinge Institute of Technology (BTH) in Sweden, where the strategic sustainable development (SSD) approach is currently in use. We first discuss the process of integrating SSD into the curriculum at BTH and the value it has brought to the institution. This information is derived from an interview with Göran Broman, professor at BTH and co-founder of the Master's Program in Strategic Leadership Towards Sustainability (MSLS). Furthermore, a faculty survey with BTH staff that work with the framework for strategic sustainable development (FSSD) adds additional perspective and finally we present peer-reviewed research that highlights the most commonly agreed upon concepts for successful higher level sustainability education and we draw connections between this research and the SSD approach.

Basic Knowledge First: Broman argues that the framework for strategic sustainable development (FSSD) helps to strengthen the learning process in the field of sustainability. It helps practitioners put their practical problems in the context of the global sustainability challenge and related opportunities, and it guides strategic actions. He points out that simply starting off with practical work without basic knowledge is scary, as it is possible to start doing things that may be counterproductive. If this is the case, you have to re-start the whole process and the people you worked with in the past may not trust what you later say is necessary, since what you said before was significantly wrong.

Broman refers to the concept of the flexible platforms, which allows for taking stepwise actions toward the sustainable vision. He does not suggest starting just with theory and only seeking to do what is perfect, perhaps becoming paralyzed and not doing anything for considerable time. He recommends to learn some basic theory, then do some work, then reflect and repeat the process. He also suggests that it is highly motivating to understand things. He stated, "We have seen it so many times when people begin to understand the FSSD. They get so excited because they can talk about sustainability in the same language - it is so motivating to be able to understand something together."

How to get started? Broman was co-founder of the Master's Program in Strategic Leadership Towards Sustainability (MSLS), which started in the academic year 2004/05 and since then over 500 students from more than 80 countries have gone through the program. However, according to Broman, the process of integrating sustainability at BTH started 11 years prior in 1993, when he developed a "mini-MSLS" course that taught students the basics of strategic sustainable development. Broman told us that the next step of integrating sustainability was through various teachers in their courses, supported by a series of seminars that Broman developed for faculty in the departments of mechanical engineering and spatial planning, and through individual coaching. He did this to convey a baseline level of sustainability knowledge among faculty. Students had their course, and the faculty had their course and coaching. Therefore, they could work together with the same basic understanding of sustainability and a common language to apply within various disciplines. Broman pointed out that he started on a small scale, with faculty who were engaged and wanted to know more about sustainability. For him, starting in one or two departments could be enough to set a good example to be able to say that it has been done, and therefore, why not do it in other departments as well? Then, it becomes difficult for others to say no, when it has already been done. Broman suggested starting where it is possible, and then building a good example that can be used as a leverage point for further integration.

Next Steps of Integrating Sustainability: Broman explains that BTH first had elective courses on sustainability that people could take in different programs, all based on the framework for strategic sustainable development. Today, the "mini-MSLS" course, as the sustainability basics course, is compulsory in all engineering programs at BTH. Broman noted that sustainability is more and more integrated into the university. He stated, "It has become very much part of the whole vision statement, and the vice chancellor says that BTH is now perhaps even more known for its sustainability profile than its IT profile. So it has been very successful that way."

BTH Faculty Perspectives: We asked 109 faculty that use SSD at BTH what they thought was valuable about integrating SSD concepts into higher education. We received seven responses and summarized the key points.

First of all, it was commonly agreed upon that there is a real need for more people to understand the sustainability challenge and to actively work toward achieving sustainability. It was noted that higher education is an excellent access point for integrating systems oriented thinking, understanding natural cycles, complex adaptive systems, and foundational science that underpins the sustainability principles. It is also a time when many people further develop their worldview and this lens is a critical perspective to have. Many faculty recognize that seeing how their specialty fits into the bigger picture is a very important skill, which is often overlooked and leads to 'drill hole' experts that have minimal awareness of why they are doing what they do. Furthermore, it was noted that this mentality may also lead to focusing on incremental improvements that amount to little more than doing less harm than before. While this may be better than doing more harm, the risk is that it may breed complacency regarding

the scale of change that is actually needed to achieve sustainability. Therefore, it was also commonly agreed upon that longer term approaches, including backcasting from principles, are essential to overcome business as usual incrementalism. Furthermore, it was suggested that the key to successful integration of SSD concepts into curriculum is contingent upon tailoring SSD concepts to the discipline and making relevant connections in the right context.

The experience of integrating strategic sustainable development at BTH and the value that it brings to education and overall sustainability success was highlighted through our peer-reviewed literature research as well.

Sustainability Education Key Aspects: Since education plays a key role in addressing the sustainability challenge, it was important to understand what is regarded and agreed upon as being effective sustainability education. There is no one specific best practice, rather many different approaches, such as the one described above from BTH in Sweden. The following model emerged as the basis for a successful sustainability education model in higher education based upon peer-reviewed research. We found that to achieve the intended goals of sustainability learning in the form of core competencies, a sustainability education model needs to have a sustainability related administrative support structure, well-defined sustainability theory and content within the curriculum, and transformational pedagogy to foster the learning process.

Key Competencies

1. Systemic Thinking and Handling of Complexity
2. Anticipatory Competence
3. Critical Thinking
4. Empathy and Change of Perspective
5. Open-Mindedness and Disposition to Innovations
6. Handling of Intercultural Relationships and Interdisciplinary Work
7. Understanding of Nature and Society
8. Handling of Information and Data Management
9. Project Management in Relation to Sustainability
10. Ambiguity and Frustration Tolerance
11. Normative Competence
12. Strategic Competence
13. Interpersonal Competence
14. Acting Fairly and Ecologically

Support Structure

1. Sustainability at the Decision-Making Level
2. Active Partnerships Among All Stakeholders
3. Continual Refining of HE-Programs and Pedagogical Transformation
4. Cross-Disciplinary Pedagogical Unit
5. Top-Down and Bottom-Up Balance
6. Empowered Staff and SD as Integral Part of University System
7. Concept of Mentoring is Installed
8. Opportunities for Discussion and Reflection of Sustainability
9. Use of a 'Systems Thinking' Organizational Structure to Empower Practice Sustainability
10. Secured and Unbiased Funding of SE Programs

Theory

1. Clear Definition of Sustainability
2. Scientific Foundations
3. Systems Thinking
4. Leadership Theory
5. Complexity Theory
6. Precautionary Principle
7. Scientific Knowledge of Social-Ecological System
8. Anticipatory Thinking and Zeitgeist
9. Tools and Concepts
    - Strategic Planning Methodology and Frameworks
    - Curriculum Design Frameworks
10. Strengthen Integrity, Fairness and Awareness

Practice

1. Traditional Lecture
2. Transformative Learning
    - Highly Interactive
3. Innovative and Adaptable Structure
4. Inter- and Multidisciplinary Work
5. Project-Based Work
    - Experimentation in Controlled University Setting
    - Application with Real-World Projects
6. Collaborative Work
    - Inclusive of Multiple Stakeholders
    - Participatory Engagement
7. Strengthen Integrity, Fairness and Awareness
8. International Engagement
9. Exchange of Experiences and Knowledge
10. HEIs as Testing Sites for Sustainable Practices

Figure 4.2. Successful Sustainability Education Components

These are three pillars for successful sustainability education in higher education institutions that emerged from our research.

Key Competencies: The research revealed that sustainability challenges have characteristics that differ significantly from problems addressed in other fields. Therefore, sustainability practitioners require the development of specific and varied key competencies. Rieckmann (2012) suggests "the most important key competencies are those for systemic thinking and handling of complexity, anticipatory thinking and critical thinking (Rieckmann 2012). Additionally, universities must also adapt their teaching and learning objectives to include regional and cultural contexts as well (Rieckmann 2012).

Support Structure: The administrative support structure of the university plays an essential role in the efficacy of the sustainability education that a university offers. Moore (2005) recommends that sustainability be infused in all decisions at the university. She argues that it should be integrated into university plans, decision-making structures and evaluative measures along with research, service and teaching components. Moore (2005) concludes that there is a need for the university community to create space and opportunity for reflection and pedagogical transformation (Moore 2005). The AASHE (2010) identifies that sustainability needs to be included in strategic planning documentation to encourage these efforts (AASHE 2010). Littledyke et al. (2013) claim that a systems thinking model for coordinating education for sustainability within a distributed leadership environment is also necessary for effective sustainability education by empowering all university members to be active in sustainability practice (Littledyke et al. 2013). According to Littledyke et al. (2013), embedding sustainability in the three broad categories of governance, curriculum and infrastructure are additional key components of effective education for sustainability in universities (Littledyke et al. 2013). This confirms Moore's (2005) recommendation at the governance (ie. leadership, planning and decision-making) levels and suggests that quality sustainability education is also fostered by universities that act as role-models that implement their own sustainable practices and infrastructure (Littledyke et al. 2013). Lu and Zhang (2013) highlight the need to establish an effective balance between top down and bottom up approaches such that staff feel supported and empowered (Lu and Zhang 2013). This further confirms the perspective of Littledyke et al. (2013) and supports the AASHE's (2010) recommendation for establishing active partnerships among students, faculty, staff, administrators, employers and others to call for support and necessary change (AASHE 2010).

