Identifying social capital effects within education for sustainable entrepreneurship

'A survey within Van Hall Larenstein'

Final version

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Abstract

Success as an entrepreneur does not solely depend on being “born as an entrepreneur”, but depends more on learning certain skills and competencies. Education can help nascent entrepreneurs develop entrepreneurial competencies, but these competences can also develop outside the school environment. Building on the work of Lans et al. (2013) we look at seven empirically tested competencies for sustainable entrepreneurship education. There are many potential factors influencing these competencies and we focus on social capital theory to explain how these competencies can develop by using social capital as a social structure and to facilitate certain actions of individuals who are within this structure. The reversed effect is also studied to show what is the influence of sustainable entrepreneurial competencies is on social capital of dormant or nascent entrepreneurs. We used three dimensions of social capital: bonding, bridging and the range. For this purpose, an empirical study was carried out among 404 students from Van Hall Larenstein. Hierarchical regression showed that three competencies (interpersonal competence, action competence and the strategic management competence) are partly explained by social capital, but only by the bonding dimension of social capital. Looking at the reversed effect (the influence of the sustainable entrepreneurship competencies on social capital), results show that the embracing diversity and interdisciplinarity competence, systems thinking competence and the foresighted thinking competence have a positive effect on the bonding or bridging dimensions of social capital. The outcomes of this research contribute to existing scientific literature on social capital, sustainable entrepreneurship competencies and the linkage between these two.

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1. Introduction

According a report of the Global Entrepreneurship Monitor (Kelley et al., 2011) there is wide agreement on the importance of entrepreneurship for economic development. Success as an entrepreneur does not solely depend on being "born as an entrepreneur", but depends more on learning certain skills (Matthews, Stow & Jenkins, 2011).
Entrepreneurial competencies alone are however, not enough anymore to remain a successful entrepreneur, sustainability and green commerce are issues that cannot be left unaddressed (Timmons & Spinelli, 2009). Education can help students develop competencies on these subjects, but these competences can also develop outside the school environment (Carolan & Natriello, 2005).
Lans, Blok & Wesselink (2013) describe seven empirically tested competencies for sustainable entrepreneurship education:

- Embracing diversity and interdisciplinarity competence
- Foresighted thinking competence
- Systems thinking competence
- Normative competence
- Action competence
- Interpersonal competence
- Strategic management competence

Sustainable entrepreneurship is suggested to be the one of the ways for sustainable economic growth and to provide jobs. The seven competencies for sustainable entrepreneurship provide are used to operationalize sustainable entrepreneurship. Sustainable entrepreneurship is a growing field in scientific research (Lekoko et al., 2012). Entrepreneurs need to develop their competencies in order to become and stay a successful entrepreneur. The competencies needed as an entrepreneur are also widely described in literature although there seems to be little agreement between authors due to the vast amount of perspectives that can be taken.
It is shown that entrepreneurial networks are important for entrepreneurial success (Anderson and Jack, 2002). Social capital theory can be of great value when explaining how entrepreneurial networks are build (Anderson and Jack, 2002) and thus possibly provide a good link between developing entrepreneurial competencies and sustainable entrepreneurship. Because developing entrepreneurial competencies and being a sustainable entrepreneur both benefit from having a well-developed network with people with different onions and views in it.
Social capital theory was first described in the 1980s by Bourdieu (Narayan and Cassidy, 2001) and today still used in many research areas, one of which is entrepreneurship. Social capital theory has been previously linked to entrepreneurship research (Aldrich and Kim, 2005), as entrepreneurs possibly benefit from having large diverse networks and social capital is linked to the diversity and size of one's network.

However, combining these three aspects, social capital theory, sustainable entrepreneurship competencies and entrepreneurship education provides a research area with much to be discovered. Currently, little is known about the relationship between social capital and entrepreneurial competencies. However, such a relationship would be expected because the more people someone

knows, the more access that person has to different wold views, opinions, information and knowledge. This can possibly contribute to being better able to deal with complex issues such as sustainability, therefore being more competent in the seven sustainable entrepreneurship competencies. The reverse effect might also be expected. If someone is better able to deal with suitability issues, it would be likely that such a person is more open to different people from different backgrounds.

Therefore, the general research question is for this research is: *What is the relationship between social capital and sustainable entrepreneurship competences in an educational setting?* The following sub research questions are help to answer the main research question

1. What is social capital?
2. Which factors influence capital formation?
3. What are sustainable entrepreneurship competencies?
4. Which (off) school factors influence entrepreneurial social capital?
5. What is the relationship between entrepreneurial social capital and sustainable entrepreneurship competencies?

With this research, we explore the relations between social capital on sustainable entrepreneurship competencies in the context of entrepreneurship education. More precisely, we analyse whether the number and the range of their different professions of relatives, friends and acquaintances relate to the sustainable entrepreneurship competences. This is expected because competences can develop through education as well as from networks and vice versa: we expect an influence of sustainable entrepreneurship competencies on social capital and an influence of social capital on sustainable entrepreneurship competencies.

This report is structured as followed: first the theoretical background on social capital and sustainable entrepreneurial competencies is discussed. This starts with defining social capital for this research, then explore which factors influence social capital formation, then explore the sustainable entrepreneurial competencies in more detail. After the description of the methods used in this research, the results are discussed. The final chapter is the conclusion.

2. Theoretical background

In this chapter the theoretical background is discussed. This starts with a literature review on social capital, followed by a literature review on sustainable entrepreneurship competencies. In the final paragraph these two topics are brought together.

2.1 Social capital

In this paragraph the subject of social capital is further researched.

2.1.1 Definitions of social capital

Social capital is a concept that has been written about by many authors. Since the concept is easy to adapt to different scientific fields, many definitions and applications of social capital theory arose. over the last 20 years. By now, many authors that write about social capital start their papers with acknowledging that (Liao & Welsch, 2003; Jack, 2005; Fulkerson & Thompson, 2008). Some of the main founders of social capital theory are Bourdieu, Putnam, Coleman and Granovetter (Häuberer, 2011). They are discussed below.

Bourdieu was one of the first authors to analyse the properties of social capital (Narayan and Cassidy, 2001). Bourdieu focusses on relationship resources as the main factor of social capital (Fulkerson &Thompson, 2008). Bourdieu's concept aims at the benefits an individual obtains through relationships (Häuberer, 2011) Bourdieu (1986) defined social capital as:

"The aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintances and recognition – or in other words, to membership in a group – which provides each of its members with the backing of the collectivity-owned capital, a 'credential' which entitles them to credit, in the various senses of the word". (Bourdieu, 1986)

Bourdieu focusses on an individual level while other authors have used the concept at a community level (Baum and Ziersch, 2003). Literature of social capital on a community level originated with the work of Putnam (1995). The main focus of that community level is on civic engagement (Fulkerson &Thompson, 2008). Putnam defined social capital as:

"Features of social organisations such as networks, norms and social trust that facilitate coordination and cooperation for mutual benefit" (Putnam 1995).

Another founding author of social capital theory is Coleman. His work links social capital to educational processes in the light of collectivist action. His definition is:

"*Social capital is defined by its function. It is not a single entity, but a variety of different entities, having two characteristics in common: they all consist of some aspect of a social structure, and they facilitate certain actions of individuals who are within the structure*" (Coleman, 1990 p302).

Another often-cited definition of social capital is the one from Granovetter. However, Granovetter does not, at least in his early work, use the definition of social capital. The main research topic are strong and weak ties, which are easily linked to social capital theory, because the ties are a measure

of the strength of the relationship with a certain person. The strength is determined by the amount of time spend together, the emotional intensity, the intimacy and the reciprocal services that characterize the tie (Granovetter, 1973). Concepts like networks and resources are also often used in relation to Granovetters work (Fulkerson &Thompson, 2008). Coleman (see below) and Putnam both refer to Granovetter in their work, so that is why Granovetters work is perhaps to be seen as a preliminary concept of social capital. Granovetter states that:

Those to whom we are weakly tied are more likely to move in circles different from our own and will thus have access to information different from that which we receive.(Granovetter, 1973)

The concept of weak and strong ties are very valuable for this research since the survey specifically ask for data on friends, family and acquaintance. This distinction makes social capital more comprehensive and tangible. It helps the conceptualisation to distinguish between strong and weak ties. Therefore, in the next section, strong and weak ties are discussed in more detail.

2.1.2 Strong and weak ties

In this paragraph, we look into the strong and weak ties dimension of social capital. This approach was also used by Granovetter (1973).

Granovetter (1973) wrote a much-cited paper about the strength of weak ties. He stated that the more frequently persons interact with one another, the more likely they are to be strong ties. Time and similarity are factors that determine the strengths of a tie. The theme is his research was job finding strategies, meaning that he mostly did research about the way people use their network to find a new job.

Weak ties are loose relationships between individuals (Davidsson and Honig, 2003). Weak ties are particularly valuable because they can act as a bridge between contacts and all bridges consist of weak ties (Granovetter, 1973). These weak ties provide bridges that create more and shorter pathways between contacts. In an educational setting, learning occurs trough exchange of opinions, exposure to new ideas and experiences (Carolan, 2005). New ideas often arise from the weak ties within ones network because the weak ties operate in other social networks with different information (Granovetter, 1973). However, these weak ties might be less motivated to share this information since they are a weak tie. Strong ties are closer personal relationships and are more likely to share information and work together (Granovetter, 1973). Strong ties are for example, parents, family members and close friend.

For this research, we look at social capital in the context of entrepreneurship. Strong ties provide secure and consistent access to resources (Davidsson & Honig, 2003). Research by Davidsson & Honig (2003) showed that strong ties (defined as parents) with experience in business, increased the odds of being a nascent entrepreneur by 1.4 compared to the control group. However, the effect was even larger for other indicators. Being encouraged by friends produces increases the odds of being a nascent entrepreneur by a factor of 1.9. Having close friends or neighbours in business is also strong and significant, doubling the odds of someone being a nascent entrepreneur. However this conclusion was not reflected in other research about this topic (see chapter 5).

The ideal entrepreneurial network should consists of both strong and weak ties (Johannisson, 1986). The strong ties can be used for support, help and access to motivation. Weak ties can be used to discover new resources and information (Jack, 2005), while strong ties provide a more solid base for motivation and resources. Later on in the entrepreneurial process, when an entrepreneur has more personal resources, he does not have to reply on personal resources as much as in the early phases (Cook & Whitmeyer, 1992).

2.1.3 Social capital and (higher) education

Different authors that have contributed to the theoretical conceptualization of social capital have stated different factors that influence formation of social capital. Burt (1997) and Granovetter (1973) stated that social capital originates from direct interactions between social actors. These interactions happen during one person's whole life, but during adolescence, a person learns how to deal with these interactions and benefit from them.

Students in higher education work on gaining knowledge and skills, and this is also the period when the social capital of a student is extending. Higher education institutes and government policy plans can play an important role in this process. In organization environments, people are expected to acquire and develop new skills like networking and communicating as well as develop new knowledge, and this also holds true for students in higher education (Vilar & Albertín, 2010). Social connections can be helpful in acquiring and developing these skills. Recent research highlights the importance of (university) students to create an maintain social ties and connections to various social networks in areas such as learning, development of their professional career, entrepreneurship and quality of life (Vilar & Albertín, 2010). Friar and Eddleston (2007) state that students need to be trained to recognize the importance of social capital when developing networks skills. Research by Villar and Albertín (2010) showed that students think that universities should encourage and prepare students to acquire social capital. Social capital is seen as important for future careers (Morgan & Sorensen, 1999; Huang et al., 2009), and in order for universities to do so, students would like to work on the skills required to develop their social capital (Villar and Albertín, 2010).

Education proves to be important for developing skills and knowledge, also about sustainability issues. Research by Jones et al. (2013) shows that students' social capital is connected with their perceptions of sustainability issues at their own university. Students develop their networks during in higher education. A high-density network is an important condition for efficient information flow about sustainable initiatives. Jones et al. (2013) found that students who tend to participate in in social networks have a greater awareness and willingness to deal with sustainability issues.

According to Glaeser (2001), a significant part of education consists of learning and improving upon social skills. These skills like interacting with other people, discussing, and communicating are also valuable for later in life and to build on one's social capital. In schools, students do not only learn new facts, but they are also taught about how to deal with peers and how to deal with an adult in an authority position like a teacher. Learning how to deal with others continues after higher education, for example in a first job. Other after school activities like sports and membership of a fraternity can also serve a basis for social capital formation later in life (Glaeser, 2001). The importance of growing social capital during higher education is stressed by Taylor, Jones and Boles (2004). They argue that children of business owners are more likely to start their own business, because they can use the

network of their parents to grow their own social capital and their parents can serve as a role model. However, specially designed educational programs can overcome the backlog of children that do not have entrepreneurial parents. Education is not only important to build social capital, it also has a direct effect on the success of the entrepreneur. Kolstad & Wiig (2013) showed that one added year of schooling significantly increases entrepreneurial profits. Finally, increased social capital also has a positive effect on school performance of students, giving them better career opportunities (Morgan & Sorensen, 1999; Huang et al., 2009).

It can be hard to separate the direct influence of education from other factors that influence social capital formation. Research by Dufur et al. (2013) shows that family social capital induces stronger effects than does school social capital on academic achievement. Both school and parents are responsible for educating children.

2.1.4 Entrepreneurial social capital

One of the research fields where social capital theory is used, is entrepreneurship. It can be easily imagined that value from ones network can help entrepreneurs, enterprises and start-ups. Anderson, Park and Jack (2007) claim that tit is very difficult to define (entrepreneurial) social capital because of unclear conceptualizations. Entrepreneurial social capital operates at two different levels: a company level and on an individual (the entrepreneur) level. On a company level each business forms part of a social web of interaction within which economic elements are conducted (Anderson, Park & Jack, 2007). On an individual level, because entrepreneurs are a product of their social environment and they will be conditioned by that environment and may even perceive opportunities in a way that is influenced by their social background (Anderson, Park & Jack, 2007).

A study by Batjargal (2003) showed impact of social capital on firm performance. This research focusses on networks of entrepreneurs. Structural embeddedness is defined as the structure of the overall network of relations. Relational embeddedness is defined as the extent to which economic actions are affected by the quality of actors' personal relations and resource embeddedness is the degree to which network contacts possess valuable resources. The main results where that relational embeddedness and resource embeddedness have a positive effect on firm performance, whereas structural embeddedness has no direct impact on firm performance (operationalized as revenue and profit margin).

The jack of all trades model of Lazear can help explain when an entrepreneur is successful (Backes-Gellner & Moog, 2008). This theory states that successful entrepreneurs must have a very broad range of knowledge. Area's such as knowledge of production management, accounting and marketing. If one of the areas is missing, the start-up cannot be successful according to the model. The weakest factor determines the overall success of the entrepreneurial startup. Therefore, someone who is especially skilled in one of the areas and not so much in the others would not be likely to become an entrepreneur because his income would be limited by his weakest skill. Knowing many people and being able to benefit from their potential, would overcome this deficiency in knowledge of the entrepreneur.

Entrepreneurship is a complex process and inextricably linked to the social context in which the entrepreneur operates (Jack, Alistar & Anderson, 2002). In the early phases of the entrepreneurial

process, entrepreneurs rely most on their personal network (Young, 1998). This is because the network is used for managing information, resource flexibility and to overcome barriers of newness (Johannisson, 1990). This information can be incorporated in one's social capital and therefor social capital can help overcome these barriers of newness.

2.1.5 Operationalization of social capital

Koko and Prescott (2002) argue that there are many different ways used in previous researches to operationalize social capital , for example by only looking at network structures. This literature study covers some essentials of the many research available on social capital conceptualization and operationalization.

Since the definition of social capital is much debated, there are many determinants of social capital published. The determinants depend on the context in which social capital is researched. Since this research focusses on social capital in an educational setting with a focus on sustainable entrepreneurship, that context will apply. A network focus will be used for this research. This includes vertical as well as horizontal associations between people and of relations within and among organizational entities as community groups (Woolcock and Narayan, 2000). Strong intra-community ties give families and communities a sense of identity and common purpose, but weak intra-community ties are also necessary to prevent the group becoming too introverted.

For example, the network approach encompasses the idea that network structures create social capital. This can happen in two different, on first sight seemingly contradictory ways. First, the structural hole argument (Burt, 2000) states that social capital is created by a network in which people can broker connections between otherwise disconnected segments. Second, the closure argument is that social capital is created by a network of strongly interconnected elements.

Lin & Dumin (1986) describe the position generator method and it includes measuring the width and depth of one's network. Strong ties are represented by the number of relatives and friends, weak ties as the number of acquaintances. These distinctions give a measurement of the width of an individual's network. The occupations of the friend, relatives and acquaintances give an indication for the quality of one's network. The range of occupational prestige scores are accessed based on the occupational status index of Ganzeboom and Treiman (1996). It is measured by the difference between the lowest and the highest prestige scores of occupations to which the student had access to through social ties.

