

CAN YOU TELL IF A STUDENT HAS PARTICIPATED IN AN UF ENTREPRENEURSHIP PROGRAMME?



**An investigation of the visible impact of
JA entrepreneurship education on upper
secondary school students.**

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**Fonden for
Entreprenørskab**



In short...

Summary

This report presents the results of a three-year study of the JA entrepreneurship programme. The results show that JA students, compared to the control group, perceive that they have significantly developed a greater ability to act entrepreneurially. This is especially true for business-specific competences, but they also perceive that they develop more in entrepreneurial life competences such as creativity, collaboration, problem solving and perseverance. A closer look at the external and internal factors that influence how students perceive they have developed their entrepreneurial competences shows that external advisors have a positive impact, but that the effect is negative if it is too strong. The extent to which students feel that they have developed entrepreneurial competences is also closely related to their experience of the programme. Participation in entrepreneurship fairs and pitch competitions, on the other hand, does not seem to have had a significant impact on students. However, those who have won prizes have significantly more positive intentions to start a business. The study also shows that there were specific groups on which JA entrepreneurship education has a significantly greater impact. Female JA students experienced greater development, as did students with low academic self-esteem and students from non-academic homes.

The study also focussed on whether students felt that participation in JA influenced the way they participated and engaged in other subjects. Both students in schools where JA was taught in the second year of upper secondary school and students in schools where

JA was taught in the third year of upper secondary school were included in this study. However, the survey was only completed at the end of their upper secondary studies. In this way, it was possible to examine both whether JA had a direct impact on students' engagement in other subjects and whether it had a lasting effect, one year after the programme ended. However, the results showed that, compared to the control group, there were only limited differences in how JA students engaged with other subjects.

This somewhat surprising finding was further explored in a qualitative interview study with teachers in schools that teach JA but do not teach this programme themselves. The analysis shows that teachers believe that JA develops useful competences in students, both in terms of their further schooling and later in life. However, they believe that more co-ordination and collaboration on teaching methods, subjects and year groups is needed if they, as teachers, are to enable students to use their entrepreneurial competences. Teachers seem to feel that it does not matter much that they have access to more advanced Lego pieces if the building instructions remain simple and basic.

The results are based on interviews with eight upper secondary school teachers, 946 second-year upper secondary school students (448 UF, 498 control), 153 follow-up students (75 UF, 78 control), and 154 third-year upper secondary school students (93 UF, 61 control). There is a large geographical spread of respondents, who come from both university preparatory and

vocational programmes. The questionnaires were collected during three school years: 2020/2021, 2021/2022 and 2022/2023. In each school included in the study, the students in the control group were carefully selected so that their programmes would resemble as closely as possible the programmes in which the JA students participated. Unfortunately, it was not practically possible to randomise which students would participate in JA. This means that, methodologically, we were not able to follow the guidelines of the Randomised Controlled Trials (RCT) methodology for programme evaluations. The results may therefore be influenced by factors and events that we could not control. Although there are some methodological limitations to the study, its findings can still guide policy development.

In conclusion, the results of the study show that participation in JA entrepreneurship:

Developing Entrepreneurial Competencies:

In order to navigate in an era increasingly characterised by rapid change and uncertainty, and to solve the challenges we face today, it has become increasingly important that our students are given the opportunity to develop entrepreneurial competences. The results of the study show that, regardless of whether students are in a university preparatory programme or a vocational programme, JA students perceive that they have developed entrepreneurial competences to a significantly higher degree than students in the control group.

Reducing Gender Differences in Entrepreneurship and Business:

Differences in the number of women and men starting a business continue to persist despite decades of attention and efforts. As differences in interest in entrepreneurship seem to occur already at school age, early intervention is crucial. The results of this study show that JA entrepreneurship has a particularly positive impact on female participants. Thus, early school-age JA can be an effective intervention to reduce gender inequalities in entrepreneurship and enterprise.

Reducing Inequity in Socio-Economic Differences in School:

Traditional teaching methods typically favour students with academic talent. With its focus on action-oriented teaching methods, character traits and social skills, JA gives students the opportunity to utilise other talents. The results of the study show that JA has a particularly positive impact on students coming from non-academic homes and students with low self-confidence in academic achievement.

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Introduction

"Can you tell if a student has participated in JA?" This question is answered in different ways depending on who is asked. Entrepreneurs and business people tend to focus on whether we can influence young people to see entrepreneurship as an alternative career choice to employment and wage labour. Politicians and policy makers focus more on whether, through education, we can prepare our students for an uncertain future and equip them with the competences to solve the challenges we face. However, the focus of this survey is on how students and teachers answer this question. Does JA, with its focus on action-oriented teaching methods and entrepreneurial competences, lead teachers to perceive JA students as more self-reliant and enterprising? Do students perceive that the authentic school tasks included in the student-centred teaching of the JA Entrepreneurship programme give them a new view of the world and equip them with the tools and skills to navigate it?

To investigate this, a three-year study has been conducted on behalf of Young Enterprise (JA) Sweden. The aim was to investigate how students and teachers perceive JA Entrepreneurship, and what impact this type of teaching has on students during their schooling. With the help of JA Sweden's regional offices, a larger quantitative survey was carried out involving schools from all over the country. The survey was also complemented by a smaller, but more exploratory qualitative interview study with teachers.

As readers of this type of report tend to be interested in different aspects, and as JA, with its wide range of stakeholders and target groups, may further contribute to this, the report starts with a short overview and some easy reading references. The first part of the report discusses the background to the study and different perspectives on entrepreneurship education and action-orientated teaching methods. It also presents the theoretical framework on which the study is based. Those interested only in the design of the survey can skip this part and proceed directly to the second part of the report. This section presents the design of the questionnaires and how the quantitative data collection was carried out. The considerations made regarding the design of the questionnaires, the competences assessed, and why a "retrospective" design of the questions has been used are described here. The third part of the report presents and discusses the results of the quantitative surveys. For the reader who is only interested in the more practical implications of the study, can start here. The qualitative interview study with teachers is then presented as a separate part of the report. The report concludes with a joint discussion of the results, their limitations, and the policy implications of these findings.