Theory: It is clearly evident in peer-reviewed research that sustainability education theory and content need to incorporate several important topics. As a foundation, it is agreed upon that sustainability education needs to be underpinned by scientific evidence (Broman and Robèrt 2015). Such a scientific and evidence-based approach leads to a clear definition of sustainability. Wiek et al. (2011) recognize that developing a normative definition of sustainability including sustainability principles, goals, targets and thresholds is valuable (Wiek et al. 2011). Steffen et al. (2015) confirm this perspective with the development of the planetary boundaries model to serve as a scientific foundation (Steffan et al. 2015, 235). Broman and Robèrt (2015) further support this need as a fundamental understanding and they use eight sustainability principles as the boundary conditions for their definition of sustainability (Broman and Robèrt 2015).

Systems thinking and complexity theory are identified as being essential elements of effective sustainability education. Steiner and Posch (2006) suggest that an understanding of open and complex systems is needed to reorient science towards sustainable thinking (Steiner and Posch 2006). Ferrer-Balas et al. (2008) identify that systems thinking is a key factor in successful

sustainability education in their cross university analysis of seven sustainability education programs (Ferrer-Balas et al. 2008). Wiek et al. (2011) further claim that systems thinking is essential in sustainability curriculum. Specifically, exploration of concepts including variables, feedback loops, complex cause effect chains, scale impacts from local to global, multiple domains including environment, society, economy, and technology along with social systems. (Wiek et al. 2011).

The value of strategic methodologies in exploring sustainability is also evidenced in peer-reviewed literature. Wiek et al. (2011) suggest that a strategic approach is essential in sustainability education. More specifically, they promote intentional strategic planning, transition management, organizational change management and methods that support behavior change (Wiek et al. 2011). Jabareen (2012) and Broman and Robèrt (2015) also emphasize the use of conceptual frameworks as strategic approaches to fostering sustainability understanding. Jabareen (2012) developed the Sustainability Education Framework (SEF), which is comprised of the five following categories: normative, sustainability governance, urban and community planning, economics and energy (Jabareen 2012). Broman and Robèrt (2015) advocate for the Framework for Strategic Sustainable Development (FSSD) as a generic and unifying framework to navigate the complexity of sustainability and to develop a strategic stepwise approach to move forward in the right direction (Broman and Robèrt 2015).

Practice: Peer-reviewed research reveals that effective pedagogy for sustainability education includes the following themes: traditional lecture, transformative learning, interdisciplinary engagement, collaboration and application with real-world projects. Sipos et al. (2008) recognize that traditional lecture holds a space in conveying important sustainability information (Sipos et al. 2008). According to the AASHE (2010), it is however, essential to then use that knowledge to empower transformative, high impact educational experiences (AASHE 2010, 9). In order to be transformative and effective, sustainability education needs to embrace interdisciplinarity. Defined as combining two or more academic disciplines and applying them to one context, interdisciplinary approaches are identified in the 2009 OECD report as being an opportunity and requirement for sustainability education (OECD 2009). Lu and Zhang (2013) identify that a key learning from their assessment of university sustainability programs is the value of an interdisciplinary approach. They acknowledge that campus based projects that draw on existing staff expertise across disciplines has the possibility of contributing to deeper change (Lu and Zhang 2013, 60). According to Lu and Zhang (2013), this not only benefits student learning, but also contributes to staff building awareness and new knowledge and ultimately fosters the university's capacity to educate for sustainability (Lu and Zhang 2013).

Interaction and collaboration are also recognized as essential components for effective sustainability education. Martins et al. (2006) highlight the importance of developing the ability to work with people from other backgrounds (Martins et al 2006). According to Savelyeva and McKenna (2011), this is a key skill in the process of engaging multiple stakeholders including students, faculty, donors, sponsors and the surrounding communities, which is necessary for effective sustainability education (Savelyeva and McKenna 2011). The AASHE (2010) also suggests that international engagement allows for diverse perspectives in discussions and highlights complexity challenges, and therefore brings additional value to sustainability education (AASHE 2010).

Furthermore, it is evident in the research that taking collaboration beyond discussion and engaging students in project-based work enhances the learning. Lu and Zhang (2013) suggest that when project-based work is infused into the curriculum, it links learning with real issues.

This deepens the level of learning as it becomes more about discovery rather than just transferring knowledge (Lu and Zhang 2013). Lipscombe et al. (2008) highlight the importance of the experience rather than passively accepting 'expert-determined' knowledge, which provides the connection between the curriculum and the community (Lipscombe et al. 2008).

The added value of integrating strategic sustainable development concepts into higher education stems from a variety of benefits. SSD is based on clear scientific knowledge and supports both professors and students to put sustainability topics in context. Due to its clear structure and a relatively small amount of time required to teach the basics, SSD can be used as an addition to existing courses. The example of BTH in Sweden shows that it is both possible and valuable to deliver a basic sustainability understanding for engineering students in their academic discipline. The sustainability education model, which is based on peer-reviewed research of important key elements in higher education for sustainability is composed of many SSD concepts, which clearly highlights the value of integrating them in higher education institutions.

4.3.2 Secondary Support Research Question - SSRQ (b)

What is the financial viability of using the framework for strategic sustainable development as a municipal planning tool?

The interviews with the SCYP city program managers indicated that financial considerations play a significant role in municipal planning and decision-making. This was also especially true when it came to sustainability planning. Co-founder Young also highlighted, "I think the biggest problem with sustainability is, nobody wants to pay for it at all. Everyone loves to talk about it, everybody wants to slap out that word, but when the rubber meets the road and it's time to commit resources, then no one wants to do it. And that's the nut that has to be cracked." To answer this support research question we focused our search on seeking information backed-up by hard data that shows both, evidence that investing in sustainability can lead to financial savings and also whether the use of the FSSD could be a beneficial tool to prove financial advantages in sustainable city planning.

The following table illustrates the perspectives of key stakeholders that have worked with the FSSD. We reached out to 32 municipalities and 11 Natural Step Offices in eight countries, the Swedish eco-municipalities network and faculty at BTH. 10 stakeholders responded indicating their experience regarding the financial viability of using the FSSD as a municipal planning tool.

Table 4.4. Stakeholder Perspectives of Financial Viability of using the FSSD

Secondary Support Research Question - SSRQ (b): What is the financial viability of using the framework for strategic sustainable development as a municipal planning tool?		
Sources	**Quality Data Proving Financial Viability**	**Difficulty Proving Financial Benefit**
City of Santa Monica, CA, United States		✔
District of North Vancouver, BC, Canada		✔
Halifax Regional Municipality, NS, Canada	✔	
Montreal, QC, Canada		✔
Resort Municipality of Whistler, BC, Canada	✔	✔
Sarah James & Associates		✔
Strategic Sustainable Development Co-creators		✔
The Natural Step Canada		✔
Town of Bridgewater, NS, Canada	✔	
Town of Caledon, ON, Canada		✔

As illustrated in the table above, three of the ten respondents indicated that they were able to demonstrate financial benefits with the application of the FSSD in their municipal planning. These municipalities include Whistler, Bridgewater, and Halifax in Canada. However, the majority of the municipalities and organizations that used the FSSD were not able to prove the financial viability through clear hard data. The cities of Caledon, Whistler and Montreal also stated that they can imply that using the FSSD is a financially viable process, but they don't have data to prove it, because it is difficult to quantify these benefits.

Since it is difficult to quantify the financial gains of using the FSSD in municipal planning, further document review of Bob Willard's *The Sustainability Advantage*, and a 2009 Master's thesis titled *Sustainable Cities - Realizing the Seven Forms of Community Capital*, along with interviews of the SSD co-creators, The Natural Step International staff, and city staff from Montreal and Caledon in Canada, suggest considering other financial benefits of sustainability. The following table illustrates these additional alternative financial benefits.

Table 4.5. Alternate FSSD Financial Benefits

Secondary Support Research Question - SSRQ (b): What is the financial viability of using the framework for strategic sustainable development as a municipal planning tool?						
Alternate Financial Benefts of Using the FSSD \ **Sources**	**Bob Willard**	**Montreal**	**MSLS Master's Thesis 2009**	**Strategic Sustainable Development Co-creators**	**The Natural Step International**	**Town of Caledon**
Reduced Energy Expenses	✔		✔	✔		✔
Reduced Waste Expenses	✔		✔			
Reduced Material Expenses	✔					
Increased Employee Productivity	✔	✔		✔		
Reduced Hiring & Attrition Expenses	✔		✔	✔		
Reduction of Risks & Uncertainties (Laws, …)	✔		✔	✔	✔	✔
Reduced Negative Externalities		✔	✔	✔		
Savings Through Project Sharings		✔	✔			
Fostering Innovation (new businesses)	✔		✔		✔	
Opportunities for (Green) Funding			✔			
Reducing Costs of Wrong Planning		✔		✔	✔	
Including Social & Environmental Costs		✔			✔	
Avoiding Costs of Missed Opportunities		✔		✔	✔	

Furthermore, Robèrt and Broman (2016) consider the financial viability of strategic sustainable development through the lens of Tucker's Prisoner's Dilemma, published in 1950. According to Robèrt and Broman, the prisoner's dilemma could be misleading in the context of

sustainability. Given the sustainability challenge we face and related opportunities, they argue that competent proactive leadership towards sustainability is a winning economic strategy, regardless of what other business leaders do.