2.2 Competencies for sustainable entrepreneurship

In this paragraph, the seven competencies for sustainable entrepreneurship are discussed. These competencies for sustainable entrepreneurship are: Embracing diversity and interdisciplinarity, foresighted thinking, systems thinking, normative, action, interpersonal, and strategic management.

2.2.1 Systems-thinking competence:

The ability to identify and analyse all relevant (sub)systems across different domains (people, planet, profit) and disciplines, including their boundaries (Lans, Blok & Wesselink, 2014).

It is operationalized in the survey as "*In my daily routines I apply a systems-thinking approach, meaning that before I start working on a sustainability issue I first identify the system(s) it may concern by examining the linkages and interactions between the elements that compose the system.".*

This competence is especially useful for sustainable entrepreneurship as sustainability is a very complex issue that is dealt with by many disciplines. Scholars need to develop this competence because the need to be able to deal with complex problems is pressing. Having a large social capital might help scholars to gain inputs from other networks and domains and thus have access to different information sources.

2.2.2 Embracing diversity and interdisciplinarity competence:

The ability to structure relations, spot issues and recognize the legitimacy of other viewpoints in the business decision making process about environmental, social and economic issues, to involve all stakeholders and to maximize the exchange of ideas and learning across different groups (inside and outside the organization) and different disciplines (De Haan, 2006; Ellis, 2008; Wilson et al., 2006).

It is operationalized in the survey as "*I realise that sustainability issues are per definition issues that concern more disciplines (e.g. maths, biology, science, social science) to solve the problem or minimize the impact of the problem. I cannot solve challenges as energy saving, waste management, labour conditions or reducing carbon footprints on my own*.".

Having a large network with many weak ties also means that a person has access to other people from different backgrounds. They can provide different views on problems. Blau (1974) showed that an individual's access to learning opportunities and resources can only be leveraged if he or she is linked with others in diverse positions providing varied information. However, if a person has a large network, but mainly consisting of strong ties, this argument would not hold. Strong ties show much overlap in networks, so the advantage of diversity does not apply. Therefore practising this competence is important for possible entrepreneurial success.

Ebbers et al. (2009) notes that diversity is important for an enterprise and that universities and higher education institutes should prepare students accordingly. For example, in the view of making the transfer of knowledge and the suitability of knowledge acquisition as realistic as possible, it is important to provide an adequate methodology by means of which students can understand and learn entrepreneurial actions (Ebber et al., 2009). The diversity competence is mainly visible in literature on gender differences and cultural differences, but also very important to entrepreneurship and running a successful business as shown above. Franz-Balsen (2014) states that the diversity competence is even becoming a professional requirement. Entrepreneurs who are good at this competence will respect cultural diversity and make structural inequalities more visible (Franz-Balsen, 2014) resulting in better business opportunities.

It is questioned however if the teachers who should teach their students about embracing diversity and interdisciplinarity themselves are capable enough to structure relationships, spot issues and recognise the legitimacy of other viewpoints in business decision making processes (Benton-Borghi and Chang, 2012). Furthermore, Benton-Borgi and Chang (2012) state that it is very difficult to actually assess and measure the diversity competence as it does not only deal with ethnic and cultural diversity, but also with different academic needs, linguistic diversity, gender diversity, mental diversity and physical diversity. However, still students are increasingly choosing for an entrepreneurial career, during or after their graduation (Levenburg et al., 2006). The entrepreneurial programs in universities and higher education institutes should not only focus on business students, but also aim at the non-business students, promoting interdisciplinarity. Levensburg et al. (2006) describes this interdisciplinarity element to be a basic entrepreneurial competence that should be present in every educational program

2.2.3 Foresighted thinking competence

The ability to collectively analyse, evaluate and craft 'pictures' of the future in which the impact of local and/or short term decisions on the environmental, social and economic issues is appreciated on the global/cosmopolitan scale and on the longer term. (Wiek et al., 2011)

It is operationalized in the survey as "*I realise that dealing with sustainability issues in my future job means that I have to be able to deal with uncertainty, I can make future prognoses, I am aware of others' expectations and am able to make, and when necessary change, plans.".*

This competence can develop further using visioning exercises as a primary approach (Frisk and Larson, 2011). During this exercises, groups of students reflect and discuss social knowledge. Weak ties of social capital operate in different worlds with perhaps different norms and values. By discussing this, the view of students on the future can become more balanced.

2.2.4 Normative competence

The ability to map, apply and reconcile sustainability values, principles and targets (Gibson, 2006; Grundwald, 2004; Wiek et al., 2011).

This competence is operationalized in the survey as *"I understand that sustainability issues are surrounded with lack of clarity. I know what trustworthy sources are and realise that facts and figures need translation to my own practice, because they cannot be applied on a one-to-one basis. The decisions I make or the initiatives I take are based on these insights.".*

Social capital might help to develop this competence because dealing with the normative concept of suitability requires input from all scientific fields (Grundwald, 2004). Grundwald (2004) argues that sustainability the imperative of sustainability has a normative character because of, its inseparable connection with deep-rooted societal structures and values, the long-term nature of many relevant developments. Since one person cannot master all scientific fields, you need to rely on others in your network.

2.2.5 Action competence

The ability to actively involve yourself in responsible actions to improve sustainability of social-ecological systems (De Haan, 2006; Ellis, 2008; Morgensen and Snack, 2010; Schnack, 1996).
This competence is operationalized in the survey as "*I realise that in the end, dealing effectively with sustainability issues also requires taking action and initiative.".*
Social capital and action competence are connected in a sense that they both can empower individuals and facilitate change (Fien and Skoien, 2002). How social capital and action competence are related in an educational setting remains to be researched.

The positive link between proactiveness and successful business has often been made (Blesa and Ripollés, 2003) and it might be important for sustainable entrepreneurship as well. Proactiveness is one of the dimensions of entrepreneurial orientation, along with innovitaviness and risk-taking (Covin and Sleving, 1993). Blesa and Ripollés (2003) also conclude that indeed entrepreneurial proactiveness has a positive effect on market orientation and therefore on the success of a business.

Alvarez and Barney (2007) elaborate on the question whether entrepreneurs create opportunities or are just better at opportunity recognition than others. They argue that entrepreneurs do not search for opportunities to be exploited, but engage in processes that could potentially lead to the formation of opportunities. In terms of the action competence this would imply that people who are actively engaging in processes that lead to opportunities, score high on the action competence.

2.2.6 Interpersonal competence

The ability to motivate, enable, and facilitate collaborative and participatory sustainability activities and research (De Haan, 2006; Wiek et al., 2011).
This competence is operationalized in the survey as *"I see that working on complex issues like sustainability is in most cases not something you do alone, it demands working with people who have very different backgrounds (e.g. entrepreneurs, government officials, activists, scientists)".*
Since this competence is all about working together with other people, a big social capital will enable anyone to have people to work together with. It remains to be cleared if having a big social capital is a cause or consequence of mastering this competence.
Villar and Albertín (2010) state that there can also be problems with student's perceptions of their interpersonal competence. Students who consider their personality as something that cannot be modified by training and education, are not likely to improve their relationship skills. This inhibits their involvement in social situations, thereby reducing their number of social ties of social capital.

The interpersonal competence is believed to be composed out of different dimensions itself. For example, Wittenberg and Reis (1988) distinguish five dimensions of the interpersonal competence: initiating relationships, self-disclosure, asserting displeasure with others' actions, providing emotional support and managing interpersonal conflicts. If someone is good at initiating friendships, we can expect that person to have a higher chance of actually having many friendships. This would enlarge ones network.

2.2.7 Strategic management competence

The ability to collectively design projects, implement interventions, transitions and strategies towards sustainable development practices (De Haan, 2006; Wiek et al., 2011).

This competence is operationalized in the survey as "*I realise that working on sustainability related issues involves the design and implementation of my intervention. More specifically it involves arranging tasks, people and other resources, inspiring and motivating others and an evaluation of my project.".*

This competence includes skills in planning, organizing and bringing together resources. Having a large network will help bring together resources and people.

Levy and Skully (2007) discuss strategic action of enterprises and argue that it can be defined as 'the attempt by social actors to create and maintain stable social worlds'. Since social capital also involves 'social worlds', it is worth looking at their theories. Firstly, the key to strategic management is to create awareness among actors. People with more ties, have the potential to create more awareness and can therefore perform better in arranging tasks, people and other resources, inspiring and motivating others; the skills associated with the strategic management competence.

2.3 Entrepreneurship education and entrepreneurial intentions

In a study by Wu and Wu (2008) it is recognized that entrepreneurship can be a driving force to the economy and help diminish unemployment rates. Therefore, governments have implemented policies to stimulate entrepreneurship through means of education and research about entrepreneurial intentions of students has increased. Lee et al, 2006 showed that entrepreneurship can be developed, also by means of education and that education background should be considered a key variable in research about entrepreneurship. Therefore, in this research we here look at entrepreneurial intentions. Entrepreneurial intention can be defined as: "a state of mind that people wish to create a new firm or a new value driver inside existing organizations" (Wu and Wu, 2008). It is a driving force of the entrepreneurial activity. Personality, ability of innovation, opportunity exploitation on the range of economics and the conditions and resources facing entrepreneurs are important aspects of entrepreneurial intention (Wu and Wu, 2008).

Collins et al. (2004) indicated that the entrepreneurial intention might also be explained by a certain need to become an entrepreneur because of the changing labor market conditions. Graduating students enter the labour market that is changing and unstable because technologies are becoming more important and the majority of new jobs will be created in small and medium-sized enterprises (Collins et al., 2004; Hynes, 1996). Collins et al (2004) state that higher education institutes are changing to accommodate students and to prepare them for these changed labor market conditions by offering specific attention to entrepreneurship education. Nonetheless, entrepreneurial intentions are also influenced by factors outside the educational program environment such as the prior experiences that students have had in education, personal aspirations for the future, expectations concerning student's life while at university and how the university supports their future aspirations (Collins et al., 2004).

Entrepreneurship education should be aimed at teaching how to reduce the risk of failure for students (Katz, 2007) and cannot completely take away the risk of failure. Do Paço et al. (2011) elaborate further on this and state that entrepreneurship education is about creating entrepreneurship competencies, which include knowledge, skills, and abilities. The results of the study of do Paço (2011) also showed that personal attitudes toward entrepreneurship are a main factor in entrepreneurial intentions and that education should focus on developing those attitudes. However, there should also be plenty of attention to the more technical sides of entrepreneurship in order to overcome the perception that starting a business is too hard. One of the final remarks of the study by do Paço et al. (2011) is that entrepreneurship educational programs should contribute to the development of entrepreneurship competencies related to entrepreneurship such as social and civic skills, communication in a foreign language, mathematical and accounting capacities, digital competences, creative and artistic skills, and cultural awareness.

Wu and Wu (2008) conclude in their research about the impact of education on entrepreneurial intentions that education will influence entrepreneurial intentions. This effect is mainly attributed to the effect of changes in one's personal attitude towards entrepreneurship. Also the major seems to be a big influencing factor in the impact of education on entrepreneurial intentions, showing that students with a major in the technological field show higher entrepreneurial intentions (Wu and Wu, 2008).

In general, entrepreneurship is often mentioned together with innovation and ore economic welfare. Therefore, many policies are aimed at increasing the amount of entrepreneurs. Backes-Gellner and Moog (2008) use this line of reasoning in relation to social capital theory. Their paper explores the willingness to become an entrepreneur depending on an individual's composition of social capital. The main finding is that students with a broad range of social capital (they know many different people) are more willing to become entrepreneurs than people with a high level of social capital (that know many people).

Collins et al. (2004) conclude that entrepreneurship education should be present across all study domains and majors because all students have entrepreneurial and this is due to the changing labour market environment. The potential benefits of entrepreneurship education in higher education are significant if the institutes can successfully balance the positioning of their offerings, policies, processes and support practices with the changing entrepreneurial needs and aspirations of new entrants (Collins et al., 2004). This statement is also acknowledged by Rushing (1990) as he defends that entrepreneurship education can enhance and develop traits that are associated with entrepreneurial success and provide skills that entrepreneurs will need latter. He also states that entrepreneurship education should be integrated and continued throughout all formal education.

2.4 Sustainable entrepreneurship competencies and social capital

Currently, there is still research to be done on the relationship between social capital and entrepreneurial competencies. However, such a relationship could be expected because the more people someone knows, the more access that person has to different wold views, opinions, information and knowledge. This can contribute to being better able to deal with complex issues such as sustainability, therefore being more competent in the seven sustainable entrepreneurship competencies. The reversed effect might also be expected. If someone is better able to deal with suitability issues, it would be likely that such a person is more open to different people from different backgrounds.

We look at social capital in an entrepreneurial education setting. There is increasingly more attention to the development of entrepreneurial competencies in higher education. It is reasoned that students equipped with the right competencies can benefit from them in later in their entrepreneurial career. Start-up firms can benefit from their social capital. For example by exploiting weak ties such as membership of a trade organization in order te learn about the latest technological innovation (Davidsson & Honig, 2003). Strong ties that can be used are, for example, the family capital. Parents or siblings that are willing to invest in the start-up company. This may be part of the founders, family and friends funding stage. In later financing phases, the need for funds from strong links becomes less expressed. And a network consisting of a diversity of weak ties becomes increasingly important (Davissson & Honig, 2003). However, looking at nascent entrepreneurs instead of start-up firms, there are some differences and these are taken into account in this research as well.

In this research, we explore those relations between social capital and sustainable entrepreneurship competencies in the context of entrepreneurship education. More precisely, it is questioned whether the number and the range of their different professions of relatives, friends and acquaintances

relates the sustainable entrepreneurship competences. This is expected because competences can develop during education as well as from networks and vice versa, it has been shown that (social) entrepreneurial competence influences entrepreneurial social capital as well (see Lans et. Al, 2014)

Below the conceptual model of this research is shown (Figure 1). This model shows the possible relation between social capital and its dimensions bonding, bridging and range and the seven sustainable entrepreneurship competencies in the context of entrepreneurship education. We expect a relation in both ways. This would mean that some sustainable entrepreneurship competencies have an influence on some dimensions of social capital. The reversed is also expected: some dimensions of social capital have an influence on the sustainable entrepreneurship competencies.

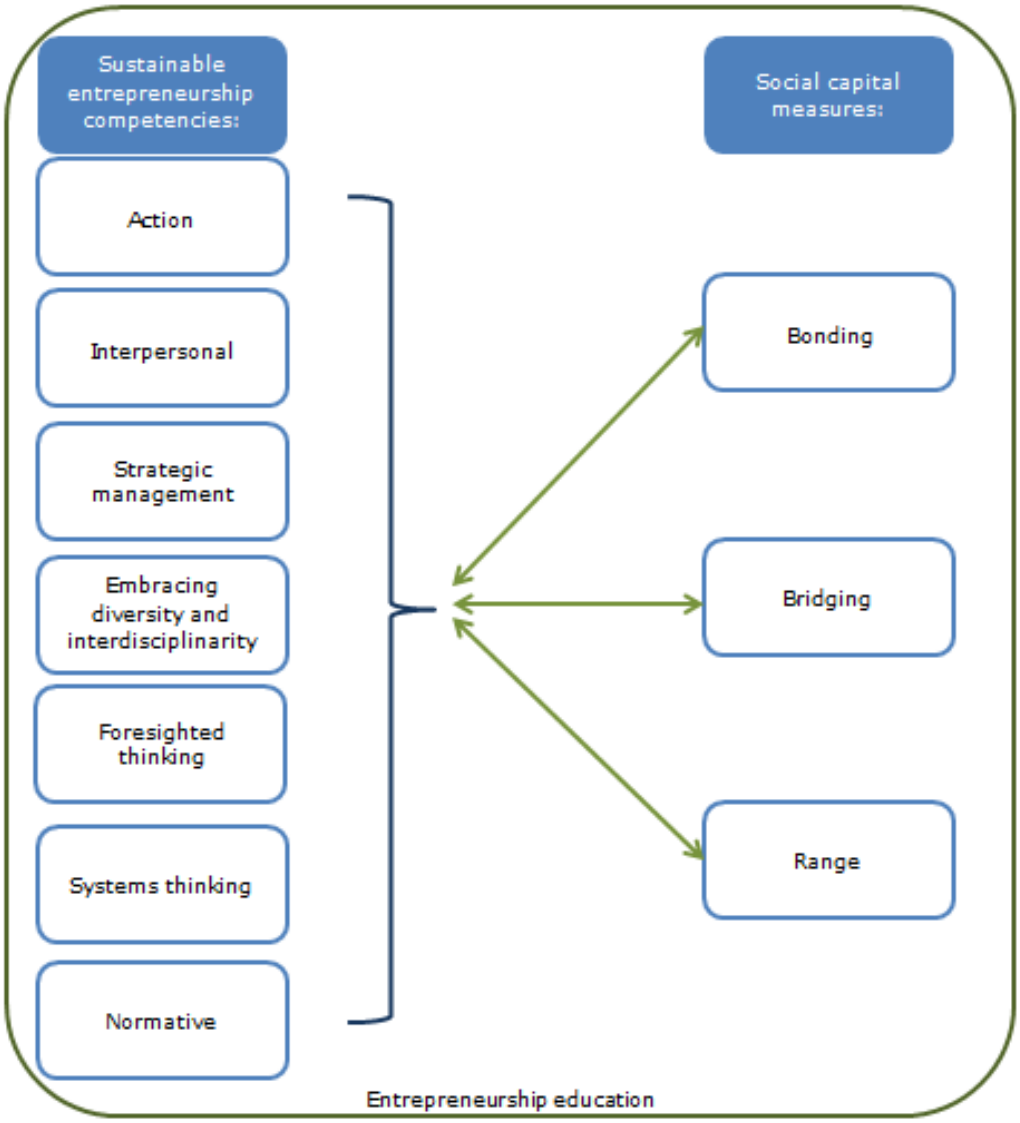

Figure 1: Model

3. Methods

In this chapter the methods used are described. We start with an overview of the respondents, the variables tested, and a description of how the data is analysed.