AUTHOR OF THE REPORT: author

This report is the result of work carried out in close collaboration with JA Sweden and its regional offices. In spring 2020, the survey design was developed in collaboration with Aino Pleiner and Pontus Ekstam from JA Sweden. Their contribution has been particularly influential in the initial phase, but they have contributed with practical knowledge and contacts with the regional JA offices during the three years the survey has been conducted. However, I myself am responsible for the final design of the survey. My background is as a researcher with a focus on entrepreneurship education and its effects. I am employed at the Foundation for Entrepreneurship, which is an organisation that can be seen as Denmark's equivalent to JA Sweden, as it is the national centre responsible for Junior Achievement's programmes,

such as Company Programme. This of course colours my analysis. However, I have endeavoured to use research methods that counteract my own preconceptions and bias. The survey includes dimensions that are included in several other studies, and they were chosen because they do not include entrepreneurial jargon that may be difficult for students in the control group to understand. To avoid influencing the results of the qualitative interviews, these were conducted by national and regional UF staff. Having said that, it is of course difficult to avoid colouring an analysis with one's own opinions and preferences. Instead of hiding these, I have, when given the opportunity, tried to highlight and discuss them from different research perspectives.



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01. Background

For those interested in the underlying factors why the survey was conducted



WHY: Young Enterprise?

Entrepreneurial learning has been recognised in recent decades as a viable alternative to traditional classroom teaching. Unfortunately, it has been difficult to implement this type of teaching widely in the education system. This is because it typically requires significant investment in the professional development of teachers, and changes in teaching and working practices involve whole schools. Most teachers do not have a detailed understanding of what entrepreneurship education is and thus attribute many different meanings to it. Many teachers are also unaccustomed to teaching in an action-orientated way and to using authentic tasks. This creates ambiguity, especially in terms of how this type of teaching fulfils the curriculum and its learning objectives. JA Entrepreneurship Programmes avoid many of these problems as it has a clear but flexible teaching structure and detailed teaching materials. While the teaching is adapted to the different programme orientations, all the programmes involved have a common framework and the teachers responsible for JA teaching have all undergone basic training in the structure of the programme and have access to the same teaching materials.

With its established framework, JA Enterprise enables entrepreneurship education on a broad front. With its common but flexible teaching structure, it guarantees the basic conditions of equal education, while allowing for a focus on specific needs, as well as local development, customisation and innovation in teaching. The focus on independent group work where students run their own businesses, with

real money, goods and customers, includes many of the dimensions that educational researchers have identified as those that particularly engage students in their learning. Basic research in this field has shown that students are engaged if learning is perceived as meaningful and useful (Illeris, 2009), and if it includes the following five dimensions:

- 1) Focus on collaboration
- 2) Authentic tasks
- 3) Gives students ownership over the learning process
- 4) Accommodates diverse talents
- 5) Is perceived as fun and enjoyable (Newman, 1991).

These are all key dimensions of entrepreneurship education. However, integrating them into the conventional school curriculum can be challenging. By focusing on business operations, they can be included in a natural and student-centred way.

Critical voices, however, argue that the success of JA comes at the expense of other alternatives to entrepreneurship education. These critics see UF's uniformity in terms of teaching structure and its focus on competitive elements in the final entrepreneurship fair and pitch competition as problematic. It leads, according to them (see e.g. Brentnall et al., 2023) to a competitive and 'one-size-fits-all' logic. However, the common teaching structure and uniformity followed by JA Entrepreneurship is a prerequisite for larger quantitative programme evaluations to be possible. If the results of this type of evaluation are to have concrete policy implications, the teaching

also needs to be practically scalable so that it can be implemented in a broad and equitable way. This requires, on the one hand, standardisation of basic dimensions of the teaching framework, but, on the other hand, that the programme structure is sufficiently flexible to accommodate many types of programmes, specialisations and learners.

The flexible alignment that characterises JA allows other factors, such as for whom and under what conditions this type of teaching is effective, to be examined. To do this, the study needs to focus both on internal factors such as learners' backgrounds and preferences, as well as external factors such as the structure of the teaching and the context in which it takes place. However, the extent to which teaching has been effective can be measured in a number of ways. A common approach in evaluations of entrepreneurship programmes is to focus on entre-

preneurial competences and school engagement. However, measuring this objectively is challenging, but in many cases students' subjective evaluations may actually be a more valid measure. Whether you choose to apply the competences you have learned depends more on your perception of mastering them than on whether you actually master them objectively. However, the opportunities for action offered and encouraged by the environment play a crucial role. Secondary school students are placed in a context and act according to the types of behaviour that this context encourages. However, their characteristics, abilities and competences determine how they navigate this context and how they interpret and reinterpret the signals they receive. The next section discusses this in the light of the key assumptions and theoretical frameworks underpinning the study.

THEORETICAL: background

Two theoretical perspectives, both of which have their roots in developmental psychology, form the basis of the study. One concept, "self-efficacy", comes from Albert Bandura's theory of social learning (1971, 1977a) and can be translated into Swedish as "självförmåga". We perform the actions and activities that we feel we have mastered. It is therefore important that the focus is not only on pupils learning new knowledge and skills, but also on giving them opportunities to experience that they are knowledgeable and competent, so that they become confident and secure.

The second concept, 'affordances', has its roots in developmental psychology with James J. Gibson's pioneering work (1977, 1979) on how life forms adapt to, are shaped by, and navigate their environment. Roughly translated into Swedish, it means "accessibility" or "possibilities for action". It is particularly in design research that this concept has been widely disseminated, and the focus has shifted from adaptation to user-centred design¹. Although we in the field of entrepreneurship have a long tradition of importing difficult-to-translate concepts and theories from design science, the focus of this study will be on the theory's application in development psychology. In the following, these two theoretical perspectives will be presented.