According to Robèrt and Broman, "We need leaders with the strategic competence necessary to improve their bottom line from a clear and sufficiently large systems perspective" (Robèrt and Broman 2016, 4). They conclude that the prisoner's dilemma misleads business and policy making. The assumption that the feasibility and speed of systemic change can be increased by national and international policy is correct. However, the prisoner's dilemma mind-set unfortunately promotes the misconception that, other than moral obligation and potential PR gains, political intervention is the only valid driver for individual market actors to work for the common good of achieving sustainability (Robèrt and Broman 2016).

Even though it became evident that money is among the strongest drivers for decisions regarding sustainability projects and development, we found hardly any hard data that proved the financial business case when working with FSSD as a municipal planning tool. This is mainly because it is difficult to break down financial benefits into clear numbers, which is due to the complex nature of external factors to consider. The few pieces of solid financial data we found were rather just from a specific area or project. Nonetheless we found alternate ways to link the FSSD with strategic financial planning. The FSSD as a planning tool could be useful when calculating the costs of not investing in sustainability, as described by Bob Willard. This change of perspective, away from historic data and towards future predictions, could lead to less energy, waste, material and attrition expenses, as well as to increased employee productivity and overall reduced risks (Willard 2012).

4.3.3   Secondary Support Research Question - SSRQ (c)

What are additional realized benefits of using the framework for strategic sustainable development in municipal planning?

Since most of our interviewees and municipalities who have worked with the FSSD could not supply data that back-up the premise that working with the FSSD leads to clear financial savings, we sought their perspectives on additional benefits they have received by using the FSSD. Many additional realized benefits of using the FSSD surfaced in our interviews and document reviews. The following are a few key points and the table below highlights the realized benefits across our research sample.

Broman argued that the FSSD is a framework that is built to embrace the global sustainability challenge and still be useful for any actor regardless of size. Therefore, he sees it as a valuable framework to inform politicians and other decision makers on a municipal level from "a clear and sufficiently large systems perspective." Willard (2012) highlights from a business perspective, that he sees the FSSD as a tool that allows a systems perspective. Perhaps the rapid escalation of complexity, which CEOs describe as their biggest challenge, will require them to take a new systems-level view of interrelated issues. A sustainability lens provides a systems perspective and could be the helpful rubric needed to rethink and simplify business models, which can also be applied to municipal contexts (Willard 2012). The Natural Step Canada claimed that FSSD provides a foundation for approaching sustainability. They suggested that the FSSD can and should be used in conjunction with other tools and concepts for community sustainability (The Natural Step 2009). Furthermore, Robèrt pointed out that the use of the FSSD makes cross-sector collaboration within municipal planning departments much easier.

Creating a shared mental model across sectors is one of the strengths of the FSSD. For Robèrt it is the basis to co-create solutions for challenges, to plan smart early moves, and thereby save money. He further explains that cross-sector cooperation is so important because no individual sector can be sustainable on its own.

Table 4.6. Realized Benefits of Using the FSSD

Secondary Support Research Question - SSRQ (c):
What are additional realized benefits of using the framework for strategic sustainable development in municipal planning?

Benefits / Sources	Systems Perspective Bigger Picture	Scientific Foundation and Principle-based approach	Combination with Other Tools	Collaboration Across Sectors	Climate Change and Environment Awareness	Community Benefits	Strategic Planning
Bob Willard	✔						
City of Santa Monica, CA, United States							
Eindhoven, Netherlands				✔	✔		
Halifax Regional Municipality, NS, Canada					✔		
Montreal, QC, Canada	✔		✔				✔
MSLS Master's Thesis 2009						✔	✔
Resort Municipality of Whistler, BC, Canada		✔		✔	✔		
Strategic Sustainable Development Co-creators	✔	✔		✔			✔
The Natural Step Canada	✔	✔	✔				
The Natural Step International	✔	✔	✔			✔	✔
Town of Bridgewater, NS, Canada		✔			✔		✔
Town of Caledon, ON, Canada					✔		✔

Collectively, the research sample recognized the following benefits. The FSSD allows for a bigger picture overview, which supports both design and prioritization of actions and projects. It is a tool than can easily be combined with other tools to increase sustainability success. According to the cities who worked with FSSD, the tool helps to create environmental and community benefits. It provides beneficial perspective during strategic planning and can serve as an education tool as well.

5 Discussion

This research focused on the Sustainable City Year Program at the University of Oregon in the United States and how it aligns with strategic sustainable development. The following are our research questions:

Primary Research Question (PRQ): How does the Sustainable City Year Program contribute to strategic sustainable development?

Secondary Research Question (SRQ): How can strategic sustainable development concepts contribute to the Sustainable City Year Program?

5.1 Mutual Contributions Between SCYP and SSD

Our discussion begins with how the SCYP contributes to the following four categories, that we identified as the main themes of SSD as well as how each of these themes may further contribute to the SCYP approach:

- The Sustainability Challenge
- Sustainability Principles as Boundary Conditions
- The Framework for Strategic Sustainable Development
- The ABCD Strategic Planning Process

5.1.1 The Sustainability Challenge

In terms of the sustainability challenge our research showed that SCYP has a clear recognition of a real challenge both ecologically and socially that needs to be addressed. The program title implies that there is a need to address sustainability in municipalities and the awareness of the challenge was overall evident in our results as we evaluated the individual projects that focus on a multitude of development issues. The project topics ranged from climate change preparedness, to green city design, to industrial ecology, to pedestrian and bike oriented urban design, to minority outreach and engagement projects as well as a variety of site redevelopment plans. Furthermore, the University of Oregon has an Office of Sustainability on campus and there are multiple sustainability oriented programs in the form of academic degrees, individual components of academic disciplines, and graduate level certificate programs that are offered. All of these components combined demonstrate that SCYP has a clear recognition of the sustainability challenge that our socio-ecological system is facing. The SCYP model has been developed out of this recognition as an attempt to address real sustainability related challenges that regional municipalities are dealing with.

5.1.2 Sustainability Principles as Boundary Conditions

The results of our research highlighted that SCYP is built upon a rather vague definition of sustainability. As described by the co-founders of the program, this is an intentional decision. They suggested that the problem is not a lack of sustainability knowledge, rather it is the application of that knowledge. Therefore, our research revealed that SCYP faculty apply

current best practices in their academic fields and focus on the tasks at hand in order to avoid getting caught up in sustainability jargon. The program's intention is to be an accelerator of the implementation of sustainability knowledge into practice by helping communities and local government officials translate sustainability concepts into everyday decisions. The goal is to catalyze communities to put new ideas in the public domain encouraging social transformation. Furthermore, they are cautious about how they communicate sustainability in order to make these new ideas accessible for cities in a non-threatening way. According to the co-founders, sustainability is always a constant factor, although it is not always visible in the form of a clear framework.

We expected to find a more clear definition of sustainability prior to engaging in our research. It is evident that the intention behind maintaining a more open concept approach may lead to more faculty involvement and openness to participation on the part of regional cities. Applying best practices in specialized disciplines as a means to achieve sustainability may lead to positive incremental sustainable change. However, the implication of such an approach may hinder the ability to create significant social transformation from a global systems thinking perspective at a rate and scale that is actually needed to really address the sustainability challenge at a systems level. Furthermore, there may be a missed educational opportunity for students to gain a bigger picture perspective of how their specific contribution to their SCYP project supports the global transition to sustainability. From the perspective of considering scientifically founded sustainability principles as boundary conditions within which to operate, this may offer the program a baseline perspective to guide the direction of each individual project. This perspective may be applied to the academic curriculum in the form of a short tutorial within each class that chooses to participate in the program or in the form of an introductory course on sustainability. The MSLS program at BTH that professors Broman and Robèrt established may serve as an example of how to integrate this thinking in a stepwise process into higher level academia in a practical way. Although the design of the SCYP model makes sense in terms of capitalizing on the current university structure using existing classes, existing faculty and operating within current university constraints, the efficacy of the program may be increased by incorporating a more clear definition of sustainability across all disciplines.