3.1 Respondents

The survey is conducted at Van Hall Larenstein. Van Hall Larenstein is a university of applied sciences in the Netherlands. It is a relatively small university with approximately 400 students and 400 employees (jaarverslag Wageningen UR, 2011); however, it is one of the largest "green curriculum" universities of applied science in the Netherlands. Entrepreneurship education came up around 2005 and nowadays, all bachelor programs have a compulsory part in entrepreneurship education (Lans, Blok, Wesselink, 2013). Van Hall Larenstein has three locations: Wageningen, Velp and Leeuwarden. The surveys were conducted at the Wageningen and Leeuwarden location. Students of all study years and studies are asked to fill out the survey. An overview of different studies at Van Hall Larenstein is shown in table 1. In Appendix I the complete list of all studies and majors respondents used to fill out the questionnaire can be found. For the analysis based on study programs, we have chosen not to use any information on the respondents majors, because this was not specifically asked in the questionnaire and thus not all data was present. The three domains used (Business and Management; Animal Husbandry Management; Rural and Environmental Management) are based on the study wizard on the Van Hall Larenstein website. Some study programs were not included in each year due to scheduling circumstances (some students are absent during the sampling period to do their internship). The study population is recruited via their teachers. The higher management of Van Hall Larenstein supports the researcher to get the teachers involved. Teachers have been requested to make some time during their classes so students could fill in the questionnaire, in order to increase the fill-in-rate. The survey is not anonymous because an overview of the approached respondents and completed questionnaires is required in order to match results of last year and insure the possibility for matching results in the next years of this longitudinal study.

Part of the survey has already been conducted before the start of the research (years 2011). The data of 2012 has been collected during the course of this study.

Table 1: Overview different studies

Study program	Number of students	%
Business and Management	*116*	*35.89*
Voedingsmiddelen Technologie (Food Technology)	29	7.18
International Business and Management Studies	3	0.74
Bedrijfskunde en Agribusiness (Business and Agribusiness)	88	21.78
Master of Agricultural Production Chain Management	21	5.20
Associate Degree Ondernemerschap (Associate degree Entrepreneurship)	4	0.99
Animal Husbandry Management	*133*	*32.92*
Dier- en Veehouderij (Animal Husbandry)	118	29.21
Dier Management (Animal Management)	15	3.71
Rural and Environmental Management	106	26.24
Kust- en Zeemanagement (Coastal and Sea Management	23	5.69
International Development Management	46	11.39
Master Management of Development	21	5.20
Milieukunde (Environmental Science)	1	0.25
Tuin- en Akkerbouw (Horticulture and Agriculture)	15	3.71
Unknown	20	4.95
Total	404	

3.2 Dependent variables

The data used in this research, is part of a larger multiyear research project. Therefore, the questionnaire used to measure social capital was already present and only slightly adjusted based on previous year's feedback. Social capital was measured using the position generator method of Lin and Dumin (1986). Respondents had to indicate how many people with a certain profession they knew. In addition, they also had to distinguish how many of them were friends, relatives or acquaintances. The professions in the list ranged from academic professor to waiter to owner/manager of a large frim (see table 5 for a list of all professions used in this survey). Overall the 15 professions represented different levels of prestige so that prestige score could be calculated based on the occupational status index of Ganzeboom and Treiman (1996). To gain more insight in the bonding and bridging dimension of social capital and to gain insight in the strong ties and weak ties dimension, a number of variables were calculated. First, as an indicator for bonding social capital, the number of persons of the 15 professions a student has access to through relatives and friends. Second, as an indicator of bridging social capital, the number of persons of the 15 professions a student has access to through acquaintances. Third, as a measure of the range of social capital, the difference between the lowest and the highest prestige scores of occupations to which the student has access through weak and strong social, ties results in a range number.

3.3 Independent variables

All the concepts in our model were measured using the questionnaires (see appendix III). Respondents had rate themselves giving a mark from 1 (low) to 10 (high) for every criterion. Measurement properties are assessed with principal component analysis (PCA) and reliability analysis (Cronbach's Alpha). The PCA of each measure should provide support for a one-component solution. Indications for a one-component solution are a scree plot with a sharp decrease in Eigenvalue from the first to the second component and a gradual decrease in Eigenvalues from the second component onwards. In addition, an Eigenvalue of the second component should be smaller than one, and a first component should account for a minimum of 50% of the variance in the items (Hair et al., 2010). Finally the reliability of the scale as indicated by Cronbach's Alpha should be higher than 0.6.

Table 2: Measurement properties of used competencies

Construct of competencies	# items	Eigenvalue second component	Variance accounted for	Cronbach's Alpha	KMO
Systems thinking	6	0.76	58.12%	0.85	0.83
Embracing diversity and interdisciplinarity	4	0.62	68.53%	0.85	0.75
Foresighted thinking	6	0.89	47.03%	0.76	0.80
Normative	7	1.00	52.60%	0.84	0.83
Action	8	1.00	51.20%	0.85	0.86
Interpersonal	6	1.21	41.23%	0.71	0.71
Strategic management	5	0.54	72.12%	0.90	0.83

The Kaiser-Meyer-Olkin measure (KMO) verified the sampling adequacy for this analysis, with KMO score ranging from 0.70 to 0.86, which is adequate according to Hutcheson et al., (1999). Bartlett's test of sphericity, indicated on all components that the correlations between items were sufficiently large for PCA ($p<0.001$).

The Eigenvalues for the action competence and for the interpersonal competence do not meet the

requirement of being less than one (although the action competence is rounded of to 1.00, so not that far off). The foresighted thinking competence is just short of meeting the 50% threshold for the variance accounted for by the first component. The reliability of all the seven constructs is above the 0.70 threshold. The interpersonal competence also does not meet the requirement of having a smaller variance accounted for than 50%, by far. Therefore, by looking more deeply into the data, the interpersonal competence is adjusted as follows. The construct does contain two complex variables (question D and E, see appendix III). There was no possibility of making two new constructs out of the interpersonal competence that had practical meaning. Therefore, the interpersonal competence now only contains questions A,B, C and F. this gives a Eigenvalue of the second component of 0.84, a variance accounted for of 52.17%, a Cronbach's Alpha of 0.68 and a KMO score of 0.68. Again, these scores are not perfect, but close enough to use this approach for further analysis.

3.4 Control variables

The question about the study programme of the students resulted in 14 different study programmes. These were reduced into 3 different components, namely Business and Management, Animal Husbandry Management and Rural and Environmental Management. This distinction was made based on the educational institutes own study programmes and associated domains. .

Table 3: Overview variables

Variable	*Values*
Social capital measures	
Bonding SC	Number of persons a respondent knows as a relative or as a friend
Bridging SC	Number of persons a respondent knows as an acquaintance
Range SC	Range of occupational prestige scores: highest occupational prestige score minus the lowest occupational prestige score
Competencies	
Systems thinking	Self-assessment mark from 1 (low) to 10 (high)
Embracing diversity and interdisciplinarity	Self-assessment mark from 1 (low) to 10 (high)
Foresighted thinking	Self-assessment mark from 1 (low) to 10 (high)
Normative	Self-assessment mark from 1 (low) to 10 (high)
Action	Self-assessment mark from 1 (low) to 10 (high)
Interpersonal	Self-assessment mark from 1 (low) to 10 (high)
Strategic management	Self-assessment mark from 1 (low) to 10 (high)
Control variables	
Gender	1 if respondent is male, 2 if respondent is female
Study year	1 for first year students, 2 for second year students etc.
Owning a company	1 for yes, 2 for no
Prior working experience	1 = none, 2 = as employee, 3 = as entrepreneur, 4 = as entrepreneur and as employee
Entrepreneurial parents	1 for yes, 2 for no
Study domain	1 for Business and Management, 2 for Animal and Husbandry Management, 3 for Rural and Environmental Management (see appendix I)
Location	1=Wageningen, 2=Leeuwarden
Self-Efficacy	Average of question 12J to 12O, 1 = disagree, 5 = agree

Gender

The field of entrepreneurship is traditionally dominated by males: the number of female entrepreneurs is lower than male entrepreneurs (Langowitz and Minniti, 2007; Thébaud, 2010). This indicates that there might be a gender effect on the intention to become an entrepreneur. With regard to sustainable entrepreneurship, research by Johnsson-Latham (2007) has shown that females

tend to live more sustainable than males, while males have double the intention to become an entrepreneur compared with woman (Reynolds, 2002). However, although there is a lot of literature on entrepreneurship and gender differences, not much research is done on sustainable entrepreneurship and gender differences.
There is already a lot of literature written about gender differences in the field of entrepreneurship, however not much is related to specifically sustainable entrepreneurship. Even less is known about gender differences that affect sustainable entrepreneurship competencies and social capital.

Working together is important trait of some of the competencies. This especially holds true for the embracing diversity and interdisciplinarity competence which deal with realising that sustainability issues are per definition issues that concern more disciplines. The interpersonal competence is also about working together as it is all about seeing that working on complex issues like sustainability is in most cases not something you do alone. And finally the strategic management competence involves arranging tasks, people and other resources. According to Burhmester (1998), men should show greater competence in domains that call for instrumental forms of behaviour whereas women report greater competence in domains that call for expressive forms of behaviour. This would imply that woman would perform better on these competencies than men.

Experience
Social capital formation takes place in different phases (Anderson and Jack, 2002) with different activities involved. These activities can contribute to an individual's entrepreneurial experience. Politis (2005) has developed a conceptual framework based on the distinction between entrepreneurial experience and entrepreneurial knowledge. One of the three pillars of the framework is the entrepreneur's career experience. According to Rae (2000), learning is a continuing process as entrepreneurial experiences are transformed into 'action' and 'doing'. Therefore, entrepreneurial experiences are expected to have an impact on social capital formation.
Furthermore, Davidsson and Honing (2003) have showed that although empirical results have been mixed, previous entrepreneurial experience (as well as labour market experience and management experience) are significantly related to entrepreneurial activity, particularly when controlling for factors such as industry and gender.

Family
Parents can contribute to one's social capital. Research has shown that the children of parent who are an entrepreneur, are more likely to become an entrepreneur themselves (Blau and Duncan, 1967; Western, 1994). This may be especially true for entrepreneurs in agricultural business, as it is common in that sector for a family owned business to be passed down from father to son. Kim et al. (2006), argues that these entrepreneurs who continue with a family business benefit from exposure to an entrepreneurial environment, from an early age on. This includes practical matters of running business operations and developing social networks to coping with the risks associated with entrepreneurship.
Even if a family is not entrepreneurial, family does provide one of the main components of the bonding dimension of social capital. Bonding social capital might provide an individual with emotional support or access to scarce resources

3.5 Analysis

In total 427 surveys were filled out (over the course of two years) of which 404 are suitable for analysis (see table 4). There were several reasons for surveys to be left out of the analysis. Some questionnaires had less than half of the all the questions filled out, others were filled out with a special pattern (e.g. 1,2,3,4,5,4,3,2,1,2,3 etc. for over half the questions). For the regression analysis, 392 surveys were used, because 12 respondents filled out the survey in both 2011 and 2012.

Table 4: Overview used surveys by year and location

	2011	2012	Total
Wageningen	116	112	228
Leeuwarden	96	80	176
Total	212	192	404

More general information on the results can be found in the first part of the next chapter. After these general characteristics, a Kruskal Wallis analysis was conducted to check for difference between the three study domains. It was not possible to meet the requirements needed for the more powerful ANOVA analysis, therefor this option was chosen to still get insight in possible differences between the three study domains. Possible (inter)correlations between the variables are calculated to provide a deeper understanding of the research variables and their (inter)correlations. After that, stepwise hierarchical regression analysis were conducted to measure the impact of sustainable entrepreneurial competences on social capital and vice versa. The first series of regression analysis focus on the effect of the sustainable entrepreneurship competencies on social capital. Here the social capital measures were the dependent variables (as described in table 3). Independent variables included gender, study year (as a measure of educational experience), entrepreneurial experience (by means of owning a company or having prior working experience as an entrepreneur), the entrepreneurial level of the parents and the study program (business oriented or non-business oriented). The second series of regression analysis show the effect of social capital on the sustainable entrepreneurship competencies. For this, for each competence as a construct, an hierarchical linear regression model was constructed. To gain more reliable results from the data, three new variables on the social capital measure were computed. These new variables give insight in whether or not a respondent score above average on the original social capital measures (bonding, bridging and range). In the first step, only the new social capital variable (displayed as “SC_High”) is added. Second, the control variable that influence external factors are added (gender, owning a company, prior working experience, and having entrepreneurial parents). In the third and final step two variables are added that the survey is conducted at a higher education institute. Students from higher study year might perceive themselves to be better at the competencies. Study domain is also added in this step, because in certain studies there might be more attention for sustainability issues. Only the four competencies that showed significant results on the SC-High variable are discussed here. The result for the remaining three competencies can be found in appendix II.

4. Results

In this chapter the results are discussed. We start with some general characteristics of the data. Second, the intercorrelations between the variables are discussed. Third, the Influence of sustainable entrepreneurial competencies on social capital is discussed and fourth, the reversed effect. We end this chapter with a brief summary of the results.

4.1 General characteristics

Table 5 shows the general characteristics for the 15 professions used in the survey. Respondents were asked to give the number of people they know of each profession. Knowing was defined as: *''Imagine when accidently meeting a person on the street, he or she would know the (first) name of that person, and both of them could start a conversation with each other."*

The prestige scores used in this research the occupational status index of Ganzeboom and Treiman (1996). Relatives and friends are grouped together as a measure for bonding social capital while the number of acquaintances is used as a measure for bridging capital.

Table 5: General characteristics for different professions

	Prestige score	***Social capital total***		***Relatives and friends***		***Acquaintances***	
		Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**
Academic/professor	78	8.51	45.06	3.44	35.48	3.79	10.14
Bank loan officer	60	1.96	4.89	0.77	3.27	0.73	1.50
Lawyer	73	1.76	3.52	0.78	2.10	0.81	2.35
Accountant/book keeper	62	2.57	4.73	1.06	2.61	1.05	2.25
Sales or marketing manager	60	2.64	5.73	0.99	2.90	1.12	3.14
Entrepreneur / small business owner	50	8.57	16.82	3.38	11.40	3.00	6.91
Physician or other health worker	73	3.92	6.32	1.71	3.20	1.61	4.41
Truck driver	33	3.07	6.10	0.99	2.68	1.31	3.65
Waiter or waitress	21	4.38	8.48	2.16	6.34	1.19	3.06
Policeman or policewoman	40	2.10	5.38	0.74	2.04	0.98	4.24
High-rank official in ministry	71	1.24	4.36	0.54	2.20	0.64	2.65
Construction worker	28	4.39	10.24	1.54	5.40	1.87	5.96
Cleaner	20	1.86	3.09	0.55	1.40	0.91	2.34
Electrician	44	2.14	3.48	0.84	1.58	0.78	1.56
Owner/manager of a large firm	70	2.96	5.65	1.30	4.06	1.15	3.32

Table 6 gives a general overview of the seven competencies used in this research. Respondents had to rate themselves by giving themselves a mark between 1 and 10 (1 = low and 10 = high) for every criterion. Each competence has between four and eight criteria. The strategic management competence scores lowest, meaning that the students consider themselves performing relatively poor on realising that working on sustainability related issues involves the design and implementation of my intervention. The interpersonal competence scores highest of all competencies meaning that they relatively well know that working on complex issues like sustainability is in most cases not something you do alone, but involves people with different backgrounds.

Table 6: General characteristics for different competencies

	Mean	SD
Embracing diversity and interdisciplinarity competence	5.89	1.65
Foresighted thinking competence	6.41	1.22
Systems-thinking competence	6.10	1.39
Normative competence	6.22	1.38
Action competence	5.49	1.52
Interpersonal competence (ABCF)	6.67	1.15
Strategic management competence	5.53	1.66

The three social capital measures are represented in table7. The only significant difference between the three study domains are found for the bridging dimension. This means that within the bridging dimension of social capital there is a difference between the three study domains. Looking deeper into the data and comparing the medians reveals that the difference is caused by differences between the domains of Business and Management and the Rural en Environmental Management and between the domains Business and Management and Animal Husbandry Management (see table 8).