AFFORDANCE: the perspective

Unfortunately, it is not only the theory's name "affordance" that is difficult to translate, its conceptual framework is also quite technical with many biological terms. In simple terms, it is about how different "life forms" adapt to "biological niches" that offer them different "affordances", i.e. opportunities for action. However, depending on the characteristics and skills of the life form, they perceive different opportunities for action. It is therefore the interaction between the individual and the environment that determines which actions and behaviours occur. For the majority of life forms, it is the biological conditions that govern. Although explanatory models that go back to our origins as nomads on the savannah have become increasingly popular and, in recent decades, we have been forced to realise more clearly how dependent we are on the ecological constraints of our surroundings, the more "primitive" aspects of affordance theory are less interesting in an educational context. The focus will therefore be on those perspectives that focus on cultural and social affordances and the reciprocal influence that individuals and their environment have on each other (see e.g. Rietveld & Kiverstein, 2014).

Thus, from an educational perspective, the focus should be on both learners and their environment. The interaction is the key here, as it is not only about the opportunities for action that the environment offers or encourages, but also how this differs depending on who the students are and what cha-



¹ Norman, 1988, started this development

ENTREPRENEURSHIP AS: an approach or as a method

racteristics they possess. If we apply this perspective to how best to nurture entrepreneurial learners in schools, the importance of focussing on interaction becomes quite clear. Schools are widely criticised for failing to stimulate creativity in young people and for using traditional teaching methods that are uniform and do not take into account students' individual differences. These critics argue that the school's focus is too much on preparing students for employment, with the result that those who show entrepreneurial qualities are downplayed and conformed to the norm. On the other hand, there are those who argue that schools over-adapt to individual differences and use 'fluffy' teaching methods without clear learning objectives. According to these critics, schools should act as socialisers and make clear what is expected of students in terms of common learning requirements. Those students who show entrepreneurial tendencies would do so regardless of the school system, and the best we can offer them is subject-oriented knowledge (see e.g. the discussion between Sweller et al., 2023 and De Jong et al., 2023).

From an affordance perspective, the focus should be on the extent to which the school system offers different opportunities for action and encourages different behaviours depending on the different characteristics that students possess. Several studies in recent years have shown that girls are increasingly doing better in school than boys². One explanation for this trend that many have focussed on is that the

school system has increasingly been designed in a way that suits girls better than boys. However, this is a general trend and there are of course many boys who have the qualities to cope with today's schools, and there are also those schools that have adapted to work for both boys and girls. However, when it comes to entrepreneurship and self-employment, there has been no change in the gender imbalance in recent decades. In other words, it does not appear that the changes that schools have undergone have changed the extent to which girls engage in entrepreneurial behaviour.

To find out why this is the case, it is natural from an affordance perspective to examine what signals the school system sends to girls and boys respectively, and whether it differs in terms of what opportunities are offered and what behaviours are encouraged (solicitations³), and whether this is particularly suited to characteristics typically found in girls or boys. Starting from the pupils, it is also possible to examine what characteristics and competences give them the ability to navigate this school system and to reinterpret the signals they receive in a way that suits them, and how this leads them to be able to identify opportunities for action that match their characteristics and interests.

Whether this means that students need to acquire a new approach, or whether other methods or competences are required, will be discussed in the following sections.

In the places where entrepreneurial learning and entrepreneurship are dealt with in the National Agency for Education's curriculum, the focus is on students being able to adopt an entrepreneurial approach. As a concept, "approach", or "mindset" as it can be translated, is unfortunately difficult to concretise and translate into clear learning objectives and concrete teaching. Researchers are far from agreeing on what characterises an entrepreneurial mindset. It is somewhat defined as something "we recognise when we see it". Colin Jones, who can be considered one of the more rigorous researchers in our field, focuses on students developing new "frames of reference" and sense-making through repeated exposure to new experiences. This leads to autonomy and a 'can do' mentality (Jones, 2020, see also Larsen, 2023). It is clear that, defined in this way, an entrepreneurial approach has clear links to Bandura's concept of self-efficacy. However, it is still difficult to translate it into clear learning objectives.

In order to clearly concretise what entrepreneurship is about, many influential researchers (Neck & Greene, 2011; Neck, Greene & Brush, 2014; Sarasvathy & Venkataraman, 2011) have conceptualised entrepreneurship as a method. According to these researchers, just as we teach the scientific method to all students, even if we do not aim for everyone to become a

scientist, we should ensure that all students have access to an 'entrepreneurial toolkit', and that they understand the entrepreneurial method, even if we do not aim for everyone to become an entrepreneur. It is not only how we understand the world that is important to focus on in our school system, our students also need to learn how value is created, and how they concretely apply their knowledge to achieve this.

This approach shares clear similarities with design thinking as a method. Just as design thinking has gained great popularity in recent decades with its focus on process, and the fact that more or less no prior knowledge is required to apply the method, entrepreneurship as a method has gained great popularity among incubators and entrepreneurship counsellors who appreciate its "one size fits all" character⁴. These approaches typically do not take into account individual differences. However, the Affordance perspective clearly shows that the different characteristics of learners have a major impact on how they perceive and interact with their environment. Thus, the focus cannot be solely on methods in general. In order for pupils to succeed in developing the competences that teaching aims to promote, teaching methods need to be adapted to the pupils' existing competences and their perception of their strengths and weaknesses.

⁴ There is a plethora of entrepreneurial practices that have helped incubators and entrepreneurship counsellors to work increasingly effectively and process-oriented with entrepreneurs and startups in recent decades. Eric Ries' (2011) "the lean startup" and Alberto Savoias' (2019) "the right it" are examples of this. Saras Saravathy's (2001, 2021) effectuation theory (see also Read et al., 2016), is a more research-oriented perspective, but the focus here is also on giving structure and form to the entrepreneurial method. Common to these methods is that they aim to minimise uncertainty by allowing entrepreneurs to identify opportunities to test their ideas and receive feedback from users at an early stage.

² See e.g. Leijnse (2017) for a review of this.

³ According to Rietveld (2012) and Rietveld & Kiverstein (2014), it is not only about the opportunities for action that the environment offers (affords) but also those it encourages (solicits).

