LAPPEENRANTA UNIVERSITY OF TECHNOLOGY

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Industrial Marketing and International Business

MASTER'S THESIS

Effects of entrepreneurial role models on students' entrepreneurial self-efficacy and intentions

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ABSTRACT

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Keywords: entrepreneurial role model, entrepreneurial self-efficacy, entrepreneurship education, entrepreneurial intentions, entrepreneurship

Entrepreneurship is considered one of the solutions for economic growth and it starts to be more supported by government. Thus, also entrepreneurship education should be developed and concentrated on. This Master's thesis studies the effects of entrepreneurial role models on students' entrepreneurial self-efficacy and intentions via multimedia storytelling. The purpose of this thesis is to explore whether the stories of entrepreneurs influence on students' thoughts, what type of entrepreneurs should be portrayed on the videos and are there differences between different majors.

Theoretical part of this thesis is based on entrepreneurship education, theory of planned behavior, Bandura's theory of self-efficacy, and entrepreneurial role model. The concepts are built based on a literature review on current academic literature. To study the role model effects in practice, quantitative research approach with a web-survey was adopted. The data was collected from two student groups – LUT students and Social Services students.

The results of this thesis show that entrepreneurship is not the first career choice for many. Also, the multimedia stories of entrepreneurs did not influence on the entrepreneurial self-efficacy and intentions of students. Results, however, show that there are differences between the two student groups and LUT students had higher entrepreneurial self-efficacy and entrepreneurial intentions.

TIIVISTELMÄ

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Yrittäjyyttä pidetään yhtenä ratkaisuna talouden kasvattamisessa ja hallitus tukee sitä yhä enemmän. Näin ollen myös yrittäjäkoulutusta tulisi kehittää ja siihen pitäisi keskittyä enemmän. Tämä diplomityö tutkii multimediatarinoiden kautta yrittäjäesikuvien vaikutusta opiskelijoiden uskoon omiin kykyihinsä selviytyä yrittäjän ydintehtävistä sekä aikomuksiin lähteä yrittäjäksi. Tarkoitus on tutkia, vaikuttavatko tarinat yrittäjistä opiskelijoiden ajatuksiin, minkälaisia yrittäjiä videoilla kannattaisi esitellä sekä eroja eri koulutusalojen välillä.

Teoreettinen osuus perustuu yrittäjäkoulutukseen, suunniteltuun käyttäytymiseen, teoriaan uskosta omiin kykyihin sekä yrittäjäesikuvaan. Aiheet perustuvat akateemiseen kirjallisuuskatsaukseen. Määrällinen tutkimustapa sekä verkkokysely valittiin avuksi, jotta roolimallien vaikutuksia voitiin tutkia käytännössä. Dataa kerättiin LUT:n opiskelijoilta sekä sosionomiopiskelijoilta.

Tulokset osoittavat, että yrittäjyys ei ole monen ensimmäinen uravalinta. Lisäksi, multimediatarinat yrittäjistä eivät vaikuttaneet opiskelijoiden uskoon omista kyvyistä tai aikeisiin ryhtyä yrittäjäksi. Tulokset kuitenkin osoittavat, että opiskelijaryhmien väillä on eroja. LUT:n opiskelijat olivat itseluottavaisempia sekä heillä oli suuremmat aikeet lähteä yrittäjiksi.

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In addition, I want to thank my family and friends for supporting me in every step of this process, as well as in my studies. Your help with daily tasks, believing in me when I did not believe in myself, and listening to me when I felt frustrated and tired have meant more than you can imagine. Also, just being there and giving me other things to think and do has been valuable. Now, I am ready to turn over a new leaf in my life!

Lappeenranta, 25th April 2018

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ABBREVIATIONS

ESE = Entrepreneurial self-efficacy

EU = European Union

LUT = Lappeenranta University of Technology

PBC = Perceived Behavioral Control

TPB = Theory of Planned Behavior

US = United States

1 INTRODUCTION

Both in policy making and in literature, it has been widely acknowledged and debated whether entrepreneurship has any role in economic growth and development (Iacobuta & Socoliuc, 2014). Iacobuta & Socoliuc (2014) state that entrepreneurship development is considered as a solution for creating jobs and sustainable growth in economy. The government of Finland tries to make the society supportive for entrepreneurial activities on their behalf (Suomalainen, Stenholm, Kovalainen, Heinonen & Pukkinen, 2016). Despite the efforts from policy-makers, the entrepreneurial activity and intentions are not high enough. More emphasis should be paid on entrepreneurship education. Researchers have already studied entrepreneurship education at some level (e.g. Wilson, Kickul, & Marlino, 2007; Van Auken, Stephens, Fry & Silva, 2006b) but there is still more to study in order to improve the education.

Entrepreneurial intentions in Finland have increased in recent years. From the adult population that has not yet engaged in entrepreneurial activities, 11 % have an intention to start a company within the following three years (Suomalainen et al., 2016). According to the report by Suomalainen et al. (2016) the share is, however, below the average of European Union (EU) countries, which is 13 %. To improve the share of entrepreneurial intentions entrepreneurial education could be the key. Some of the studies about entrepreneurship education mention that enhancing individual's entrepreneurial self-efficacy (ESE) is said to be one of the key elements in influencing on entrepreneurial intentions (e.g. Krueger, 1993; Chen, Greene & Crick, 1998; Pruett, Shinnar, Toney, Llopis & Fox, 2009). When an individual believes that he or she has the capacity to successfully perform the tasks of entrepreneurship, he or she will more likely to engage in those tasks (Chen et al., 1998). It is thought that an existence of entrepreneurial role model could increase the ESE of an individual (e.g. Scherer, Adams, Carley & Wiebe, 1989). Hence, providing students with potential role models could be a way to improve entrepreneurship education.

Despite the growing interest in entrepreneurship, the current academic literature still lacks information of entrepreneurship education, and especially the use of entrepreneurial role models and multimedia storytelling. While ESE has been a research topic for a while (e.g. Chen et al., 1998), the modern ways to influence it have not been studied enough. The literature lacks understanding whether entrepreneurship education could use these multimedia stories of entrepreneurial role models and thus effect on entrepreneurial intentions and self-efficacy.

1.1   Background of the study

This master's thesis is a follow-up part of a research project called E-Ship Stories, which is an Initiative for Entrepreneurship Education with Multimedia Storytelling.[1] The project explores the influence of multimedia stories about entrepreneurs as an additional teaching method in entrepreneurship education. Besides the research topic in this master's thesis, the project focuses on finding out 1) whether real-life entrepreneurial stories help changing the perspective of individuals towards entrepreneurship positively, 2) whether these multimedia stories about entrepreneurs are an appropriate teaching method, and 3) whether real failure and success stories have equal results in education. (E-Ship Stories, 2017.)

1.2   Research problem, objectives, and limitations

The purpose of this research is to study whether entrepreneurial role models have influence on ESE, and thus entrepreneurial intentions. Also, the goal is to examine what type of characteristics individuals value in the case of role models. Based on these goals the research questions and objectives are formed (table 1).

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[1] Please see www.e-ship-stories.com

Table 1. Research questions and objectives.

Research questions	Research objectives
1. Do multimedia stories of entrepreneurial role models influence student's entrepreneurial self-efficacy and intentions?	To understand whether the exposure to entrepreneurial role models (especially via multimedia storytelling) influence individual's confidence and will to become an entrepreneur.
2. Do students look for similar characteristics from their role models as they themselves have?	To understand what kind of role models influence the most on entrepreneurial self-efficacy and intentions.
3. Do the entrepreneurial views of Lappeenranta University of Technology students and Social service students differ from each other?	To understand the differences of views in two different educations.

The current literature has mostly strengthened the view that the exposure to entrepreneurial role models influence entrepreneurial intentions and self-efficacy. *The first* research question aims to get more validation for this assumption. In particular, it focuses on studying the effects of multimedia stories of these role models. *The second* research question aims to get insights of the characteristics of the entrepreneurial role models. Since educational institutions are nowadays providing students with entrepreneurial role models as guest speakers, it would be useful to find out what kind of entrepreneur has the most influence on students. Hence, the goal is to understand whether students get motivated by role models that are more relatable to themselves or by models that are successful and have been long in the industry. *The third* research question aims comparing the view of LUT students and Social services students. The goal is to have deeper understanding whether entrepreneurship is more appealing career option for certain majors.

The study is limited to concern role model effects to entrepreneurial intentions and ESE. It is acknowledged that there are several other factors influencing on the intentions and self-efficacy. However, to keep the study clear, simple, and coherent limitations are needed. Other limitation is that only students are engaging in the

research. The results would probably be quite different if the chosen population would be entrepreneurs or employees. The students were chosen since the emphasis is to find out how students are seeing entrepreneurship and how they could be guided to that career path. To further limit the study, it was chosen that only students from Industrial Engineering and Management, and Social Services were studied. Two quite opposite subjects were chosen to get some comparison between fields of studies. The reason behind choosing the role model effects as the topic is that they are not so widely studied. Also, since one of the goals is to help improve entrepreneurship education, educational institutions could use the information of what type of role models inspire students. Hence, they would know better what type of guests they should ask to lecture.

1.3   Execution of the study

This study employs a cross-sectional comparative quantitative research approach as the primary research method. Because there are already some earlier studies concerning entrepreneurship and role models, deductive approach is chosen for the data analysis. This means that the study tests hypothesis derived from literature.

The execution of the study consists of three steps that are presented in figure 1. The first step is literature review that aims at describing earlier researches and findings on entrepreneurial role models, self-efficacy, and education. The findings are a base for the analysis of the data. Rather than creating a thorough theoretical framework for the data analysis, the literature review subsidizes to the study by building a basic understanding of the subject and the fundamental theoretical assumptions of the entrepreneurial perspective adopted for the study.
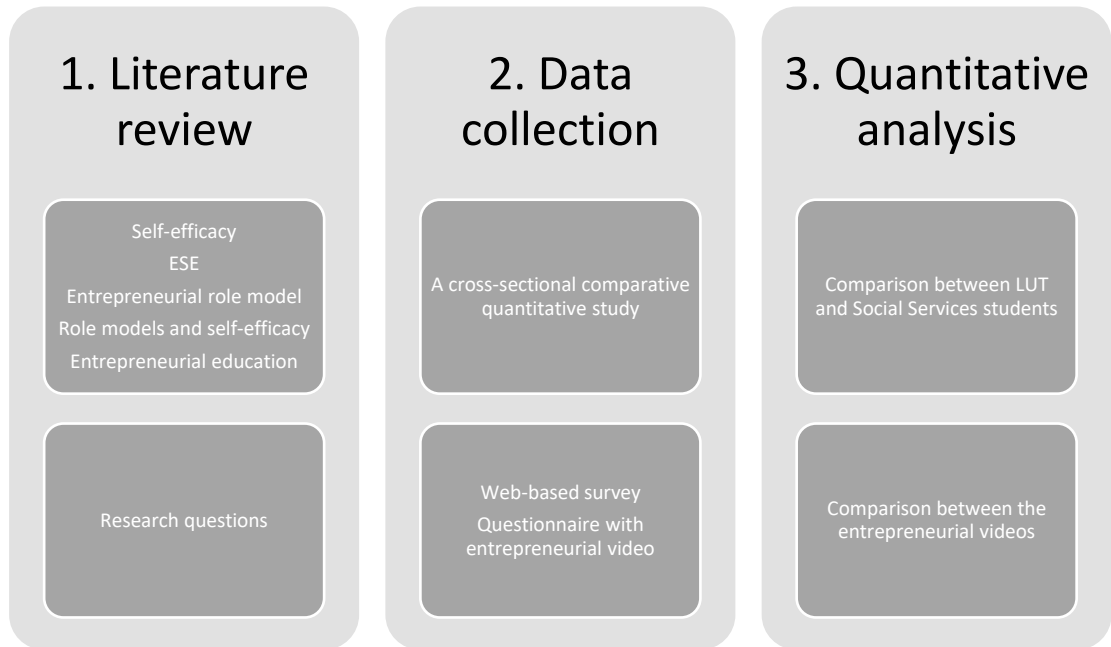
Figure 1. Execution of the study.

The second and third step build the empirical part of the thesis. First, there is the data collection phase, that includes gathering the required data from students in the form of an online survey. Students fill in a questionnaire and watch an entrepreneurial video in between the questions. The last step is the quantitative analysis, which aims at answering the research questions. The goal is to understand whether the existence of an entrepreneurial role model have an influence on entrepreneurial self-efficacy and intentions, and what are these role models like. The purpose is to compare Lappeenranta University of Technology (LUT) students, mainly from Industrial engineering and management, and Social Services students. Also, the study compares the videos. To see if the entrepreneurial videos have any influence on the students, the pre-video and post-video questions are compared. Chapter three describes the execution and the used methodology in more detail.

1.4   Structure of the study

The study is structured as five main chapters: Introduction, Theoretical background, Research methodology and data collection, Research findings, and Discussion and conclusions (figure 2). Besides, this thesis has an abstract and acknowledgement in the beginning and list of used references and appendices in the end.

Chapter 1: Introduction	• Background • Research questions, objectives, and limitations
Chapter 2: Theoretical background	• Review of existing academic literature of entrepreneurial self-efficacy and role models
Chapter 3: Research methodology and data collection	• Overview of the methodological choices
Chapter 4: Research findings	• Analysis of the collected data • Results
Chapter 5: Discussion and conclusions	• Research findings • Theoretical and managerial implications

Figure 2. Structure of the study.

The first chapter of this thesis is *Introduction*. Its purpose is to introduce the reader with the topic of this research and present the research questions. The second chapter is *Theoretical background* and it reviews the current academic literature about ESE and entrepreneurial role models. The chapter provides an overview of current knowledge about the topic. The third chapter, *Research methodology and data collection*, provides insights of research settings, measurements and control variables, and data collection and analysis methods. It, also, addresses the reliability and validity of this research. The fourth chapter, *Research findings*, is presenting the results of the data analysis. The

last chapter, *Discussion and conclusions*, sums up the research findings and analyses how they are a line with the existing literature findings. Furthermore, the chapter introduces theoretical and managerial implications of the research findings and implications for future research.

2   THEORETICAL BACKGROUND

In this chapter the theoretical background for this research is introduced. The hypotheses are deduced based on the review of current literature. The topics include entrepreneurship education and theory of planned behavior (TPB) as well as self-efficacy, and entrepreneurial role model.

2.1   Entrepreneurship education

Business education, especially in Western countries, has long focused on managerial skills instead of enhancing entrepreneurial skills such as risk taking and innovation (e.g. Chen et al., 1998; Van Auken et al., 2006b). As the study by Van Auken et al. (2006b) shows, United States (US) focuses more on preparing students to work in big corporations. Learning managerial skills is also important for future entrepreneurs but it is not the only competence they need. It is only seen as a complementing ability (e.g. Chen et al., 1998). However, since entrepreneurship has been a common topic of research, educational institutions have started to focus more on entrepreneurial education and what needs to be taught (Wilson et al., 2007). It has been long argued that it is not enough to teach only the relevant skills. Students also need to understand and feel that using the skills in practice is feasible (Krueger, 1993).

Many studies argue that one of the key factors in entrepreneurial education is to enhance the ESE (e.g. Krueger, 1993; Chen et al., 1998; Pruett et al., 2009). Education needs to aim at teaching all the required skills and giving the student the confidence to use the skills in practice. If students are encouraged and made feel that they are mastering the skills that successful entrepreneurship requires, they will more likely become interested in entrepreneurial career. As Pruett et al. (2009) states, to actually get the students fascinated by entrepreneurship, their sense of initiative and confidence needs to be fostered. Also, education should concentrate on increasing students'

perceptions of feasibility and desirability (Krueger, 1993). Some might feel that entrepreneurial career is too risky and hard but changing those attitudes and making the career option more desirable should be the goal of entrepreneurial education. Wilson et al. (2007) find that it is not only important to enhance entrepreneurial students' self-efficacy but also shape students' confidence at much earlier stage. If the confidence and belief in one's own capabilities is built already in the early years of school, it is much easier to get the student's ESE high in college. It is also important to start making entrepreneurialism feasible at early years.

It is easy to state that to really get students interested about entrepreneurial career option their ESE needs to be enhanced. However, it is more difficult to say how to do that. Wilson et al. (2007) suggest that self-confidence can be build up by experiencing and modeling, for example. They argue that schools should provide chances for students to do feasibility studies, participate in running real or imagined business, and develop business plans. The findings are similar with Chen et al. (1998) who state that entrepreneurship educators could involve the students in small business assistance or business design. This could be done by inviting entrepreneurs as guest lecturers and by verbal persuasion from renowned entrepreneurs and the lecturer. Bosma et al. (2012) and Pruett et al. (2009), also, point out the role of entrepreneurial role models in enhancing self-efficacy of students. By providing entrepreneurial role models schools might help the students to form valuable networks which they can benefit from later when starting a business (Pruett et al., 2009). Bosma et al. (2012), however, points out that since educational institutions are already spending quite a lot resources on providing students with guest speakers, it is important to further research whether these role models have influence on self-efficacy as well as entrepreneurial intentions. Also, the use of the resources will become more effective if educational institutions know better what type of characteristics students look up to. Of course, everyone has individual perception of what enhances their confidence. However, it is good to know whether they become more confident listening to experienced and successful

entrepreneur or entrepreneurs that are more relatable in characteristics, such as educational background and age.

When designing the entrepreneurship education, the institutions should notice that there are differences between genders. Wilson et al. (2007) see that men over women are more likely to choose entrepreneurial career. As said above, starting to enhance ESE at a young age is important and that is especially with girls. Schools could expand the perceived entrepreneurial options for women, and thus make that career path more feasible. Besides the gender differences, there are differences between countries and regions. The study by Van Auken et al. (2006b) compares the effect of role models on the will to become an entrepreneur between Mexican and US students. The results indicate that Mexican students are more interested in entrepreneurship than US students. This is partly explained through that Mexican schools are preparing their students for business ownership while their neighbor country focuses on large companies (Van Auken et al., 2006b).

2.2   Theory of Planned Behavior

Since the end of 1980s, literature has used entrepreneurial intentions as a concept and entrepreneurship is viewed as intentional behavior (e.g., Bird, 1988; Van Gelderen, Brand, van Praag, Bodewes, Poutsma & van Gils, 2008). When analyzing entrepreneurial intentions and the creation process of them, researchers commonly use the theory of planned behavior (TPB). It theorizes intention's strength as a precursor of behavior (Ajzen, 1991). According to Conner & Armitage (1998) it is an addition to the theory of reasoned action. These models are providing explanations about motivational and informational effects on behavior and implying that people's decisions are based on carefully considering the available information.