On the municipality side of the SCYP model, the sustainability principles as boundary conditions may also support the overall sustainable direction of the projects being proposed by the partner cities. Since all the partner cities already go through some version of a strategic planning process, the added layer of considering the sustainability principles to guide the direction of next steps and future projects within each city may also benefit the overall sustainability trajectory of the cities. We recognize that many of these cities in this particular region are challenged by the term sustainability and the associated pressures of dealing with the global challenge, and the fact that they choose to participate in SCYP in the first place is a big step. Therefore, further sustainability framing in the planning process may prevent their participation. However, exploring avenues to integrate this level of thinking into the planning process may also have tremendous value and increase the overall contribution of this model to SSD. This point will be discussed further in following sections.

5.1.3   The Framework for Strategic Sustainable Development

When considering the five level framework for SSD, the SCYP approach has varying levels of contribution. At the *systems level*, as described previously, SCYP shares a common

understanding of the global sustainability challenge. It is evident through review of the SCYP project reports that some projects incorporate more systems oriented thinking than others. This concept does not seem to be universally applied across SCYP projects and academic courses participating in the program. The implication of this inconsistent approach is running the risk of some project work becoming trapped in the 'drill hole' mentality of applying best practices within limited specializations that may yield positive incremental change but have little impact on addressing global systemic problems.

At the *success level*, our research reveals that success for SCYP is facilitating effective collaboration between the university and regional municipalities that allows for the transfer of the most up to date 'best practice' knowledge to real-world needs in regional communities. The benefit of this approach is that new knowledge is actually reaching communities and impacting how they think and move forward with their urban planning and project needs. Furthermore, this process is taking advantage of the resources and ideas produced at the university and using them to support regional needs that lack those resources to make progress. A potential challenge with this vision of success from an SSD perspective, is that program and individual project success may not always be cast within the boundaries of what the socio-ecological system can support in the long term. This is an area where a clearly defined definition of sustainability (i.e. success) has the potential to further the sustainability outcomes of SCYP partnerships.

At the *strategic guidelines* and *actions level*s, our research revealed that SCYP utilizes clear SSD strategies as well as more subtle approaches. The more explicit SSD techniques that SCYP utilizes include the use of strategic planning within the municipalities, backcasting from principles in individual projects, and prioritization that occurs in both the municipal planning and individual projects. The more subtle approaches include the strategic design of the model itself, the collaborative process that develops trust, increases civic engagement and initiates behavior change, and the development of leadership and communication skills that prepare students for high impact professional positions.

Regarding the tangible strategies, backcasting is used to develop proposed actions within each individual project. Faculty and students are briefed on the intended goal or outcome that the partner city aims to achieve. Students then engage in their process of assessing the current situation relevant to the context of their project and deliver multiple possible solutions or suggestions in the form of a project report on how to proceed in order to achieve the intended outcome. The project reports can also be viewed as flexible platforms that may open new doors and lead toward sustainability in a stepwise process that is relevant to the partner city needs. The strategic planning process, which also involves prioritization, occurs at the municipal level prior to engaging with SCYP. The next prioritization process takes place as a collaborative effort between the city staff and SCYP staff to determine the projects for the partnership. A further prioritization process occurs again at the municipal level after students propose solutions to project needs as city staff decide what to implement and how.

The subtleties of how SCYP strategically moves society towards sustainability begins with the strategic design of the education model itself. The concept is built upon a thoughtful structure that maximizes potential within institutional and municipal constraints. It is designed to utilize the existing university structure, classes, and faculty, which is an effective and efficient use of resources that minimizes the overall burden on the university, and yet, enables a high level of publicly engaged scholarship. Furthermore, the matchmaking process strategically matches academic resources with relevant city needs, which may also be viewed as part of the prioritization process.

Another layer of strategic thinking is that the SCYP experience fosters a strong social fabric based upon trust that develops through a highly collaborative and multidisciplinary effort that creates mutual benefit for all the stakeholders involved. Part of building this trust, is learning to speak a common language and developing a shared mental model for the partnership. Therefore, SCYP intentionally uses a broad definition of sustainability as a strategic move. SCYP staff understand the need to engage with communities at a level they will respond to, and therefore, exercise thoughtful communication around the sustainability concept and speak the language of the partner city staff and community members to initiate the stepwise process of integrating sustainability. Furthermore, the partnership builds trust as city staff 'risk' handing over real project needs to the students, and the students become accountable to producing viable solutions. This relationship only works if both parties trust each other throughout the process. The development of trust over time fosters meaning-making and a strong social fabric, which in and of itself is a social sustainability achievement. Additionally, a strong social fabric based upon trust among diverse stakeholders allows all parties to feel empowered, energized, and more creative, which serves as a foundation for further strategic collaboration to address the next level of complex sustainability related challenges.

The decision to leverage the student learning experience for social transformation is a strategic choice that has a significant impact, both for the students and the communities they work with. Regarding the impact upon the communities, the students seem to have an ability to break through the general lack of community involvement. They are able to increase civic engagement and public awareness of sustainability related concerns and opportunities. Furthermore, the collaborative effort initiates behavior change among community members and local government leaders. In terms of the impact upon the students, connecting academic theory and practice in this way is a critical step in preparing students to work toward achieving sustainability in their careers. During the SCYP experience, students are exposed to 'reality' and learn how to contextualize their idealism in a practical way. This essential skill prepares students to be effective change agents for sustainability, and can be viewed as a strategic educational approach to help position well-prepared students in empowering roles to affect further change during their professional careers.

The various strategies that SCYP employs can capitalize on their gains if the program seeks to develop a cyclical partnership process with the same cities perhaps in a 5-10 year loop. So much work goes into establishing trust, building community, demonstrating that the program can produce excellent results and that it is a mutually beneficial experience all around. A follow up strategic step would be to explore how to capture the progress that has been gained and to use it as a new baseline to take to the next level during the next iteration of an SCYP partnership. Throughout repeat partnerships, the program may be able to integrate more and more layers of sustainable thinking into project ideas as the ongoing behavior change and openness to new ideas initiated in the first partnership continue to grow.

Finally, at the *tools level* SCYP uses various effective tools, methods, and frameworks for decision-making, monitoring and assessing situations within specific contexts. This is a strength of the SCYP model and discipline specific specialized knowledge that comes from a university environment. Included in these tools the University of Oregon uses is The Natural Step Framework, also known as SSD. This suggests that the SSD perspective is not a foreign concept to the university, however, it is not universally applied. Again, the added value of the SSD lens is the ability to see specialized context specific details within a bigger picture socio-ecological system perspective.

5.1.4   The ABCD Strategic Planning Process

Our research suggested that the SCYP projects are primarily determined by the partner cities and the project ideas are derived from each city's strategic plan or city council goal planning process. We were unable to research at great depth regarding the actual planning process and the criteria used in determining project needs and prioritization. Therefore, it is difficult to assess how their planning process actually contributes to SSD. However, we recognize that the project ideas that are presented to the SCYP staff are the basis for the work that gets done during the program. Therefore, there is a strong argument for making sure that the project ideas are necessary and productive regarding the overall transition toward sustainability so the energy, time, and financial investment are not wasted. The ABCD strategic planning process of the SSD concept may be beneficial for SCYP partner cities to incorporate into their project list determination process. This process is designed to facilitate vision creation, stimulate creativity, brainstorm possible actions and prioritize implementation all within sustainable boundaries. This could be supported by SCYP staff, which would also allow them to be confident that the project ideas are real 'sustainability related' needs that can benefit from the latest academic knowledge and discipline specific best practices that SCYP claims to offer.

To support the integration of SSD or more specifically the use of the FSSD in the strategic planning process in the partner cities, we tentatively investigated the financial viability of using the FSSD in municipal planning. We explored this angle as it became evident in our research that for each of the partner cities, the key decision-making factor in city planning, project implementation and city-wide initiatives was always the bottom line cost. Therefore, in order for such cities to be open to including an SSD perspective in their planning, an associated understanding of financial and business case benefits among additional benefits seems to be a necessary component. Although we found that clear direct financial gains and cost savings were difficult to prove, our initial research also suggests that there is a business case and financial benefit in sustainable development planning in the long run when factoring in aspects such as reduced energy and waste expenses and risk reduction. The ability to integrate the business case for sustainability and the use of the FSSD into the partner city strategic planning processes, is also likely dependent upon the ability of the program to cycle back to working with the same cities over time as it is not a practical first step for SCYP as it is currently designed.