Table 7: Different social capital measures for the three study domains

Groups compared	Social capital measure	Chi-Square	DF	Sig
Business, Rural, Animal	Bonding	4.12	2	0.128
Business, Rural, Animal	Bridging	10.68	2	0.005
Business, Rural, Animal	Range	1.56	2	0.459

Business = Business and Management; Rural =Rural en Environmental Management; Animal = Animal Husbandry Management

Table 8: Mann-Whitney U differences between study domains

Groups compared	Social capital measure	Mann-Whitney U	Z	Sig
Business, Rural	Bonding	6548.00	-0.336	0.737
Business, Rural	Bridging	5484.00	-2.421	0.015
Business, Rural	Range	6195.50	-1.045	0.296
Rural, Animal	Bonding	5411.50	-1.812	0.070
Rural, Animal	Bridging	5456.50	-1.728	0.084
Rural, Animal	Range	6221.50	-0.160	0.872
Business, Animal	Bonding	8487.50	-1.646	0.100
Business, Animal	Bridging	7712.00	-2.816	0.005
Business, Animal	Range	8890.00	-1.062	0.288

Business = Business and Management; Rural =Rural en Environmental Management; Animal = Animal Husbandry Management

4.2 (Inter)correlations)

Table 9 shows the (inter)correlations between the variables. The table shows that there are many some correlations between the control variables.

The competencies are greatly correlated with each other; all the correlations between them are significant. That was expected because all the competencies are about sustainable entrepreneurship and therefore some overlap was expected. There are also significant correlations between all three different measures of social capital.
Bonding social capital has a small significant correlation with gender, self-efficacy, having an own company, the action competence, the interpersonal competence and with the strategic management competence. All these correlations are positive, except for the correlation with gender and having an own company.. This indicates that males seem to have slightly more access to friends and relatives with their networks than female students and that students with their own company have slightly more access to friends and relatives with their networks than students who do not own a company.
The positive correlation for the interpersonal competence, the action competence and the strategic management competence, indicate that students with more access to friends and relatives in their network, consider themselves to perform better on these competencies.

Bridging social capital has a small significant positive correlation with prior working experience. This indicates that students with more working experience, have more access to acquaintances through their networks. Bridging social capital also has a strong positive correlation with bonding social capital. This implies that if you have a lot of friends and relatives, you also have many acquaintances. Bridging social capital also has a strong positive correlation with the range of social capital. This implies that if you have a lot of friends and relatives, chances are they are from many different professions.

The social capital range is a measure for how many different people one knows. It is negatively correlated with the location, indication that students from Wageningen have a smaller range of people with different professions in their networks than the students in Leeuwarden. The social capital range is also strongly positively correlated with the bonding and bridging social capital dimensions.

Table 9: (inter)correlations between research variables

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
1. Gender	-															
2. Study year	0.116*															
3. Self-Efficacy	-0.171**	0.101														
4. Location	-0.346**	-0.167**	0.097													
5. Owning a company	0.140**	-0.086	-0.292**	-0.110*												
6. Prior working experience	-0.164**	-0.020	0.317**	.0038	-0.324**											
7. Entrepreneurial parents	0.093	-0.019	-0.234**	-0.316**	0.179**	-0.283**										
8. Systems thinking	-0.207**	.0131*	0.297**	0.042	-0.098	0.145**	-0.024									
9. Embracing diversity and interdisciplinarity	-0.247**	-0.085	0.217**	0.190**	-0.186**	0.157**	0.025	0.463**								
10. Foresighted thinking	-0.096	.0122*	0.293**	0.032	-0.132*	0.175**	-0.004	0.608**	0.571**							
11. Normative	-0.078	-0.029	0.102	-0.039	-0.059	0.115*	0.034	0.532**	0.398**	0.451**						
12. Action	-0.024	0.019	0.163**	-0.194**	-0.026	0.116*	0.095	0.487**	0.417**	0.379**	0.697**					
13. Interpersonal	0.068	0.001	0.226**	-0.215**	-0.074	0.076	0.088	0.313**	0.259**	0.381**	0.355**	0.453**				
14. Strategic management	-0.101*	0.029	0.286**	-0.056	-0.156**	0.133*	0.048	0.505**	0.451**	0.384**	0.590**	0.697**	0.402**			
15. Bonding SC	-0.100*	-0.063	0.161**	-0.059	-0.180**	0.100	0.034	0.059	0.097	0.044	0.096	0.127*	0.120*	0.101*		
16. Bridging SC	-0.069	-0.028	0.065	-0.094	-0.053	0.111*	0.000	0.028	0.016	0.060	0.051	0.069	0.093	0.023	0.370**	
17. Range SC	0.037	0.053	0.076	-0.175**	0.067	0.059	-0.051	0.059	-0.082	0.033	0.036	0.009	0.056	0.066	0.164**	0.265**

*P<0.05, ** p< 0.01

4.3 Influence of sustainable entrepreneurial competencies on social capital

The previous correlation analysis did not correct for other factors that might influence the three social capital dimensions. Therefore, regression analysis is done to determine which factors explain social capital bonding, social capital bridging and social capital range.

In the first regression analysis, the three social capital measures (bonding, bridging and range) were the dependent variables, so there are three different models represented in the table 10. The different sustainable entrepreneurial competencies were added in the third step as independent variables. The regression analysis was carried out without the data of respondents that had a total of friends, family and acquaintances of zero. These entries were left out because it caused a huge, unsolvable skwedness in the data making it no longer suitable for regression analysis.

In the first model, where bonding social capital is the dependent variable, two competencies contribute significantly to the model. First, the foresighted thinking competence (at the $p<0.05$ level), second the systems thinking competence (at the $P<0.10$ level). This implies that a person that perceives themselve to be more competent at foresighted thinking, will have more friends and relatives. Since the beta is negative for the systems thinking competence, this implies that a person that perceives himself to be less competent at systems thinking, will have more friends and relatives. This issue is discussed in chapter 5. The only other factor that contributes significantly to the bonding social capital model is self-efficacy. This implies that that if someone stronger believes in his or her own abilities as an entrepreneur, they will have more friends and relatives.

In the second model, where bridging social capital is the dependent variable, the only competence that contributes significantly to the model is the embracing diversity and interdisciplinarity competence. This implies that a person that perceives themselve to be more competent at embracing diversity and interdisciplinarity, will have more friends and relatives. The only other factor that contributes significantly to the bridging social capital model is the study domain of Rural and Environmental Management. This implies that that if respondents from the study domain of Rural and Environmental Management, have more friends and family members.

In the third model, where the range of social capital is the dependent variable, none of the competencies contribute significantly to the model.

Table 10: Regression analysis influence of sustainable entrepreneurial competencies on social capital

	Bonding				Bridging				Range			
	B	***SE B***	***ß***	***Sig***	***B***	***SE B***	***ß***	***Sig***	***B***	***SE B***	***ß***	***Sig***
Step 1												
(Constant)	0.820	0.157		0.000**	0.753	0.187		0.000**	1.032	0.135		0.000**
Gender	-0.005	0.039	-0.007	0.908	0.005	0.047	0.007	0.912	-0.019	0.034	-0.037	0.574
Year of study	0.043	0.031	0.086	0.168	0.029	0.037	0.047	0.434	0.034	0.027	0.078	0.210
StudyDomain_Business	0.064	0.093	0.103	0.491	0.105	0.110	0.137	0.344	-0.089	0.080	-0.167	0.263
StudyDomain_Animal	0.044	0.095	0.063	0.647	-0.063	0.113	-0.075	0.576	-0.091	0.082	-0.155	0.263
StudyDomain_Rural	0.060	0.093	0.094	0.523	0.180	0.111	0.231	0.106	-0.072	0.080	-0.132	0.371
Self_Efficacy	-0.020	0.026	-0.047	0.453	-0.010	0.031	-0.019	0.747	-0.016	0.023	-0.044	0.475
Location	0.023	0.041	0.037	0.568	-0.010	0.048	-0.013	0.838	0.004	0.035	0.008	0.907
Step 2												
(Constant)	1.133	0.246		0.000**	0.993	0.293		0.001**	0.940	0.213		0.000**
Gender	0.005	0.039	0.008	0.903	0.012	0.047	0.016	0.804	-0.016	0.034	-0.030	0.645
Year of study	0.041	0.031	0.081	0.192	0.026	0.037	0.043	0.478	0.036	0.027	0.083	0.189
StudyDomain_Business	0.039	0.093	0.062	0.679	0.111	0.111	0.145	0.319	-0.081	0.081	-0.150	0.320
StudyDomain_Animal	0.022	0.095	0.032	0.820	-0.047	0.114	-0.056	0.680	-0.085	0.083	-0.144	0.306
StudyDomain_Rural	0.053	0.094	0.083	0.574	0.206	0.111	0.266	0.066**	-0.061	0.081	-0.112	0.453
Self_Efficacy	-0.049	0.028	-0.114	0.088*	-0.024	0.034	-0.046	0.476	-0.015	0.025	-0.042	0.534
Location	-0.009	0.043	-0.014	0.837	-0.018	0.051	-0.023	0.731	0.000	0.037	0.001	0.991
Own company	-0.045	0.067	-0.044	0.503	-0.038	0.080	-0.031	0.631	0.066	0.058	0.075	0.259
PriorWExp_Employee	0.015	0.054	0.023	0.777	-0.074	0.064	-0.089	0.250	-0.026	0.047	-0.044	0.583
PriorWExp_Entrepreneur	0.121	0.095	0.096	0.203	-0.086	0.113	-0.056	0.448	0.010	0.083	0.010	0.899
PriorWExp_Both	0.108	0.093	0.089	0.247	0.104	0.111	0.070	0.350	0.070	0.081	0.067	0.388
Entrepreneurial parents	-0.076	0.040	-0.126	0.061*	-0.054	0.048	-0.074	0.259	-0.021	0.035	-0.041	0.547
Step 3												
(Constant)	1.240	0.280		0.000**	0.987	0.333		0.003**	0.936	0.247		0.000**
Gender	-0.009	0.040	-0.015	0.825	0.018	0.048	0.024	0.710	-0.015	0.036	-0.029	0.680
Year of study	0.038	0.032	0.075	0.247	0.033	0.038	0.053	0.395	0.032	0.029	0.074	0.264
StudyDomain_Business	0.039	0.094	0.062	0.680	0.105	0.111	0.138	0.343	-0.079	0.083	-0.147	0.339
StudyDomain_Animal	0.007	0.096	0.011	0.940	-0.042	0.114	-0.050	0.714	-0.083	0.085	-0.141	0.327
StudyDomain_Rural	0.046	0.094	0.073	0.626	0.213	0.112	0.274	0.058*	-0.060	0.083	-0.110	0.472
Self_Efficacy	-0.054	0.030	-0.128	0.076*	-0.019	0.036	-0.037	0.596	-0.019	0.027	-0.051	0.491
Location	-0.038	0.047	-0.061	0.413	-0.078	0.056	-0.101	0.164	-0.007	0.041	-0.013	0.862
Own company	-0.036	0.068	-0.035	0.602	-0.020	0.081	-0.016	0.803	0.068	0.060	0.077	0.262
PriorWExp_Employee	0.016	0.055	0.023	0.771	-0.073	0.065	-0.088	0.259	-0.028	0.048	-0.048	0.561
PriorWExp_Entrepreneur	0.153	0.096	0.122	0.112	-0.066	0.114	-0.043	0.562	0.019	0.085	0.018	0.822
PriorWExp_Both	0.098	0.094	0.080	0.297	0.083	0.111	0.056	0.455	0.075	0.083	0.071	0.368
Entrepreneurial parents	-0.080	0.041	-0.134	0.049**	-0.066	0.048	-0.089	0.174	-0.021	0.036	-0.040	0.564
Diversity Mean	0.004	0.015	0.020	0.805	0.042	0.017	0.190	0.018**	0.002	0.013	0.016	0.849
Foresighted Mean	0.044	0.022	0.170	0.048**	0.031	0.026	0.098	0.236	0.005	0.019	0.022	0.803
Systems Mean	-0.038	0.020	-0.159	0.055*	-0.035	0.023	-0.121	0.132	0.002	0.017	0.010	0.909
Normative Mean	-0.018	0.021	-0.073	0.413	0.013	0.025	0.045	0.606	-0.010	0.019	-0.047	0.612
Action Mean	-0.029	0.022	-0.135	0.197	-0.040	0.026	-0.152	0.133	-0.012	0.020	-0.067	0.533
Strategic Mean	0.014	0.018	0.076	0.420	-0.009	0.021	-0.038	0.678	-0.001	0.016	-0.004	0.970
Interpersonal_ABCF_Mean	0.013	0.019	0.051	0.485	0.000	0.022	-0.001	0.985	0.015	0.016	0.066	0.375

** P<0.05; * P<0.10

Model with Bonding: step 1 R^2 = 0.012, step 2 ΔR^2 = 0.036 (p=0.077), step 3 ΔR^2 = 0.039 (p=0.137)

Model with Bridging: step 1 R^2 = 0.071, step 2 ΔR^2 = 0.025 (p=0.171), step 3 ΔR^2 = 0.044 (p=0.069)

Model with Range: step 1 R^2 = 0.012, step 2 ΔR^2 = 0.013 (p=0.602), step 3 ΔR^2 = 0.008 (p=0.946)

4.4 Influence of social capital on the sustainable entrepreneurial competencies

To gain more insight into the factors that influence the sustainable entrepreneurial competencies, another series of regression analysis, were done on the reversed effect as discussed in the previous paragraph.

Only the competencies that showed any significance in adding the social capital measures in the final step are discussed here. Appendix II shows the remaining regression analysis. The three models used differ in the type of social capital measure that is added in step 3.

Table 11 shows the results for the regression analysis of the interpersonal competence. Regarding bonding social capital (model 1), this variable contributes significantly to the model, whereas bridging social capital (model 2) and the range of social capital (model 3) do not. This implies that there is a significant difference between respondents with a higher than average number of friends and relatives and people with a lower than average number of friends and relatives in the way they score self-perceived on the interpersonal competence. Since the beta score is positive, people with a higher than average number of friends and relatives, score higher on the interpersonal competence.

Other variables that are significantly contributing to this model are self-efficacy (in all steps), location, (in all steps), having an own company (step 2 and 3). Furthermore, prior working experience as an employee and having entrepreneurial parents contribute to the model at a $p<0.10$ level. The contribution of self-efficacy implies that if someone stronger believes in his or her own abilities as an entrepreneur, they will score higher on the interpersonal competence. The contribution of location implies that students from van Hall Larenstein Wageningen perceive themselves to be more competent with respect to aspects from the interpersonal competence. The contribution of having an own company to the model implies that respondents who have their own company, perceive themselves to be more competent with respect to aspects from the interpersonal competence. Model 2 and model 3 only differ in the type of social capital measure was added in step three, so only minor differences exists between these models and model 1 with respect to the variables discussed.