The TPB suggests that views about control, attitude, and norms affect behavior while intentions mediate them (Kautonen, Gelderen & Fink, 2015). Intention refers to "a

person's motivation in the sense of her or his conscious plan or decision to exert effort to enact the behavior" (Conner & Armitage, 1998, p. 1430). According to some researchers (e.g. Ajzen, 1991; Kautonen et al., 2015) intention has three cognitive factors preceding it. These are attitude, which implies to the evaluation of an individual whether the target behavior is favorable or not; subjective norms, which mean the views of social groups such as friends and family; and perceived behavioral control (PBC), which refers to the level of easiness of the target behavior (Kautonen et al, 2015). These factors build a simple theoretical model of TPB (figure 3) where the first hypothesis is built. To be noted, PBC is not only linked to the intentions but also straight to the behavior. When a person is controlling the behavior, intention can predict individual's effort and actions (Ajzen, 1991). On the other hand, if the control is low, PBC also contributes to the behavior (Ajzen, 1991). In the model, the arrow between intentions and behavior refers to the likelihood of individual participating in behaviors they are intending to perform.

Based on the notions from current literature it is assumed that the more individuals are influenced by entrepreneurial role models, the more opinions they have about entrepreneurialism. It is expected that having entrepreneurial role models shape the entrepreneurial attitudes of individuals. The attitude is thought to influence the entrepreneurial intentions. In other words, the first hypothesis implies that people who have entrepreneurial models have stronger opinions whether they themselves want to become entrepreneurs. To be noted, this hypothesis does not necessarily imply that exposure to entrepreneurial role models lead to entrepreneurial intentions. It can also mean individuals realizing that entrepreneurship is not an appealing option for them. Below, the first hypothesis is formed.

> H1: Exposure to entrepreneurial role models influence entrepreneurial attitudes, which have influence on entrepreneurial intentions.
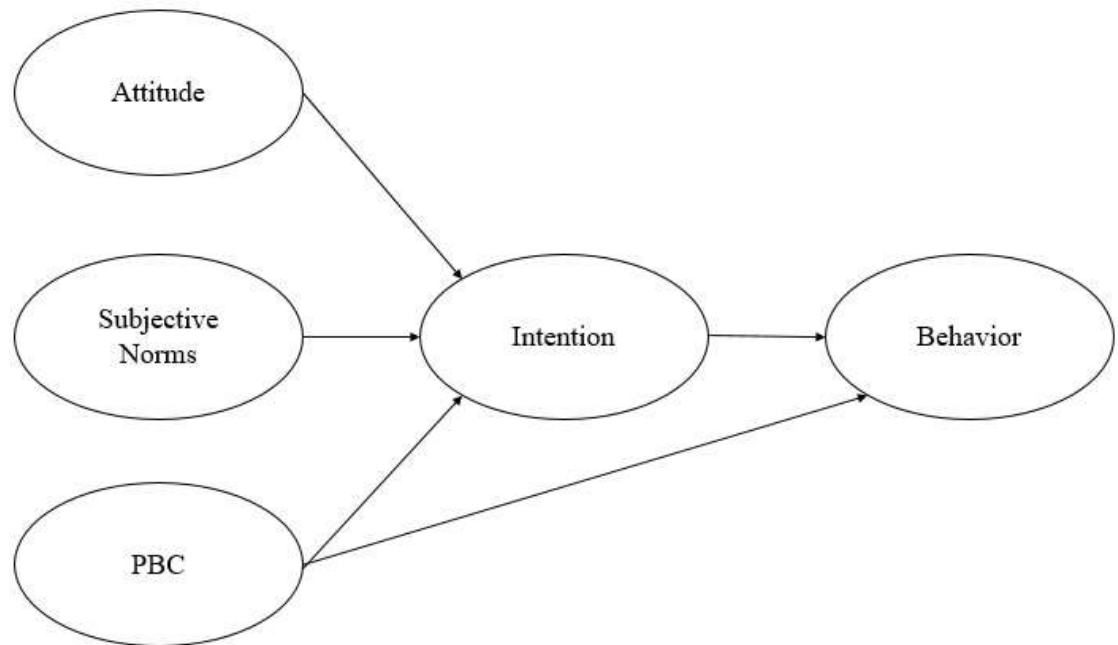
Figure 3. Structural Model of TPB (Kautonen et al., 2015, p. 666).

Conner & Armitage (1998), on the other hand, suggest extending the TPB. Instead of using only three precursors, they present six variables: belief salience measures, moral norms, self-efficacy versus PBC, past behavior, self-identity, and emotional beliefs. As Ajzen (1991, p. 199) states: "The theory of planned behavior is, in principle, open to the inclusion of additional predictors if it can be shown that they capture a significant proportion of the variance in intention or behavior after the theory's current variables have been taken into account". It is rare that a researcher uses all the variables in a study. They can instead estimate the purpose of their study and the nature of the behavior and hence, choose different combinations of the variables (Conner & Armitage, 1998). Next, I am going to discuss about how self-efficacy and more detailed ESE effect on the entrepreneurial behavior and the purpose to start a business.

2.3   Bandura's Theory of Self-efficacy

There are many factors influencing on our behavior and actions. Scholars have tried to examine what defines what we do and why we do it. There are several characteristics that shape our behavior but in this thesis, it is only looked more deeply into self-efficacy and how it effects on our actions. Several papers about the subject can be found, and most of the literature about self-efficacy is based on Albert Bandura's work. Bandura (e.g. 1977, 1982, 1986,1989b, 2001, 2003) has several studies about self-efficacy and its effect on human actions. Later many researchers have taken the subject to a more specific level. ESE (e.g. Chen et al., 1998) is one of the examples and it will be discussed more on later. Next, the research will focus on what literature informs about self-efficacy and its influence on behavior in general level.

Self-efficacy in general relates to "one's estimate of one's overall ability to perform successfully in a wide variety of achievement situations" (Chen et al., 2001, p. 79), or to "how *confident* one is that she or he can perform effectively across different tasks and situations" (Chen et al., 2001, p. 63). ESE captures the confidence of an individual to perform the necessary tasks to establish a company.

Self-efficacy is considered to have significant influence on human behavior (Bandura, 1989b). The general self-efficacy as mentioned above is referring to individual's belief oneself to complete certain tasks with desired outcomes (e.g. Bandura, 1977; Krueger, 1993). It is about the self-perception of one's abilities and skills (Wilson et al., 2007). One may have the skills but without believing in own capability to manage the task people may not even try. The higher the self-efficacy is the more likely the individual will pursue the certain task and vice versa (Bandura, 1977). It has been noticed that individuals with same skills can perform very differently. This mainly depends on their own beliefs of their self-efficacy and whether it influences their motivation and efforts positively or negatively (Wood & Bandura, 1989). People usually try to avoid intimidating situations but if one feels capable of coping with the circumstances or

tasks they will get involved and try to cope with it (Bandura, 1977). Self-efficacy is about thinking that one is capable to use required skills effectively not necessarily about owning the skills. This leads to that people will behave differently and have different motivations depending on the self-efficacy (Perwin, 2003).

In most studies, it is shown that individuals who have higher self-efficacy usually believe they will succeed and therefore are more likely to succeed (e.g. Bandura 1989b). This success usually has a positive effect on the self-efficacy. One may say that self-efficacy and success both feed each other (Bandura, 1989b). With enough self-efficacy people can get the most out of their skills (Bandura, 1989b). To sum up from Bandura's researches, self-efficacy effects on behavioral choices by 1) determining the activities which to participate in, 2) the level of motivation to perform the task, and 3) influencing on the though patterns (Bandura, 1982, 1986, 1989b). People most likely will try things they believe they can successfully complete and the motivation to finish the tasks is higher if they feel it is possible for them to cope with the task.

If someone has a good self-efficacy in certain task it does not mean that one has it in other tasks. It has been mentioned in the academic literature that self-efficacy is task and domain specific (e.g. Bandura, 1989a) Depending highly on the context and content one may have good self-efficacy in one setting and non-existent in another (Bandura, 1977; Wilson et al., 2007). Self-efficacy differs in significant ways from the 'locus of control' (Wilson et al., 2007), which is a construct referring to an overall belief of an individual in the power of their behavior and actions in certain situations and tasks (Boyd & Vozikis, 1994). This means that one might have high locus of control, i.e. belief that they are able to have control over outcomes, but week self-efficacy for a specific task (Wilson et al., 2007).

One important factor to be noted is that self-efficacy is not equal to self-esteem – even though they may have similar influences on human behavior. Self-esteem indicates

individual's insight of self-worth, whereas self-efficacy is how individual sees one's own abilities to complete certain tasks (Bandura 1989b; Perwin, 2003). They both, however, are quite similar and usually have a positive effect on behavior.
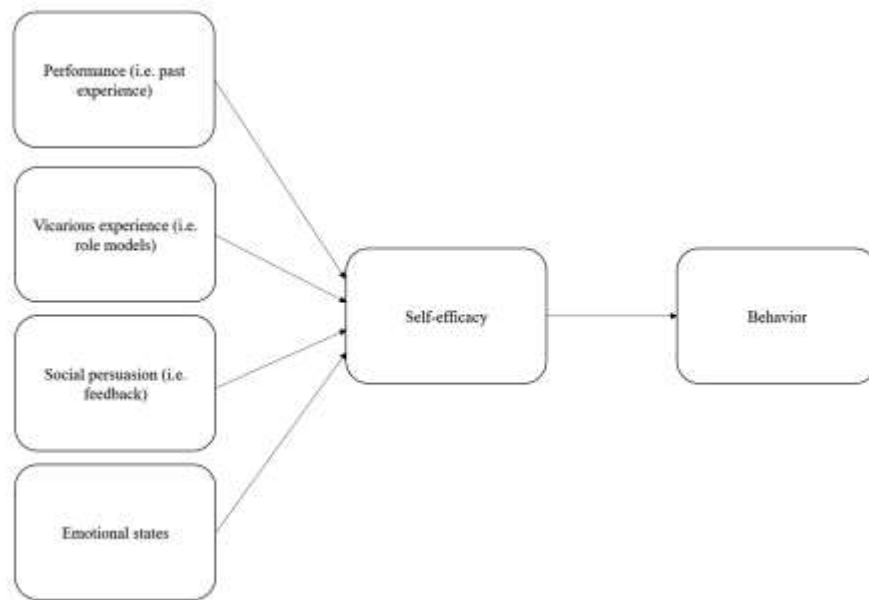
Figure 4. Influences on self-efficacy (Bandura, 1989b).

Self-efficacy is not a stable factor but it, however, can be fostered and developed over the years. Bandura (1989b) mentions four ways that can shape and influence self-efficacy. These are pictured in figure 4. *First,* past experiences can influence it. *Second,* if one has a role model that is able of doing certain things, it can increase one's own beliefs of successfully performing the same tasks. *Third,* social persuasion i.e. someone else telling you can do it has an impact on self-efficacy. *Fourth,* one's ability to accept bodily states such as shaking and sweating due to stressful situation can increase self-efficacy.

Self-efficacy is often connected to PBC. They are two concepts that are related but differ in their influence on entrepreneurial intention (Conner & Armitage, 1998; Ajzen, 2002). PBC means "individual's perception of the extent to which performance of the

behavior is easy or difficult" (Conner & Armitage, 1998, p. 1430). According to PBC people usually participate in behaviors they have control over. Before, the researchers have commonly used the concepts of PBC and self-efficacy as synonymous. However, there is an evidence that the two concepts differ in some ways (e.g. Conner & Armitage, 1998). Ajzen (2002) proposes a two-level hierarchical model that combines PBC and self-efficacy. PBC is the head construct containing two components in the lower level: self-efficacy and controllability (Ajzen, 2002; Conner & Armitage, 1998). Also, Conner & Armitage (1998) suggest that what is different is that self-efficacy can influence the outcome while PBC only predicts how an individual behaves during the task.

2.3.1   Entrepreneurial self-efficacy

The study has discussed about self-efficacy in general level but due to the nature and subject of this research there is a need to extend the search for ESE. According to the literature, ESE is referring to "the strength of a person's belief that he or she is capable of successfully performing the various roles and tasks of entrepreneurship" (Chen et al., 1998, p. 295). It has an impact to one's perceived control, level of realized accomplishment, and how much self-blame, depression, and stress we experience when coping with taxing situations (Markman, Balkin & Baron, 2002). Also, ESE can affect the courses of action, the time one perseveres, whether one has self-aiding or -hindering thoughts, and the level of effort and resilience when facing obstacles, failure, or adversity (Wood & Bandura, 1989). These all are important to entrepreneurs. For example, being an entrepreneur can sometimes be stressful and difficult but if one can cope with the stress and have self-aiding thoughts, it is likely one will do better.

While general self-efficacy can consist of many different factors, according to Chen et al. (1998) ESE is built upon five key factors. These are marketing, management, innovation, risk-taking, and financial control (figure 5). As mentioned before, self-efficacy is domain and task specific (e.g. Bandura, 1989a). If one has high ESE, it is

not obvious that one has high self-efficacy in all the five factors. This creates a problem for the researchers to solve, since they must decide whether they measure the ESE in general level or factor by factor. Further, inside these factors there are several tasks. It is not practical to take all the potential tasks of entrepreneur into account (Chen et al., 1998). It is challenge for the researcher to decide the most convenient factors to measure.

Figure 5. The five factors of ESE (Chen et al. 1998).

In the beginning of Chapter 2, it was discussed how intentions influence the behaviors we engage in. In the field of entrepreneurship, this means that if one has entrepreneurial intention i.e. thought of starting own business, they will more likely start the business (Chen et al., 1998). Boyd & Vozikis (1994) are seeing ESE as variable that determines the strength of entrepreneurial intentions. They also think it determines how likely the intentions will influence entrepreneurial actions. Also, other researchers support this view (e.g. Krueger & Brazeal, 1994; Markman et al., 2002). Krueger & Brazeal (1994) see that people are intentional actors and decision-makers who rationally calculate the

personal and situational factors in to come up with entrepreneurial decision. Further, ESE is one essential factor for an entrepreneur also in this intentional model.

Entrepreneurial intention and decision can be influenced by ESE in many reasons (Chen et al. 1998). *First,* someone with high ESE could estimate the exact same entrepreneurial environment as filled with opportunities while other with low ESE could find the environment full of risks and costs. *Second,* even if people would perceive the surrounding situation identical with all the risks, individuals who have high self-efficacy are more likely to be able to cope with that reality. This second reason can be extended to the assumption that though there exists a positive relationship between risk tolerance and entrepreneurial intentions, if self-efficacy is considered the relationship is not significant (Douglas & Fitzsimmons, 2012). *Third,* individuals with high ESE forecast more favorable outcomes than those with low ESE. Hence, the latter might see the failure before even trying and this most likely will lead to not trying.

While the literature about entrepreneurial intentions has mostly focused on person's intention to start own business, employees within organizations can also possess entrepreneurial behavior (Douglas & Fitzsimmons, 2012). This concept is known as intrapreneurship (Pinchot, 1985). As mentioned above, ESE relates positively to entrepreneurial intentions. The literature proves that the findings are similar in the case of intrapreneurial intentions (Douglas & Fitzsimmons, 2012). What differs, however, is the impact of attitudes to ownership, independence, risk, and income (Douglas & Fitzsimmons, 2012). Douglas & Fitzsimmons (2012) argue that there is no important relationship between intrapreneurial intentions and attitudes to income, ownership, and independence. Also, they found out that the relationship between intrapreneurial intentions and tolerance for risk is negative. Hence, risk averse people usually find employment in corporate environment where they can implement their entrepreneurial behavior more safely (Parker, 2011).

Another research topic among researchers in the field of entrepreneurial ESE is opportunity recognition. Many researches (e.g. Forbes, 2005; Ozgen & Baron, 2007; Tang, 2008) demonstrate that high self-efficacy facilitates opportunity recognition. Hence, people with high ESE have a tendency to recognize the entrepreneurial opportunities more easily. Ozgen & Baron (2007) find two major reasons for this. First, people with high self-efficacy are usually more self-assured and confident. These personality traits relate to the potentially broader social network which on the other hand is related to larger set of information. With this useful information, it is easier to recognize the opportunities. The broad social network does not only provide information, but also increases the self-efficacy to even higher level. Second, people with high ESE have faith in themselves successfully developing the opportunities they recognize. Hence, they may search for them more proactively (Gaglio & Katz, 2001).