5.2   Benefits of Combining the SCYP and the SSD Approaches

In our evaluation of the SCYP model and comparison with the SSD approach, we recognize two distinct approaches with different strengths. A significant benefit of SCYP is in the immediate action-taking and application of knowledge into practice, while the FSSD is an excellent tool to understand the bigger picture and support effective sustainability planning. In phase III of our research we also explored other current research on the topic of effective higher level sustainability education. The research suggested that sustainability education be geared toward developing key competencies that are fostered through a support structure, theory and practice. In comparison to the peer-reviewed literature, SCYP is already in line with many of the elements that are identified as being valuable for a successful sustainability education model. However, we also found that the elements SSD aligns with, would provide further added value to SCYP. For example, regarding key competencies, SCYP is very strong when it comes to project management in relation to sustainability, handling of information and data management, anticipatory competence, and open-mindedness to innovation. SSD fosters

competence in systems thinking, complexity theory, anticipatory competence, and understanding the socio-ecological system. In terms of support structure, SCYP has active partnerships among all stakeholders, a strong administrative team that builds relationships and manages logistical needs, a balance of top down and bottom up support, and an embedded interdisciplinary approach. At the theoretical level, SSD is rooted in scientific knowledge, has a clear definition of sustainability, emphasizes the precautionary principle, and offers a conceptual framework and a platform to develop a shared mental model. In terms of practice, SCYP employs a transformative learning process, engages in multidisciplinary project-based work, and emphasizes collaboration. Exploring how to weave these two concepts thoroughly together may promote more effective sustainability education that strategically helps move partner cities towards sustainability.

5.3   Piecing It Together

Given that the socio-ecological system is systematically in decline, it is essential that society steps up to address this challenge. The sustainability challenge is large-scale, complex and involves multiple systems that constantly interact, adapt, and are influenced by individual and collective decisions that people make. Cities, with high concentrations of people that are expected to grow, are at the epicenter of ecological and social impacts around the world. Higher education institutions are uniquely situated within or nearby these cities, and they are in a position to prepare students to understand the fundamental components of this challenge, to work together to innovate and explore new ideas and solutions, and furthermore apply their learning to real-world issues to address this challenge. Education needs to provide interdisciplinary systems-oriented thinking, science-based research, and a strategic pedagogical approach to tackle this problem and work toward achieving sustainability. SCYP, as an educational program, employs a strategic approach to work within the constraints of the higher education system to integrate public scholarship and community engagement. This program combines disciplines and collaborates with local communities and city governments to bring the latest knowledge into practice on a local and regional scale.

The value that an SSD perspective offers SCYP is clarity of a scientifically founded definition of sustainability that can guide the overall direction of municipal planning and student project work. This perspective in combination with SCYP's strategic practical approach will enhance the efficacy of achieving sustainable outcomes educationally, socially and ecologically within the region. When such initiatives similar to SCYP scale up throughout the nation and around the world, the SCYP approach (or publicly engaged scholarship for sustainability), has the potential to capitalize on small-scale local incremental changes and subtle paradigm shifts, and transform them into large-scale system-wide changes.

5.4   Validity

As discussed in our methods section, the data collection for *phase I* of our research produced good results. We were able to gain a thorough understanding of the underlying sustainability premise, the structure, and the design of the SCYP model. However, our understanding of the sustainability premise could have been improved if we were able to connect with more SCYP program staff, faculty, and students.

In *phase II* of our research, regarding the impact upon the partner cities, the perspectives shared by the SCYP city program managers provided great context that we hoped would be further supported or negated by additional perspective from the city staff survey. The city staff survey was our most effective survey that produced a 31% response rate. Therefore, the added perspective does not necessarily represent the majority opinion. Further document review allowed for deeper understanding of actual sustainability impacts upon the city based upon how the projects were determined and the level of implementation that followed after the project reports were completed. In terms of the impact upon the university, we really only had one primary source of information, which was perspective from SCYP co-founder Marc Schlossberg. Our SCYP faculty survey had a 12% response rate, from which we could infer some perspective. However, no solid conclusions could be formed from that data sample. Additionally, several attempts were made to contact to upper administrative staff to discuss their perspective, but no contact was ever established. The impact upon the students, is perhaps our weakest research point. We were able to get outside perspective from SCYP program founders and city staff. However, these were secondary source perspectives and not directly heard from the participating students. We made several attempts to conduct surveys and/or interviews with students, none of which produced any results.

Our research in *phase III* regarding successful sustainability education is well grounded in peer-reviewed literature and further interviews and faculty perspective offer supporting evidence. In our limited timeframe for further research on the financial viability and additional benefits of using the FSSD in municipal planning, we reached out to over 30 municipalities in eight countries and received nine responses, which provided us with a baseline perspective that is by no means comprehensive and should serve as a catalyst for further research. Overall, we designed our research to triangulate multiple research methods to enhance the credibility of our results. For more details, refer to section 2.0.

5.5   Recommendations for Further Research

In terms of further research that we would have included if we had more time, we would have liked to learn more about the student impact. SCYP is also keen to gather the student perspective. Therefore, this data might be available in the near future. It will be definitely interesting to incorporate that opinion in further studies on applied learning and SCYP.

Other areas of interest for future research that surfaced include the following points:

The Future Fit Benchmark for Municipalities: We clearly found in our interviews that money plays an important role in municipal planning, in particular regarding sustainability initiatives. The Future-Fit Benchmark for Businesses, is an open source initiative that helps to define the level of performance required on key environmental, social and governance indicators for a company to be a truly sustainable business. Bob Willard, a leading expert on quantifying and selling the business value of corporate sustainability strategies, told us in an interview that the Future-Fit Foundation is currently working on a Future-Fit Benchmark for Municipalities. According to Willard, the new benchmark will be a useful resource for cities once it's ready, and therefore could be another resource to combine with the FSSD to demonstrate the financial business case behind integrating sustainability into municipal planning. This could further support the use of FSSD in municipal planning for SCYP partner cities.

Financial Business Case for Sustainability: Overall, we heard from many municipal planners that solid data proving financial benefits through sustainability planning is missing, but would be desirable to have. Despite the fact that collecting this data may be difficult and time consuming to gather, it could contribute greatly to incentivize cities to move towards sustainability.

Large-Scale Economic Incentives: Another angle to tackle financial incentives on a large scale could be to elaborate on how to put pressure on politics in order to come up with economic incentives for businesses that do things sustainably. Although Broman and Robèrt point out in their prisoner's dilemma paper that it is a wrong assumption that political interventions are the only valid driver for achieving sustainability, it could still be one strong argument for the business case (Broman and Robèrt 2016). SCYP co-founder Young supports this idea:

> "You need federal and state laws that just say, you know what, we are phasing out fossil fuel in five years, we are going to zero emissions...figure it out boys. Or, we are closing the landfills in a decade. That's how we created the recycling industry, and all of a sudden you've got a billion-dollar industry because it's cheaper than landfilling it."

Designing this approach, and/or doing the necessary research could be a highly interesting project in an upcoming SCYP partnership, for instance for a law class in conjunction with the city council or directly with some big companies in the city.

The Role of Sustainability Champions: These types of innovative programs tends to be heavily reliant upon champions of the idea. This brings up the question of long term sustainability of the idea if it can't be stabilized with more support? It might be of interest to have a closer look into the role of sustainability champions.

Universities Working with the FSSD: A cross university assessment of institutions that work with FSSD could be interesting, especially from the perspective of applied learning. For example, the Strategic Planning for Sustainability project in MSLS or the Western Ontario University sustainability program. This would be especially interesting from the perspective of applied learning related to the 'practice' pillar of the successful sustainability education model.

SCYP outside of Oregon: As SCYP type programs expand beyond Oregon, throughout the United States and internationally, it would be interesting to compare the different approaches taken by the various universities. Researching whether or not there are certain success factors and patterns that work everywhere, and/or identifying unique regional component that are essential for program success. Since this paper clearly analyzes the set-up tailored for Oregon, it may only capture a limited perspective.

6   Conclusion

" ... to learn and not to do is really not to learn. To know and not to do is really not to know."
- Stephen R. Covey

As a publicly engaged scholarship model, SCYP aims to bridge the gap between theoretical knowledge within universities and practical application of this knowledge to address real-world sustainability needs. Our research focused on how this educational approach contributes to SSD and how SSD may further contribute to the SCYP approach.

Key Findings and Implications: Our research suggests that the SCYP experience has a significant impact upon regional communities. The process expands the often narrowly-defined solutions from traditional municipality consultancy relationships to creating a container for creativity that frequently results in offering multiple proposed approaches to solving real challenges. It accelerates the rate of progress of city project needs, and it builds positive trusting relationships among, students, faculty, city staff, and community members. It does all this while combining the latest academic knowledge with real local issues.

SCYP uses a subtle strategic process of integrating sustainability into communities. The program is intentional about meeting communities where they are at by speaking the appropriate 'sustainability language' and working on community proposed projects. This allows SCYP to integrate these communities as municipal partners while slowly creating behavior change and buy-in for addressing the sustainability challenge through municipal planning and community development. SCYP contributes to SSD through their strategic approach to establish a collaborative effort with these regional municipalities. Additionally, their understanding of the sustainability challenge, their use of backcasting to generate proposed ideas and solutions as well as systems-thinking awareness that is evident within some individual projects are all contributions to strategic progress towards sustainability.