Table 11: Regression analysis Interpersonal competence

Interpersonal	Model 1				Model 2				Model 3			
	B	*Se B*	*ß*	*Sig*	*B*	*Se B*	*ß*	*Sig*	*B*	*Se B*	*ß*	*Sig*
Step 1												
(Constant)	6.288	0.610		0.000**	6.251	0.643		0.000**	6.161	0.600		0.000**
Gender	0.008	0.153	0.003	0.960	0.071	0.162	0.030	0.659	0.048	0.152	0.020	0.755
Year of study	-0.108	0.120	-0.057	0.369	-0.139	0.123	-0.073	0.257	-0.160	0.118	-0.083	0.177
StudyDomain_Business	0.139	0.370	0.058	0.707	0.078	0.398	0.032	0.845	0.290	0.346	0.119	0.402
StudyDomain_Animal	0.066	0.378	0.025	0.862	-0.098	0.417	-0.034	0.815	0.156	0.354	0.058	0.659
StudyDomain_Rural	0.027	0.372	0.011	0.942	-0.121	0.400	-0.050	0.762	0.141	0.347	0.057	0.685
Self_Efficacy	0.408	0.103	0.249	0.000**	0.425	0.107	0.257	0.000**	0.418	0.102	0.253	0.000**
Location	-0.544	0.159	-0.227	0.001**	-0.521	0.166	-0.211	0.002**	-0.549	0.156	-0.225	0.001**
Step 2												
(Constant)	6.836	0.934		0.000**	6.784	0.987		0.000**	6.696	0.936		0.000**
Gender	-0.002	0.152	-0.001	0.992	0.077	0.159	0.032	0.631	0.060	0.150	0.026	0.690
Year of study	-0.112	0.119	-0.059	0.347	-0.153	0.120	-0.080	0.205	-0.164	0.116	-0.085	0.159
StudyDomain_Business	0.047	0.367	0.020	0.898	0.013	0.392	0.006	0.973	0.183	0.343	0.075	0.595
StudyDomain_Animal	-0.031	0.375	-0.012	0.934	-0.167	0.410	-0.058	0.684	0.049	0.351	0.018	0.890
StudyDomain_Rural	-0.072	0.369	-0.030	0.845	-0.215	0.393	-0.089	0.584	0.031	0.344	0.013	0.928
Self_Efficacy	0.367	0.111	0.224	0.001**	0.369	0.115	0.223	0.002**	0.358	0.109	0.217	0.001**
Location	-0.542	0.166	-0.226	0.001**	-0.503	0.173	-0.204	0.004**	-0.540	0.162	-0.221	0.001**
Own company	-0.528	0.249	-0.140	0.035**	-0.610	0.264	-0.157	0.022**	-0.568	0.262	-0.141	0.031**
PriorWExp_Employee	0.390	0.210	0.151	0.064*	0.526	0.216	0.199	0.016**	0.478	0.205	0.182	0.020**
PriorWExp_Entrepreneur	0.488	0.354	0.106	0.170	0.506	0.393	0.098	0.199	0.677	0.359	0.139	0.060*
PriorWExp_Both	-0.185	0.348	-0.041	0.596	-0.078	0.358	-0.018	0.828	-0.088	0.347	-0.019	0.801
Entrepreneurial parents	0.252	0.154	0.109	0.102	0.296	0.162	0.126	0.069*	0.277	0.152	0.118	0.070*
Step 3												
(Constant)	6.349	0.951		0.000**	6.651	0.997		0.000**	6.142	1.349		0.000**
Gender	0.036	0.152	0.015	0.814	0.084	0.160	0.036	0.598	0.065	0.151	0.028	0.667
Year of study	-0.079	0.119	-0.042	0.506	-0.156	0.120	-0.082	0.195	-0.163	0.116	-0.085	0.162
StudyDomain_Business	-0.034	0.366	-0.014	0.926	0.012	0.392	0.005	0.975	0.165	0.345	0.068	0.633
StudyDomain_Animal	-0.118	0.374	-0.045	0.752	-0.142	0.411	-0.049	0.730	0.026	0.354	0.010	0.941
StudyDomain_Rural	-0.101	0.366	-0.042	0.783	-0.171	0.396	-0.070	0.666	0.008	0.347	0.003	0.981
Self_Efficacy	0.337	0.111	0.206	0.003**	0.354	0.116	0.214	0.003**	0.344	0.112	0.208	0.002**
Location	-0.502	0.166	-0.210	0.003**	-0.496	0.173	-0.201	0.005**	-0.526	0.164	-0.216	0.002**
Own company	-0.504	0.247	-0.133	0.043**	-0.614	0.264	-0.158	0.021**	-0.571	0.262	-0.141	0.030**
PriorWExp_Employee	0.383	0.208	0.148	0.067*	0.503	0.217	0.191	0.021**	0.476	0.205	0.182	0.021**
PriorWExp_Entrepreneur	0.452	0.352	0.099	0.200	0.469	0.395	0.091	0.237	0.681	0.359	0.140	0.059*
PriorWExp_Both	-0.239	0.346	-0.053	0.491	-0.115	0.360	-0.026	0.750	-0.092	0.348	-0.020	0.792
Entrepreneurial parents	0.252	0.152	0.110	0.099*	0.292	0.162	0.124	0.073*	0.280	0.152	0.120	0.067*
Bonding (Model 1)	0.392	0.175	0.140	0.026**								
Bridging (Model 2)					0.165	0.169	0.064	0.329				
Range (Model3)									0.343	0.601	0.035	0.568

** P<0.05; * P<0.10

Model 1: Step 1 R^2 = 0.102, step 2 ΔR^2 = 0.048 (p=0.021), step 3 ΔR^2 = 0.017 (p=0.026)

Model 2: Step 1 R^2 = 0.113, step 2 ΔR^2 = 0.062 (p=0.006), step 3 ΔR^2 = 0.004 (p=0.329)

Model 3: Step 1 R^2 = 0.109, step 2 ΔR^2 = 0.055 (p=0.007), step 3 ΔR^2 = 0.001 (p=0.568)

Table 12 shows the results for the regression analysis of the strategic management competence. Regarding bonding social capital (model 1), this variable contributes significantly (although only at the $p<0.10$ level) to the model, whereas bridging social capital (model 2) and the range of social capital (model 3) do not. This implies that there is a significant difference between respondents with a higher than average number of friends and relatives and people with a lower than average number of friends and relatives in the way they score self-perceived on the strategic management competence. Since the beta score is positive, people with a higher than average number of friends and relatives, score higher on the strategic management competence.

Other variables that are significantly contributing to this model are self-efficacy (in all steps), having an own company (step 2 and 3) and having entrepreneurial parents (step 2 and 3). Furthermore, prior working experience as an entrepreneur contributes to the model at a $p<0.10$ level. The contribution of self-efficacy implies that if someone stronger believes in his or her own abilities as an entrepreneur, they will score higher on the strategic management competence. The contribution of having an own company to the model implies that respondents who have their own company, perceive themselves to be more competent with respect to aspects from the strategic management competence. The contribution of having entrepreneurial parents implies that respondents who do not have parents with their own company, perceive themselves to be more competent with respect to aspects from the strategic management competence. Model 2 and model 3 only differ in the type of social capital measure was added in step three, so only minor differences exists between these models and model 1 with respect to the variables discussed. One difference is gender in model 2 in step 1.

Table 12: Regression analysis strategic management competence

Strategic	Model 1				Model 2				Model 3			
	B	*Se B*	*ß*	*Sig*	*B*	*Se B*	*ß*	*Sig*	*B*	*Se B*	*ß*	*Sig*
Step 1												
(Constant)	4.420	0.865		0.000**	4.197	0.884		0.000**	4.551	0.866		0.000**
Gender	-0.195	0.216	-0.060	0.368	-0.381	0.221	-0.118	0.086*	-0.235	0.217	-0.071	0.280
Year of study	0.044	0.169	0.016	0.797	0.197	0.167	0.076	0.240	0.038	0.169	0.014	0.822
StudyDomain_Business	-0.181	0.524	-0.054	0.730	0.077	0.547	0.023	0.888	-0.359	0.498	-0.103	0.472
StudyDomain_Animal	-0.214	0.535	-0.058	0.690	0.003	0.572	0.001	0.996	-0.273	0.511	-0.071	0.594
StudyDomain_Rural	-0.177	0.526	-0.052	0.737	0.062	0.550	0.019	0.910	-0.269	0.500	-0.077	0.591
Self_Efficacy	0.600	0.145	0.260	0.000**	0.576	0.147	0.254	0.000**	0.617	0.146	0.261	0.000**
Location	-0.227	0.224	-0.067	0.313	-0.152	0.227	-0.045	0.505	-0.240	0.225	-0.069	0.287
Step 2												
(Constant)	4.810	1.316		0.000**	4.596	1.371		0.001**	5.181	1.350		0.000**
Gender	-0.140	0.215	-0.043	0.516	-0.318	0.222	-0.099	0.153	-0.164	0.217	-0.049	0.450
Year of study	0.046	0.167	0.017	0.785	0.183	0.167	0.070	0.275	0.028	0.168	0.010	0.866
StudyDomain_Business	-0.225	0.521	-0.067	0.666	0.042	0.549	0.013	0.939	-0.396	0.500	-0.114	0.429
StudyDomain_Animal	-0.295	0.533	-0.080	0.580	-0.098	0.573	-0.025	0.864	-0.347	0.511	-0.091	0.498
StudyDomain_Rural	-0.206	0.523	-0.061	0.694	0.017	0.550	0.005	0.976	-0.276	0.501	-0.079	0.582
Self_Efficacy	0.544	0.158	0.236	0.001**	0.534	0.160	0.235	0.001**	0.552	0.159	0.234	0.001**
Location	-0.189	0.234	-0.056	0.422	-0.136	0.241	-0.040	0.572	-0.206	0.234	-0.059	0.380
Own company	-0.721	0.347	-0.137	0.039**	-0.606	0.361	-0.115	0.094*	-0.787	0.373	-0.138	0.036**
PriorWExp_Employee	0.258	0.298	0.071	0.387	0.174	0.302	0.048	0.566	0.202	0.298	0.054	0.498
PriorWExp_Entrepreneur	0.857	0.503	0.132	0.090*	0.702	0.551	0.099	0.204	0.838	0.523	0.120	0.110
PriorWExp_Both	0.106	0.494	0.017	0.831	0.026	0.501	0.004	0.958	0.036	0.505	0.005	0.943
Entrepreneurial parents	0.534	0.215	0.166	0.014**	0.443	0.224	0.138	0.050*	0.499	0.218	0.150	0.023**
Step 3												
(Constant)	4.285	1.349		0.002**	4.467	1.386		0.001**	3.201	1.952		0.102
Gender	-0.100	0.215	-0.031	0.645	-0.311	0.223	-0.096	0.164	-0.147	0.217	-0.044	0.499
Year of study	0.081	0.168	0.030	0.632	0.180	0.168	0.069	0.283	0.033	0.168	0.012	0.846
StudyDomain_Business	-0.311	0.522	-0.093	0.552	0.041	0.550	0.012	0.940	-0.459	0.501	-0.133	0.360
StudyDomain_Animal	-0.387	0.534	-0.105	0.469	-0.077	0.575	-0.020	0.893	-0.426	0.514	-0.111	0.407
StudyDomain_Rural	-0.238	0.522	-0.070	0.649	0.058	0.555	0.018	0.917	-0.358	0.503	-0.102	0.477
Self_Efficacy	0.512	0.158	0.222	0.001**	0.519	0.162	0.229	0.002**	0.504	0.162	0.213	0.002**
Location	-0.146	0.235	-0.043	0.536	-0.128	0.241	-0.038	0.596	-0.156	0.237	-0.045	0.510
Own company	-0.693	0.346	-0.132	0.046**	-0.608	0.361	-0.116	0.094*	-0.795	0.372	-0.140	0.033**
PriorWExp_Employee	0.251	0.297	0.069	0.400	0.152	0.304	0.042	0.618	0.195	0.298	0.052	0.513
PriorWExp_Entrepreneur	0.818	0.502	0.127	0.104	0.667	0.554	0.094	0.230	0.852	0.522	0.122	0.104
PriorWExp_Both	0.049	0.494	0.008	0.921	-0.007	0.504	-0.001	0.989	0.023	0.504	0.003	0.964
Entrepreneurial parents	0.535	0.215	0.166	0.013**	0.439	0.225	0.136	0.052*	0.513	0.218	0.154	0.019**
Bonding (Model 1)	0.415	0.250	0.105	0.098*								
Bridging (Model 2)					0.156	0.235	0.044	0.509				
Range (Model3)									1.225	0.873	0.087	0.162

** P<0.05; * P<0.10

Model 1: Step 1 R^2 = 0.079, step 2 ΔR^2 = 0.046 (p=0.030), step 3 ΔR^2 = 0.010 (p=0.098)

Model 2: Step 1 R^2 = 0.096, step 2 ΔR^2 = 0.030 (p=0.178), step 3 ΔR^2 = 0.002 (p=0.509)

Model 3: Step 1 R^2 = 0.082, step 2 ΔR^2 = 0.040 (p=0.045), step 3 ΔR^2 = 0.007 (p=0.162)

Table 13 shows the results for the regression analysis of the action competence. Regarding bonding social capital (model 1), this variable contributes significantly to the model, whereas bridging social capital (model 2) and the range of social capital (model 3) do not. This implies that there is a significant difference between respondents with a higher than average number of friends and relatives and people with a lower than average number of friends and relatives in the way they score self-perceived on the action competence. Since the beta score is positive, people with a higher than average number of friends and relatives, score higher on the action competence. This is further discussed in chapter 5.

Other variables that are significantly contributing to this model are self-efficacy (at $P<0.05$ level in step 1, at $P<0.10$ level in step 2, not significant in step 3), location (all steps) and prior working experience (step 2 and 3).Furthermore, having entrepreneurial parents contributes to the model at a $p<0.10$ level.

The contribution of self-efficacy implies that if someone stronger believes in his or her own abilities as an entrepreneur, they will score higher on the action competence. The contribution of location to the model implies that respondents who study in Wageningen, perceive themselves to be more competent with respect to aspects from the action competence, than respondents from Leeuwarden. The contribution of prior working experience as an entrepreneur implies that respondents who did not have prior working experience as an entrepreneurs, perceive themselves to be more competent with respect to aspects from the action competence. Model 2 and model 3 only differ in the type of social capital measure was added in step three, so only minor differences exists between these models and model 1 with respect to the variables discussed. One difference is that self-efficacy is still significant (at $p<0.05$ or at $p<0.10$) in all steps in model 2 and 3.

Table13: Regression analysis action competence

Action	Model 1				Model 2				Model 3			
	B	*Se B*	*ß*	*Sig*	*B*	*Se B*	*ß*	*Sig*	*B*	*Se B*	*ß*	*Sig*
Step 1												
(Constant)	6.038	0.802		0.000**	5.753	0.821		0.001**	6.054	0.791		0.000**
Gender	-0.148	0.200	-0.049	0.462	-0.135	0.205	-0.046	0.511	-0.127	0.199	-0.042	0.523
Year of study	-0.039	0.157	-0.016	0.806	-0.011	0.156	-0.004	0.945	-0.061	0.155	-0.024	0.692
StudyDomain_Business	-0.078	0.486	-0.025	0.873	0.059	0.509	0.019	0.907	-0.241	0.456	-0.076	0.597
StudyDomain_Animal	-0.217	0.497	-0.063	0.662	-0.159	0.531	-0.044	0.766	-0.274	0.467	-0.079	0.558
StudyDomain_Rural	-0.433	0.488	-0.138	0.376	-0.361	0.511	-0.119	0.480	-0.524	0.457	-0.164	0.253
Self_Efficacy	0.298	0.135	0.140	0.028**	0.303	0.136	0.145	0.027**	0.323	0.134	0.150	0.016**
Location	-0.718	0.208	-0.230	0.001**	-0.634	0.211	-0.204	0.003**	-0.706	0.206	-0.222	0.001**
Step 2												
(Constant)	5.059	1.227		0.000**	4.339	1.268		0.001**	4.794	1.236		0.000***
Gender	-0.089	0.200	-0.030	0.656	-0.067	0.206	-0.023	0.745	-0.059	0.199	-0.019	0.768
Year of study	-0.011	0.156	-0.005	0.942	0.010	0.155	0.004	0.947	-0.043	0.154	-0.017	0.780
StudyDomain_Business	-0.087	0.486	-0.028	0.858	0.095	0.508	0.031	0.852	-0.218	0.458	-0.069	0.633
StudyDomain_Animal	-0.311	0.497	-0.091	0.532	-0.223	0.531	-0.062	0.674	-0.347	0.468	-0.100	0.459
StudyDomain_Rural	-0.450	0.488	-0.143	0.357	-0.369	0.509	-0.121	0.470	-0.512	0.459	-0.160	0.265
Self_Efficacy	0.268	0.147	0.126	0.070*	0.288	0.149	0.138	0.053*	0.313	0.145	0.145	0.032**
Location	-0.755	0.219	-0.242	0.001**	-0.623	0.223	-0.200	0.006**	-0.705	0.215	-0.222	0.001**
Own company	0.090	0.324	0.019	0.780	0.157	0.334	0.032	0.639	0.113	0.341	0.022	0.740
PriorWExp_Employee	0.307	0.278	0.091	0.271	0.340	0.280	0.102	0.226	0.253	0.273	0.074	0.354
PriorWExp_Entrepreneur	1.334	0.470	0.223	0.005**	1.328	0.510	0.204	0.010**	1.302	0.479	0.205	0.007**
PriorWExp_Both	0.561	0.461	0.096	0.225	0.645	0.463	0.115	0.165	0.554	0.462	0.092	0.232
Entrepreneurial parents	0.336	0.201	0.112	0.096*	0.431	0.208	0.146	0.039**	0.431	0.200	0.142	0.032**
Step 3												
(Constant)	4.411	1.253		0.001**	4.256	1.283		0.001**	4.234	1.793		0.019**
Gender	-0.039	0.200	-0.013	0.844	-0.062	0.206	-0.021	0.763	-0.054	0.200	-0.018	0.788
Year of study	0.032	0.156	0.013	0.838	0.009	0.155	0.004	0.956	-0.042	0.154	-0.017	0.786
StudyDomain_Business	-0.193	0.484	-0.062	0.690	0.095	0.509	0.031	0.853	-0.236	0.460	-0.075	0.608
StudyDomain_Animal	-0.425	0.496	-0.124	0.392	-0.210	0.532	-0.058	0.694	-0.370	0.472	-0.106	0.434
StudyDomain_Rural	-0.489	0.485	-0.156	0.314	-0.342	0.513	-0.112	0.506	-0.535	0.463	-0.168	0.248
Self_Efficacy	0.229	0.147	0.107	0.121	0.279	0.150	0.134	0.065*	0.299	0.149	0.139	0.046**
Location	-0.702	0.218	-0.225	0.001**	-0.618	0.223	-0.199	0.006**	-0.691	0.217	-0.218	0.002**
Own company	0.125	0.321	0.026	0.697	0.156	0.334	0.032	0.642	0.111	0.342	0.021	0.746
PriorWExp_Employee	0.297	0.276	0.088	0.282	0.326	0.282	0.098	0.249	0.251	0.273	0.073	0.359
PriorWExp_Entrepreneur	1.286	0.466	0.215	0.006**	1.306	0.513	0.200	0.012**	1.306	0.480	0.205	0.007**
PriorWExp_Both	0.491	0.458	0.084	0.285	0.624	0.466	0.111	0.182	0.551	0.463	0.091	0.236
Entrepreneurial parents	0.336	0.199	0.113	0.093*	0.429	0.208	0.145	0.040**	0.434	0.200	0.143	0.031**
Bonding (model 1)	0.513	0.232	0.140	0.028**								
Bridging (model 2)					0.100	0.218	0.031	0.648				
Range (model3)									0.346	0.802	0.027	0.667

** P<0.05; * P<0.10

Model 1: Step 1 R^2 = 0.076, step 2 ΔR^2 = 0.036 (p=0.084), step 3 ΔR^2 = 0.018 (p=0.028)

Model 2: Step 1 R^2 = 0.078, step 2 ΔR^2 = 0.037 (p=0.093, step 3 ΔR^2 = 0.001 (p=0.648)

Model 3: Step 1 R^2 = 0.076, step 2 ΔR^2 = 0.038 (p=0.061), step 3 ΔR^2 = 0.001 (p=0.667)

4.5 Summary of results

Table 14 shows a summary of the results of the influence of social capital on the sustainable entrepreneurship competencies. When a measure of social capital is added to the model, this variable sometimes contributes significantly to the model explaining the different sustainable entrepreneurship competencies. As indicated by the asterix in the table this can be a the p<0.05 level or at the P<0.10 level. Three competencies can be partly explained by the bonding social capital measure.