2.3.2   Entrepreneurial Alertness

According to the research by Tang (2008) entrepreneurs have an ability to find the opportunities without searching for them and it is called entrepreneurial alertness. ESE affects this entrepreneurial alertness as visualized in the model (figure 6). Since entrepreneurial alertness usually means unsystematic and unfocused search, the entrepreneur must compensate that by the quality of search (Tang, 2008). This is gained through the confidence in one's abilities to identify the opportunities correctly. The entrepreneurial munificence refers to the economic, socio-cultural, and governmental factors influencing individual's ability and will to engage in entrepreneurial activities, such as searching for entrepreneurial opportunities (Gnyawali & Fogel, 1994). Figure 6 also shows that entrepreneurial alertness enhances commitment. Continuance means the intention of an entrepreneur to develop the new venture regardless of the unpredictability, risks, and uncertainties in the startup process. Behavioral commitment denotes the willingness of the entrepreneur to expend important efforts for the new venture, while affective commitment refers to the aspiration and desire to create the new venture (Tang, 2008).

```
            ┌─────────────────┐
            │ Entrepreneurial │
            │ Self-Efficacy   │
            └────────┬────────┘
                     │
                     ▼
┌─────────────────┐     ┌─────────────────┐     ┌─────────────────────┐
│ Entrepreneurial │────▶│ Entrepreneurial │────▶│ Entrepreneurial     │
│ Munificence     │     │ Alertness       │     │ Commitment          │
└─────────────────┘     └─────────────────┘     │  • Continuance      │
                                                 │  • Behavioral       │
                                                 │  • Affective        │
                                                 └─────────────────────┘
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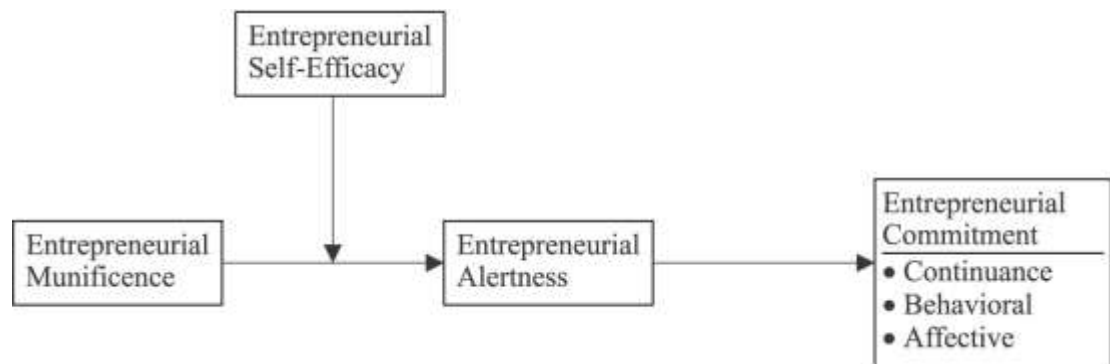
Figure 6. Conceptual model entrepreneurial alertness (Tang, 2008, p. 130).

Among all the previously mentioned factors, ESE is linked to the firm performance and especially in new venture performance. Forbes (2005) proves that a positive relationship between them exists. Hence, the entrepreneurial cognition can influence new-venture success. Since in the early phase of starting the business the entrepreneur cannot rely on the past experience, the attitude and thoughts play a big role. This view is also supported by Hmieleski & Corbett (2008). They state that entrepreneurs with high self-efficacy seem to have the best new venture performance. Also, it is suggested by them that nascent entrepreneurs should develop their confidence in entrepreneurial skills i.e. ESE before they attempt to progress a growing new venture further.

While reviewing the literature about firm innovation and self-efficacy, most studies show that there is a positive linkage between them. Ahlin, Drnovšek & Hisrich (2013) state that ESE has direct positive influences on process and product innovation in the middle of the entrepreneurship process. Hmieleski & Corbett (2008) find that already in the startup phase there is remarkable positive linkage between improvisational behavior, firm performance, and self-efficacy. This means that new entrepreneurs who have high self-efficacy are more innovative, which is moderated to the firm performance. Markman et al. (2002), on the other hand, suggest that people with high self-efficacy tend to build an own venture around the innovations, whereas people with moderate self-efficacy only invent as employees for other's companies. As a

conclusion from the reviewed literature, it can be said that when the self-efficacy is higher the more likely individuals will use their own innovations to start an own business and it will most likely lead to a better performance.

This chapter has already gone through how ESE is a component influencing on factors such as entrepreneurial intentions, opportunity recognition, performance, and innovation. The literature proves that ESE is influencing on entrepreneur's success. Next, the purpose is to find out what is in turn influencing on self-efficacy. As I am researching the effect of role-models in ESE and hence, in the willingness to become an entrepreneur, it would also be needed to look what the literature says about entrepreneurial role-models in general and whether having a role model is enhancing ESE or not. Next, this will be discussed further.

2.4   Entrepreneurial role model

Many years now, the researchers have shown evidence that role models might have a significant effect on career decisions (e.g. Bosma, Hessels, Schutjens, Van Praag & Verheul, 2012). Thus, role models may improve the desire and likelihood to become an entrepreneur and increase the ESE (Van Auken, Fry & Stephens, 2006a). Role model refers to "a cognitive construction based on the attributes of people in social roles an individual perceives to be similar to him or herself to some extent and desires to increase perceived similarity by emulating those attributes" (Gibson, 2004, p. 136). In other words, the term refers to "individuals who set examples to be emulated by others and who may stimulate or inspire other individuals to make certain decisions and achieve certain goals" (Bosma et al., 2012, p.410). The construct of role model is divided into two theoretical concepts which are the concept of role and concept of modeling (Gibson, 2004). To extend this further, the role aspect implies that people are fascinated by role models who they feel are similar in characteristics, goals, or behavior

and the model aspect means that people are attracted to role models they can learn new skills from (Bosma et al., 2012).

Bandura's theory of social learning can clarify the phenomenon of role models and how they influence career choices (Bosma et al., 2012). This theory suggests that individuals engage in models because from them they can learn new abilities (Gibson, 2004). Social learning theory is about learning and self-development by observing how others i.e. the role models behave (Scherer et al., 1989). By observing the model who takes part in different behaviors the individual also notes the reinforcements the model receives. If the individual sees the reinforcement and outcome as positive, they will likely try to copy the behavior (Scherer et al., 1989). This can also work vice versa. If the role model behavior is not perceived as successful, it can discourage the observer to take similar career path (Krumboltz, Mitchell & Jones, 1976). Hence, people not only observe the behaviors but also evaluate their outcomes. This process can influence career preferences by increasing or decreasing aspirations towards education, expectations for engaging in the particular career area, or evaluations of own abilities and skills they need to succeed in that career path (Krumboltz et al., 1976).

According to Gibson (2004) people are fascinated by role models which can assist them to grow as individuals by learning new skills and tasks from the model. Learning from models can either strengthen or weaken existing habits in certain behaviors, transmit new behaviors, or lead to initiation of similar behaviors (Chlosta, Patzelt, Klein & Dormann, 2010). People tend to observe individuals to whom they can identify and who do well in the area the observer him or herself wants to succeed in (Bosma et al. 2012). When an individual does not have any own experience about certain tasks or situations, it might help them to see and copy how others survived from them. Social learning theory can be used when researching the role model effect on career choices such as becoming an entrepreneur. Role models are a significant environmental factor when individuals form career preferences and they also make the career path prominent to the observer (Krumboltz et al., 1976). Positive entrepreneurial examples seem to

have important role in enhancing entrepreneurial tasks and activities (Bosma et al., 2012), since people tend to form preferences for careers they have seen others do well in (Scherer et al., 1989). Hence, if people see someone managing an own business successfully, they might be more interested to try entrepreneurial career themselves.

As already mentioned above, opinions and behavior by other people, how they demonstrate their identity, and the examples they set influence decisions of an individual to participate in particular behavior (Ajzen, 1991). This also concerns entrepreneurship, since many entrepreneurs say that their decision to start an own business and develop it have been affected by other people such as other entrepreneurs (Bosma et al., 2012). As Van Auken et al. (2006b) state role models effect on entrepreneurial intentions by changing the beliefs and attitudes of an individual. Some people might have prejudices for entrepreneurship but if they find an entrepreneurial role model these prejudices can be removed.

Bosma et al. (2012) suggest that entrepreneurial role models have four interrelated tasks or functions. First, they inspire and motivate individuals to get started. Second, they increase individual's self-efficacy by making them feel confident to also achieve the same goal the role model has achieved. Third, they teach by example by showing guidelines for actions. Fourth, they also teach by support meaning that they might be there in person to provide practical advices. It is examined that tasks and activities that are relationship-oriented have greater likelihood of affecting individual's career intentions (e.g. Van Auken et al., 2006a). This hints that even though people might have role models that they do not know, to really get interested of starting an own business they also require role models that they can actively interact with and get hands-on support. Famous entrepreneurs might be great motivators and exemplars, but they are not able to be there to help and they are not so easily to copied.

Many researches show that entrepreneurial role models who the observers know personally have greater influence on individual's entrepreneurial intentions (e.g.

Bosma et al., 2012; Chlosta et al., 2010; Djankov, Qjan, Roland & Zhuravskaya, 2006). The problem with famous entrepreneurs seems to be that they are too distant. Of course, Steve Jobs and other very successful icons motivate people to try the same, but the studies have shown that they do not have significant influence on people's desire to become an entrepreneur (e.g. Bosma et al., 2012). The reason for not having famous entrepreneurial role models might also be that they are sometimes harder to identify with. The study by Bosma et al. (2012) also shows that most entrepreneurs communicate personally with their role model to get support. This finding is also supported by earlier research by Van Auken et al. (2006a) who see mentoring as important activity at motivating people to pursuit a career as an entrepreneur. Mentoring and communication is seen important in the later phases of entrepreneurship as well.

Since I already have come up to an assumption that personal role models have more influence on entrepreneurial intentions than 'famous' one's, more deeper understanding about these personal role models is needed. There can be found three strands of literature supporting role model importance in the entrepreneurial decisions: parental role model effects, network and peer group effects, and regional effects (Bosma et al., 2012). There are plenty of studies showing that individuals with parent as an entrepreneur will more likely either start an own business themselves or take lead in their parent's venture (e.g. Chlosta et al., 2010; Scherer et al., 1989; Scott & Twomey, 1988). According to Scott & Twomey (1988), if a person has parental role model, he or she will more likely see him or herself as an entrepreneur as well. They state that this self-perception may lead to a preference of an entrepreneurial career, if the person also has a business idea and a triggering factor. Study by Chlosta et al. (2010) complements the view that individuals who have self-employed parents will more potentially become self-employed than those people whose parents do not have an own business. Chlosta et al. (2010), also, extends the research to distinguish maternal and paternal role models. What differs is that the influence of paternal role model is depending on the openness of the individuals, while the influence of maternal

role model is not depending on that characteristic. Though many studies show that parental role models are significantly influencing on entrepreneurial intentions, there is also evidence that the effect differs geographically. The study by Van Auken et al. (2006b) compares parental influence on career selection in Mexico and US. The research shows that Mexicans have more parental role models, whereas Americans have more role models outside their immediate family. This is most likely due to the cultural differences and perceptions of family.

Based on the literature findings it can be assumed that entrepreneurial identity is a result from a person's socialization. The study has already discussed about the parental effect, but it can also consider social networks and peer groups (e.g. Falck, Heblich & Luedemann, 2012). The study by Falck et al. (2012) shows that peer groups are influencing on entrepreneurial intentions. This means that individuals who study with individuals who have entrepreneurial background will more likely become interested in entrepreneurship. This view is also supported by Djankov et al. (2006). However, there are also studies showing that peer groups have negative influence on entrepreneurial intentions. Lerner & Malmendier (2007) argue that spending time with larger share of students or friends with entrepreneurial background decreases the likelihood of starting a business.

As already mentioned, regions and countries have differences in role model effects. Some areas of the world have more entrepreneurs than others and it is further influencing on entrepreneurial intentions (e.g. Lafuente, Vailliant & Rialp, 2007). Mueller (2006) find that local environments with high entrepreneurial activity may decrease the level of individual's obscurity associated with self-employment and in contrast, increase the legitimacy of entrepreneurship. If the area has a lot of entrepreneurs, others can find entrepreneurial role models more easily. It can be said that regional entrepreneurship increases the self-employment levels even more. The challenge here seems to be how to increase the self-employment in regions where the entrepreneurial activities are small.

Other interesting area of study is what type of entrepreneurial role models people have. Researchers should find out whether it is enough that the entrepreneur is highly successful or does he or she have to be also easy to identify with. As Bosma et al. (2012) find, people are fascinated by role models which are perceived to have similar characteristics, goals, or behavior and from whom the can learn new skills and abilities they need for their chosen entrepreneurial activity. Usually, the role model and the entrepreneur resemble each other by gender, nationality, or sector but differ in human capital characteristics and firm performance (Bosma et al., 2012). This means that role models, in most cases, have larger and older ventures. Also, Gibson (2004) and Falck et al. (2012) argue that role model has similarities with the observer. Based on this assumption, I chose the entrepreneurial role models for this research. The other is thought to be easier to identify with in terms of sector and characteristics, and the other is thought to have little resemblance in the studied individuals. Based on the review of literature second hypothesis is deduced.

> H2: Students' entrepreneurial role models are similar in their characteristics as the students are.

2.5   Role models and self-efficacy

The study has discussed about self-efficacy and role models separately but in this section, these two concepts are combined. Based on the findings from literature we already assume that high ESE and having an entrepreneurial role model has positive influence on entrepreneurial intentions. The literature shows that there is also a relationship between self-efficacy and having a role model. In other words, entrepreneurial role model seems to influence positively on ESE (e.g. Scherer et al., 1989; Bosma et al., 2012). The case of self-efficacy and role models refers to person's evaluation whether he or she has the same competencies that the entrepreneurial role

model possesses or can create them (Krumboltz et al., 1976). If the observer has a role model who is high performing, it is more likely that the individual will have a positive view about own capabilities, since he or she can enhance own knowledge about the behaviors that repeat themselves (Scherer et al., 1989).

Other researches also support the view that entrepreneurial role models enhance observer's self-efficacy. Van Auken et al. (2006a; 2006b) propose that observing the role model increases the confidence of one's own capabilities i.e. self-efficacy. In addition, seeing someone else succeeding in something can make the goal achievable for the observer as well (Bosma et al., 2012).

Though performance of the role model is seen quite important factor in encouraging to become an entrepreneur, it might be said that the existence of the role model is more important (Scherer et al., 1989). It is not necessary that the role model is extremely successful to create high ESE. It is also possible for the observer to learn from the mistakes the role model makes and make sure not to make the same mistakes him or herself (Scherer et al., 1989). In these situations, the observer might feel that he or she would do a lot better in the same environment, and thus, increase one's own self-efficacy.

Finally, as Krueger et al. (2000) state, role models will influence entrepreneurial intentions only when they can change perceived self-efficacy and other beliefs. This is seen as one of the key functions of a role model (Bosma et al., 2012). Hence, role model would probably not be a role model if he or she would not have any influence on the thoughts of the observer. Role models are meant for showing the way for the people who admire them. Thus, it could be assumed that entrepreneurial role models do influence ESE and further, entrepreneurial intentions.

3   RESEARCH METHODOLOGY AND DATA COLLECTION

This research adopted a cross-sectional comparative quantitative research approach with a web-survey. Quantitative research is best when *1)* the factors that influence the outcome need to be identified, *2)* the understanding of the best predictors of outcomes is needed, or *3)* a theory, explanation, or hypotheses need to be tested (Creswell, 2009, p. 18). The purpose of this research is to find out the factors influencing on entrepreneurial intentions and test hypotheses i.e. study whether role model presence has affect and what type of these role models typically are. Hence, quantitative research fits here. In table 2 there are typical characteristics of quantitative approaches.