ENTREPRENEURIAL SKILLS: and self-efficacy

A middle ground between the somewhat abstract "entrepreneurship as an approach" perspective and the uniform "entrepreneurship as a method" perspective can be to see entrepreneurship as a set of competences. Entrepreneurship has been identified as one of the eight key competences that EU citizens should possess (EC, 2006, 2018). However, what this competence means has been contested. Much of the debate has centred on whether starting and running a business is the relevant activity, or whether entrepreneurship as a competence should be understood in a broader sense and also include competences that are important in life in general. To clarify what was meant by entrepreneurship as a key competence, researchers, experts and educators in the field of entrepreneurship were brought together to discuss which competences and areas of competence were considered to be the most central. In a multi-stage process, the EntreComp competency framework was developed in this way (Bacigalupo et al., 2016).

Several of the competences in EntreComp focus on activities that are not based on declarative knowledge and are therefore difficult to codify. These types of competences are collectively referred to as 'non-cognitive competences' and can be loosely understood as the 'residual of an IQ test', i.e. the character traits and social skills that explain why people with the same IQ level do differently in life (Gutman & Schoon, 2013). Competences such as managing uncertainty, mobilising people and resources, taking the initiative, and being slow and persistent are all of central importance for entrepre-

neurs starting and running businesses, but they are also important for success in life in general. Research has shown that both types of competences should be focused on as they have a mutually reinforcing effect. If non-cognitive competences are trained, it is easier to acquire cognitive-oriented competences, and vice versa (Cunha & Heckman, 2007, 2010).

Thus, the focus on entrepreneurial competences should come early in the education system. However, they can be challenging to teach using traditional teaching methods. Standardised tests that can effectively test students' literacy or mathematical competence cannot be used to determine the extent to which a student can, for example, deal with uncertainty, learn from experience, or collaborate with others. This is of course challenging for teachers, but also for learners seeking evidence that they are developing the competences they are being taught. In his theory of social learning, Albert Bandura (1971, 1977a, 1977b, 1997) showed that we typically learn socially by imitating others. However, he demonstrated that it was important to be exposed to situations that provide opportunities to really test one's abilities and thereby obtain clear evidence of whether one has sufficient competence to master the activity one has practised. You can train and objectively improve a skill, but what actually determines the likelihood of performing the activity, or using the skill, is your subjective perception of the extent to which you believe you have mastered it.

Activities such as innovation and

entrepreneurship are not traditionally focussed on in the school system. Non-cognitive competences are in themselves a challenge to assess and evaluate. When these are also outside the normal scope of school activities, the challenge becomes even greater. Teaching that focuses on training students in entrepreneurial competences therefore needs to be action-oriented and provide students with ample opportunities to test their competences. Authentic elements are typically important as real-life situations provide more genuine learning experiences. However, it is important that learning takes place in a safe environment where mistakes and failures are allowed, and that teachers help and support students when they are struggling. According to Bandura, the goal is for students to increase their self-efficacy, i.e. their confidence to use the skills they have learnt and perform activities that were previously perceived as unfamiliar and challenging. This creates a positive feedback loop where increased self-efficacy leads to increased motivation and commitment to face and overcome new challenges.

With their focus on identifying opportunities for early testing and feedback of ideas and concepts, entrepreneurial approaches are typically well suited to provide students with opportunities to practice their competences and develop self-efficacy. As entrepreneurial skills are increasingly recognised as important for navigating an uncertain and changing world, not just for starting a business, action-oriented teaching where students practice non-cognitive competences has attracted increasing attention. A clear

proof of this is that when the European Commission updated its list of key competences in 2018, it added personal and social competences to the competence of 'learning to learn' and developed the LifeComp competence framework (Sala et al., 2020). The key life competences included in this framework clearly overlap with the competences in EntreComp (see Moberg, 2023 for a discussion on this). Another clear evidence of this is that entrepreneurial learning, where the focus is not on starting a business, has become increasingly popular. The teaching methods recommended for teaching the competences included in LifeComp (Sala et al., 2022) can be seen as an example of this.



02. Method

For those interested in the
survey design and data collection

DATA COLLECTION: and dataset

In order to maximise the geographical and programme coverage of the schools included in the study, they were selected in collaboration with the JA National Analysis Unit. In addition to having students participating in JA in the second school year, it was important that the schools were also able to provide a control group of students from the corresponding programme. The most desirable situation was for the school to have a group of students who were involved in JA in the second year and, in parallel, another group of students from the same upper secondary programme who were not. However, as the aim was to include several different study programmes in the survey, this option was limited to a handful of schools. The JA analysis unit provi-

ded lists with information on the number of students who had participated in JA in the previous year and whether a suitable control group of students from a similar programme could be identified at the school. The selection was made based on these lists and the Regional Office of JA was tasked with contacting the selected schools. This resulted in 17 schools and 602 students (316 experimental, 286 control) being included in the first round of the study in 2020/2021, and 10 schools and 344 students (132 experimental, 212 control) in the second round of the study in 2021/2022 (three schools were included in both rounds). Table 1 presents a descriptive overview of the respondents in this dataset.

School year	Group	% Men	% Parent with higher education	% Parent/sibling with experience in entrepreneurship
2020/2021	Experiment	61%	52%	54%
	Control	41%	54%	50%
2021/2022	Experiment	39%	61%	40%
	Control	36%	45%	36%
Total dataset		36%	45%	36%

Table 1: Overview of the second year students who participated in the survey.

The students who participated in the survey were informed about the purpose of the study and that they would be contacted again in the coming year. As a thank you for their participation in the follow-up survey, they were rewarded with a "glassogram" sent to them by UF Sweden via SMS. By the end of the 2021/2022 school year, this resulted in 101 students completing the survey. The limited number of respondents participating in the fol-

low-up study meant that the following year the study was expanded to also include pupils who had participated in JA entrepreneurship during their third school year. This resulted in 154 students from 7 new schools being included in the study by the end of the 2022/2023 school year, and 52 students completing the follow-up questionnaire. Table 2 presents a descriptive overview of the respondents in these datasets.



	Schools with JA entrepreneurship in the 2nd year 2021/2022		Schools with JA entrepreneurship in the 2nd year 2022/2023		Schools with JA entrepreneurship in 3rd year	
	% Men	Total number of pupils	% Men	Total number of pupils	% Men	Total number of pupils
Control	48%	47	29%	31	30%	61
UF	48%	54	52%	21	51%	93
Total		101		52		154

Table 2: Overview of third year students.