Table 14: Summary results influence of social capital on the sustainable entrepreneurship competencies

	Bonding	Bridging	Range
Interpersonal competence	**		
Strategic management competence	*		
Action competence	**		

** P<0.05; * P<0.10

Table 15 shows a summary of the reversed effect: the influence of the sustainable entrepreneurship competencies on social capital. When the competencies are added to the model in step 2, the systems thinking competence contributes significantly to the bonding dimension of social capital. This means that if a person themselves scores higher on the systems thinking competence, their bonding social capital (the amount of friends and relatives) will probably be higher. Embracing diversity and interdisciplinarity contributes significantly to the bridging dimension of social capital. This means that if a person scores themselves high on this competence, they will probably have more acquaintances (e.g. the bridging dimension of social capital). The foresighted thinking competence contributes significantly to the bonding dimension of social capital. This means that if a person themselves scores higher on the foresighted thinking competence, their bonding social capital (the amount of friends and relatives) will probably be higher.

Table15: Summary results influence of sustainable entrepreneurship competencies on social capital

	Bonding	Bridging	Range
Systems thinking competence	*		
Embracing diversity and interdisciplinarity		**	
Foresighted thinking competence	**		

** P<0.05; * P<0.10

5. Discussion and conclusion

Success as an entrepreneur does not solely depend on being "born as an entrepreneur", but depends more on learning certain skills and competencies. Education can help nascent entrepreneurs develop entrepreneurial competencies, but these competences can also develop outside the school environment. There are many potential factors influencing these competencies and we have focussed on social capital theory to explain how these competencies can develop by using social capital as a social structure and to facilitate certain actions of individuals who are within the structure. The reversed effect was also studied to show the influence of sustainable entrepreneurial competencies is on social capital of dormant or nascent entrepreneurs. We have used three dimensions of social capital: bonding, bridging and the range. The competencies that are used were seven previously empirically tested competencies for sustainable entrepreneurship: embracing diversity and interdisciplinarity competence, foresighted thinking competence, Systems thinking competence, Normative competence, action competence, interpersonal competence and the strategic management competence.

The aim of this research project was to identify and understand the influence of social capital on sustainable entrepreneurship competencies in the educational setting. First, a literature review was executed considering relevant theories concerning sustainable- and entrepreneurial competencies, social capital theory, and factors influencing social capital formation. This literature study reveals that social capital is a much-debated concept, with many different definitions, making it difficult to compare empirical results on social capital research. By using different dimensions of social capital (strong and weak ties, bridging and bonding), more results become comparable. Numerous factors have shown to have an influence on social capital formation, among others education, gender, family and entrepreneurial experience are important. The literature review resulted in a framework used in the further analysis of this research.

In the empirical part of this research, it is shown that the seven different sustainable entrepreneurial competencies are highly inter-correlated with each other. Still it was possible with regression analysis to show that there are influences of sustainable entrepreneurial competencies on social capital. Hierarchical regression showed that three competencies (interpersonal competence, action competence and the strategic management competence) could be partly explained by social capital, but only by the bonding dimension of social capital. Looking at the reversed effect (the influence of the sustainable entrepreneurship competencies on social capital), results show that the embracing diversity and interdisciplinarity competence, systems thinking competence and the foresighted thinking competence have a positive effect on the bonding or bridging dimensions of social capital. However, because of the huge skewdness in the data and the high amount of respondents that had to be left out of the analysis these conclusions should be interpreted carefully.

We have shown that three competencies can be, at least partly, explained by a social capital measure, in all cases the bonding social capital dimension. This implies that people with many close friends and relatives, can be expected to be score higher for the three specific competencies (e.g. interpersonal competence, strategic management competence and the action competence). For the

interpersonal competence, this is in line with what would be expected since it was defined as "*The ability to motivate, enable, and facilitate collaborative and participatory sustainability activities and research".* People who have many close friends and relatives, can be expected to have learned better to motivate others from their interactions with others. This would be especially true for friends and relatives since those are the people with whom you participate the most in collaborative activities. This finding is not completely in line with the argument of Villar and Albertín (2010) who state that there can also be problems with student's perceptions of their interpersonal competence with students who consider their personality as something that cannot be modified by training and education. Those students would not be likely to improve their relationship skills. This inhibits their involvement in social situations, thereby reducing their number of social ties of social capital. However, we cannot be sure if the students of the survey consider their personality as something that cannot be modified by training and education.

We have argued that people with many close friends and relatives can be expected to score higher on the interpersonal competence based on research by Wittenberg and Reis (1988). They have argued that the interpersonal competence is composed out of five dimensions: initiating relationships, self-disclosure, asserting displeasure with others' actions, providing emotional support and managing interpersonal conflicts. Especially the dimension of initiation relationships would explain that people with many friends, are somehow better at initiating relationships with others, which in turn enlarges the potential of a large network and thus a bigger social capital in terms of the amount of friends. This is in line with the findings of our research.

For the strategic management competence, we have shown that people with many close friends and relatives score higher on this competence than people with a lower number of close friends and relatives. We have argued that this competence includes skills in planning, organizing and bringing together resources and therefore, having a large network will help bring together resources and people thus resulting in a higher score on this competence.

The embracing diversity and interdisciplinarity has shown a positive correlation with the bonding dimension of social capital. This implies that people with a large network of friends and family members, score higher on the embracing diversity and interdisciplinarity competence than people with a smaller network of friends and relatives. We have defined this competence as "*The ability to structure relations, spot issues and recognize the legitimacy of other viewpoints in the business decision making process about environmental, social and economic issues, to involve all stakeholders and to maximize the exchange of ideas and learning across different groups (inside and outside the organization) and different disciplines*.". Thus competence deals with the ability to work well together with other people from different backgrounds.

This competence has also shown a positive reaction to the reversed correlation. This implies that people who are better at the embracing diversity and interdisciplinarity, have a larger diverse network, with many acquaintances than people who score lower on this competence. This is in line with what would be expected based on the literature review. We have argued that people with a large diverse network have more access to other people from different backgrounds than people with a smaller less diverse network. Our results are in line with Blau (1974), who showed that an individual's access to learning opportunities and resources can only be leveraged if he or she is linked

with others in diverse positions providing varied information. However, we have also argued that if a person has a large network, but mainly consisting of strong ties, this argument would not hold. This contradicts with the results of our study that showed that people with a large network of friends and family members, score higher on the embracing diversity and interdisciplinarity competence than people with a smaller network of friends and relatives. Since strong ties typically show much overlap in networks, the advantage of diversity does not apply.

We have shown that the systems thinking competence contributes significantly to the bonding dimension of social capital. This means that if a person themselves scores higher on the systems thinking competence, their bonding social capital (the amount of friends and relatives) will probably be higher. The systems thinking competence is about the ability to identify and analyse all relevant systems across different and disciplines. We have argued that having a large social capital might help to gain inputs from other networks and domains and thus have access to different information sources.

Additionally De Carolis and Saparito (2006) have made a theoretical framework of social capital and cognition. They argue that that psychological (e.g., personal efficacy, need for achievement, and locus of control) and demographic factors (e.g., age, entrepreneurial parents, and education) were intentionally not incorporated into their model's predictions of entrepreneurial behaviour. This was done because previous empirical studies testing the link between these variables and exploitation of opportunities have yielded inconsistent results. The inclusion of these variables as moderating influences between social capital and cognitive biases could yield additional insights into entrepreneurial behaviour. In our model, we have included some of these factors.

Furthermore, Glaeser (2001) states that there is a knowledge gap on the causes of social capital, or social capital formation. Current research has focussed on the effects of social capital, but to take the concept to the next level, more research is needed on social capital formation. However, the research of Glaeser (2001) focusses on a community level of social capital. Indeed, social capital first arises at an individual level before it can penetrate the higher level of the community. This relates back to this research in a way that it must be stated that first more should be known about individual level social capital formation before one can conclude anything about the potential benefits for society of having more entrepreneurs.

Research by Villar and Albertín (2010) points out the ethical sides of working on acquiring social capital intentionally. It seems *unethical to do so* [acquiring more social capital] *consciously and intentionally while acting out of self-interest.* This shows that although students recognize the importance of social capital, ethical factors might hold them back from working on improving their social capital consciously.
And finally Van der Gaag and Snijders (2002) describe that the method we used for measuring social capital focusses on the access an individual may have to resources embedded in relationships with network members, and not their use. The choice to still use a measurement that measures access and not use is made because the retrieved information is more straightforwardly to interpret.

For this paper, we measured social capital by means of occupations of friends, relatives and family of students. This position generator method is a commonly used method in social capital research,

however, there are also some discussions about this method (Hallsten et al., 2015). Especially the choice of occupations used for the measurement of social capital can affect the outcomes of researches significantly (Hallsten et al., 2015). In the same research it is advised to alter the list of occupations to the process under study. This is what we have done for this research. However this also decreases the comparability of the results to other researches on social capital.

However with much caution, we do conclude that this research has contributed to the existing literature on sustainable entrepreneurship competencies and social capital theory for nascent entrepreneurs. We have shown that some sustainable entrepreneurship competencies have an effect on social capital. However, certain limitations need to be taken into account. Although the questionnaire has been validated by previous research, still the respondents sometimes struggled to fill out the questionnaire. This might had to do with the level of English used in the questionnaire or the length of the questionnaire. There was a lot of missing data, especially in the questions concerning social capital.

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Appendix I: Overview study programs

Respondent answers	Major/Study	Study program	Frequency
AAS	Applied Animal Science	Bedrijfskunde & Agribusiness	19
AB	Agrarische Bedrijfskunde	Bedrijfskunde & Agribusiness	30
ABK	Agrarische Bedrijfskunde	Bedrijfskunde & Agribusiness	1
AD Ondernemerschap	Associate Degree Ondernemerschap	Associate Degree Ondernemerschap	4
Agrarisch Ondernemerschap		Bedrijfskunde & Agribusiness	1
Agribusiness		Bedrijfskunde & Agribusiness	1
AO	Agrarisch Ondernemerschap	Bedrijfskunde & Agribusiness	9
APCM	Master of Agricultural Production Chain Management	Master of Agricultural Production Chain Management	21
BA	Agrarische Bedrijfskunde	Bedrijfskunde & Agribusiness	2
BAB	Bedrijfskunde & Agribusiness	Bedrijfskunde & Agribusiness	4
Bedrijfskunde		Bedrijfskunde & Agribusiness	5
Coastal Management		Kust- en Zeemanagement	1
Coastal Zone Management		Kust- en Zeemanagement	1
Dairy		Dier- en Veehouderij	1
Diergezondheidszorggedrag		Dier Management	1
Diergezondheidszorg		Dier Management	14
DV	Dier- en Veehouderij	Dier- en Veehouderij	14
EBE	Equine, Business and Economics	Dier- en Veehouderij	14
ELS	Equine, Leisure and Sports	Dier- en Veehouderij	39
ETM	Unknown	Unknown	1
FAT	Unknown	Unknown	1
FIM	Food and Innovation Management	Voedingsmiddelen Technologie	27
Food security		Voedingsmiddelen Technologie	2
FTM	Fair Trade Management	International Development Management	22
HV	Unknown	Unknown	1
IAT	International Agribusiness and Trade	Bedrijfskunde & Agribusiness	11
IBMS	International Business and Management Studies	International Business and Management Studies	3
IHM	International Horticulture and Management	Bedrijfskunde & Agribusiness	5
KZM	Kust- en Zeemanagement	Kust- en Zeemanagement	21
LS	Livestock Management	Dier- en Veehouderij	6
LS3	Livestock Management	Dier- en Veehouderij	1
Milieukunde	Milieukunde	Milieukunde	1
MOD	Master Management of Development	Master Management of Development	14
MV	Melkveehouderij	Dier- en Veehouderij	40
RDC	Rural Development and Communication	Master Management of Development	1
RDG	Rural Development and Gender	Master Management of Development	1
RDI	Rural Development and Innovation	International Development Management	24
Rural Development		Master Management of Development	2
Rural Development and communication		Master Management of Development	2
Rural Development and Food Security		Master Management of Development	1
TA	Tuin- en Akkerbouw	Tuin- en Akkerbouw	15
Veehouderij		Dier- en Veehouderij	3
Unknown			17
Total			404

Appendix II: Remaining regression analyses

Table I: Regression analysis for the embracing diversity and interdisciplinarity competence