Table 2. Characteristics of quantitative approaches (Creswell, 2009, p. 17).

Quantitative Approaches tend to or typically…	
use these philosophical assumptions:	- Post-positivist knowledge claims
employ these strategies of inquiry:	- Surveys and experiments
employ these methods:	- Closed-ended questions, predetermined approaches, numeric data
use these practices of research as the researcher:	- Tests or verifies theories or explanations - Identifies variables to study - Relates variables in questions or hypotheses - Uses standards of validity and reliability - Observes and measures information numerically - Uses unbiased approaches

	- Employs statistical procedures

As mentioned above this study is *cross-sectional*, which refers to that the survey is only once given to a certain sample of respondents (Nardi, 2014, p. 127). A cross-sectional study suits for this purpose since it requires less time than longitudinal study and does not require follow-up study. *Comparative design*, on the other hand, refers to the fact that the study compares different cases to test the hypotheses. This research compares the entrepreneurial views of engineering students and social service students as well as the views inside the certain field of education. The comparison between the students who study the same subject is executed by showing two different entrepreneurial videos to the students. This is explained further in Data collection methods.

This research is *deductive* by nature. This reasoning is used when an already existing theory is used to form research ideas about certain attitudes and behaviors (Nardi, 2014, p. 36). Deduction shifts from the general idea to more specific knowledge about the issue. In the literature review, it is suggested that role models have influence on entrepreneurial intentions. From that assumption, I formed the research problem and hypotheses, and hope to find out more what kind of these role models are.

The research was designed as modelled in figure 5. First, the current literature was analyzed and reviewed (Chapter 2) to have a clear picture of what is the prevalent view of role model effects in entrepreneurship. Second, as mentioned, a quantitative research was chosen as a method and an online questionnaire was conducted to students. Third, the quantitative data was analyzed with help of SPSS.
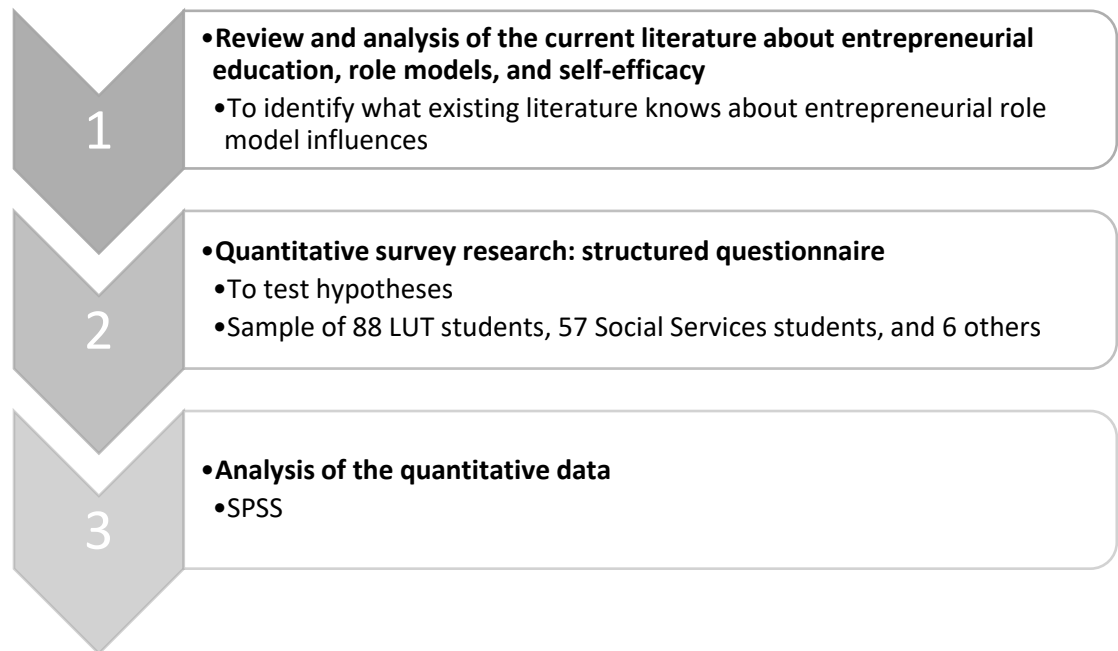
Figure 7. The model of the research design.

3.1 Research settings and sample characteristics

The purpose of this study is to strengthen the current view that entrepreneurial role models influence entrepreneurial intentions and identify what kind of role models motivate student best. Also, the goal is to find out whether a role model could influence the self-efficacy in the form of multimedia storytelling.

The data was mainly collected from Industrial engineering and management students, Environmental engineering students and Social services students. However, since many courses in the LUT have a mixture of different majors, the respondents might include also other LUT students. It would have been possible to not include the answers from other majors but since the response rate was quite small, all the answers were valuable. Also, to be noted, the options for field of education may not be precise enough. Hence, student studying Industrial engineering and management could choose either Business and Management, Information Technology or Technical (Sciences)

depending on their academic emphasis. Hence, these three fields of study are combined in this research as LUT students. In table 3, it is listed how many responses and from which educational background each video had. The reason behind choosing Industrial engineering and management students is the major of the writer of this thesis. Choosing also Environmental engineering and Social Services students as comparison groups was mainly due to the entrepreneurial role models in the questionnaire. The other entrepreneur has graduated Environmental engineering as a major and the other entrepreneur works in the field of social service. Also, they are two quite different fields of study, so it could be assumed that there are differences between their results. Besides these majors, there were six respondents that were neither from LUT or Social sciences. They were not included in the comparison between majors but they were included in pre- and post-video comparison.

Table 3. Majors of the respondents.

	Video 1	Video 2
LUT students	58	30
Social (Sciences)	22	35
Others	2	4
Total	82	69

As can be seen from table 3, altogether 151 students started to fill in the questionnaire. Almost all the respondents were Finnish students. There were few exceptions - 13 students were other nationalities. This was due to that one of the Social Services student groups and one of the Environmental engineering classes were international. The main reason for trying to keep the sample as Finnish students was that other entrepreneurial video was in Finnish. However, these international students were not forbidden to answer but they were given the link to the questionnaire that included entrepreneurial video in English. In other characteristics, 75 females and 56 males answered the questionnaire. In addition, the age distribution of the sample is presented in figure 8.
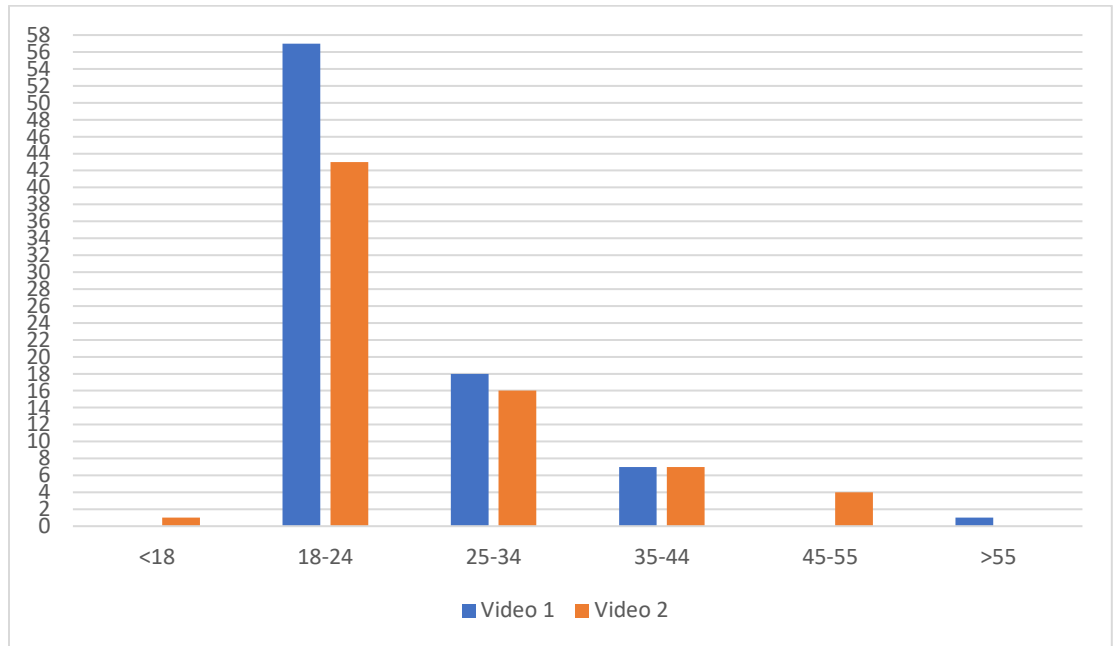
Figure 8. Age distribution.

3.2   Measurements

Measure	Concept	Definition	Number of items/item example	Source
		Students		
Inspiration / modeling (IM)	Students' career inspiration and influence from others	Individual trying to model a person who inspires them in certain career path	5 "There is an entrepreneurial person I am trying to be like in my career pursuits"	Modified from Nauta & Kokaly (2001)
Subjective norm	Which persons in students' close environment would approve	Individual's perceived social pressure to engage in a behavior	4 - Parents - Siblings - Friends - Someone else who is important to me	Modified from Liñan & Chen (2009); Kautonen et al. (2015)

	the decision to create a firm		and/or someone I do not know personally	
Entrepreneurial attitudes	Students' attitudes towards entrepreneurship	Individual's opinion about entrepreneurship as a career option	11 "A career as entrepreneur is attractive for me"	Modified from Liñan & Chen (2009);Kautonen et al. (2015)
Entrepreneurial passion	Students' passion towards entrepreneurial tasks	Passion to become self-employed and carry out entrepreneurial tasks	13 "Establishing a new company seems exiting to me."	Based on Breugst et al. (2012); modified from Cardon et al. (2013)
Perceived entrepreneurial desirability	Students' desire to start own business	The level of desirability of entrepreneurial career	3 "I would love to start my own business"	Modified from Peterman & Kennedy (2003)
Perceived entrepreneurial feasibility	Student's thought about the feasibility of starting own business	The level of feasibility of entrepreneurial career	5 "It will be easy to start my own business"	Modified from Peterman & Kennedy (2003)
Entrepreneurial alertness	Students' ability to pursuit new opportunities	Ability to find entrepreneurial opportunities	24 "I have an extraordinary ability to smell profitable opportunities"	Tang et al. (2012)
Entrepreneurial orientation	Students' orientation towards entrepreneurship		17 "I consider working independently to enhance creative thinking"	Adapted from the EO Scale by Covin & Slevin (1989) and the IEO scale of Langkamp, Bolton & Lane (2012); Bolton

				(2012); Dess & Lumpkin (2005; 1996)
Self-efficacy	Students' confidence in own entrepreneurial skills	An individual's belief in own capabilities to accomplish a certain task	10 "Conceive a unique idea for a business"	Chen et al. (2001); Kickul et al. (2009)
Perceived behavioral control	Students' perception of how easy it is to start own firm	The level of easiness of the target behavior	10 "I am prepared to start a viable firm"	Liñan & Chen (2009); modified from Kautonen et al. (2015)
Behavior	Students' resources already invested in activities aimed at starting a business	Actions or manners of conducting oneself	3 "I have spent much time on activities aimed at starting a business in the last 12 months"	Modified from Kautonen et al. (2015)
Entrepreneurial intention	Students' intention to start own business	Thought of starting own business	9 "I am ready to do anything to be an entrepreneur"	Liñan & Chen (2009); Kautonen et al. (2015)
Entrepreneurial experience	Students' previous experience about entrepreneurship	Being engaged in entrepreneurial activities in past	8 "Have you ever started a business"	Peterman & Kennedy (2003)
Performance	Student's school, work, and entrepreneurial performance	The execution of certain task or action	3 "I usually perform above average (in my studies or any other work etc.)"	Students' answers in the questionnaire

3.3   Control variables

Research settings have independent variables and dependent variables. *Dependent variables* are the outcomes researchers are trying to understand, i.e. its variability *depends on* certain causes or explanations. These causes and explanations are the *independent variables.* (Nardi, 2014, p. 48.) Studies can also have several control variables that are expected to have some level of influence on the dependent variables. The control variables used in this research are gender, age, nationality, entrepreneurship education, and field of education. These variables are controlled so that it is possible to determine the real influence of these variables on the dependent variable (Creswell, 2009, p. 51).

3.4   Data collection methods

The data for this thesis was collected through a structured internet-based questionnaire. The questionnaire consists of 46 questions and an entrepreneurial video in between the questions. Almost all the questions can be answered on 7 -item Likert scale meaning that 1 means strongly disagree and 7 means strongly agree. The questionnaire was formed for earlier research purposes in this entrepreneur education project and the questions were modified or taken from previous researches. In the middle of the questionnaire students watch a video of a potential entrepreneurial role model. For this research there are two entrepreneurial video options. The characteristics of these entrepreneurs are listed in table 4. The purpose was to have two quite different entrepreneurs in their gender, age, industry, and their experience. The other entrepreneur is supposed to be more relatable with LUT Industrial engineering and management students and Environmental engineering students and other one is supposed to be more relatable with Social Services students.

Table 4. Characteristics of the entrepreneurs in the videos.

Video 1	Video 2
construction consulting & project management	child welfare/foster care
company founded 2015	company founded 2000
graduated few years ago	graduated many years ago
male	female

The survey was distributed via professors in the universities. In LUT, the research topic was presented to students in different courses and they were personally asked to take part in this survey. The professors shared the link of the questionnaire with students and tried to motivate the students on their behalf. In few cases, the students had the opportunity to answer during the lecture. It was not possible to present the topic personally to the Social Services students, so a representative in the school only shared the link with the students. To get more answers, in the end of the questionnaire students had an opportunity to take part in a lottery of two movie tickets. At first, the students were given two weeks to fill in the questionnaire. However, the answer time was extended to get higher response rate.

During the period to answer, altogether 174 respondents started the questionnaire. Out of these, 82 finished the survey. It can be said that the response rate is very small since the information about the questionnaire was shared with around 2000 students. There might be several reasons for this. First, the students can be hard to motivate to answer. Even though they were promised a chance to win two movie tickets, they may feel the chances to win them are too little and that the prize is too small. The questionnaire takes quite much time, and many might feel that 30 minutes is too much for something that does not necessarily benefit them. Also, even though the subject was presented for part of the students in the lectures, they might forget to answer at home. What also

lowers the response rate is that the link was shared with every single Social Services student in two Universities of Applied Sciences.

3.5   Data analysis methods

After collecting the data and combining the separate surveys into a dataset, the analysis was done with the help of statistical program SPSS. The data was analyzed by including paired samples t-test and independent samples t-test. Both tests give a p-value, which is the probability that the difference in means is only due to a sampling error. The smaller the p-value is, the more validation there is for the means differing from each other statistically. Basically, if the value of p is below 0,05, there is a difference in the means.

3.6   Reliability and validity

Reliability and *validity* are valid concepts to take into consideration when building research methods. Findings are not trustworthy if they are not consistent and accurate. One of the reasons studies fail is bad quality of the measurements. (Nardi, 2014, p. 61.) Hence, it is important to form the questions carefully and if possible, test them beforehand. This is applied in this research.

Reliability is basically referring to consistency. In other words, "it is the expectation that there won't be different findings each time the measures are used, assuming that nothing has changed in what is being measured" (Nardi, 2014, p. 64). Validity is referring to accuracy of the results and how correctly the operationalization is indicating what it is meant to (Nardi, 2014, p. 62). In this research, the reliability was pursued using items from previous studies. The questions were operationalized by forming them according to the previous studies. The ideas for the questions were taken from studies that are reliable and these studies have proven that the questions have been

successful. Also, before this survey the questionnaire has been used to survey different research topic. These factors should prove the items reliable also in this study.

4 RESEARCH FINDINGS

In this chapter, the research findings are presented. In the data analysis, the main focus is on inspiration/modeling, self-efficacy, entrepreneurial intention and role model. In chapter 4.1 dependent samples t-test is for comparing the results pre- and post-video. The goal is to find out do the entrepreneurial videos influence the students' self-efficacy and entrepreneurial intentions, and on views about role modeling. In chapters 4.2 and 4.3 the test under analysis is independent samples t-test to make comparison between the two student groups.

4.1 Paired Samples Test

In this section, pre- and post-video results are compared and thus H1. is answered. The goal is to find out whether watching the video influence students views about the questions. In table 5, means, standard deviations and standard error means are listed for both video 1 and video 2.

Table 5. Paired Samples Statistics, video 1.

			Video 1				Video 2			
			Mean	N	Std. Dev.	Std. Error Mean	Mean	N	Std. Dev.	Std. Error Mean
Inspiration/modeling										
Pair 1	There is an entrepreneurial person I am trying to be like in my career pursuits.	Pre	3,54	46	1,810	,267	3,74	43	1,787	,273
		Post	3,59	46	1,869	,276	3,79	43	1,656	,252
Pair 2	There is an entrepreneurial person particularly inspirational to me in my career path.	Pre	3,67	46	1,826	,269	4,05	43	1,838	,280
		Post	3,85	46	1,932	,285	4,12	43	1,665	,254
Pair 3	In the career path I am pursuing, there is an entrepreneurial person I admire.	Pre	3,96	46	2,097	,309	4,02	43	1,845	,281
		Post	4,04	46	2,087	,308	4,05	43	1,704	,260
		Pre	3,00	46	1,647	,243	3,28	43	1,737	,265

Pair	Item		Mean	N	Std.	Std.Err		Mean	N	Std.	Std.Err
Pair 4	I have a mentor in my potential entrepreneurial career field.	Post	3,17	46	1,768	,261		3,51	43	1,681	,256
Pair 5	I know of an entrepreneurial person who has a career I would like to pursue.]	Pre	3,67	46	1,898	,280		3,93	43	1,778	,271
		Post	3,54	46	1,870	,276		4,02	43	1,725	,263
Self-efficacy [I feel very competent and confident that I could..]											
Pair 6	conceive a unique idea for a business.	Pre	4,14	42	1,829	,282		4,62	42	1,464	,226
		Post	4,60	42	1,654	,255		4,79	42	1,335	,206
Pair 7	identify market opportunities for a new business.	Pre	4,57	42	1,915	,295		4,69	42	1,506	,232
		Post	4,74	42	1,609	,248		4,79	42	1,539	,237
Pair 8	plan a new business.	Pre	4,33	42	1,843	,284		4,64	42	1,511	,233
		Post	4,62	42	1,696	,262		4,76	42	1,559	,241
Pair 9	write a formal business plan.	Pre	4,52	42	1,685	,260		4,19	42	1,502	,232
		Post	4,40	42	1,768	,273		4,21	42	1,631	,252
Pair 10	raise money to start a business.	Pre	4,12	42	1,915	,296		4,36	42	1,394	,215
		Post	4,07	42	1,786	,276		4,50	42	1,419	,219
Pair 11	convince others to invest in your business.	Pre	4,21	42	1,747	,270		4,48	42	1,383	,213
	convince others to invest in your business.	Post	4,26	42	1,712	,264		4,52	42	1,452	,224
Pair 12	convince a bank to lend you money to start a business.	Pre	4,43	42	1,769	,273		4,62	42	1,361	,210
		Post	4,19	42	1,784	,275		4,60	42	1,483	,229
Pair 13	convince others to work for you in your new business.	Pre	4,55	42	1,699	,262		4,81	42	1,215	,187
		Post	4,48	42	1,811	,279		4,69	42	1,456	,225
Pair 14	manage a small business.	Pre	4,79	42	1,675	,259		4,71	42	1,384	,214
		Post	4,64	42	1,722	,266		4,83	42	1,413	,218
Pair 15	grow a successful business.	Pre	4,31	42	1,732	,267		4,71	42	1,066	,164
		Post	4,29	42	1,812	,280		4,83	42	1,378	,213
Entrepreneurial intention											
Pair 16	I am ready to do anything to be an entrepreneur.	Pre	2,95	41	1,702	,266		3,38	42	1,637	,253
		Post	2,98	41	1,725	,269		3,45	42	1,611	,249
Pair 17	My professional goal is to become an entrepreneur.	Pre	3,20	41	1,978	,309		3,67	42	1,720	,265
		Post	3,37	41	1,907	,298		3,90	42	1,736	,268
Pair 18	I will make every effort to start and run my own firm.	Pre	3,22	41	1,917	,299		3,52	42	1,700	,262
		Post	3,29	41	1,927	,301		3,74	42	1,654	,255
Pair 19	I am determined to create a firm in the future.	Pre	3,51	41	1,912	,299		3,83	42	1,780	,275
		Post	3,59	41	2,000	,312		3,95	42	1,766	,273

Pair			Mean	N	Std. Dev	Std. Error	Mean	N	Std. Dev	Std. Error
Pair 20	I have very seriously thought of starting a firm.	Pre	3,88	41	2,015	,315	4,17	42	1,780	,275
		Post	3,80	41	2,052	,320	4,14	42	1,907	,294
Pair 21	I have the firm intention to start a firm some day.	Pre	3,59	41	2,012	,314	3,93	42	1,840	,284
		Post	3,63	41	2,059	,321	4,05	42	1,860	,287
Pair 22	I plan to take steps to start a business in the next 12 months.	Pre	2,56	41	1,803	,282	2,90	42	1,679	,259
		Post	2,71	41	1,901	,297	3,02	42	1,732	,267
Pair 23	I intend to take steps to start a business in the next 12 months.	Pre	2,51	41	1,748	,273	2,86	42	1,632	,252
		Post	2,61	41	1,856	,290	2,93	42	1,673	,258
Pair 24	I will try to take steps to start a business in the next 12 months.	Pre	2,51	41	1,762	,275	2,86	42	1,632	,252