RETROSPECTIVE: question structure

A survey distributed at the end of the school year was used to investigate how students perceived they had developed entrepreneurial competences during their second year of upper secondary school, and whether this differed for students who had participated in Young Enterprise. The survey design was based on established and ongoing surveys, notably the Junior Achievement Entrepreneurial Skills Pass (ESP) and the OECD PISA survey. As many secondary school students have a distorted view of what entrepreneurship is, using traditional programme evaluation methods can be problematic. In many cases, entrepreneurship education provides them with a new frame of reference, making pre- and post-test comparisons uncertain. Participants' understanding of the assessed variables may have changed (re-evaluation) and who they are comparing themselves with is often different before and after participating in the programme (recalibration) (Schwartz & Sprangers, 2000; Sprangers & Schwartz, 2000; Sprangers et al., 1999). This so-called "response shift bias"⁵, which has made the results of several programme evaluations of entrepreneurship education difficult to interpret and unreliable, can be avoided by using a retrospective question structure (Little et al., 2020).


In surveys with a retrospective question structure, respondents are asked to indicate the level they considered themselves to be at at the beginning of the training period and the level they considered themselves to be at at the time of answering the survey, which

is typically after the training period has ended. As the focus of the study was to investigate students' subjective perception of how they developed entrepreneurial competences, i.e. their entrepreneurial self-efficacy, they were asked to assess the extent to which they felt they had mastered different abilities and activities that are part of entrepreneurial competences. The study included three competences with a strong focus on entrepreneurship (Financial knowledge, Ability to network, and Ability to start a business), and four more general entrepreneurial competences (Creativity, Problem solving, Perseverance, and Cooperation). As these competences can be understood in many ways, each of them was defined with three questions. Tests of "Cronbach's alpha" (CA) values were conducted to examine the extent to which respondents' answers to questions were related for the different competences. This value, which ranges from 0-1, must be higher than 0.7 to be considered acceptable (Nunnally, 1978). Table 3 below presents an overview of the competences and their Cronbach's alpha values. Also included are definitions of the competences, as presented to the respondents, and a 'sample question' for each dimension. In addition to the competences, a measure of how students developed their entrepreneurial intentions is also included, which is also presented in Table 3.

⁵ See, for example, Drennan and Hyde (2008) and Nieuwkerk and Sprangers (2009) for a discussion of this.



Dimension	Definition	Example question: How would you rate your proficiency in the following skills at the beginning and end of the school year? (1-low to 7-high)	CA Before	CA After
Creativity	Creativity is about developing ideas and solutions, for existing and new challenges. Key dimensions of creativity are exploring, experimenting and combining knowledge and resources.	Combining ideas in new ways	0,80	0,83
Teamwork	Collaborative skills are about the ability to work with others to develop your ideas and realise them. Resolving conflicts and listening to others are important elements of good co-operation.	Listen to what others say when working in a group	0,67	0,72
Problem solving	Problem-solving skills are about the ability to find new ways of doing things when there is uncertainty. Being flexible and able to try new ideas quickly are important elements of this skill.	Change your plans to achieve the goals you have set	0,82	0,84
Perseverance	Perseverance is about the ability to keep trying to achieve your long-term goals and turn ideas into action. It is about being resilient under pressure, adversity and failure.	Be determined to achieve your goals	0,73	0,79
Networking	Networking is about the ability to utilise networks that you need at the different stages of a project. It is about being able to network, establish partnerships, collaborate and communicate.	Make contact with people you don't know	0,84	0,86



Dimension	Definition	Example question: How would you rate your proficiency in the following skills at the beginning and end of the school year? (1-low to 7-high)	CA Before	CA After
Economic understanding	Financial literacy is about understanding and managing finances, both in the short and long term. It is important to be able to estimate the costs of realising your ideas, to be able to plan and evaluate financial decisions over time.	Making a budget for a new project	0,86	0,89
Business competences	Starting a business is about having the skills and knowledge to start a business or organisation. It is about being able to deal with the uncertainty and stress of entrepreneurial life.	Managing the challenges and risks of an entrepreneur's daily life	0,93	0,95
Entrepreneurial intentions		My goal is to become an entrepreneur	0,68	0,070

Table 3: Overview of the competences in the questionnaire for 2nd year students.

In addition to questions on competences and entrepreneurial intentions, several questions were included that focused on internal and external factors such as family background and perception of academic ability. Information on these variables was

collected from both control and experimental groups. A battery of questions focussing on JA entrepreneurship was also included, which was only answered by students in the experimental group.

SCHOOL ENGAGEMENT: and perspectives on teaching

The survey for third-year students focussed on school engagement, how they perceived their teaching and how they felt their teachers perceived them. The survey was distributed to third-year students at schools that were included in the study when they were second-year students and ran JA companies, but also to schools where students participated in JA in their third year. For the former group, the questionnaire included several questions focusing on learning strategies and future plans, while for the latter group, questions on entrepreneurial competences were also included. However, this report is limited to the dimensions included in both surveys.