Diversity	Model 1				Model 2				Model 3			
	B	*Se B*	*ß*	*Sig*	*B*	*Se B*	*ß*	*Sig*	*B*	*Se B*	*ß*	*Sig*
Step 1												
(Constant)	5.828	0.882		0.000**	5.721	0.904		0.000**	5.827	0.898		0.000**
Gender	-0.608	0.220	-0.179	0.006**	-0.621	0.226	-0.184	0.006***	-0.654	0.225	-0.184	0.004**
Year of study	-0.120	0.172	-0.043	0.486	-0.059	0.171	-0.022	0.730	-0.163	0.176	-0.056	0.354
StudyDomain_Business	-0.349	0.535	-0.099	0.514	-0.215	0.560	-0.062	0.701	-0.382	0.517	-0.103	0.461
StudyDomain_Animal	-0.925	0.546	-0.238	0.092*	-0.708	0.585	-0.173	0.227	-0.892	0.530	-0.218	0.094*
StudyDomain_Rural	-0.795	0.537	-0.223	0.140	-0.733	0.562	-0.212	0.193	-0.804	0.519	-0.215	0.123
Self_Efficacy	0.409	0.148	0.169	0.006**	0.360	0.150	0.152	0.017**	0.408	0.152	0.162	0.008**
Location	0.329	0.228	0.093	0.151	0.429	0.232	0.121	0.066*	0.412	0.233	0.111	0.079*
Step 2												
(Constant)	5.962	1.351		0.000*	5.354	1.403		0.000**	5.394	1.403		0.000**
Gender	-0.546	0.220	-0.161	0.014**	-0.553	0.227	-0.164	0.016**	-0.577	0.226	-0.162	0.011**
Year of study	-0.111	0.172	-0.039	0.520	-0.061	0.171	-0.022	0.724	-0.160	0.174	-0.054	0.360
StudyDomain_Business	-0.381	0.535	-0.108	0.476	-0.201	0.562	-0.058	0.721	-0.342	0.519	-0.092	0.510
StudyDomain_Animal	-1.000	0.547	-0.257	0.069*	-0.763	0.587	-0.186	0.195	-0.912	0.531	-0.223	0.087*
StudyDomain_Rural	-0.808	0.537	-0.227	0.134	-0.751	0.563	-0.217	0.184	-0.756	0.520	-0.202	0.148
Self_Efficacy	0.343	0.162	0.142	0.035**	0.326	0.164	0.137	0.048**	0.379	0.165	0.150	0.022**
Location	0.347	0.241	0.098	0.150	0.492	0.246	0.139	0.047**	0.491	0.244	0.132	0.045**
Own company	-0.538	0.356	-0.098	0.132	-0.417	0.369	-0.076	0.260	-0.490	0.387	-0.081	0.207
PriorWExp_Employee	0.280	0.306	0.074	0.360	0.332	0.309	0.088	0.285	0.214	0.310	0.053	0.490
PriorWExp_Entrepreneur	0.986	0.517	0.145	0.057*	0.768	0.564	0.104	0.175	0.910	0.543	0.122	0.095*
PriorWExp_Both	0.347	0.507	0.053	0.494	0.362	0.512	0.057	0.480	0.398	0.525	0.056	0.449
Entrepreneurial parents	0.460	0.221	0.136	0.038**	0.514	0.230	0.153	0.026**	0.635	0.227	0.179	0.005**
Step 3												
(Constant)	5.514	1.387		0.000**	5.618	1.414		0.000**	7.465	2.027		0.000**
Gender	-0.511	0.221	-0.151	0.022**	-0.568	0.227	-0.168	0.013**	-0.595	0.226	-0.167	0.009**
Year of study	-0.081	0.173	-0.029	0.641	-0.055	0.171	-0.020	0.749	-0.164	0.174	-0.056	0.346
StudyDomain_Business	-0.455	0.536	-0.129	0.398	-0.200	0.561	-0.057	0.722	-0.276	0.520	-0.074	0.596
StudyDomain_Animal	-1.079	0.549	-0.278	0.051*	-0.806	0.587	-0.196	0.171	-0.828	0.533	-0.203	0.122
StudyDomain_Rural	-0.835	0.536	-0.234	0.121	-0.836	0.566	-0.241	0.141	-0.670	0.523	-0.179	0.201
Self_Efficacy	0.316	0.163	0.131	0.053*	0.356	0.166	0.150	0.032**	0.430	0.169	0.170	0.011**
Location	0.384	0.242	0.109	0.113	0.476	0.246	0.135	0.055*	0.439	0.246	0.118	0.075*
Own company	-0.514	0.356	-0.093	0.150	-0.413	0.369	-0.075	0.264	-0.481	0.386	-0.079	0.214
PriorWExp_Employee	0.274	0.305	0.072	0.371	0.376	0.311	0.100	0.227	0.222	0.309	0.055	0.474
PriorWExp_Entrepreneur	0.954	0.516	0.140	0.066*	0.839	0.565	0.113	0.139	0.895	0.542	0.120	0.100*
PriorWExp_Both	0.299	0.507	0.045	0.556	0.431	0.514	0.068	0.403	0.411	0.524	0.058	0.433
Entrepreneurial parents	0.460	0.221	0.136	0.038**	0.522	0.229	0.155	0.024**	0.621	0.226	0.175	0.007**
Bonding (Model 1)	0.355	0.257	0.086	0.169								
Bridging (Model 2)					-0.320	0.240	-0.087	0.183				
Range (Model3)									-1.281	0.907	-0.085	0.159

Model 1: Step 1 R^2 = 0.132, step 2 ΔR^2 = 0.032 (p=0.100), step 3 ΔR^2 = 0.007 (p=0.169)
Model 2: Step 1 R^2 = 0.137, step 2 ΔR^2 = 0.027 (p=0.209, step 3 ΔR^2 = 0.007 (p=0.183)
Model 3: Step 1 R^2 = 0.133, step 2 ΔR^2 = 0.036 (p=0.056), step 3 ΔR^2 = 0.007 (p=0.159)

Table II: Regression analysis foresighted thinking competence

Foresighted	Model 1				Model 2				Model 3			
	B	*Se B*	*ß*	*Sig*	*B*	*Se B*	*ß*	*Sig*	*B*	*Se B*	*ß*	*Sig*
Step 1												
(Constant)	5.219	0.617		0.000**	4.912	0.645		0.000**	5.052	0.665		0.000**
Gender	-0.078	0.154	-0.033	0.614	-0.128	0.161	-0.054	0.429	-0.141	0.167	-0.055	0.399
Year of study	0.194	0.121	0.100	0.109	0.230	0.122	0.120	0.061*	0.251	0.130	0.118	0.055*
StudyDomain_Business	-0.236	0.374	-0.097	0.529	0.048	0.399	0.020	0.905	-0.194	0.383	-0.072	0.613
StudyDomain_Animal	-0.352	0.382	-0.131	0.357	-0.071	0.417	-0.025	0.864	-0.266	0.393	-0.090	0.498
StudyDomain_Rural	-0.351	0.375	-0.143	0.350	-0.066	0.401	-0.027	0.869	-0.291	0.385	-0.107	0.450
Self_Efficacy	0.461	0.103	0.276	0.000**	0.466	0.107	0.279	0.000**	0.445	0.112	0.243	0.000**
Location	-0.028	0.160	-0.012	0.861	0.012	0.166	0.005	0.941	0.068	0.173	0.025	0.694
Step 2												
(Constant)	4.745	0.955		0.000**	4.141	1.006		0.000**	4.215	1.050		0.000**
Gender	-0.063	0.156	-0.027	0.688	-0.112	0.163	-0.047	0.492	-0.115	0.169	-0.045	0.496
Year of study	0.210	0.121	0.109	0.084*	0.241	0.123	0.126	0.051*	0.264	0.131	0.124	0.044**
StudyDomain_Business	-0.237	0.378	-0.098	0.531	0.108	0.403	0.044	0.789	-0.153	0.389	-0.057	0.695
StudyDomain_Animal	-0.353	0.387	-0.132	0.362	-0.007	0.421	-0.002	0.987	-0.234	0.398	-0.079	0.557
StudyDomain_Rural	-0.364	0.380	-0.148	0.340	-0.043	0.404	-0.018	0.916	-0.272	0.390	-0.100	0.486
Self_Efficacy	0.431	0.115	0.258	0.000***	0.456	0.118	0.273	0.000**	0.436	0.124	0.238	0.000**
Location	0.017	0.170	0.007	0.921	0.113	0.177	0.045	0.522	0.161	0.182	0.060	0.379
Ow n company	-0.071	0.252	-0.019	0.778	-0.023	0.265	-0.006	0.931	-0.078	0.290	-0.018	0.787
PriorWExp_Employee	0.354	0.216	0.135	0.103	0.366	0.222	0.137	0.101	0.304	0.232	0.105	0.191
PriorWExp_Entrepreneur	0.383	0.365	0.082	0.296	0.048	0.404	0.009	0.905	0.340	0.407	0.063	0.404
PriorWExp_Both	0.468	0.359	0.103	0.193	0.473	0.367	0.105	0.199	0.541	0.393	0.106	0.170
Entrepreneurial parents	0.184	0.156	0.079	0.241	0.211	0.165	0.089	0.201	0.343	0.170	0.133	0.044**
Step 3												
(Constant)	4.763	0.985		0.000**	4.064	1.017		0.000**	4.314	1.524		0.005**
Gender	-0.064	0.157	-0.027	0.684	-0.108	0.164	-0.045	0.511	-0.116	0.170	-0.045	0.494
Year of study	0.209	0.123	0.108	0.089*	0.239	0.123	0.125	0.053*	0.264	0.131	0.124	0.045**
StudyDomain_Business	-0.234	0.381	-0.096	0.539	0.108	0.403	0.044	0.790	-0.149	0.391	-0.056	0.703
StudyDomain_Animal	-0.350	0.390	-0.131	0.370	0.006	0.422	0.002	0.989	-0.230	0.401	-0.078	0.566
StudyDomain_Rural	-0.362	0.381	-0.148	0.342	-0.018	0.407	-0.007	0.965	-0.268	0.393	-0.099	0.497
Self_Efficacy	0.432	0.116	0.259	0.000**	0.447	0.119	0.268	0.000**	0.439	0.127	0.240	0.001**
Location	0.015	0.171	0.006	0.928	0.118	0.177	0.047	0.506	0.158	0.185	0.059	0.392
Ow n company	-0.072	0.253	-0.019	0.776	-0.024	0.265	-0.006	0.927	-0.078	0.290	-0.018	0.789
PriorWExp_Employee	0.354	0.217	0.135	0.103	0.352	0.223	0.132	0.116	0.304	0.232	0.105	0.191
PriorWExp_Entrepreneur	0.384	0.367	0.082	0.296	0.027	0.407	0.005	0.946	0.339	0.408	0.063	0.406
PriorWExp_Both	0.470	0.360	0.103	0.194	0.453	0.370	0.101	0.222	0.542	0.394	0.106	0.170
Entrepreneurial parents	0.184	0.157	0.079	0.242	0.209	0.165	0.088	0.207	0.342	0.170	0.133	0.046**
Bonding (model 1)	-0.014	0.182	-0.005	0.938								
Bridging (model 2)					0.094	0.173	0.036	0.587				
Range (model3)									-0.061	0.682	-0.006	0.929

Model 1: Step 1 R^2 = 0.107, step 2 ΔR^2 = 0.014 (p=0.567), step 3 ΔR^2 = 0.000 (p=0.938)
Model 2: Step 1 R^2 = 0.114, step 2 ΔR^2 = 0.019 (p=0.403), step 3 ΔR^2 = 0.001 (p=0.587)
Model 3: Step 1 R^2 = 0.094, step 2 ΔR^2 = 0.019 (p=0.357), step 3 ΔR^2 = 0.000 (p=0.929)

Table III: Regression analysis systems thinking competence

Systems	Model 1				Model 2				Model 3			
	B	*Se B*	*ß*	*Sig*	*B*	*Se B*	*ß*	*Sig*	*B*	*Se B*	*ß*	*Sig*
Step 1												
(Constant)	5.801	0.689		0.000**	5.473	0.711		0.000**	5.637	0.688		0.000**
Gender	-0.599	0.172	-0.223	0.001**	-0.583	0.178	-0.216	0.001**	-0.552	0.173	-0.202	0.002**
Year of study	0.368	0.135	0.166	0.007**	0.393	0.135	0.180	0.004**	0.353	0.135	0.156	0.009**
StudyDomain_Business	-0.295	0.418	-0.106	0.480	-0.067	0.440	-0.024	0.879	-0.351	0.396	-0.123	0.377
StudyDomain_Animal	-0.618	0.427	-0.201	0.149	-0.458	0.460	-0.140	0.320	-0.567	0.406	-0.181	0.163
StudyDomain_Rural	-0.423	0.419	-0.150	0.314	-0.207	0.442	-0.075	0.640	-0.383	0.398	-0.133	0.336
Self_Efficacy	0.399	0.116	0.208	0.001**	0.397	0.118	0.209	0.001**	0.421	0.116	0.217	0.000**
Location	-0.112	0.178	-0.040	0.531	-0.049	0.183	-0.017	0.788	-0.069	0.179	-0.024	0.702
Step 2												
(Constant)	5.738	1.066		0.000**	5.249	1.115		0.000**	5.178	1.088		0.000**
Gender	-0.597	0.174	-0.222	0.001**	-0.589	0.181	-0.218	0.001**	-0.542	0.175	-0.198	0.002**
Year of study	0.374	0.136	0.169	0.006**	0.395	0.136	0.181	0.004**	0.358	0.135	0.159	0.009**
StudyDomain_Business	-0.360	0.422	-0.129	0.394	-0.089	0.447	-0.032	0.841	-0.376	0.403	-0.132	0.351
StudyDomain_Animal	-0.714	0.432	-0.232	0.100*	-0.488	0.467	-0.149	0.297	-0.628	0.412	-0.200	0.129
StudyDomain_Rural	-0.509	0.424	-0.180	0.232	-0.266	0.448	-0.096	0.553	-0.439	0.404	-0.153	0.278
Self_Efficacy	0.380	0.128	0.198	0.003**	0.399	0.131	0.210	0.003**	0.423	0.128	0.218	0.001**
Location	-0.149	0.190	-0.053	0.433	-0.041	0.196	-0.014	0.835	-0.064	0.189	-0.022	0.736
Ow n company	-0.096	0.281	-0.022	0.734	-0.053	0.294	-0.012	0.857	-0.041	0.300	-0.009	0.892
PriorWExp_Employee	0.279	0.241	0.093	0.248	0.235	0.246	0.078	0.340	0.248	0.240	0.081	0.302
PriorWExp_Entrepreneur	0.612	0.408	0.114	0.135	0.264	0.448	0.044	0.557	0.563	0.421	0.098	0.183
PriorWExp_Both	-0.067	0.400	-0.013	0.868	-0.111	0.407	-0.022	0.786	-0.034	0.407	-0.006	0.933
Entrepreneurial parents	0.119	0.175	0.044	0.497	0.114	0.183	0.042	0.532	0.218	0.176	0.080	0.217
Step 3												
(Constant)	5.672	1.099		0.000**	5.128	1.127		0.000**	5.333	1.578		0.001**
Gender	-0.592	0.176	-0.221	0.001**	-0.582	0.181	-0.216	0.002**	-0.544	0.176	-0.198	0.002**
Year of study	0.378	0.137	0.171	0.006**	0.392	0.136	0.180	0.004**	0.358	0.136	0.159	0.009**
StudyDomain_Business	-0.371	0.425	-0.133	0.383	-0.090	0.447	-0.032	0.840	-0.372	0.405	-0.130	0.360
StudyDomain_Animal	-0.725	0.435	-0.236	0.097*	-0.468	0.468	-0.143	0.318	-0.621	0.415	-0.198	0.136
StudyDomain_Rural	-0.513	0.425	-0.182	0.229	-0.227	0.451	-0.082	0.615	-0.432	0.407	-0.150	0.289
Self_Efficacy	0.376	0.129	0.196	0.004**	0.385	0.132	0.203	0.004**	0.427	0.131	0.220	0.001**
Location	-0.144	0.191	-0.051	0.454	-0.033	0.196	-0.012	0.865	-0.068	0.191	-0.024	0.724
Ow n company	-0.092	0.282	-0.021	0.744	-0.055	0.294	-0.012	0.852	-0.040	0.301	-0.009	0.894
PriorWExp_Employee	0.278	0.242	0.092	0.251	0.215	0.248	0.071	0.387	0.249	0.241	0.081	0.302
PriorWExp_Entrepreneur	0.607	0.409	0.113	0.139	0.231	0.451	0.039	0.609	0.561	0.422	0.098	0.185
PriorWExp_Both	-0.074	0.402	-0.014	0.854	-0.142	0.410	-0.028	0.729	-0.033	0.408	-0.006	0.935
Entrepreneurial parents	0.119	0.175	0.044	0.498	0.111	0.183	0.041	0.545	0.217	0.176	0.079	0.220
Bonding (model 1)	0.053	0.204	0.016	0.796								
Bridging (model 2)					0.147	0.191	0.050	0.443				
Range (model3)									-0.096	0.706	-0.008	0.892

Model 1: Step 1 R^2 = 0.154, step 2 ΔR^2 = 0.014 (p=0.539), step 3 ΔR^2 = 0.000 (p=0.796)
Model 2: Step 1 R^2 = 0.165, step 2 ΔR^2 = 0.009 (p=0.785), step 3 ΔR^2 = 0.002 (p=0.785)
Model 3: Step 1 R^2 = 0.141, step 2 ΔR^2 = 0.014 (p=0.518), step 3 ΔR^2 = 0.000 (p=0.892)