		Post	2,68	41	1,903	,297	2,90	42	1,679	,259

In table 6, there are the correlations between the variables from both videos. All the correlations are statistically significant since Sig. is below 0,001.

Table 6. Paired Samples Correlations.

		Video 1			Video 2		
		N	Correlation	Sig.	N	Correlation	Sig.
Inspiration/modeling							
Pair 1	There is an entrepreneurial person I am trying to be like in my career pursuits.	46	,883	,000	43	,939	,000
2	There is an entrepreneurial person particularly inspirational to me in my career path.	46	,867	,000	43	,908	,000
3	In the career path I am pursuing, there is an entrepreneurial person I admire.	46	,894	,000	43	,863	,000
4	I have a mentor in my potential entrepreneurial career field.	46	,832	,000	43	,937	,000
5	I know of an entrepreneurial person who has a career I would like to pursue.	46	,677	,000	43	,901	,000
Self-efficacy [I feel very comptent and confident that I could..]							
6	conceive a unique idea for a business.	42	,794	,000	42	,606	,000
7	identify market opportunities for a new business.	42	,873	,000	42	,823	,000
8	plan a new business.	42	,822	,000	42	,740	,000
9	write a formal business plan.	42	,885	,000	42	,779	,000
10	raise money to start a business.	42	,910	,000	42	,857	,000
11	convince others to invest in your business.	42	,903	,000	42	,832	,000

12	convince a bank to lend you money to start a business.	42	,847	,000	42	,913	,000
13	convince others to work for you in your new business.	42	,896	,000	42	,793	,000
14	manage a small business.	42	,860	,000	42	,736	,000
15	grow a successful business.	42	,873	,000	42	,814	,000
Entrepreneurial intention							
16	I am ready to do anything to be an entrepreneur.	41	,928	,000	42	,913	,000
17	My professional goal is to become an entrepreneur.	41	,955	,000	42	,895	,000
18	I will make every effort to start and run my own firm.	41	,903	,000	42	,892	,000
19	I am determined to create a firm in the future.	41	,953	,000	42	,960	,000
20	I have very seriously thought of starting a firm.	41	,931	,000	42	,834	,000
21	I have the firm intention to start a firm some day.	41	,934	,000	42	,885	,000
22	I plan to take steps to start a business in the next 12 months.	41	,968	,000	42	,915	,000
23	I intend to take steps to start a business in the next 12 months.	41	,965	,000	42	,916	,000
24	I will try to take steps to start a business in the next 12 months.	41	,952	,000	42	,921	,000

In table 7, the differences between pre-video and post-video results can be seen for video 1. The only question showing some difference is *"I feel very competent and confident that I could… [conceive a unique idea for a business]."* The mean of the answers before the video 4,14 (σ = 1,829, n = 42) was smaller than the mean of the answers after the video 4,60 (σ = 1,654, n = 42). The difference proved to be statistically almost significant in dependent samples t-test: t(41) = - 2,593, p = 0,013, 2-tailed. All the other differences were not significant enough.

Table 7. Paired Samples Test, video 1.

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Dev.	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Inspiration/modeling								
1 There is an entrepreneurial person I am trying to be like in my career pursuits.	-,043	,893	,132	-,309	,222	-,330	45	,743
2 There is an entrepreneurial person particularly inspirational to me in my career path.	-,174	,973	,143	-,463	,115	-1,212	45	,232
3 In the career path I am pursuing, there is an entrepreneurial person I admire.	-,087	,962	,142	-,373	,199	-,613	45	,543
4 I have a mentor in my potential entrepreneurial career field.	-,174	,996	,147	-,470	,122	-1,185	45	,242
5 I know of an entrepreneurial person who has a career I would like to pursue.	,130	1,515	,223	-,319	,580	,584	45	,562
Self-efficacy [I feel very competent and confident that I could..]								
6 conceive a unique idea for a business.	-,452	1,131	,174	-,805	-,100	-2,593	41	,013*
7 identify market opportunities for a new business.	-,167	,935	,144	-,458	,125	-1,155	41	,255
8 plan a new business.	-,286	1,066	,164	-,618	,046	-1,737	41	,090
9 write a formal business plan.	,119	,832	,128	-,140	,378	,927	41	,359
10 raise money to start a business.	,048	,795	,123	-,200	,295	,388	41	,700
11 convince others to invest in your business.	-,048	,764	,118	-,286	,190	-,404	41	,688
12 convince a bank to lend you money to start a business.	,238	,983	,152	-,068	,544	1,570	41	,124

13	convince others to work for you in your new business.	,071	,808	,125	-,180	,323	,573	41	,570
14	manage a small business.	,143	,899	,139	-,137	,423	1,030	41	,309
15	grow a successful business.	,024	,897	,138	-,256	,303	,172	41	,864
Entrepreneurial intention									
16	I am ready to do anything to be an entrepreneur.	-,024	,651	,102	-,230	,181	-,240	40	,812
17	My professional goal is to become an entrepreneur.	-,171	,587	,092	-,356	,015	-1,861	40	,070
18	I will make every effort to start and run my own firm.	-,073	,848	,132	-,341	,195	-,552	40	,584
19	I am determined to create a firm in the future.	-,073	,608	,095	-,265	,119	-,771	40	,445
20	I have very seriously thought of starting a firm.	,073	,755	,118	-,165	,311	,621	40	,538
21	I have the firm intention to start a firm some day.	-,049	,740	,116	-,282	,185	-,422	40	,675
22	I plan to take steps to start a business in the next 12 months.	-,146	,478	,075	-,297	,004	-1,962	40	,057
23	I intend to take steps to start a business in the next 12 months.	-,098	,490	,077	-,252	,057	-1,275	40	,210
24	I will try to take steps to start a business in the next 12 months.	-,171	,587	,092	-,356	,015	-1,861	40	,070

* = Sig. (2-tailed) < 0,05

In table 8, the differences between pre-video and post-video results can be seen for video 2. The only question showing some difference is *"I have a mentor in my potential entrepreneurial career field."* The mean of the answers before the video 3,28 ($\sigma = 1,737$, n = 43) was smaller than the mean of the answers after the video 3,51 ($\sigma = 1,681$, n = 43). The difference proved to be statistically almost significant in dependent samples t-test: $t(42) = - 2,496$, $p = 0,017$, 2-tailed. Also in video 2, all the other differences were not significant enough.

Table 8. Paired Samples Test, video 2.

	Paired Differences							Sig. (2-tailed)
			Std. Error Mean	95% Confidence Interval of the Difference				
	Mean	Std. Dev.		Lower	Upper	t	df	
Inspiration/modeling								
1 There is an entrepreneurial person I am trying to be like in my career pursuits.	-,047	,615	,094	-,236	,143	-,496	42	,623
2 There is an entrepreneurial person particularly inspirational to me in my career path.	-,070	,768	,117	-,306	,167	-,595	42	,555
3 In the career path I am pursuing, there is an entrepreneurial person I admire.	-,023	,938	,143	-,312	,266	-,163	42	,872
4 I have a mentor in my potential entrepreneurial career field.	-,233	,611	,093	-,421	-,045	-2,496	42	,017*
5 I know of an entrepreneurial person who has a career I would like to pursue.	-,093	,781	,119	-,333	,147	-,781	42	,439
Self-efficacy [I feel very competent and confident that I could..]								
6 conceive a unique idea for a business.	-,167	1,248	,193	-,555	,222	-,866	41	,392
7 identify market opportunities for a new business.	-,095	,906	,140	-,377	,187	-,682	41	,499
8 plan a new business.	-,119	1,109	,171	-,465	,226	-,696	41	,490
9 write a formal business plan.	-,024	1,047	,162	-,350	,303	-,147	41	,884
10 raise money to start a business.	-,143	,751	,116	-,377	,091	-1,232	41	,225
11 convince others to invest in your business.	-,048	,825	,127	-,305	,209	-,374	41	,710
12 convince a bank to lend you money to start a business.	,024	,604	,093	-,165	,212	,255	41	,800
13 convince others to work for you in your new business.	,119	,889	,137	-,158	,396	,868	41	,391
14 manage a small business.	-,119	1,017	,157	-,436	,198	-,759	41	,452
15 grow a successful business.	-,119	,803	,124	-,369	,131	-,961	41	,342

Entrepreneurial intention								
16	I am ready to do anything to be an entrepreneur.	-,071	,677	,104	-,282	,140	-,684	41	,498
17	My professional goal is to become an entrepreneur.	-,238	,790	,122	-,484	,008	-1,952	41	,058
18	I will make every effort to start and run my own firm.	-,214	,782	,121	-,458	,029	-1,776	41	,083
19	I am determined to create a firm in the future.	-,119	,504	,078	-,276	,038	-1,532	41	,133
20	I have very seriously thought of starting a firm.	,024	1,070	,165	-,310	,357	,144	41	,886
21	I have the firm intention to start a firm some day.	-,119	,889	,137	-,396	,158	-,868	41	,391
22	I plan to take steps to start a business in the next 12 months.	-,119	,705	,109	-,339	,101	-1,094	41	,281
23	I intend to take steps to start a business in the next 12 months.	-,071	,677	,104	-,282	,140	-,684	41	,498
24	I will try to take steps to start a business in the next 12 months.	-,048	,661	,102	-,254	,158	-,467	41	,643

Paired samples test did not give enough proof that exposure to entrepreneurial role models influence entrepreneurial attitudes and thus on entrepreneurial intentions. Hence, H1 needs to be rejected.

H1: Exposure to entrepreneurial role models influence entrepreneurial attitudes, which have influence on entrepreneurial intentions.

4.2 Independent Samples Test - Role model

To get answer to the second research question and find out whether H2. is correct, independent samples t-test was used. Independent samples t-test gives group statistics, Levene's test for equality of variances, and t-test for equality of means. For role model there were only questions after the video. Hence, these results do not have the pre-video part. In table 9, there are the group statistics for video 1.

Table 9. Group Statistics: Role model, video 1.

Group Statistics					
	Education	N	Mean	Std. Deviation	Std. Error Mean
If you have an entrepreneurial role model,who is it?					
[Parents or siblings]	A1	39	2,77	1,693	,271
	A8	6	4,00	2,608	1,065
[Friends]	A1	39	2,92	1,707	,273
	A8	6	2,17	1,941	,792
[Someone else who is important to me and/or someone I do not know personally]	A1	39	3,97	1,912	,306
	A8	6	4,33	2,805	1,145
[The entrepreneur from the video]	A1	39	3,26	1,568	,251
	A8	6	1,17	,408	,167

As can be seen from table 10, two out of four measurements of role model have equal variances assumed and other two have equal variances not assumed. The ones that have Sig. below 0,05 are marked.

Table 10. Levene's Test for Equality of Variances: Role model, video 1.

	Levene's Test for Equality of Variances	
	F	Sig.
If you have an entrepreneurial role model, who is it?		
[Parents or siblings]	5,651	,022*
[Friends]	,213	,647
[Someone else who is important to me and/or someone I do not know personally]	2,631	,112
[The entrepreneur from the video]	12,493	,001*

* = Sig. < 0,05

In video 1, there is a difference (table 11) between the groups in question "*If you have an entrepreneurial role model, who is it? [The entrepreneur from the video.]*" LUT students mean 3,26 (σ = 1,568, n=39) differed from Social students mean 1,17 (σ =

0,408, n = 6). The difference proved to be statistically very significant in independent samples t-test: t(31,859) = 6,934, p = 0,000, 2-tailed.

Table 11. T-test for Equality of Means: Role model, video 1.

	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
If you have an entrepreneurial role model, who is it?			
[Parents or siblings]	-1,120	5,666	,308
[Friends]	,994	43	,326
[Someone else who is important to me and/or someone I do not know personally]	-,402	43	,690
If you have an entrepreneurial role model, who is it? [The entrepreneur from the video]	6,934	31,859	,000***

*** = Sig. (2-tailed) < 0,001

Table 12 includes the group statistics for video 2.

Table 12. Group Statistics: Role model, video 2.

Group Statistics					
	Education	N	Mean	Std. Deviation	Std. Error Mean
If you have an entrepreneurial role model, who is it?					
[Parents or siblings]	A1	30	3,20	1,827	,334
	A8	11	2,64	1,286	,388
[Friends]	A1	30	3,53	1,717	,313
	A8	11	2,45	1,368	,413
[Someone else who is important to me and/or someone I do not know personally]	A1	30	4,23	1,547	,282
	A8	11	2,64	1,362	,411
[The entrepreneur from the video]	A1	30	3,63	1,217	,222
	A8	11	3,27	1,489	,449

In video 2, all role model measurements have equal variances assumed (table 13) due to Sig. being above 0,05.

Table 13. Levene's Test for Equality of Variances: Role model, video 2.

	Levene's Test for Equality of Variances	
	F	Sig.
If you have an entrepreneurial role model, who is it?		
[Parents or siblings]	1,839	,183
[Friends]	1,778	,190
[Someone else who is important to me and/or someone I do not know personally]	1,296	,262
[The entrepreneur from the video]	2,090	,156

As can be seen from table 14, there is a difference in question *"If you have an entrepreneurial role model, who is it? [Someone else who is important to me and/or someone I do not know personally.]"*. LUT students mean 4,23 (σ = 1,547, n=30) differed from Social students mean 2,64 (σ = 1,362, n = 11). The difference proved to be statistically significant in independent samples t-test: t(39) = 3,018, p = 0,004, 2-tailed.

Table 14. T-test for Equality of Means: Role model, video 2.

	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
If you have an entrepreneurial role model, who is it?			
[Parents or siblings]	,938	39	,354
[Friends]	1,872	39	,069
[Someone else who is important to me and/or someone I do not know personally]	3,018	39	,004**
[The entrepreneur from the video]	,792	39	,433

** = Sig. (2-tailed) < 0,01

The test does not give enough support for second hypothesis, and thus it is rejected.

> H2: Students' entrepreneurial role models are similar in their characteristics as the students are.

4.3 Independent Samples Test – group differences

In this section, the independent samples test is used to get answer to third research question. The entrepreneurial views of the two chosen groups, LUT students and Social Services students, are compared.

4.3.1 Inspiration/modeling

In table 15, there are the group statistics in inspiration and modeling for video 1. The group statistics include the number of answers, means, standard deviations, and standard error means.

Table 15. Group Statistics: Inspiration/modeling, video 1.

Group Statistics									
		Pre-video				Post-video			
	Education	N	Mean	Std. Dev.	Std. Error Mean	N	Mean	Std. Dev.	Std. Error Mean
There is an entrepreneurial person I am trying to be like in my career pursuits.	A1	50	3,84	1,765	,250	39	3,64	1,799	,288
	A8	11	2,91	1,640	,495	6	2,67	1,862	,760
There is an entrepreneurial person particularly inspirational to me in my career path.	A1	50	3,84	1,788	,253	39	3,95	1,863	,298
	A8	11	3,55	1,916	,578	6	2,67	1,862	,760
In the career path I am pursuing, there is an entrepreneurial person I admire.	A1	50	3,90	1,898	,268	39	4,05	2,012	,322
	A8	11	3,73	2,370	,715	6	3,50	2,510	1,025
I have a mentor in my potential entrepreneurial career field.	A1	50	2,86	1,552	,219	39	3,13	1,625	,260
	A8	11	3,18	1,471	,444	6	3,64	1,799	,288
I know of an entrepreneurial person who has a career I would like to pursue.	A1	50	3,64	1,793	,254	39	2,67	1,862	,760
	A8	11	4,09	2,023	,610	6	3,95	1,863	,298

Levene's test (table 16) tells the observer whether equal variances are assumed or not assumed. Whenever Sig. is more than 0,05, equal variances are assumed. As can be seen from table 6, Sig. is always above 0,05. Hence, test for equal variances is used.

Table 16. Levene's Test for Equality of Variances: Inspiration/modeling, video 1.

	Levene's Test for Equality of Variances				
	Pre-video			Post-video	
	F	Sig.		F	Sig.
There is an entrepreneurial person I am trying to be like in my career pursuits.	0,439	0,510		0,03	0,955
There is an entrepreneurial person particularly inspirational to me in my career path.	0,396	0,532		0,00	1,000
In the career path I am pursuing, there is an entrepreneurial person I admire.	1,874	0,176		1,043	0,313
I have a mentor in my potential entrepreneurial career field.	0,043	0,836		1,501	0,227
I know of an entrepreneurial person who has a career I would like to pursue.	0,325	0,571		0,002	0,968

T-test for equality of means tells whether there is a significant difference between the two groups in comparison. In table 17, none of the differences is significant since Sig. (2-tailed) is above 0,05. Based on the results of inspiration/modeling from the first video, there are no remarkable differences between the views of the groups.

Table 17. T-test for Equality of Means: Inspiration/modeling, video 1.

	t-test for Equality of Means					
	Pre-video			Post-video		
	t	df	Sig. (2-tailed)		t	df	Sig. (2-tailed)
There is an entrepreneurial person I am trying to be like in my career pursuits.	1,602	59	,114		1,230	43	,225
There is an entrepreneurial person particularly inspirational to me in my career path.	,488	59	,627		1,569	43	,124
In the career path I am pursuing, there is an entrepreneurial person I admire.	,261	59	,795		,605	43	,548

I have a mentor in my potential entrepreneurial career field.	-,628	59	,532		,394	43	,695
I know of an entrepreneurial person who has a career I would like to pursue.	-,738	59	,463		1,163	43	,251

In table 18, the group statistics in inspiration and modeling for video 2 are presented. The table includes the pre- and post-video means, standard deviations and standard error means for both groups.

Table 18. Group Statistics: Inspiration/modeling, video 2.

Group Statistics								
		Pre-video				Post-video		
	Education	N	Mean	Std. Dev.	Std. Error Mean	N	Mean	Std. Dev.	Std. Error Mean
There is an entrepreneurial person I am trying to be like in my career pursuits.	A1	31	4,00	1,751	,315	30	3,93	1,484	,271
	A8	24	3,38	1,663	,340	11	2,82	1,401	,423
There is an entrepreneurial person particularly inspirational to me in my career path.	A1	31	4,39	1,745	,313	30	4,37	1,450	,265
	A8	24	3,46	1,532	,313	11	2,91	1,446	,436
In the career path I am pursuing, there is an entrepreneurial person I admire.	A1	31	4,32	1,681	,302	30	4,13	1,570	,287
	A8	24	3,29	1,459	,298	11	3,27	1,618	,488
I have a mentor in my potential entrepreneurial career field.	A1	31	3,48	1,651	,296	30	3,57	1,547	,282
	A8	24	2,71	1,334	,272	11	2,73	1,348	,407
I know of an entrepreneurial person who has a career I would like to pursue.	A1	31	4,19	1,579	,284	30	4,23	1,569	,286
	A8	24	3,50	1,642	,335	11	2,91	1,446	,436

In table 19, all values of Sig. are above 0,05. Hence, equal variances are assumed.

Table 19. Levene's Test for Equality of Variances: Inspiration/modeling, video 2.

	Levene's Test for Equality of Variances			
	Pre-video		Post-video	
	F	Sig.	F	Sig.
There is an entrepreneurial person I am trying to be like in my career pursuits.	,278	,600	,544	,465
There is an entrepreneurial person particularly inspirational to me in my career path.	1,562	,217	,096	,759
In the career path I am pursuing, there is an entrepreneurial person I admire.	1,790	,187	,008	,930
I have a mentor in my potential entrepreneurial career field.	3,227	,078	,338	,564
I know of an entrepreneurial person who has a career I would like to pursue.	,189	,666	,555	,461