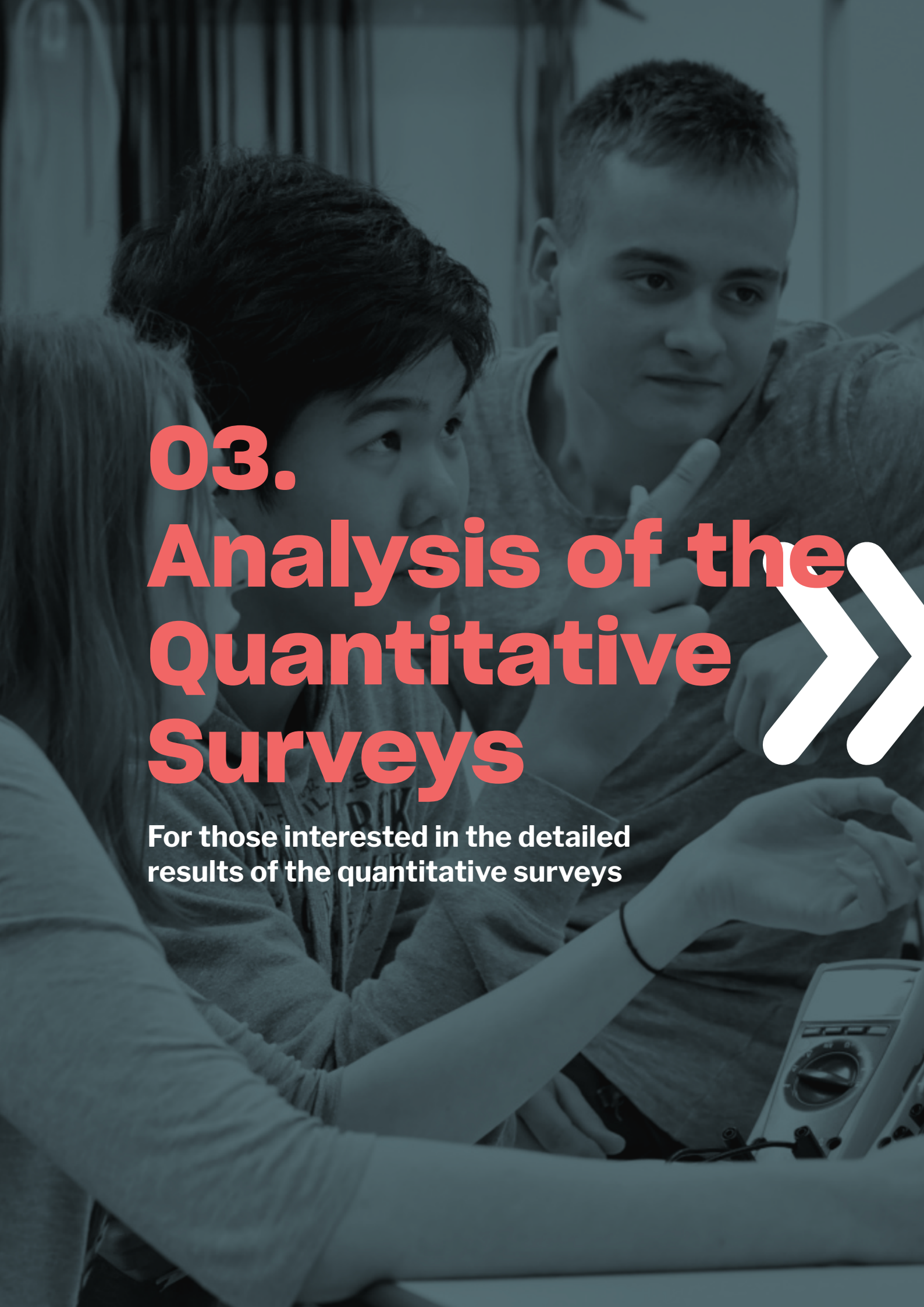
As the focus was not on how they felt they had changed, but only on whether

there was a difference between students who had participated in JA and students who had not, it was not necessary to use a retrospective question structure. Thus, students were only asked to respond to statements about their schooling. Three dimensions focused on students' school engagement and their perception of their teachers. Three dimensions focused on the extent to which and the ways in which students perceived their education to be different in the current school year compared to the previous one. The dimensions were constructed with 2-6 questions. *Table 4* presents an overview of the dimensions and their internal reliability. The complete questionnaires are available in the [online appendix](#) of the report.



Dimension	Example question:	Number of questions	CA Displaced effects	CA Direct effects
School engagement	I have found my teaching to be meaningful	4	0,79	0,83
Self-propelled according to teachers	My teachers see me as someone who is motivated and curious to learn new things	6	0,83	0,87
Co-operative according to teachers	My teachers see me as someone who is helpful to my classmates	2	0,62	0,85
Meaningful learning	Comparing the teaching you experienced in your 2nd/3rd year of school with what you have experienced in your 3rd/2nd year, are there any of the following that you feel have been different? Focus on: Meaningful learning	2	0,79	0,75
Action-oriented teaching	Comparing the teaching you experienced in your 2nd/3rd year of school with what you have experienced in your 3rd/2nd year, is there any of the following that you feel has been different? Focus on: Project-based learning	5	0,69	0,74
Perceived teacher support	To what extent do you agree with the following statements about the teachers you had in your second year of secondary school compared to your third year of secondary school? My teachers... Believed in my ability	3	Year 2: 0.78 Year 3: 0.75	Year 2: 0,81 Year 3: 0,86

Table 4: Overview of the education-oriented dimensions of the questionnaire for 3rd year students.



03. Analysis of the Quantitative Surveys

For those interested in the detailed results of the quantitative surveys

AN ANALYSIS: in two parts

The results of the surveys described above are presented here as two related but separate analyses. To improve the readability of the report, only the results of the analyses are presented in summary form. Those wishing to

access more detailed tables and results of various robustness tests are referred to the online appendix of the report⁶, which will be continuously updated.

TO WHAT EXTENT: do JA students perceive that they develop entrepreneurial competences?

The methodology used in this analysis is inspired by the methodology proposed, among others, by Hüber and colleagues (2014). The focus is on the difference in students' competences, i.e. the differences between the levels that students perceived they possessed in the competences at the beginning of the school year compared to the end of the school year. The retrospective design of the survey reduces the problem of ceiling effects, i.e. that the respondent indicates already before the intervention has taken place a very high level or even the highest level, in the variables that the intervention aims to change. Nevertheless, the 'baseline' level, the level at which respondents report being before the intervention, should be included in the analysis. This is crucial because it affects the scope for change that the variable has. For ease of comparison, all results have been converted to Z-scores. Thus, what is being compared is how much the result differs from the

mean and this is presented in standard deviations⁷.