When viewed from a bigger picture perspective, SCYP is one version of a publically engaged sustainability oriented education model. Since its inception in 2009, there are 21 additional programs based on the same model that are currently active, one more that is launching in 2016, and six more that are developing across the United States. Furthermore, this concept is expanding internationally in China and beyond. From this perspective, the global impact of local and regional publicly engaged scholarship programs that create strong social fabrics, foster collaboration among communities, and subtly increase awareness and desire to address the sustainability challenge has the potential to accelerate global change at a similar rate that each individual program is able to advance the municipal planning progress with their local partners.

Recommendations: Based on these key findings and their implications, we propose the following recommendations. Since SCYP has proven that positive sustainability action can take place even within structural constraints, we suggest that SCYP seeks avenues to incorporate larger systems level thinking guided by a scientifically founded clear definition of sustainability. Therefore, we recommend incorporating the use of the FSSD, both on the municipality side of the partnership and within the academic curricula as well. Regarding the municipal planning perspective, the FSSD may be applied in the strategic planning process and therefore lead to appropriately prioritized SCYP project selections that align with the sustainability principles. This would ensure the sustainability related requirement of the SCYP partnership, and it could be an educational experience for city staff and other involved

community members. In terms of the academic curricula perspective, the FSSD lens would provide a scientifically founded context, within which the faculty and students derive their solutions. This concept may be integrated either as a tutorial within individual SCYP classes or as an introductory course on sustainability that spans multiple disciplines. In this regard, SCYP's strength of practical engagement and application of knowledge can be combined with the value of the scientifically founded boundary conditions of sustainability and an effective strategic planning process that SSD offers. These two approaches can work together to achieve more effective sustainable results in a stepwise strategic process over time.

Furthermore, we encourage the program to consider the sustainability of the SCYP approach itself. In its current iteration and design, the program will likely run out of regional partner cities to work with. We recommend exploring how the program may establish long-term partnerships that repeat over time. This can build on their initial integration into the communities and potentially allow the university to capitalize on the behavior change that city staff and community members go through during the process. It may also allow for the incorporation of the FSSD as recommended above. This may lead to longer term and more systems oriented thinking to develop in the program regarding how city staff, faculty, and students explore solutions to city needs. As the program model continues to adapt and innovate, considering how to cycle back to previous partner cities may become a strategic move for the education program itself and for long-term regional and global systems level sustainable development.

As more and more SCYP-type programs emerge and evolve, future iterations can take the impact to the next level. The increased awareness of sustainability issues, openness to new approaches, and increased motivation to address the sustainability challenge can be harnessed to incorporate higher systems level thinking. These programs and partner cities can learn from each other and capitalize on their gains one iteration at a time. From operating within institutional constraints to incorporating global solutions cast within boundary conditions at a local scale, and connecting the nationwide and international publicly engaged scholarship initiatives, these programs can be a driving force for sustainable change.

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Appendices

Appendix A - Overview of Contacted Cities

We reached out to 37 cities in 8 countries. 5 of them are SCYP partner cities, 1 of them works with the SMART city vision, 30 of them work or used to work with TNS/FSSD and one city (Gibsons) told us that they have never worked with TNS, which goes against our research.

Table A.1. Contacted Cities

Overview of Contacted Cities:				
Contacted City	**SCYP Partner City**	**Currently Working or Used to Work with TNS**	**SMART City**	**Status**
Airdrie, AB, Canada		✔		no response
Albany, OR, United States	✔			interview
Aukland, New Zealand		✔		no response
Bridgewater, NS, Canada		✔		e-mail contact
Caledon, ON, Canada		✔		skype interview
Canmore, AB, Canada		✔		no response
Central Otago, New Zealand		✔		no response
Christchurch, New Zealand		✔		no response
Copenhagen, Denmark			✔	no response
Dublin, Ireland		✔		no response
Edmonton, AB, Canada		✔		no response
Eindhoven, Netherlands		✔		no response
Falkenberg, Sweden		✔		no response
Flatrock, NL, Canada		✔		no response
Forteau, NL, Canada		✔		no response
Gibsons, BC, Canada				e-mail contact
Halifax, NS, Canada		✔		e-mail contact
Hastings, New Zealand		✔		no response
L'Anse au Clair, NL, Canada		✔		no response
L'Anse au Loup, NL, Canada		✔		no response
Markham. ON, Canada		✔		no response
Madison, WI, United States		✔		no response
Medford, OR, United States	✔			interview
Montreal, QC, Canada		✔		skype interview
Morbegno, Italy		✔		no response
Okotoks, AB, Canada		✔		e-mail contact
Olds, AB, Canada		✔		no response
Pouch Cove, NL, Canada		✔		no response
Redmond, OR, United States	✔			no response
Salem, OR, United States	✔			interview
Santa Monica, CA, United States		✔		e-mail contact
Saskatoon, SK, Canada		✔		no response
Springfield, OR, United States	✔			skype interview
Vancouver, BC, Canada		✔		e-mail contact
West St. Modeste, NL, Canada		✔		no response
Whistler, BC, Canada		✔		e-mail contact
Wolfville, NS, Canada		✔		no response

Appendix B - SCYP Partner Cities

SCYP is currently operating in its seventh year since its kick-off in 2009 when Gresham was the first SCYP partner city. The biggest partner city was Salem (2010-11) with 160,000 inhabitants in the second year. Springfield partnered with the SCYP in two consecutive years (2011-12 and 2012-13). Medford (2013-14) is 267 km or a three-hour-ride by car away from the University of Oregon in Eugene, and is therefore the partner city which is furthest away from the students. For the 2014-15 academic year, the SCYP worked with multiple partners, specifically Metro, Multnomah County, Troutdale, and Gresham. The partner city for the current academic year is Redmond.

2016-17: **Albany**, Oregon (51,583 inhabitants; 76 km from the University of Oregon)
2015-16: **Redmond**, Oregon (27,427; 206 km)
2014-15: **Metro, Multnomah County, Troutdale, Gresham**
2013-14: **Medford**, Oregon (77,677; 267 km)
2012-13: **Springfield** - LTD, Oregon (60,177; 5 km)
2011-12: **Springfield**, Oregon (60,177; 5 km)
2010-11: **Salem**, Oregon (160,614; 110 km)
2009-10: **Gresham**, Oregon (109,397; 200 km)
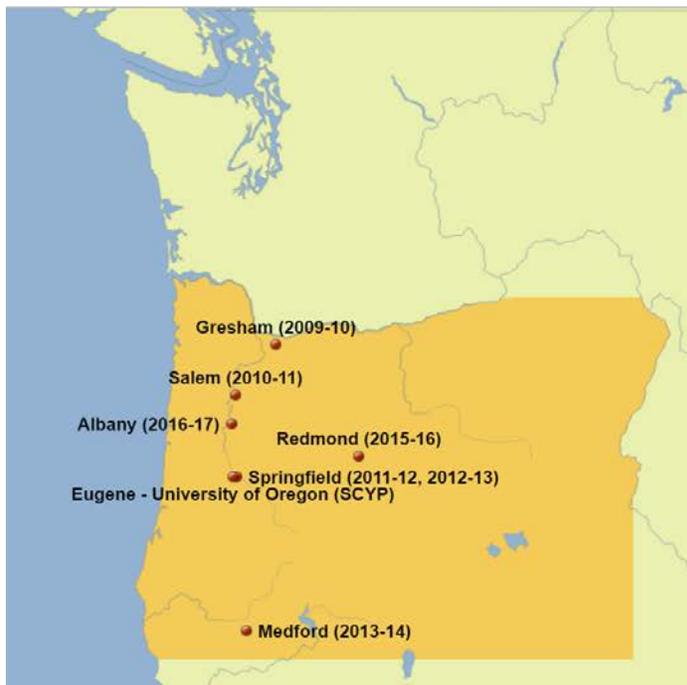

Figure B.1. Map of the United States

Figure B.2. Map of Oregon and SCYP Partner Cities

Appendix C - The 3-Step SCYP Process Description

Step 1: City applies and is accepted to the program:

The process of developing community-generated projects that the students will work on starts once a city's application is accepted to be the partner city in any given year. However, in order to get accepted, cities have to hand in an application that includes the following elements and commitments (Schlossberg and Larco 2014):

   a. 15-20 project ideas that can be accomplished in 10-week academic terms.
   b. Community generated projects that involve diverse local partners, ensuring full community buy-in, that are part of the city's proposed work plan for the upcoming year.
   c. Projects that address sustainability issues.
   d. Explicit buy-in from the top, including the mayor, city council, city manager, and multiple departments within the city.
   e. The city's financial commitment to the university for the cost of running the program.

Step 2: Faculty express interest in working with the city:

The matchmaking process involves SCYP staff and university leadership along with city staff and municipal leadership working together to pair individual faculty with their counterpart in the city. From there, they define and refine projects that can be meaningful for the city and appropriate learning opportunities for students. The instructor and city staff person define scope, schedule, and deliverables and continue working together until their project is complete (Schlossberg and Larco 2014).