In table 20, there are differences between the means in some of the questions ($p < 0,05$). In pre-video question, *"There is an entrepreneurial person particularly inspirational to me in my career path."* LUT students mean 4,39 ($\sigma = 1,745$, n=31) differed from Social students mean 3,46 ($\sigma = 1,532$, n = 24). The difference proved to be statistically almost significant in independent samples t-test: $t(53) = 2,063$, $p = 0,044$, 2-tailed. Also, in pre-video question *"In the career path I am pursuing, there is an entrepreneurial person I admire."* LUT students mean 4,32 ($\sigma = 1,681$, n=31) differed from Social students mean 3,29 ($\sigma = 1,459$, n = 24). The difference proved to be statistically almost significant: $t(53) = 2,387$, $p = 0,021$, 2-tailed.

Table 20. T-test for Equality of Means: Inspiration/modeling, video 2.

	t-test for Equality of Means					
	Pre-video			Post-video		
	t	df	Sig.(2-tailed)	t	df	Sig. (2-tailed)
There is an entrepreneurial person I am trying to be like in my career pursuits.	1,341	53	,185	2,162	39	,037*
There is an entrepreneurial person particularly inspirational to me in my career path.	2,063	53	,044*	2,854	39	,007**

In the career path I am pursuing, there is an entrepreneurial person I admire.	2,387	53	,021*	1,543	39	,131
I have a mentor in my potential entrepreneurial career field.	1,875	53	,066	1,589	39	,120
I know of an entrepreneurial person who has a career I would like to pursue.	1,588	53	,118	2,442	39	,019*

* = Sig. (2-tailed) < 0,05

** = Sig. (2-tailed) < 0,01

In post-video questions (table 20) there are three differences. In question *"There is an entrepreneurial person I am trying to be like in my career pursuits."* LUT students mean 3,93 (std. deviation = 1,484, n=30) differed from Social students mean 2,82 (σ = 1,401, n = 11). The difference proved to be statistically almost significant in independent samples t-test: t(39) = 2,162, p = 0,037, 2-tailed. In question *"There is an entrepreneurial person particularly inspirational to me in my career path."* LUT students mean 4,37 (std. deviation = 1,450, n=30) differed from Social students mean 2,91 (σ = 1,446, n = 11). The difference proved to be statistically significant in independent samples t-test: t(39) = 2,854, p = 0,007, 2-tailed. In question *"I know of an entrepreneurial person who has a career I would like to pursue."* LUT students mean 4,23 (σ = 1,569, n=30) differed from Social students mean 2,91 (σ = 1,446, n = 11). The difference proved to be statistically almost significant in independent samples t-test: t(39) = 2,442, p = 0,019, 2-tailed.

4.3.2   Self-efficacy

In table 21, there are the group statistics of self-efficacy related questions. The table includes pre- and post-video questions' means, standard deviations and standard error means.

Table 21. Group Statistics: Self-efficacy, video 1.

Group Statistics									
		Pre-video				Post-video			
	Education	N	Mean	Std. Dev.	Std. Error Mean	N	Mean	Std. Dev.	Std. Error Mean
I feel very competent and confident that I could…									
conceive a unique idea for a business.	A1	46	4,00	1,578	,233	37	4,35	1,585	,261
	A8	6	5,00	2,757	1,125	4	6,25	,957	,479
identify market opportunities for a new business	A1	46	4,46	1,709	,252	37	4,57	1,608	,264
	A8	6	4,67	2,582	1,054	4	5,75	,957	,479
plan a new business.	A1	46	4,22	1,685	,248	37	4,41	1,641	,270
	A8	6	4,33	2,338	,955	4	6,00	1,414	,707
write a formal business plan.	A1	46	4,22	1,604	,237	37	4,24	1,690	,278
	A8	6	4,17	2,317	,946	4	5,25	2,217	1,109
raise money to start a business.	A1	46	3,96	1,801	,265	37	3,97	1,724	,283
	A8	6	3,67	2,251	,919	4	4,25	2,217	1,109
convince others to invest in your business.	A1	46	4,07	1,679	,248	37	4,11	1,646	,271
	A8	6	3,67	1,966	,803	4	5,00	2,000	1,000
convince a bank to lend you money to start a business.	A1	46	4,35	1,676	,247	37	4,08	1,706	,280
	A8	6	4,00	2,098	,856	4	4,50	2,380	1,190
convince others to work for you in your new business.	A1	46	4,52	1,683	,248	37	4,35	1,783	,293
	A8	6	4,33	2,338	,955	4	5,00	2,000	1,000
manage a small business.	A1	46	4,76	1,580	,233	37	4,57	1,708	,281
	A8	6	4,50	2,429	,992	4	4,75	1,893	,946
grow a successful business.	A1	46	4,24	1,608	,237	37	4,14	1,766	,290
	A8	6	4,00	2,098	,856	4	5,00	2,000	1,000

Due to Levene's test for equality of variances (table 22) equal variances are not assumed for question *"I feel very competent and confident that I could conceive a unique idea for a business."*. In all the others equal variances are assumed.

Table 22. Levene's Test for Equality of Variances: Self-efficacy, video 1.

	Levene's Test for Equality of Variances			
	Pre-video		Post-video	
	F	Sig.	F	Sig.
I feel very competent and confident that I could…				
conceive a unique idea for a business.	6,905	,011*	,884	,353
identify market opportunities for a new business.	2,805	,100	1,026	,317
plan a new business.	1,460	,233	,766	,387
write a formal business plan.	1,622	,209	,176	,677
raise money to start a business.	1,482	,229	,144	,706
convince others to invest in your business.	,459	,501	,103	,750
convince a bank to lend you money to start a business.	,475	,494	1,563	,219
convince others to work for you in your new business.	1,570	,216	,000	,985
manage a small business.	3,331	,074	,013	,909
grow a successful business.	,827	,367	,021	,884

* = Sig. < 0,05

T-test for equality of means in video 1 (table 23) shows few differences in post-video questions. In question *"I feel very competent and confident that I could… [conceive a unique idea for a business]"* LUT students mean 4,35 (σ = 1,585, n=37) differed from Social students mean 6,25 (σ = 0,957, n = 4). The difference proved to be statistically almost significant in independent samples t-test: t(39) = -2,334, p = 0,025, 2-tailed.

Table 23. T-test for Equality of Means: Self-efficacy, video 1.

	t-test for Equality of Means					
	Pre-video			Post-video		
	t	df	Sig (2-tailed)	t	df	Sig (2-tailed)
I feel very competent and confident that I could…						
conceive a unique idea for a business.	-,870	5,435	,421	-2,334	39	,025*
identify market opportunities for a new business.	-,267	50	,791	-1,433	39	,160
plan a new business.	-,152	50	,880	-1,865	39	,070
write a formal business plan.	,069	50	,945	-1,102	39	,277
raise money to start a business.	,361	50	,720	-,298	39	,767

convince others to invest in your business.	,537	50	,594		-1,011	39	,318
convince a bank to lend you money to start a business.	,465	50	,644		-,450	39	,655
convince others to work for you in your new business.	,247	50	,806		-,684	39	,498
manage a small business.	,357	50	,723		-,201	39	,842
grow a successful business.	,331	50	,742		-,920	39	,363

* = Sig. (2-tailed) < 0,05

In table 24, there are means, standard deviations and standard error means for video 2 results.

Table 24. Group Statistics: Self-efficacy, video 2.

Group Statistics									
		Pre-video				Post-video			
	Education	N	Mean	Std. Deviation	Std. Error Mean	N	Mean	Std. Deviation	Std. Error Mean
I feel very competent and confident that I could…									
conceive a unique idea for a business.	A1	30	4,80	1,243	,227	30	5,07	1,015	,185
	A8	17	3,71	1,448	,351	10	3,50	1,269	,401
identify market opportunities for a new business.	A1	30	5,07	1,081	,197	30	5,27	,907	,166
	A8	17	3,47	1,375	,333	10	2,90	1,524	,482
plan a new business.	A1	30	4,97	1,245	,227	30	5,13	1,167	,213
	A8	17	3,76	1,437	,349	10	3,20	1,549	,490
write a formal business plan.	A1	30	4,40	1,248	,228	30	4,70	1,088	,199
	A8	17	3,41	1,417	,344	10	2,20	1,135	,359
raise money to start a business.	A1	30	4,50	1,009	,184	30	4,83	,913	,167
	A8	17	3,35	1,498	,363	10	3,00	1,491	,471
convince others to invest in your business.	A1	30	4,53	1,106	,202	30	4,83	1,020	,186
	A8	17	3,41	1,502	,364	10	3,10	1,524	,482
	A1	30	4,77	,971	,177	30	4,90	1,062	,194

convince a bank to lend you money to start a business.	A8	17	3,65	1,579	,383	10	3,20	1,619	,512
convince others to work for you in your new business.	A1	30	4,90	,923	,168	30	5,03	,964	,176
	A8	17	3,94	1,560	,378	10	3,20	1,619	,512
manage a small business.	A1	30	4,80	1,270	,232	30	5,10	1,029	,188
	A8	17	4,24	1,522	,369	10	3,60	1,647	,521
grow a successful business.	A1	30	4,77	,898	,164	30	5,10	,960	,175
	A8	17	3,82	1,334	,324	10	3,60	1,647	,521

As can be seen from table 25, there is quite many where equal variances cannot be assumed. All these that have Sig. smaller than 0,05 are marked in the table.

Table 25. Levene's Test for Equality of Variances: Self-efficacy, video 2.

	Levene's Test for Equality of Variances				
	Pre-video			Post-video	
	F	Sig.		F	Sig.
"I feel very competent and confident that I could…"					
conceive a unique idea for a business.	,777	,383		2,289	,139
identify market opportunities for a new business.	2,518	,120		7,790	,008*
plan a new business.	,388	,537		1,621	,211
write a formal business plan.	,131	,719		,379	,542
raise money to start a business.	2,887	,096		5,006	,031*
convince others to invest in your business.	1,909	,174		4,852	,034*
convince a bank to lend you money to start a business.	6,185	,017*		5,820	,021*
convince others to work for you in your new business.	6,932	,012*		8,566	,006*
manage a small business.	,418	,521		6,331	,016*
grow a successful business.	1,670	,203		5,388	,026*

* = Sig. < 0,05

T-test for equality of means in video 2 (table 26) shows a lot of differences in means. In question *"I feel very competent and confident that I could… [conceive a unique idea for a business]"* there is difference in pre- and post-video. Pre-video LUT students mean 4,80 (σ = 1,243, n=30) differed from Social students mean 3,71 (σ = 1,448, n =

17). The difference proved to be statistically significant in independent samples t-test: t(45) = 2,732, p = 0,009, 2-tailed. Post-video LUT students mean 5,07 (σ = 1,015, n=30) differed from Social students mean 3,50 (σ = 1,269, n = 10). The difference proved to be statistically very significant in independent samples t-test: t(38) = 3,971, p = 0,000, 2-tailed. There are also differences in *"I feel very competent and confident that I could… [identify market opportunities for a new business]"* pre- and post-video. Pre-video LUT students mean 5,07 (σ = 1,081, n=30) differed from Social students mean 3,47 (σ = 1,375, n = 17). The difference proved to be statistically very significant in independent samples t-test: t(45) = 4,405, p = 0,000, 2-tailed. Post-video LUT students mean 5,27 (σ = 0,907, n=30) differed from Social students mean 2,90 (σ = 1,524, n = 10). The difference proved to be statistically significant in independent samples t-test: t(11,203) = 4,644, p = 0,001, 2-tailed. In question *"I feel very competent and confident that I could… [plan a new business]."* pre-video LUT students mean 4,97 (σ = 1,245, n=30) differed from Social students mean 3,76 (σ = 1,437, n = 17). The difference proved to be statistically significant in independent samples t-test: t(45) = 3,007, p = 0,004, 2-tailed. Post-video LUT students mean 5,13 (σ = 1,167, n=30) differed from Social students mean 3,20 (σ = 1,549, n = 10). The difference proved to be statistically very significant in independent samples t-test: t(38) = 4,177, p = 0,000, 2-tailed. In question *"I feel very competent and confident that I could… [write a formal business plan]."* pre-video LUT students mean 4,40 (σ = 1,248, n=30) differed from Social students mean 3,41 (σ = 1,417, n = 17). The difference proved to be statistically almost significant in independent samples t-test: t(45) = 2,483, p = 0,017, 2-tailed. Post-video LUT students mean 4,70 (σ = 1,088, n=30) differed from Social students mean 2,20 (σ = 1,135, n = 10). The difference proved to be statistically very significant in independent samples t-test: t(38) = 6,230, p = 0,000, 2-tailed. In question *"I feel very competent and confident that I could… [raise money to start a business]."* pre-video LUT students mean 4,50 (σ = 1,009, n=30) differed from Social students mean 3,35 (σ = 1,498, n = 17). The difference proved to be statistically significant in independent samples t-test: t(45) = 3,135, p = 0,003, 2-tailed. Post-video LUT students mean 4,83 (σ = 0,913, n=30) differed from Social students mean 3,00 (σ = 1,491, n = 10). The

difference proved to be statistically significant in independent samples t-test: t(11,336) = 3,667, p = 0,004, 2-tailed.

Table 26. T-test for Equality of Means: Self-efficacy, video 2.

	t-test for Equality of Means					
	Pre-video			Post-video		
	t	df	Sig. (2-tailed)	t	df	Sig. (2-tailed)
I feel very competent and confident that I could…						
conceive a unique idea for a business.	2,732	45	,009**	3,971	38	,000***
identify market opportunities for a new business.	4,405	45	,000***	4,644	11,203	,001**
plan a new business.	3,007	45	,004**	4,177	38	,000***
write a formal business plan.	2,483	45	,017*	6,230	38	,000***
raise money to start a business.	3,135	45	,003**	3,667	11,336	,004**
convince others to invest in your business.	2,929	45	,005**	3,355	11,807	,006**
convince a bank to lend you money to start a business.	2,653	23,017	,014*	3,105	11,690	,009**
convince others to work for you in your new business.	2,315	22,487	,030*	3,386	11,205	,006**
manage a small business.	1,363	45	,180	2,710	11,435	,020*
grow a successful business.	2,839	43	,007**	2,730	11,109	,019*

* = Sig. (2-tailed) < 0,05

** = Sig. (2-tailed) < 0,01

*** = Sig. (2-tailed) < 0,001

The rest of the questions in table 26 also proved to have differences. In question *"I feel very competent and confident that I could… [convince others to invest in your business]."* pre-video LUT students mean 4,53 (σ = 1,106, n=30) differed from Social students mean 3,41 (σ = 1,502, n = 17). The difference proved to be statistically significant in independent samples t-test: t(45) = 2,929, p = 0,005, 2-tailed. Post-video LUT students mean 4,83 (σ = 1,020, n=30) differed from Social students mean 3,10 (σ = 1,524, n = 10). The difference proved to be statistically significant in independent

samples t-test: t(11,807) = 3,355, p = 0,006, 2-tailed. In question *"I feel very competent and confident that I could… [convince a bank to lend you money to start a business].*" pre-video LUT students mean 4,77 (σ = 0,971, n=30) differed from Social students mean 3,65 (σ = 1,579, n = 17). The difference proved to be statistically almost significant in independent samples t-test: t(23,017) = 2,653, p = 0,014, 2-tailed. Post-video LUT students mean 4,90 (σ = 1,062, n=30) differed from Social students mean 3,20 (σ = 1,619, n = 10). The difference proved to be statistically significant in independent samples t-test: t(11,690) = 3,105, p = 0,009, 2-tailed. In question *"I feel very competent and confident that I could… [convince others to work for you in your new business].*" pre-video LUT students mean 4,90 (σ = 0,923, n=30) differed from Social students mean 3,94 (σ = 1,560, n = 17). The difference proved to be statistically almost significant in independent samples t-test: t(22,487) = 2,315, p = 0,030, 2-tailed. Post-video LUT students mean 5,03 (σ = 0,964, n=30) differed from Social students mean 3,20 (σ = 1,619, n = 10). The difference proved to be statistically significant in independent samples t-test: t(11,205) = 3,386, p = 0,006, 2-tailed. In question *"I feel very competent and confident that I could… [manage a small business].*" only post-video differed. LUT students mean 5,10 (σ = 1,029, n=30) differed from Social students mean 3,60 (σ = 1,647, n = 10). The difference proved to be statistically almost significant in independent samples t-test: t(11,435) = 2,710, p = 0,020, 2-tailed. In question *"I feel very competent and confident that I could… [grow a successful business].*" pre-video LUT students mean 4,77 (σ = 0,898, n=30) differed from Social students mean 3,82 (σ = 1,334, n = 17). The difference proved to be statistically significant in independent samples t-test: t(43) = 2,839, p = 0,007, 2-tailed. Post-video LUT students mean 5,10 (σ = 0,960, n=30) differed from Social students mean 3,20 (σ = 1,619, n = 10). The difference proved to be statistically significant in independent samples t-test: t(11,109) = 2,730, p = 0,019, 2-tailed.

4.3.3   Entrepreneurial intention

The group statistics in entrepreneurial intention for video 1 can be seen in table 27.

Table 27. Group Statistics: Entrepreneurial intention, video 1.

Group Statistics									
		Pre-video				Post-video			
	Education	N	Mean	Std. Dev.	Std. Error Mean	N	Mean	Std. Dev.	Std. Error Mean
I am ready to do anything to be an entrepreneur.	A1	44	2,80	1,503	,227	36	2,86	1,588	,265
	A8	6	3,00	2,098	,856	4	3,00	2,160	1,080
My professional goal is to become an entrepreneur.	A1	44	3,02	1,785	,269	36	3,28	1,830	,305
	A8	6	3,00	2,098	,856	4	3,25	2,217	1,109
I will make every effort to start and run my own firm.	A1	44	3,00	1,657	,250	36	3,14	1,775	,296
	A8	6	3,33	2,422	,989	4	3,75	2,754	1,377
I am determined to create a firm in the future.	A1	44	3,27	1,676	,253	36	3,44	1,858	,310
	A8	6	3,50	2,345	,957	4	4,00	2,944	1,472
I have very seriously thought of starting a firm.	A1	44	3,66	1,855	,280	36	3,67	1,897	,316
	A8	6	3,00	2,530	1,033	4	4,25	3,202	1,601
I have the firm intention to start a firm some day.	A1	44	3,32	1,814	,274	36	3,50	1,935	,322
	A8	6	3,00	2,530	1,033	4	4,00	2,944	1,472
I plan to take steps to start a business in the next 12 months.	A1	44	2,30	1,503	,227	36	2,56	1,715	,286
	A8	6	2,33	2,338	,955	4	3,00	2,708	1,354
I intend to take steps to start a business in the next 12 months.	A1	44	2,25	1,433	,216	36	2,47	1,630	,272
	A8	6	2,33	2,338	,955	4	2,75	2,872	1,436
I will try to take steps to start a business in the next 12 months.	A1	44	2,25	1,449	,218	36	2,56	1,698	,283
	A8	6	2,33	2,338	,955	4	2,75	2,872	1,436

Levene's test for equality of variances (table 28) shows that all except one have equal variances. The one with Sig. below 0,05 is marked. In that case equal variances are not assumed.

Table 28. Levene's Test for Equality of Variances: Entrepreneurial intention, video 1.

	Levene's Test for Equality of Variances				
	Pre-video			Post-video	
	F	Sig.		F	Sig.
I am ready to do anything to be an entrepreneur.	1,235	,272		,162	,690
My professional goal is to become an entrepreneur.	,256	,615		,260	,613
I will make every effort to start and run my own firm.	2,513	,119		2,425	,128
I am determined to create a firm in the future.	1,243	,270		3,374	,074
I have very seriously thought of starting a firm.	,941	,337		5,785	,021*
I have the firm intention to start a firm some day.	1,232	,273		2,873	,098
I plan to take steps to start a business in the next 12 months.	,776	,383		1,314	,259
I intend to take steps to start a business in the next 12 months.	1,094	,301		2,399	,130
I will try to take steps to start a business in the next 12 months.	1,021	,317		1,942	,172

* = Sig. < 0,05

T-test for equality of means (table 29) shows no differences for video 1 in entrepreneurial intentions. Hence, none of the differences are statistically significant.

Table 29. T-test for Equality of Means: Entrepreneurial intention, video 1.

	t-test for Equality of Means					
	Pre-video			Post-video		
	t	df	Sig.(2-tailed)	t	df	Sig.(2-tailed)
I am ready to do anything to be an entrepreneur.	-,298	48	,767	-,161	38	,873
My professional goal is to become an entrepreneur.	,029	48	,977	,028	38	,978
I will make every effort to start and run my own firm.	-,437	48	,664	-,620	38	,539
I am determined to create a firm in the future.	-,297	48	,768	-,536	38	,595
I have very seriously thought of starting a firm.	,782	48	,438	-,357	3,238	,743
I have the firm intention to start a firm some day.	,385	48	,702	-,467	38	,643
I plan to take steps to start a business in the next 12 months.	-,054	48	,957	-,465	38	,644
I intend to take steps to start a business in the next 12 months.	-,123	48	,902	-,299	38	,766