In addition to investigating whether teaching JA entrepreneurship has an impact on students in general, the focus has also been on analysing for whom and under what conditions the teaching works. To investigate this, external and internal factors have been included in the analysis through hierarchical regression analysis. Factors that are particularly interesting to investigate are whether JA entrepreneurship has different effects depending on the students' background or how they perceive their academic ability (for previous research on this see Heilbrunn & Almor, 2014; Moberg, 2018; Streicher et al., 2019). Analyses were therefore conducted in conclusion where interaction effects for these variables and JA entrepreneurship were included. In the following, these analyses will be presented.

⁶<https://ffefonden.box.com/s/bdcpbjoya1zxc2teizeuesjejsta8u9>

⁷ In simple terms, observations are generally distributed around the mean, with 68% of observations falling within one standard deviation below and one standard deviation above the mean. If a result has a Z-score of 1 or higher, it means that the result belongs to the highest 16% of observations.

EXTERNAL AND: internal variables

In order to structure the analysis, several of the variables’ response options have been simplified. The way in which they have been categorised is presented in the following parenthesis. The variables included in the questionnaire for both the experimental and control groups are Gender (male/non-male), Type of education (university preparatory/vocational programme), Parents’ level of education (university education/no university education), Family entrepreneurial background (mother, father or siblings with experience of starting a business), Previous experience with entrepreneurship education (yes/no), Year of collection (2021/2022). Table 5 presents the impact of these variables on how students perceive that their education has developed their general entrepreneurial competences and Table 6 how it has affected their more business-specific competences, as well as their entrepreneurial intentions.



Table 5: Impact of JA on firm-specific competences.

Table 6: Impact of JA on generic entrepreneurial competences.

Table 5	Networking	P	Economic understanding	P	Company competences	P	Entrepreneurial intentions	P
Previous level	-0,45	0,000	-0,38	0,000	-0,4	0,000	-0,3	0,000
UF	-0,31	0,000	0,77	0,000	1,13	0,000	0,43	0,000
Man	-0,05	0,398	-0,04	0,450	-0,07	0,178	0,06	0,376
Previously ent.utb.	0	0,990	0	0,983	0,11	0,085	0,04	0,592
Preparation for higher education	0,18	0,090	0,13	0,209	0,22	0,020	0,07	0,553
Entrepreneur in the family	0,11	0,074	0,07	0,251	0,05	0,334	0,16	0,022
University-educated parents	-0,1	0,136	-0,02	0,802	0,01	0,860	-0,08	0,289
Year of collection	0,01	0,910	-0,11	0,068	-0,21	0,000	-0,15	0,023

Table 6	Creativity	P	Teamwork	P	Problem solving	P	Endurance	P
Previous level	-0,57	0,000	-0,46	0,000	-0,5	0,000	-0,47	0,000
UF	0,18	0,001	0,17	0,003	0,26	0,000	0,34	0,000
Man	0,01	0,830	-0,12	0,047	-0,02	0,731	0,05	0,409
Previously ent.utb.	0,04	0,538	-0,05	0,451	-0,05	0,465	-0,02	0,773
Preparation for higher education	0,15	0,123	0,17	0,093	0,08	0,422	0,08	0,469
Entrepreneur in the family	0,06	0,265	0,07	0,226	0,04	0,459	-0,06	0,346
University-educated parents	0,03	0,603	0,01	0,868	0,08	0,245	0,04	0,522
Year of collection	0,01	0,798	-0,07	0,264	0,03	0,645	-0,08	0,173

The results show that students who have participated in JA entrepreneurship consistently have higher scores in all competences. This is especially true for the business-specific competences, but also in the more general entrepreneurial competences the scores are significantly higher, especially for their perception of how they developed their competence to be persistent. None of the external variables have a consistent influence on how students perceive they have developed competences and entrepreneurial intentions.

In the next step of the analysis, variables specific to students who participated in JA were included. These were the following: Compulsory (or self-selected), Participated in pitching competition (yes/no), Won prize (yes/no), Associated counsellor (yes/no), Time with counsellor (<1 time per week/>1 time per week), Time with teacher (<1 time per week/>1 time per week). Tables 7 and 8 present the results of these analyses. All variables from the previous analysis have been included, but to simplify the overview of the results, only three of these variables (Previous level, Participation in JA, Gender) are presented in the tables. The results for all variables are presented in the [online appendix](#) of the report.



Table 7: The impact of different dimensions of JA entrepreneurship education on business-specific competences.

Table 8: The impact of different dimensions of JA entrepreneurship education on generic entrepreneurial competences.

Table 7	Networking	P	Economic understanding	P	Company competences	P	Entrepreneurial intentions	P
Previous level	-0.45	0.000	-0.38	0.000	-0.40	0.000	-0.30	0.000
UF	0.02	0,887	0,38	0,001	0,85	0,000	0,16	0,250
Man	-0,01	0,812	-0,01	0,861	-0,04	0,472	0,08	0,233
UF: Self-selected	0,00	0,993	0,06	0,517	0,03	0,696	0,09	0,352
UF: Participated in competition	0,17	0,092	0,10	0,279	0,13	0,143	-0,08	0,471
UF: Won award	0,12	0,303	0,14	0,217	0,15	0,154	0,31	0,018
JA: Time with teachers	0,02	0,862	0,07	0,47	0,05	0,516	0,30	0,003
UF: Counsellor attached	0,23	0,041	0,34	0,002	0,20	0,046	0,05	0,688
UF: Time with counsellors	-0,24	0,058	-0,35	0,005	-0,25	0,029	0,00	0,981

Table 8	Creativity	P	Teamwork	P	Problem solving	P	Endurance	P
Previous level	-0.57	0.000	-0.46	0.000	-0.50	0.000	-0.48	0.000
UF	-0.11	0,297	-0,11	0,370	0,15	0,211	0,06	0,593
Man	0,03	0,564	-0,10	0,089	0,01	0,921	0,07	0,284
UF: Self-selected	0,05	0,557	0,07	0,460	-0,06	0,502	-0,01	0,916
UF: Participated in competition	-0,02	0,790	0,06	0,528	0,01	0,926	0,03	0,759
UF: Won award	0,14	0,188	0,02	0,877	0,05	0,688	0,11	0,367
JA: Time with teachers	0,05	0,573	0,03	0,738	0,02	0,831	-0,04	0,700
UF: Counsellor attached	0,34	0,001	0,28	0,009	0,18	0,090	0,36	0,001
UF: Time with counsellors	-0,30	0,008	-0,27	0,025	-0,29	0,016	-0,16	0,211

It is clear that the JA company structure of having a counsellor attached to the JA company has an overall positive impact on how students feel they have developed. However, the extent to which they have interacted with their advisor is significant. Students who have met with their counsellor more than once a week feel that they have developed significantly less compared to other students.