Table IV: Regression analysis normative competence

Normative	Model 1				Model 2				Model 3			
	B	*Se B*	*ß*	*Sig*	*B*	*Se B*	*ß*	*Sig*	*B*	*Se B*	*ß*	*Sig*
Step 1												
(Constant)	6.031	0.763		0.000**	5.978	0.770		0.000**	5.945	0.758		0.000**
Gender	-0.071	0.191	-0.026	0.710	-0.154	0.192	-0.057	0.425	-0.045	0.190	-0.016	0.814
Year of study	-0.089	0.149	-0.039	0.552	-0.045	0.146	-0.020	0.761	-0.134	0.148	-0.058	0.368
StudyDomain_Business	0.435	0.463	0.152	0.348	0.577	0.477	0.206	0.227	0.339	0.436	0.116	0.438
StudyDomain_Animal	0.141	0.472	0.045	0.766	0.299	0.498	0.091	0.549	0.161	0.447	0.050	0.719
StudyDomain_Rural	0.104	0.464	0.036	0.824	0.164	0.479	0.059	0.732	0.083	0.438	0.028	0.849
Self_Efficacy	0.090	0.128	0.046	0.481	0.086	0.128	0.045	0.504	0.142	0.128	0.071	0.268
Location	-0.074	0.198	-0.026	0.707	-0.044	0.198	-0.015	0.825	-0.086	0.197	-0.029	0.664
Step 2												
(Constant)	5.992	1.181		0.000**	5.495	1.207		0.000**	5.865	1.199		0.000**
Gender	-0.039	0.193	-0.014	0.838	-0.124	0.196	-0.046	0.527	0.000	0.193	0.000	0.998
Year of study	-0.075	0.150	-0.033	0.617	-0.035	0.147	-0.016	0.811	-0.127	0.149	-0.055	0.393
StudyDomain_Business	0.398	0.468	0.139	0.395	0.581	0.483	0.208	0.230	0.303	0.444	0.104	0.495
StudyDomain_Animal	0.082	0.478	0.026	0.864	0.268	0.505	0.081	0.596	0.103	0.454	0.032	0.821
StudyDomain_Rural	0.072	0.470	0.025	0.878	0.146	0.485	0.052	0.764	0.056	0.445	0.019	0.900
Self_Efficacy	0.030	0.142	0.015	0.834	0.054	0.141	0.028	0.703	0.090	0.141	0.045	0.525
Location	-0.083	0.210	-0.029	0.695	-0.035	0.212	-0.012	0.869	-0.075	0.208	-0.025	0.720
Own company	-0.217	0.311	-0.048	0.487	-0.039	0.318	-0.009	0.901	-0.239	0.331	-0.050	0.470
PriorWExp_Employee	0.340	0.268	0.110	0.204	0.311	0.266	0.102	0.244	0.291	0.265	0.092	0.274
PriorWExp_Entrepreneur	0.747	0.452	0.135	0.100*	0.674	0.485	0.113	0.166	0.719	0.464	0.122	0.123
PriorWExp_Both	0.406	0.444	0.075	0.361	0.369	0.441	0.072	0.404	0.371	0.449	0.066	0.409
Entrepreneurial parents	0.192	0.193	0.070	0.321	0.202	0.198	0.075	0.307	0.236	0.194	0.084	0.225
Step 3												
(Constant)	5.596	1.213		0.000**	5.348	1.220		0.000**	5.579	1.740		0.002**
Gender	-0.009	0.194	-0.003	0.963	-0.115	0.196	-0.043	0.557	0.002	0.194	0.001	0.992
Year of study	-0.049	0.151	-0.021	0.747	-0.038	0.147	-0.018	0.794	-0.127	0.149	-0.055	0.397
StudyDomain_Business	0.334	0.469	0.117	0.478	0.580	0.484	0.207	0.231	0.294	0.446	0.100	0.511
StudyDomain_Animal	0.012	0.480	0.004	0.980	0.293	0.506	0.089	0.564	0.091	0.458	0.028	0.843
StudyDomain_Rural	0.049	0.469	0.017	0.918	0.193	0.488	0.069	0.693	0.044	0.449	0.015	0.921
Self_Efficacy	0.006	0.142	0.003	0.968	0.037	0.143	0.019	0.795	0.083	0.145	0.041	0.568
Location	-0.050	0.211	-0.017	0.812	-0.026	0.212	-0.009	0.903	-0.067	0.211	-0.023	0.750
Own company	-0.195	0.311	-0.044	0.531	-0.042	0.318	-0.009	0.896	-0.241	0.332	-0.050	0.469
PriorWExp_Employee	0.334	0.267	0.108	0.212	0.286	0.268	0.094	0.287	0.290	0.265	0.091	0.276
PriorWExp_Entrepreneur	0.718	0.451	0.130	0.113	0.635	0.488	0.107	0.194	0.721	0.465	0.122	0.122
PriorWExp_Both	0.364	0.444	0.068	0.414	0.331	0.443	0.065	0.456	0.369	0.449	0.066	0.413
Entrepreneurial parents	0.192	0.193	0.070	0.320	0.198	0.198	0.073	0.318	0.238	0.194	0.085	0.222
Bonding (model 1)	0.313	0.225	0.093	0.165								
Bridging (model 2)					0.178	0.207	0.060	0.391				
Range (model3)									0.177	0.779	0.015	0.820

Model 1: Step 1 R^2 = 0.017, step 2 ΔR^2 = 0.016 (p=0.546), step 3 ΔR^2 = 0.008 (p=0.164)
Model 2: Step 1 R^2 = 0.027, step 2 ΔR^2 = 0.012 (p=0.731), step 3 ΔR^2 = 0.003 (p=0.391)
Model 3: Step 1 R^2 = 0.015, step 2 ΔR^2 = 0.015 (p=0.554), step 3 ΔR^2 = 0.000 (p=0.820)

Appendix III: Survey (English version)

Introduction

1. Please indicate your name, student number, current study and year of entrance

- ❑ Name:_____
- ❑ Student number: _____
- ❑ Current Study:_____
- ❑ Year of entrance:_____
- ❑ Study year:_____

2. Gender

- ❑ Male
- ❑ Female

Learning outcomes

On the next page you will find a list of 7 competencies and related performance criteria. All these competencies focus on sustainable entrepreneurship: activities and processes to discover, evaluate and exploit opportunities in order to enhance sustainability. This can for instance be done by creating new activities, but also by managing or organizing existing processes in a new, innovative manner. ***With sustainability (issues) we mean challenges, such as energy saving, waste management, labour conditions, maintaining biodiversity, carbon foot print reduction and social responsibility.***
The performance criteria can more or less be applied to yourself. Rate yourself according to your own opinion about your performance for a criterion at this moment by giving yourself a mark between 1 and 10 (1 = low and 10 = high) for every criterion. Important is that you give yourself a honest mark for every performance criterion.

(e.g. internship, work at home, holiday job). Show this by giving a low score for these criteria.

3. Diversity competence

I realise that sustainability issues are per definition issues that concern more disciplines (e.g. maths, biology, science, social science) to solve the problem or minimize the impact of the problem. I cannot solve challenges such as energy saving, waste management, labour conditions or reducing carbon footprints on my own.

Performance criteria	MARK (1-10)
a. I am able to bring together economic, social and environmental conflicts of interest	
b. I use the experiences, activities and values of various relevant stakeholders in addressing sustainability issues	
c. I am able to actively involve stakeholders and experts from other disciplines in addressing sustainability issues.	
d. I am able to explain the importance of involving local stakeholders (e.g. in recruitment) for a company	

4. Foresighted thinking competence

I realise that dealing with sustainability issues in my future job means that I have to be able to deal with uncertainty, I can make future prognoses, I am aware of others' expectations and am able to make, and when necessary change, plans.

Performance criteria	MARK (1-10)
a. I am able to deal with uncertainty.	
b. I am able to construct and consider different directions for sustainability in the future	
c. I am able to identify risks and opportunities inherent in present and future developments	
d. In analysing and evaluating scenario's for action, I take the impact on the short as well as the long term into consideration	
e. In analysing and evaluating scenario's for action, I take both the impact on the local and the global scale into consideration	
f. I have creative skills.	

5. Systems thinking competence

In my daily routines I apply a systems-thinking approach, meaning that before I start working on a sustainability issue I first identify the system(s) it may concern by examining the linkages and interactions between the elements that compose the system.

Performance criteria	MARK (1-10)
a. I am able to identify key aspects of production chains and agricultural eco-systems	
b. I am able to identify the key operations of a company that have a negative impact on the environment or society	
c. I am able to evaluate and assess all parts of the life cycle of a product, from extracting basic resources, through production and transportation, to use and disposal of the product.	
d. I am able to analyse strengths and weaknesses of production chains and propose improvements to reduce the negative effects on the environment or society	
e. I am able to integrate social, environmental and societal issues into future plans of a company	
f. I am able to formulate sustainability criteria for purchasing products or services	

6. Normative competence

I understand that sustainability issues are surrounded with lack of clarity. I know what trustworthy sources are and realise that facts and figures need translation to my own practice, because they cannot be applied on a one-to-one basis. The decisions I make or the initiatives I take are based on these insights.

Performance criteria	MARK (1-10)
a. I am able to select trustworthy sources that inform me about what is sustainable and what is not	
b. I am able to acquire the latest facts and figures about sustainability	
c. I am willing to take initiative to make improvements in my own practice based on norms, values, targets and principles of sustainability	
d. I know what is seen as ‘good sustainable practice’ in my field of study	
e. I am able to apply norms, values, targets and principles of sustainability to my own practice	
f. I know how to explain the decisions a company has made concerning sustainability	
g. I will refuse to ‘do business’ when social, environmental or societal issues are clearly at stake	

7. Action competence

I realise that in the end, dealing effectively with sustainability issues also requires taking action and initiative.

Performance criteria	MARK (1-10)
a. I am constantly on the lookout for new ways to live my life more sustainable	
b. I am driven to make a difference in my community and the world	
c. I tend to let others take the initiative to start new sustainability related projects	
d. I challenge not sustainable ways of working in a company	
e. I am very good at identifying opportunities for sustainable development	
f. I am always looking for opportunities to improve the social-ecological efficiency and/or effectivity of systems	
g. I know how social, environmental or societal challenges can be turned into opportunities for an organization/company	
h. I am able to motivate higher management in a company to invest in sustainability	

8. Interpersonal competence

I see that working on complex issues like sustainability is in most cases not something you do alone, it demands working with people who have very different backgrounds (e.g. entrepreneurs, government officials, activists, scientists).

Performance criteria	MARK (1-10)
a. I am able to introduce myself very easily to someone I don't know	
b. I let others know how much I appreciate cooperating with him or her in solving complex issues.	
c. I stand up for my rights if someone is overlooking (forgetting) one or more aspects of sustainability	
d. I am patiently and sensitively to someone who "lets off steam" in complex issues	
e. In a personal conflict, I am able to take the others' perspective and really understand his or her point of view.	

f. I am able to feel to what extent stakeholders are willing to cooperate in a project	

9. Strategic management competence

I realise that working on sustainability related issues involves the design and implementation of my intervention. More specifically it involves arranging tasks, people and other resources, inspiring and motivating others and an evaluation of my project.

Performance criteria	MARK (1-10)
a. When it comes to achieving particular goals in relation to sustainability I know whom to involve.	
b. If I want to reach goals in relation to sustainability, I know which steps should be taken to be successful.	
c. I am able to apply the latest knowledge about sustainability in projects I am working on	
d. I am able to use a strategic way of working in sustainability related projects (designing, testing, implementing, evaluating).	
e. I am able to monitor the sustainability performance of a company	

10. If you have participated in any type of internship experience could you give a short description of the internship task? *(if not you can leave this question unanswered).*

- ❑ And secondly, to what extent were the above mentioned competencies important/addressed in carrying out your work in the internship? (1 = not important at all...5= of great importance)

a. Short description of you internship task					
b. *Competence important / addressed?*	1	2	3	4	5
Systems thinking competence	❑	❑	❑	❑	❑
Diversity and interdisciplinarity competence	❑	❑	❑	❑	❑
Foresighted thinking competence	❑	❑	❑	❑	❑
Normative competence	❑	❑	❑	❑	❑
Action competence	❑	❑	❑	❑	❑
Interpersonal competence	❑	❑	❑	❑	❑
Strategic management competence	❑	❑	❑	❑	❑

Entrepreneurial intentions

11. Do you have your own company?

- ❑ Yes
- ❑ No

If not, in which type of entrepreneurial activities are you **most** interested in the next 5 to 10 years? 1(*very little)*….5 (*very much)*

Entrepreneurial activity	1	2	3	4	5
a. Becoming an entrepreneurial individual as employee within an existing company	❑	❑	❑	❑	❑
b. Starting up my own company	❑	❑	❑	❑	❑
c. Starting up and building a high growth company	❑	❑	❑	❑	❑
d. Acquiring or inheriting a small company	❑	❑	❑	❑	❑

e.	Acquiring or inheriting a company and turn it into a high growth company	❑	❑	❑	❑	❑

12. Please indicate **to what extent** you agree with the following statements? 1*(disagree)…5 (agree)*

		1	2	3	4	5
a.	A career as an entrepreneur is totally unattractive to me	❑	❑	❑	❑	❑
b.	If I had the opportunity and resources, I would love to start a new company	❑	❑	❑	❑	❑
c.	Amongst various options, I would rather be anything but an entrepreneur	❑	❑	❑	❑	❑
d.	Being an entrepreneur would give me great satisfaction	❑	❑	❑	❑	❑
e.	Being an entrepreneur implies more advantages than disadvantages to me	❑	❑	❑	❑	❑
f.	I believe that my closest family thinks I should start my own company.	❑	❑	❑	❑	❑
g.	I believe that my closest friends think I should start my own company.	❑	❑	❑	❑	❑
h.	I believe that people, who are important to me, think I should start my own company.	❑	❑	❑	❑	❑
i.	It would be difficult for me to start a new company after my education.	❑	❑	❑	❑	❑
j.	I believe I would be completely competent to start a new company	❑	❑	❑	❑	❑
k.	I am able to control the creation process of a new company	❑	❑	❑	❑	❑
l.	I know all about the practical details needed to start a company	❑	❑	❑	❑	❑
m.	If I start a company, full-time, the chances of success would be very high	❑	❑	❑	❑	❑
n.	The number of events outside my control which could prevent me from starting a new company are limited	❑	❑	❑	❑	❑
o.	For me, developing an idea for a company would be easy	❑	❑	❑	❑	❑

Social capital

13. How many people do you know in any of the following jobs? (see table below)

As a criteria of 'knowing' imagine when accidently meeting a person on the street, he or she would know the (first) name of that person, and both of them could start a conversation with each other.

14. If you know people in these professions, please indicate <u>how many</u> of these people you would label as relatives, friends or acquaintances (*in Dutch: kennissen*)?

	Q. 13	Q. 14 Distribution		
	How many?	# Relatives	# Friends	# Acquaintances
a. Academic/professor				
b. Bank loan officer				
c. Lawyer				
d. Accountant/book keeper				
e. Sales or marketing manager				
f. Entrepreneur / small business owner				
g. Physician or other health worker				
h. Truck driver				
i. Waiter or waitress				
j. Policeman or policewoman				
k. High-rank official in ministry (*hoge ambtenaar op het ministerie)*				
l. Construction worker				
m. Cleaner				
n. Electrician				
o. Owner/manager of large firm				

Learning actvities

15. To what extent were the various learning activities present in the courses you have followed so far at VHL ? *(1=not at all present....5=very much present)*

	1	2	3	4	5
a. Performing group work with students from other VHL studies	❑	❑	❑	❑	❑
b. Conducting a project for a commissioner	❑	❑	❑	❑	❑
c. Interviewing entrepreneurial people outside school	❑	❑	❑	❑	❑
d. Reading stories about entrepreneurial people	❑	❑	❑	❑	❑
e. Presenting (i.e. pitching an entrepreneurial idea	❑	❑	❑	❑	❑
f. Guest lectures	❑	❑	❑	❑	❑
g. Simulations/Management games	❑	❑	❑	❑	❑
h. Coaching/mentoring by entrepreneurial professionals outside school	❑	❑	❑	❑	❑
i. Role plays	❑	❑	❑	❑	❑
j. Debates	❑	❑	❑	❑	❑
k. Business plan competitions/contests	❑	❑	❑	❑	❑
l. Teaching each other	❑	❑	❑	❑	❑
m. Networking with experienced entrepreneurial professionals (e.g. business café)	❑	❑	❑	❑	❑
n. Interacting with entrepreneurial clubs and societies (e.g. NAJK, SIFE,StartLife)	❑	❑	❑	❑	❑
o. Company excursions/visits	❑	❑	❑	❑	❑
p. Student companies	❑	❑	❑	❑	❑
q. Competence assessments	❑	❑	❑	❑	❑
r. Making/analysing business plans	❑	❑	❑	❑	❑
s. Business case studies	❑	❑	❑	❑	❑

t.	Advising entrepreneurs in their business development	❑	❑	❑	❑	❑

Learning environment

16. I experience the VHL school environment as a place where: *(1=not at all....5=very much)*

		1	2	3	4	5
a.	teachers actively support students' engagement in new activities	❑	❑	❑	❑	❑
b.	teachers encourage me to pursue new ideas	❑	❑	❑	❑	❑
c.	creativity is awarded	❑	❑	❑	❑	❑
d.	negative reactions can be expected when the exact course instructions are not followed	❑	❑	❑	❑	❑
e.	students are expected to handle problems in a standardized way	❑	❑	❑	❑	❑
f.	there are many opportunities for students to try out new things	❑	❑	❑	❑	❑
g.	there is room for change/improvement	❑	❑	❑	❑	❑
h.	teachers stick to safe and proved practices	❑	❑	❑	❑	❑
i.	if you come up with a new idea you will receive positive feedback	❑	❑	❑	❑	❑
j.	students are stimulated to pursue new ideas	❑	❑	❑	❑	❑
k.	students are stimulated to take (calculated) risks	❑	❑	❑	❑	❑
l.	teachers discuss actual/recent developments in the market	❑	❑	❑	❑	❑
m.	interaction with organizations and businesses outside VHL is encouraged	❑	❑	❑	❑	❑
n.	students are stimulated to learn by doing	❑	❑	❑	❑	❑
o.	students are stimulated to learn from mistakes or crisis	❑	❑	❑	❑	❑
p.	emotional well-being of students is important and noticed	❑	❑	❑	❑	❑

Learning outcomes

17. Please indicate prior working experience (more than one answer possible)

- ❑ No prior working experience
- ❑ Prior working experience as an employee
- ❑ Prior working experience as an entrepreneur (e.g. owner/founder of company)

18. Do you have entrepreneurial parents (e.g. parents with their own company)?

- ❑ Yes
- ❑ No