I will try to take steps to start a business in the next 12 months.	-,122	48	,903		-,203	38	,840

In table 30, there are the group statistics in entrepreneurial intention for video 2.

Table 30. Group statistics: Entrepreneurial intention, video 2.

Group Statistics			Pre-video				Post-video		
	Education	N	Mean	Std. Dev.	Std. Error Mean	N	Mean	Std. Dev.	Std. Error Mean
I am ready to do anything to be an entrepreneur.	A1	30	3,53	1,383	,252	30	3,57	1,382	,252
	A8	15	2,33	1,234	,319	10	2,40	1,265	,400
My professional goal is to become an entrepreneur.	A1	30	3,93	1,507	,275	30	4,20	1,495	,273
	A8	15	2,40	1,242	,321	10	2,40	1,265	,400
I will make every effort to start and run my own firm.	A1	30	3,73	1,507	,275	30	3,97	1,402	,256
	A8	15	2,33	1,113	,287	10	2,40	1,265	,400
I am determined to create a firm in the future.	A1	30	4,13	1,592	,291	30	4,27	1,530	,279
	A8	15	2,60	1,121	,289	10	2,40	1,265	,400
I have very seriously thought of starting a firm.	A1	30	4,47	1,613	,295	30	4,57	1,591	,290
	A8	15	3,00	1,363	,352	10	2,30	1,494	,473
I have the firm intention to start a firm some day.	A1	30	4,27	1,660	,303	30	4,47	1,525	,278
	A8	15	2,67	1,113	,287	10	2,20	1,398	,442
I plan to take steps to start a business in the next 12 months.	A1	30	3,07	1,437	,262	30	3,23	1,478	,270
	A8	15	1,80	,941	,243	10	1,60	,843	,267
I intend to take steps to start a business in the next 12 months.	A1	30	3,00	1,365	,249	30	3,10	1,398	,255
	A8	15	1,80	,941	,243	10	1,60	,843	,267
I will try to take steps to start a business in the next 12 months.	A1	30	3,00	1,365	,249	30	3,07	1,413	,258
	A8	15	1,80	,941	,243	10	1,60	,843	,267

All the Sig.-values are above 0,05 in Levene's test for equality of variances (table 31). Hence equal variances are assumed.

Table 31. Levene's test for Equality of Variances: Entrepreneurial intention, video 2.

	Levene's test for Equality of Variances

	Pre-video		Post-video	
	F	Sig.	F	Sig.
I am ready to do anything to be an entrepreneur.	,731	,397	,156	,695
My professional goal is to become an entrepreneur.	,732	,397	,620	,436
I will make every effort to start and run my own firm.	2,269	,139	,135	,715
I am determined to create a firm in the future.	2,425	,127	1,059	,310
I have very seriously thought of starting a firm.	,519	,475	,436	,513
I have the firm intention to start a firm some day.	3,186	,081	,393	,534
I plan to take steps to start a business in the next 12 months.	1,843	,182	2,317	,136
I intend to take steps to start a business in the next 12 months.	,984	,327	,905	,348
I will try to take steps to start a business in the next 12 months.	,984	,327	1,015	,320

As can be seen from table 32, all means show difference for entrepreneurial intentions in video 2. In question *"[I am ready to do anything to be an entrepreneur.]"* pre-video LUT students mean 3,53 (σ = 1,383, n=30) differed from Social students mean 2,33 (σ = 1,234, n = 15). The difference proved to be statistically significant in independent samples t-test: t(43) = 2,839, p = 0,007, 2-tailed. Post-video LUT students mean 3,57 (σ = 1,382, n=30) differed from Social students mean 2,40 (σ = 1,265, n = 10). The difference proved to be statistically almost significant in independent samples t-test: t(38) = 2,358, p = 0,024, 2-tailed. In question "*[My professional goal is to become an entrepreneur.]"* pre-video LUT students mean 3,93 (σ = 1,507, n=30) differed from Social students mean 2,40 (σ = 1,242, n = 15). The difference proved to be statistically significant in independent samples t-test: t(43) = 3,400, p = 0,001, 2-tailed. Post-video LUT students mean 4,20 (σ = 1,495, n=30) differed from Social students mean 2,40 (σ = 1,265, n = 10). The difference proved to be statistically significant in independent samples t-test: t(38) = 3,415, p = 0,002, 2-tailed. In question *"[I will make every effort to start and run my own firm.]"* pre-video LUT students mean 3,73 (σ = 1,507, n=30) differed from Social students mean 2,33 (σ = 1,113, n = 15). The difference proved to be statistically significant in independent samples t-test: t(43) = 3,183, p = 0,003, 2-

tailed. Post-video LUT students mean 3,97 (σ = 1,402, n=30) differed from Social students mean 2,40 (σ = 1,265, n = 10). The difference proved to be statistically significant in independent samples t-test: t(38) = 3,131, p = 0,003, 2-tailed. In question *"[I am determined to create a firm in the future.]"* pre-video LUT students mean 4,13 (σ = 1,592, n=30) differed from Social students mean 2,60 (σ = 1,121, n = 15). The difference proved to be statistically significant in independent samples t-test: t(43) = 3,332, p = 0,002, 2-tailed. Post-video LUT students mean 4,27 (σ = 1,530, n=30) differed from Social students mean 2,40 (σ = 1,265, n = 10). The difference proved to be statistically significant in independent samples t-test: t(38) = 3,474, p = 0,001, 2-tailed. In question *"[I have very seriously thought of starting a firm.]"* pre-video LUT students mean 4,47 (σ = 1,613, n=30) differed from Social students mean 3,00 (σ = 1,363, n = 15). The difference proved to be statistically significant in independent samples t-test: t(43) = 3,019, p = 0,004, 2-tailed. Post-video LUT students mean 4,57 (σ = 1,591, n=30) differed from Social students mean 2,30 (σ = 1,494, n = 10). The difference proved to be statistically very significant in independent samples t-test: t(38) = 3,958, p = 0,000, 2-tailed.

Table 32. T-test for Equality of Means: Entrepreneurial intention, video 2.

	t-test for Equality of Means						
	Pre-video				Post-video		
	t	df	Sig. (2-tailed)		t	df	Sig. (2-tailed)
I am ready to do anything to be an entrepreneur.	2,839	43	,007**		2,358	38	,024*
My professional goal is to become an entrepreneur.	3,400	43	,001**		3,415	38	,002**
I will make every effort to start and run my own firm.	3,183	43	,003**		3,131	38	,003**
I am determined to create a firm in the future.	3,332	43	,002**		3,474	38	,001**
I have very seriously thought of starting a firm.	3,019	43	,004**		3,958	38	,000***
I have the firm intention to start a firm some day.	3,365	43	,002**		4,149	38	,000***
I plan to take steps to start a business in the next 12 months.	3,090	43	,004**		3,301	38	,002**

I intend to take steps to start a business in the next 12 months.	3,054	43	,004**		3,188	38	,003**
I will try to take steps to start a business in the next 12 months.	3,054	43	,004**		3,089	38	,004**

* = Sig. (2-tailed) < 0,05

* = Sig. (2-tailed) < 0,01

* = Sig. (2-tailed) < 0,001

As already said above, results from table 32 show all differences in means. In question *"[I have the firm intention to start a firm some day.]"* pre-video LUT students mean 4,27 (σ = 1,660, n=30) differed from Social students mean 2,67 (σ = 1,113, n = 15). The difference proved to be statistically significant in independent samples t-test: t(43) = 3,365, p = 0,002, 2-tailed. Post-video LUT students mean 4,47 (σ = 1,525, n=30) differed from Social students mean 2,20 (σ = 1,398, n = 10). The difference proved to be statistically very significant in independent samples t-test: t(38) = 4,149, p = 0,000, 2-tailed. In question *"[I plan to take steps to start a business in the next 12 months.]"* pre-video LUT students mean 3,07 (σ = 1,437, n=30) differed from Social students mean 1,80 (σ = 0,941, n = 15). The difference proved to be statistically significant in independent samples t-test: t(43) = 3,090, p = 0,004, 2-tailed. Post-video LUT students mean 3,23 (σ = 1,478, n=30) differed from Social students mean 1,60 (σ = 0,843, n = 10). The difference proved to be statistically significant in independent samples t-test: t(38) = 23,301, p = 0,002, 2-tailed. In question *"[I intend to take steps to start a business in the next 12 months.]"* pre-video LUT students mean 3,00 (σ = 1,365, n=30) differed from Social students mean 1,80 (σ = 0,941, n = 15). The difference proved to be statistically significant in independent samples t-test: t(43) = 3,054, p = 0,004, 2-tailed. Post-video LUT students mean 3,10 (σ = 1,398, n=30) differed from Social students mean 1,60 (σ = 0,843, n = 10). The difference proved to be statistically significant in independent samples t-test: t(38) = 3,188, p = 0,003, 2-tailed. In question *"[I will try to take steps to start a business in the next 12 months.]"* pre-video LUT students mean 3,00 (σ = 1,365, n=30) differed from Social students mean 1,80 (σ = 0,941, n = 15). The difference proved to be statistically significant in independent

samples t-test: t(43) = 3,054, p = 0,004, 2-tailed. Post-video LUT students mean 3,07 (σ = 1,413, n=30) differed from Social students mean 1,60 (σ = 0,843, n = 10). The difference proved to be statistically significant: t(38) = 3,089, p = 0,004, 2-tailed.

5   DISCUSSION AND CONCLUSIONS

The aim of this study was to find out whether multimedia stories of potential entrepreneurial role models could have influenced on students' ESE and entrepreneurial intentions. Also, the purpose was to compare two different student groups and find out whether students' role models have similar characteristics as they have. To figure out the problems there were two videos that had entrepreneurs with quite different backgrounds and characteristics. The other entrepreneur was a bit younger male who had founded his company few years after graduating from LUT. The company is concentrating on construction consulting & project management. The other entrepreneur was female who had longer experience as an entrepreneur. Her company focuses on child welfare and foster care. The student groups studied were Social services students and students from LUT. The research questions and the answers are shortly presented in table 33.

Table 33. Research questions and answers.

Research questions	Answer
1. Do multimedia stories of entrepreneurial role models influence student's entrepreneurial self-efficacy and intentions?	Based on the results comparing all pre- and post-video answers, it cannot be said that multimedia stories have significant influence on students' entrepreneurial self-efficacy and intentions. Only one difference in video 1 and one in video 2 proved to be statistically significant. They are not enough to show that entrepreneurial multimedia stories have influence on students' views.
2. Do students look for similar characteristics from their role models as they themselves have?	Based on the means neither group of students found the entrepreneurs in the videos as their role models. It is difficult to define what type of person another individual views similar to oneself. Based on these results, it could be assumed that for example similar education/work is not enough.

3. Do the entrepreneurial views of LUT students and Social service students differ from each other?	There were quite many measurements that had statistically significant difference in means. The study found differences in inspiration/modeling, self-efficacy, entrepreneurial intention, and role model. Based on the results, these two groups have different views on entrepreneurship. However, since the number of Social services students in the study is small, the results cannot be generalized.

The answer for the first research question (table 33) was clarified with the dependent samples t-test. It showed only two statistically significant differences: one in video 1 and one in video 2. One of the self-efficacy related questions *"I feel very competent and confident that I could…[conceive a unique idea for business]"* had higher mean after the video. Hence, entrepreneur from the first video influenced on the students' confidence that they could conceive a unique idea for business. The other one that had statistically significant difference was *"I have a mentor in my potential entrepreneurial career."* from inspiration/modeling. Assumingly, this does not mean that the change is due to students thinking that the entrepreneur from the video is the mentor. Potentially, the difference in the means is a coincidence or the video helped the students to realize that they actually have a mentor. Based on these results, it cannot be said that multimedia stories about entrepreneurs have a significant influence on ESE and entrepreneurial intentions. However, the sample is quite small. Also, it might be possible that these videos did not appeal to these groups of students, but some other videos might. Another reason might be that the students started to think too much how they are supposed to answer or in opposite did not think enough. For example, they might have tried to remember what they had first answered and in the post questions to answer exactly the same.

When it comes to the second research question (table 33), neither video 1 or video 2 watchers found the entrepreneurs as their role models. The mean for LUT students

watching the video 1 was 3,26, which is between somewhat disagreeing and neither disagreeing or agreeing. The mean for the Social services students was 1,17, which means that they quite strongly disagreed the entrepreneur being their role model. What is interesting is that the mean of the LUT students who watched the second video was 3,63. The mean is higher than for the first video, which had entrepreneur similar with LUT students. Also, the mean for Social services students was higher (3,27) in second video but this was not as surprising since the video had an entrepreneur working in the field of Social services. Since more LUT students found the second entrepreneur as a role model, it is possible to assume that the same field of work and study, and age are not something that students only look from their role models.

In the independent samples t-test, there appeared to be more differences. This means that the means differed between LUT students and Social services students. The first video showed no difference for inspiration but the second video, however, had differences in the means. The results show that a LUT student i.e. engineering or business student will more likely have an entrepreneurial role model. The students' ESE did only have one difference in video 1. Based on the results, Social services students felt more competent and confident that they could conceive a unique idea for a business. However, there were only few Social services students answering this question. In video 2, again, almost all means differed. Based on table 32, LUT students have more ESE. This could be, for example, due to differences in curricula i.e. in LUT the teaching aims more at preparing the students for different career options such as entrepreneurship. As before, the video 1 showed no differences for entrepreneurial intention and video 2 had differences in all the questions. Based on table 32, LUT students have more entrepreneurial intentions. As said in self-efficacy, the LUT curricula probably bring out the option for entrepreneurism more while social services students might not feel that as an attractive career option.

As the pre- and post-video results did not show many significant differences, it cannot be suggested that entrepreneurial multimedia stories alone would be a sufficient

teaching method. However, based on these results it also cannot be said that the videos would not be a good method. To have more validation for the teaching method more research would be needed.

The results of this study are not entirely aligned with the findings from the literature review. For example, based on the literature findings entrepreneurial role models increase the likelihood of becoming an entrepreneur (e.g. Van Auken et al., 2006a). However, the results from this study do not support that view. Finding from literature review that the results of this study support is that business education does not focus enough on enhancing entrepreneurial skills (e.g. Chen et al., 1998; Van Auken et al., 2006b). As the other student group included Industrial engineering and business students and the result did not show them having huge self-efficacy or interest towards entrepreneurship, it can be said that business education is not focusing on enhancing entrepreneurial self-efficacy.

The outtake from this research that managers of the educational institutions should pay attention to is that students do not seem to be interested in entrepreneurship as a primary career option. That would need to be changed. Whether it is the entrepreneurial multimedia storytelling or some other way, educators need to start to enhance the ESE and encourage entrepreneurialism more.

The results from this research did not provide enough evidence that exposure to entrepreneurial role models via multimedia storytelling enhances ESE and influences on the entrepreneurial intentions. Hence, it leaves space for future research. To get more reliable results, research that studies the students for a longer period of time could be an option. If some courses or curricula would start to exploit entrepreneurial multimedia videos, the groups could be tested pre- and post-course or even after finishing the degree. Straight after watching the video, the student may not have progressed their thoughts about entrepreneurship enough. If, however, they would be

given time to think what they have watched, and the questions would be asked again later, the results might already be different.

Also, this same research topic could be used with different student groups or different entrepreneurial role models and see if the results give any significant differences. Just based on a quite small sample of two student groups no generalization can be made. Thus, it would be good to get more students to participate in the research. It would be useful to get students to realize that entrepreneurship is an option that anyone can choose, no matter what they have studied. Some educational institutions bring up the opportunity of entrepreneurship to students more likely and often than others. If more student groups with different majors would be studied, the knowledge about which student groups are most likely oriented towards entrepreneurship would be gained. Thus, in majors that would have low results in entrepreneurial intentions some entrepreneurship education could potentially be added to their curricula or alternatively developed based on the results. As stated in the beginning of this study, entrepreneurship development is considered as a solution for creating jobs and sustainable growth in economy (Iacobuta & Socoliucm 2014). The government of Finland tries to support this on their behalf (Suomalainen et al., 2016). All the educational institutions should do the same and thus add and improve entrepreneurship education.

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APPENDICES

Appendix 1. Interview guideline for the entrepreneurs

Please tell you entrepreneurial story!
1. In one word, characterize your life as an entrepreneur.
2. What are the three major reasons why you started a new business venture?
3. If you had the chance to start your career over again, would you do it again?
4. Please summarize in one sentence what was/is and how was the fundamental idea for starting your business created?
5. How many hours do you work a day on average?
6. Has being an entrepreneur affected your private life positively or negatively?
7. Please mention three motivators for you as an entrepreneur?
8. What is your favorite aspect of being an entrepreneur?