Step 3: Coordinators within the university and city facilitate systems to carry out the work:

Coordinators on campus and in the city are an essential component of the SCYP model for the yearlong partnership. This lessens the burden for individual professors and individual city staff members and encourages them to participate. The city coordinator works to define problems, provide information, accompany students on site visits, and participate in reviews of student work to ensure that they are developing viable solutions. There is also a full-time SCYP program manager who coordinates the university side of the partnership. It is the responsibility of the SCYP program manager to organize and facilitate the application process, match faculty and courses with city-identified projects, facilitate the scope of work for each project, manage the budget, organize events and communications, and to oversee final reports written by students for the city. Although the actual coursework takes place throughout a single academic year, the overall engagement that prepares for this work often starts six to eight months earlier (Schlossberg and Larco 201).

Appendix D - Costs for SCYP

According to Schlossberg and Larco, SCYP charges partner cities with a minimum of USD 250,000 for the one-year partnership. This is both, a way to cover costs of running the program, and a way to ensure that partner cities have real interest in the success of the partnership. The amount of USD 250,000 includes:

- The salaries of a full time program manager, communications director, and accountant.
- Two graduate research assistants to help out with day-to-day matters.
- One or two top students per class to consolidate their ideas into a professional report.
- Travel costs to and from the sites for faculty.
- A USD 1,000 stipend for each professor that participates to supplement their course.
- A partnership launch party at the beginning of every year and a big wrap up event at the end of the year.

Appendix E - SCYP Projects and their Contribution to SSD

Table E.1. SSD Contribution Analysis of Project Reports of Salem, Oregon

Salem, Oregon					
Report	Systems Thinking	Backcasting	Boundary Conditions	Ecological Sustainability	Social Sustainability
Advancing Sustainability by Fostering Civic Engagement	✔				✔
Integrating Riverfront Park with Pringle Creek	✔	✔			
Controlling Congestion Through Parking Policy	✔				
Cultural Mapping - A Civic Engagement Study	✔	✔			✔
Development Proposals for Three Targeted Sites in Salem	✔	✔			
Downtown Parks Connectivity Analysis with GIS	✔	✔			
Downtown Circulation Study	✔	✔			
Efficient Public Lighting Options				✔	
Engaging the Latino community	✔				✔
Housing for the Salem Housing Authority	✔	✔			
Minto-Brown Island Park Citizen Communications Strategy					
Minto-Brown Island Park Studio	✔	✔			
Waterfront Development: Building Design Proposals	✔	✔			
Waterfront Development: Urban Design Proposals	✔	✔			
Bicycle Transportation	✔	✔		✔	
Civic Center - Interior Architecture	✔	✔			
North Downtown Riverfront Redevelopment Concept Plan	✔	✔			
Salem Strategic Economic Prosperity Plan		✔			
Salem Target Industry Analysis		✔			
Salem Transportation Industry Analysis		✔			
South of Mission (Salem, Or.)	✔	✔			
Environmental Law: Building, Graywater, and Stormwater	✔	✔	✔		
Green Cities	✔	✔	✔	✔	
Industrial ecology	✔	✔		✔	
Salem Police Station	✔	✔			

Table E.2. SSD Contribution Analysis of Project Reports of Springfield, Oregon

Springfield, Oregon					
Report	Systems Thinking	Backcasting	Boundary Conditions	Ecological Sustainability	Social Sustainability
Booth-Kelly Mixed-Use District	✔	✔			
City Wayfinding Report		✔			
A Plan for the Implementation of Bicycle Networks	✔	✔		✔	
Recommendations for Buildings, Electricity, and Transport	✔	✔		✔	
School from Bench to building - A New K-8 School	✔	✔			
Springfield Public Library Research		✔			
Springfield Public Library	✔				
Strategic Public Relations Plan- Springfield Public Library					
Springfield's Adopt-A-Waterway Program	✔	✔		✔	
Willamalane Center Riverfront Development					
Student Apartment Price Models					
Student Composition in United Way of Lane County					
Urban Ecological Design - Booth-Kelly-Eco-District	✔	✔		✔	
Waremart Site Redevelopment concept Plan	✔				
A Spatial Analysis of Lane Transit District in Springfield	✔				
Connecting Bikes to Transit in Springfield	✔	✔		✔	
Lane Transit: Expansion Communication Assessment					
The Nicolai site Redevelopment Plan - Four Visions	✔	✔	✔		
Springfield Signage		✔			
Cultural Mapping in Laura Street and Brattain	✔				✔
Cultural Fieldwork in Downtown Springfield		✔			✔
Dorris Ranch - Business Planning and Strategy Project		✔			
Economic Analysis of Local Street Improvement Value					

Table E.3. SSD Contribution Analysis of Project Reports of Medford, Oregon

Medford, Oregon					
Report	Systems Thinking	Backcasting	Boundary Conditions	Ecological Sustainability	Social Sustainability
Activity Center Identification in Medford, OR					
An Analysis of Medford's Parks & Recreation Department		✔			
Rogue Valley Transportation District Public Relations Plan					
Public Engagement with Diverse communities (2013)	✔	✔			✔
Public Engagement with Diverse communities (2014)	✔	✔			✔
The Effect of Neighborhood Watch Programs on Crime	✔	✔			✔
The Jackson County Health Site Redevelopment Plan	✔	✔			
Open Space Protection - Legal and Planning Strategies	✔	✔		✔	

Appendix F - SCYP City Program Manager Survey Results

Question 1: How did your participation with an SCYP project impact your work experience? (Check all that apply)

A. My perspective or approach to my project work has not changed.
B. I realized there is a significant difference between theoretical academic knowledge and practical solutions I was looking for. This made it difficult to collaborate.
C. I am more willing to listen to and consider different ideas and/or approaches to responding to community needs.
D. I was amazed by the creative and diverse ideas produced by students. Their work opened up new ways for me to address my project needs.
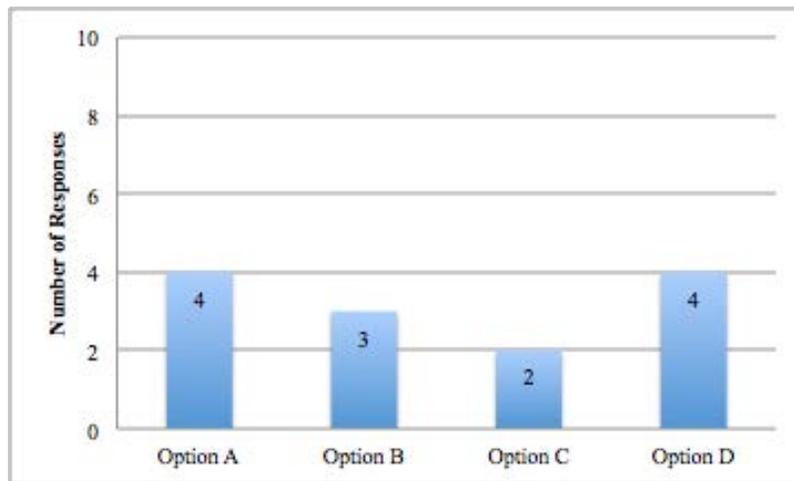
Figure F.1. SCYP City Program Manager Survey - Question 1

Question 2: How did the student work benefit your department?
(Check all that apply)

   A. The student report was an excellent idea and implementation began immediately.
   B. The student report produced great ideas that were discussed and used to inform our decision-making.
   C. The student report was used to leverage future funding for project implementation.
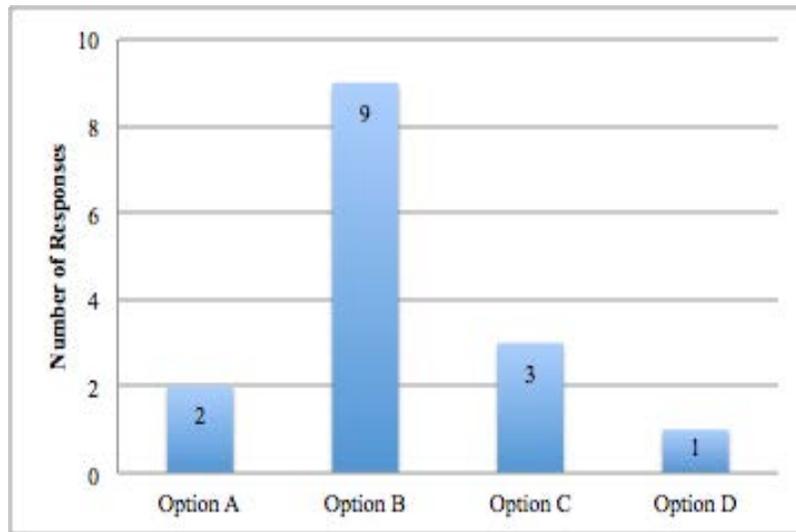   D. The student report was impractical and not very useful.