9. Based on what factors, figures or other elements do you assess your business ideas?
10. How do you explore and exploit entrepreneurial opportunities?

Please tell a particular entrepreneurial success story!
11. How do you define success?
12. What was the biggest success you've made so far in your business life?
13. What would you say are the top three skills needed to be a successful entrepreneur?
14. What is the best way to achieve long-term success?
15. Please tell us your formula to becoming a successful entrepreneur.
16. What are the five key elements for starting and running a successful business?
17. What three pieces of advice would you give to students who want to become entrepreneurs?

Please tell a particular entrepreneurial failure story!
18. How do you define failure?
19. What was the biggest mistake you've made so far in your business life?
20. How did you deal with failures?
21. How do you prevent mistakes and failures?
22. How did you learn from failures?
23. What are the secrets to survive failures?
24. What sacrifices have you had to make to be a successful entrepreneur?
25. What risk do you have as an entrepreneur?
26. How do you cope with these risks?

Questions related to the questionnaire
27. ROLE MODEL - Have you ever had an entrepreneurial role model?

28. ENTREPRENEURIAL ATTITUDES -Was a career as entrepreneur always attractive with more advantages than disadvantages for you?
29. ENTREPRENEURIAL PASSION - What is the entrepreneurial passion for you? Is it exciting, energizing, motivating and enjoyable to be an entrepreneur?
30. ENTREPRENEURIAL DESIRABILITY - Have you always been enthusiastic to start your own business?
31. ENTREPRENEURIAL FEASIBILITY - Was it always feasible taken your knowledge and successful self-confidence into account?
32. ENTREPRENEURIAL ALERTNESS IN THE PURSUIT OF NEW OPPORTUNITIES - How do you explore, evaluate and exploit entrepreneurial opportunities?
33. INDIVIDUAL ENTREPRENEURIAL ORIENTATION - Are you a proactive, risky, and innovative person?
34. General self-efficacy relates to "one's estimate of one's overall ability to perform successfully in a wide variety of achievement situations, or to how confident one is that she or he can perform effectively across different tasks and situations (Chen et al., 2001).
35. How was your performance in school?

ENTREPRENEURIAL CASE
- Please shortly describe a real business case of your past entrepreneurial experience (any problem or case in finance, marketing, leadership, human resource management, project management etc.) and ask the students what they would do, how, or what to think about/what is crucial when solving these entrepreneurial problems or taking entrepreneurial decisions?

Your Quotation as the story title?

Appendix 2. Excerpts from the videos.

PEKKA HARTIKKA
CO-FOUNDER OF DIOPCO OY

DIOPCO OY
CONSTRUCTION CONSULTING & PROJECT MANAGEMENT
FOUNDED IN 2015

DIOPCO OY
2 OWNERS,
3 EMPLOYEES

BASED IN SOUTHERN FINLAND

SARI AIRAS
FOUNDER OF PERHEKOTI
PALLO OY

SOUTH KARELIA, FINLAND

PERHEKOTI PALLO OY
CHILD WELFARE/
FOSTER CARE

FOUNDED IN 2000

Appendix 3. Questionnaire for the students.

PRE-POST-Questionnaire

INTRODUCTION

Welcome to this research project!

Because this is a research project we kindly ask you to fill out this questionnaire before and after watching this entrepreneurial story. It will take around 30 minutes of your time. We guarantee full anonymity! From this place we would like to express our utmost gratitude for your participation in this research project!

Every participant is highly welcome to watch this entrepreneurial story!
We highly appreciate your valuable time for our research!

If you have further questions, please do not hesitate to contact me via aino.partinen@student.lut.fi

Thank you very much for your great support!

Kind regards,
The research team at Lappeenranta University of Technology

QUESTIONNAIRE ID

Have you already watched the multimedia entrepreneurial story? (Yes / No)
- If yes, which one have you watched (Marko, Vincent, Marisa, Markus, Toni, Wieland, Feldhofer, Johannes, Jochen, Helmut, Selly, Martina)
- Have you watched this video within an Entrepreneurship Education course? (Yes / No)

Have you ever enjoyed Entrepreneurship Education? (Yes / No)

IMPORTANT - ID trough IP addresses for long-term effects

GENERAL INFORMATION

	Drop-down
Gender	male, female
Age	<15; 16-18 ;18-24 ; 25-34 ; 35-44
Nationality	Austria, Germany, Italy, Finland, Russia, other
School / University	Lappeenranta University of Technology, New Design University, Griffith University; the Queensland University of Technology, and the Curtin University, Universities in Germany etc....Vocational school
Field of study	Business and Management; Information Technology, Natural Sciences, Technical Sciences, Human Medicine/ Health Sciences, Social Sciences, Agricultural Sciences, Other Sciences, Arts

INSPIRATION/MODELING (IM)

Please indicate your level of agreement with the following statements!

Domain and item	*1= strongly disagree.......7= strongly agree*	1	2	3	4	5	6	7
IM_01	There is an entrepreneurial person I am trying to be like in my career pursuits.							
IM_02	There is an entrepreneurial person particularly inspirational to me in my career path.							
IM_03	In the career path I am pursuing, there is an entrepreneurial person I admire.							
IM_04	I have a mentor in my potential entrepreneurial career field.							
IM_05	I know of an entrepreneurial person who has a career I would like to pursue.							

SUBJECTIVE NORM

If you decided to create a firm in the next 12 months, who in your close environment would approve of that decision?

Domain and item	*1= total disapproval.......7= total approval*	1	2	3	4	5	6	7
SN_1	Parents							
SN_2	Siblings							
SN_3	Friends							
SN_4	Someone else who is important to me and/or someone I do not know personally							

PERSONAL ENTREPRENEURIAL ATTITUDES

Please indicate your level of agreement with the following statements!

Domain and item	*1= strongly disagree.......7= strongly agree*	1	2	3	4	5	6	7
A_1	Being an entrepreneur implies more advantages than disadvantages to me.							
A_2	A career as entrepreneur is attractive for me.							
A_3	If I had the opportunity and resources, I'd like to start a firm.							
A_4	Being an entrepreneur would entail great satisfactions for me.							
A_5	Among various options, I would rather be an entrepreneur.							

Please rate the following statement based on the word pairs provided:

Domain and item	*1= strongly disagree.......7= strongly agree*	1	2	3	4	5	6	7
	'For me, taking steps to start a business in the next 12 months would be							

A_6	. . . attractive							
A_7	. . . useful							
A_8	. . . wise							
A_9	. . . positive							
A_10	. . . important							
A_11	. . . inspiring							

PERCEPTIONS OF ENTREPRENEURIAL PASSION

Please indicate your level of agreement with the following statements!

Domain and item	1= strongly disagree.......7= strongly agree	1	2	3	4	5	6	7
Passion-inv1	It is exciting to figure out new ways to solve unmet market needs that can be commercialized.							
Passion -inv2	Searching for new ideas for products & services appears to be enjoyable to me.							
Passion -inv3	I am motivated to figure out how to make existing products/services better.							
Passion -inv4	Scanning the environment for new opportunities really excites me.							
Passion -inv5	Inventing new solutions to problems could turn in an important part of who I am.							
Passion -fnd1	Establishing a new company seems exciting to me.							
Passion -fnd2	Owning my own company will energize me.							
Passion -fnd3	Nurturing a new business through its emerging success will be enjoyable.							
Passion -fnd4	Being the founder of a business could turn in an important part of who I am.							
Passion -dev1	I will like finding the right people to market new product/service to.							
Passion -dev2	Assembling the right people to work for my business will be exciting.							

| Passion -dev3 | Pushing myself to make my business better motivates me. | | | | | | | |
| Passion -dev4 | Nurturing and growing companies could turn in an important part of who I am. | | | | | | | |

Note: inv = inventing; fnd = founding; and dev = developing.

PERCEIVED ENTREPRENEURIAL DESIRABILITY

Please indicate your level of agreement with the following statements!

Domain and item	*1= strongly disagree.......7= strongly agree*	1	2	3	4	5	6	7
D_1	I would love to start my own business.							
D_2	I would be very tense to start my own business.							
D_3	I would be very enthusiastic to start my own business.							

PERCEIVED ENTREPRENEURIAL FEASIBILITY

Please indicate your level of agreement with the following statements!

Domain and item	*1= strongly disagree.......7= strongly agree*	1	2	3	4	5	6	7
F_1	It will be easy to start my own business.							
F_2	I will be successful when I have my own business.							
F_3	I won't be overworked when I have my own business.							
F_4	I know enough how to start a business.							
F_5	I am sure about myself.							

SELF-EFFICACY

Please indicate your level of agreement with the following statements!

Domain and item	*1 = "strongly disagree"; 7 = "strongly agree"*	1	2	3	4	5	6	7
	Searching stage							
SE_S_1	Task 1: Conceive a unique idea for a business							
SE_S_2	Task 2: Identify market opportunities for a new business							
	Planning stage							
SE_P_1	Task 3: Plan a new business							
SE_P_2	Task 4: Write a formal business plan							
	Marshalling stage							
SE_M_1	Task 5: Raise money to start a business							
SE_M_2	Task 6: Convince others to invest in your business							
SE_M_3	Task 7: Convince a bank to lend you money to start a business							
SE_M_4	Task 8: Convince others to work for you in your new business							
	Implementing stage							
SE_I_1	Task 9: Manage a small business							
SE_I_2	Task 10: Grow a successful business							

PERCEIVED BEHAVIORAL CONTROL

To what extent do you agree with the following statements regarding your entrepreneurial capacity?

Domain and item	1= strongly disagree.......7= strongly agree	1	2	3	4	5	6	7
BC_1	To start a firm and keep it working would be easy for me.							
BC_2	I am prepared to start a viable firm.							
BC_3	I can control the creation process of a new firm.							
BC_4	I know the necessary practical details to start a firm.							
BC_5	I know how to develop an entrepreneurial project.							
BC_6	If I tried to start a firm, I would have a high probability of succeeding.							
BC_7	If I wanted to, I could take steps to start a business in the next 12 months.							
BC_8	If I took steps to start a business in the next 12 months, I would be able to control the progress of the process to a great degree myself.							
BC_9	It would be easy for me to take steps to start a business in the next 12 months.							
BC_10	If I wanted to take steps to start a business in the next 12 months, no external factor, independent of myself, would hinder me in taking such action.							

BEHAVIOR

Please indicate your level of agreement with the following statements!

Domain and item	1= strongly disagree.......7= strongly agree	1	2	3	4	5	6	7
B_1	I have applied much effort to activities aimed at starting a business in the last 12 months.							
B_2	I have spent much time on activities aimed at starting a business in the last 12 months.							
B_3	I have invested much money in activities aimed at starting a business in the last 12 months.							

Estimate the probability you'll start your own business in the next 5 years? (Please scale from 0 % to 100 %!) _____

How practical is it for you to start your own business? (Please scale from 0 % to 100 %!) _____

ENTREPRENEURIAL INTENTION

Please indicate your level of agreement with the following statements!

Domain and item	*1= strongly disagree.......7= strongly agree*	1	2	3	4	5	6	7
I_1	I am ready to do anything to be an entrepreneur.							
I_2	My professional goal is to become an entrepreneur.							
I_3	I will make every effort to start and run my own firm.							
I_4	I am determined to create a firm in the future.							
I_5	I have very seriously thought of starting a firm.							
I_6	I have the firm intention to start a firm some day.							
I_7	I plan to take steps to start a business in the next 12 months.							
I_8	I intend to take steps to start a business in the next 12 months.							
I_9	I will try to take steps to start a business in the next 12 months.							

ENTREPRENEURIAL EXPERIENCE

Please evaluate the following questions regarding your entrepreneurial experience.

Domain		0	1

and item		**no**	**yes**
Exp_1	Have your parents ever started a business?		
Exp_2	Has another family member ever started a business?		
Exp_3	Has a friend of you ever started a business?		
Exp_4	Has another important person in your life ever started a business?		
Exp_5	Have you ever worked for a small or new company?		
Exp_6	Have you ever started a business?		
Exp_7	Do you have work experience?		
Exp_8	Do you have any other entrepreneurial / self-employed experience?		

PERFORMANCE

Please indicate your level of agreement with the following statements!

Domain and item	*1= strongly disagree.......7= strongly agree*	1	2	3	4	5	6	7
P_1	I usually perform above average (in my studies or any other work etc.).							
P_2	Compared to my colleagues I have above average work experience.							
P_3	Compared to my colleagues I have above average entrepreneurial experience.							

entrepreneurial video

INSPIRATION/MODELING (IM)

Please indicate your level of agreement with the following statements!

Domain and item	*1= strongly disagree.......7= strongly agree*	1	2	3	4	5	6	7
IM_01	There is an entrepreneurial person I am trying to be like in my career pursuits.							
IM_02	There is an entrepreneurial person particularly inspirational to me in my career path.							
IM_03	In the career path I am pursuing, there is an entrepreneurial person I admire.							
IM_04	I have a mentor in my potential entrepreneurial career field.							
IM_05	I know of an entrepreneurial person who has a career I would like to pursue.							

ROLE MODEL

If you have an entrepreneurial role model, who is it?

1= strongly disagree.......7= strongly agree	1	2	3	4	5	6	7
Parents or siblings							
Friends							
Someone else who is important to me and/or someone I do not know personally							
The entrepreneur from the video							

PERSONAL ENTREPRENEURIAL ATTITUDES

Please indicate your level of agreement with the following statements!

Domain and item	*1= strongly disagree.......7= strongly agree*	1	2	3	4	5	6	7

A_1	Being an entrepreneur implies more advantages than disadvantages to me.							
A_2	A career as entrepreneur is attractive for me.							
A_3	If I had the opportunity and resources, I'd like to start a firm.							
A_4	Being an entrepreneur would entail great satisfactions for me.							
A_5	Among various options, I would rather be an entrepreneur.							

Please rate the following statement based on the word pairs provided:

Domain	*1= strongly disagree.......7= strongly agree*	1	2	3	4	5	6	7
and item	'For me, taking steps to start a business in the next 12 months would be							
A_6	. . . attractive							
A_7	. . . useful							
A_8	. . . wise							
A_9	. . . positive							
A_10	. . . important							
A_11	. . . inspiring							

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Please indicate your level of agreement with the following statements!

Domain and item	*1= strongly disagree.......7= strongly agree*	1	2	3	4	5	6	7
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Passion -inv4	Scanning the environment for new opportunities really excites me.							
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Note: inv = inventing; fnd = founding; and dev = developing.

PERCEIVED ENTREPRENEURIAL DESIRABILITY AND FEASIBILITY

Please indicate your level of agreement with the following statements!

Domain and item	1= strongly disagree.......7= strongly agree	1	2	3	4	5	6	7
D_1	I would love to start my own business.							
D_2	I would be very tense to start my own business.							
D_3	I would be very enthusiastic to start my own business.							

Please indicate your level of agreement with the following statements!

Domain	1= strongly disagree.......7= strongly agree	1	2	3	4	5	6	7

and item								
F_1	It will be easy to start my own business.							
F_2	I will be successful when I have my own business.							
F_3	I won't be overworked when I have my own business.							
F_4	I know enough how to start a business.							
F_5	I am sure about myself.							

SELF-EFFICACY

Please indicate your level of agreement with the following statements!

Domain and item	1 = "strongly disagree"; 7 = "strongly agree"	1	2	3	4	5	6	7
SE_S_1	Task 1: Conceive a unique idea for a business							
SE_S_2	Task 2: Identify market opportunities for a new business							
SE_P_1	Task 3: Plan a new business							
SE_P_2	Task 4: Write a formal business plan							
SE_M_1	Task 5: Raise money to start a business							
SE_M_2	Task 6: Convince others to invest in your business							
SE_M_3	Task 7: Convince a bank to lend you money to start a business							
SE_M_4	Task 8: Convince others to work for you in your new business							
SE_I_1	Task 9: Manage a small business							
SE_I_2	Task 10: Grow a successful business							

PERCEIVED BEHAVIORAL CONTROL

To what extent do you agree with the following statements regarding your entrepreneurial capacity?

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BC_4	I know the necessary practical details to start a firm.							
BC_5	I know how to develop an entrepreneurial project.							
BC_6	If I tried to start a firm, I would have a high probability of succeeding.							
BC_7	If I wanted to, I could take steps to start a business in the next 12 months.							
BC_8	If I took steps to start a business in the next 12 months, I would be able to control the progress of the process to a great degree myself.							
BC_9	It would be easy for me to take steps to start a business in the next 12 months.							
BC_10	If I wanted to take steps to start a business in the next 12 months, no external factor, independent of myself, would hinder me in taking such action.							

BEHAVIOR

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B_3	I have invested much money in activities aimed at starting a business in the last 12 months.							

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How practical is it for you to start your own business? (Please scale from 0 % to 100 %!) _____

ENTREPRENEURIAL INTENTION

Please indicate your level of agreement with the following statements!

Domain and item	*1= strongly disagree.......7= strongly agree*	1	2	3	4	5	6	7
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I_4	I am determined to create a firm in the future.							
I_5	I have very seriously thought of starting a firm.							
I_6	I have the firm intention to start a firm some day.							
I_7	I plan to take steps to start a business in the next 12 months.							
I_8	I intend to take steps to start a business in the next 12 months.							
I_9	I will try to take steps to start a business in the next 12 months.							

ENDING

Dear student,

Thank you very much for filling out this questionnaire!
Kind regards,
The research team at Lappeenranta University of Technology