Figure F.2. SCYP City Program Manager Survey - Question 2

Question 3: What is your perception of how the SCYP experience encouraged community involvement with addressing community needs? (Check all that apply)

A. The community was not involved.
B. The community engaged with students and shared their perspectives and ideas.
C. The community is more engaged and participatory in local government than before.
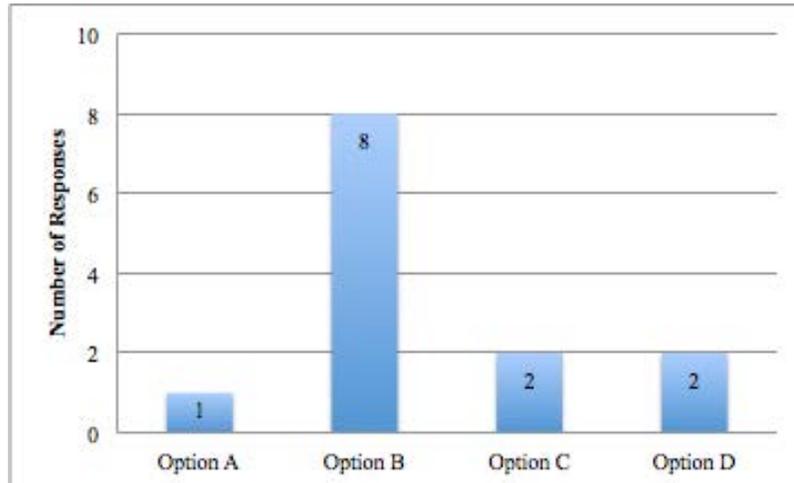D. The community is self-organizing and taking action on addressing their concerns.

Figure F.3. SCYP City Program Manager Survey - Question 3

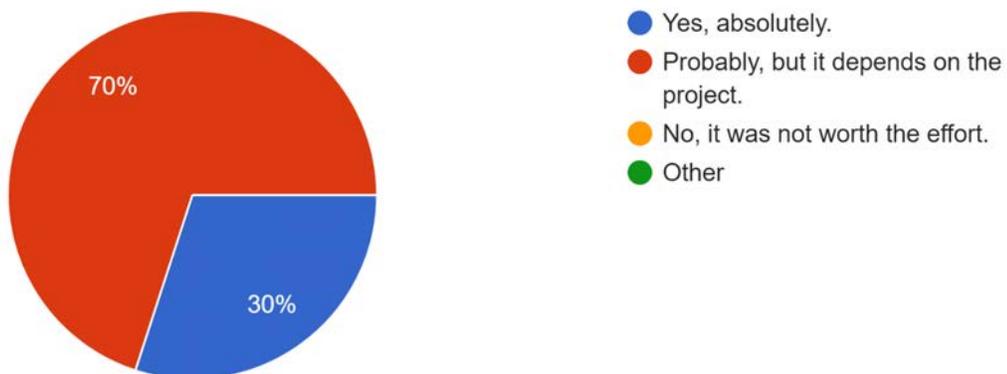*Question 4: If you had the opportunity, would you work with SCYP again?*

Figure F.4. SCYP City Program Manager Survey - Question 4

Appendix G - SCYP Faculty Survey Results

Question 1: Did working on an SCYP project improve your student's engagement in your class?
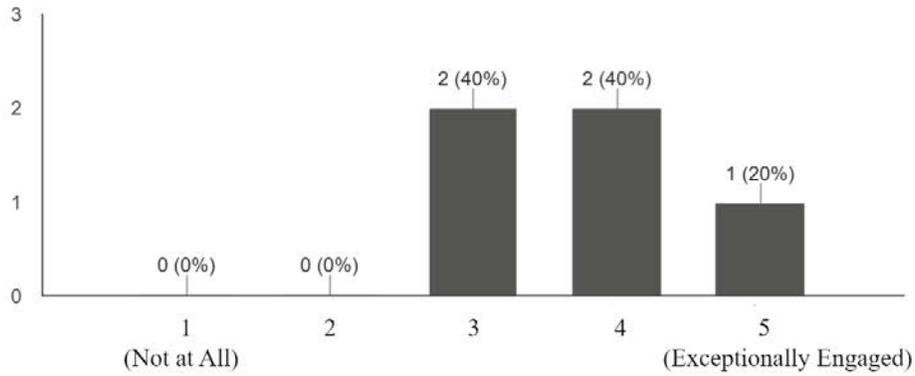

Figure G.1. SCYP Faculty Survey - Question 1

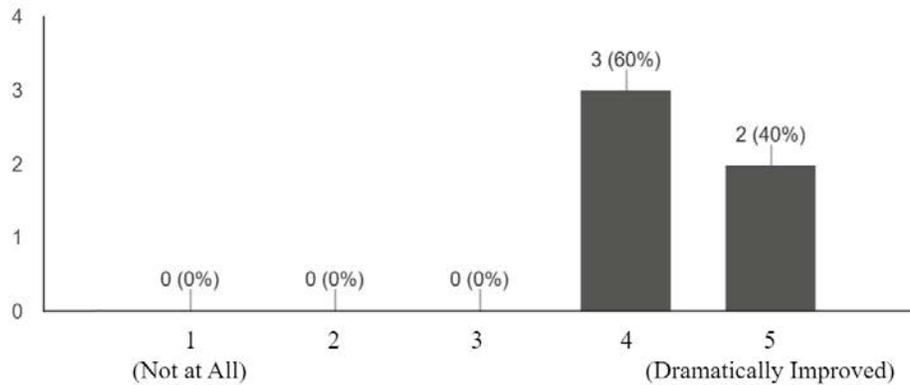*Question 2: Do you think student outcomes were improved by participating in an SCYP project?*

Figure G.2. SCYP Faculty Survey - Question 2

Question 3: Does working on an SCYP project increase your motivation and desire to teach?

Legend:
- **Yes. It is more interesting, engaging and realistic. Therefore, it empowers me to be an excellent professor.**
- **Yes. It is definitely worth it, but it is difficult to handle the extra workload.**
- **No. Student engagement and outcomes do not change. Therefore…**
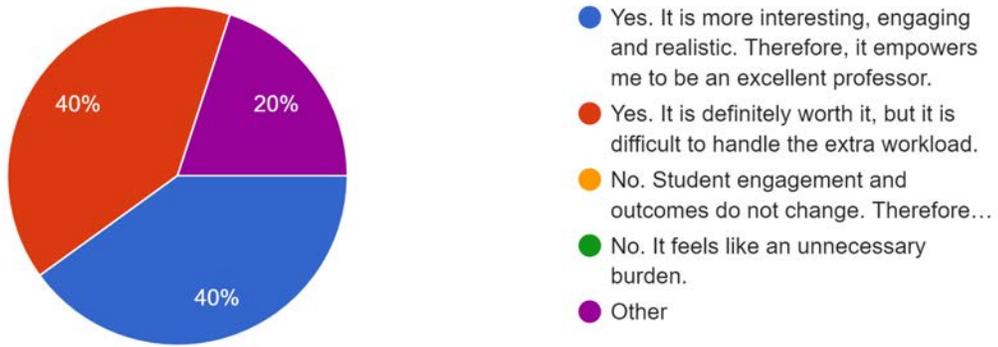- **No. It feels like an unnecessary burden.**
- **Other**

Figure G.3. SCYP Faculty Survey – Question 3

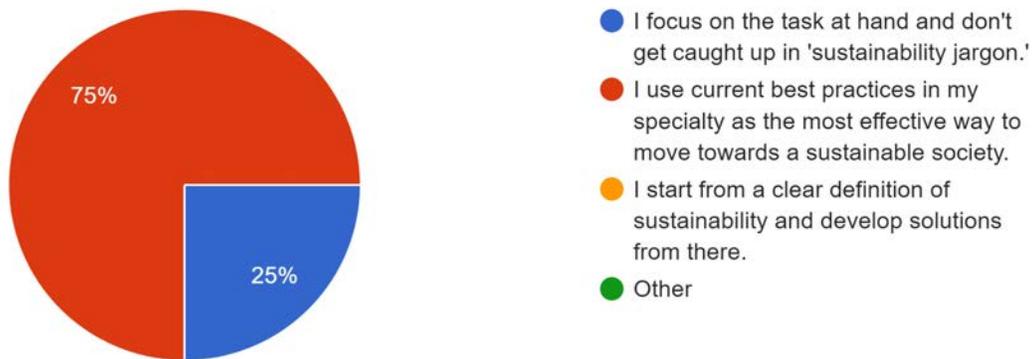*Question 4: How much do you incorporate 'sustainability' into your curriculum and SCYP project coaching?*

Legend:
- **I focus on the task at hand and don't get caught up in 'sustainability jargon.'**
- **I use current best practices in my specialty as the most effective way to move towards a sustainable society.**
- **I start from a clear definition of sustainability and develop solutions from there.**
- **Other**

Figure G.4. SCYP Faculty Survey - Question 4