In the third part of the analysis, the internal variables whose variation is based on students' subjective perception of how they see themselves in comparison to others were included. With the exception of Perceived academic ability (average or below/above average), all these variables were specific to students who participated in JA. These variables were: Perceived performance in JA work (average or below/above average), Satisfied with pitch competition (Very satisfied), Satisfied with teacher (Very satisfied), Satisfied with advisor (Very satisfied), Would recommend JA (1-10 very likely). Tables 9 and 10 present the results of these analyses. Again, a limited number of variables from the previous analyses are presented.

Table 9: How internal dimensions affect firm-specific competences.

Table 10: Impact of internal dimensions on generic entrepreneurial competences.

Table 9	Networking	P	Economic understanding	P	Company competences	P	Entrepreneurial intentions	P
Previous level	-0.46	0.000	-0.40	0.000	-0.41	0.000	-0.32	0.000
UF	-0.21	0,106	0,23	0,068	0,62	0,000	-0,13	0,350
Man	-0,02	0,762	0,00	0,934	-0,02	0,659	0,09	0,157
UF: Counsellor attached	0,13	0,294	0,15	0,233	-0,03	0,783	-0,12	0,389
UF: Time w. counsellors	-0,22	0,076	-0,37	0,003	-0,27	0,014	0,02	0,875
Over funding in JA work	0,06	0,489	0,12	0,207	0,15	0,070	0,18	0,077
Above average in school work	0,16	0,011	0,11	0,070	0,07	0,195	-0,01	0,856
JA: Satisfied with JA competition	0,07	0,560	0,10	0,433	0,15	0,163	0,31	0,021
UF: Satisfied with teachers	0,06	0,490	-0,11	0,227	0,08	0,294	-0,10	0,381
UF: Satisfied with counsellor	-0,14	0,163	0,12	0,210	0,09	0,321	-0,14	0,213
Recommend UF (1-10)	0,31	0,000	0,22	0,000	0,28	0,000	0,43	0,000

Table 10	Creativity	P	Teamwork	P	Problem solving	P	Endurance	P
Previous level	-0.54	0.000	-0.49	0.000	-0.53	0.000	-0.52	0.000
UF	-0.29	0,013	-0,33	0,007	-0,02	0,846	-0,07	0,578
Man	0,04	0,440	-0,10	0,083	0,02	0,785	0,07	0,272
UF: Counsellor attached	0,22	0,056	0,16	0,192	0,03	0,794	0,19	0,129
UF: Time with counsellors	-0,29	0,009	-0,28	0,022	-0,30	0,012	-0,17	0,175
Over funding in JA work	0,15	0,082	0,21	0,018	0,18	0,041	0,05	0,628
Above average in school work	0,24	0,000	0,22	0,000	0,25	0,000	0,29	0,000
Satisfied with UF competition	0,14	0,215	0,06	0,586	0,18	0,128	0,15	0,211
Satisfied with teachers	-0,10	0,199	0,06	0,499	0,04	0,611	0,02	0,840
Satisfied with mentor	-0,01	0,918	-0,05	0,611	0,05	0,620	0,07	0,456
Recommend UF (1-10)	0,23	0,000	0,26	0,000	0,19	0,001	0,19	0,001

In general, students with high self-confidence in their academic abilities feel that they develop their entrepreneurial competences the most. For JA students, their self-confidence in their JA work also seems to have an influence on this. It is generally positive for all competences, but it is only for Teamwork and Problem Solving that the difference is significant. It is also clear that those students who are satisfied with their JA teaching and who recommend it to others are also those who feel they have gained the most from it.

In the final part of the analysis, it is examined whether JA entrepreneurship affects students differently depending on their Gender (Male), Parents' education (tertiary level) Perceived academic ability (above average). What is tested is whether significant interaction effects for JA entrepreneurship and these variables can be identified. Tables 11, 12, 13, 14, 15 and 16 present the results of these analyses. To facilitate the interpretation of the results, the variables on which the interaction effects are tested have been reverse coded. Instead of the categories Parents with tertiary education, Above average in schoolwork, and Male, it is now the categories Parents without tertiary education, Below or average in schoolwork, Non-male (i.e. also those who identify as non-binary or with another gender identity) that are coded with 1 in the variables. Again, only a limited number of the variables from the previous analyses are presented, although all are included in the analyses.

➤ See [online appendix](#) for full tables.

Table 11	Networking	P	Economic understanding	P	Company competences	P	Entrepreneurial intentions	P
Previous level	-0.46	0.000	-0.41	0.000	-0.41	0.000	-0.32	0.000
UF	-0.39	0,006	0,02	0,905	0,44	0,000	-0,29	0,062
Non-man	-0,14	0,070	-0,19	0,013	-0,14	0,051	-0,23	0,007
Counsellors	0,15	0,231	0,17	0,171	-0,01	0,907	-0,10	0,451
Time with counsellors	-0,18	0,156	-0,31	0,010	-0,23	0,039	0,06	0,660
Over funding in JA work	0,05	0,594	0,10	0,278	0,14	0,100	0,17	0,100
Above average in school work	0,16	0,009	0,12	0,056	0,08	0,169	-0,01	0,895
Recommend UF (1-10)	0,32	0,000	0,24	0,000	0,29	0,000	0,44	0,000
Non-man*UF entrepreneurship	0,37	0,002	0,43	0,000	0,36	0,001	0,31	0,014

Table 11: The impact of JA on how female, non-binary and other gender identity students perceive they develop business-specific competences.

Table 12	Creativity	P	Teamwork	P	Problem solving	P	Endurance	P
Previous level	-0.54	0.000	-0.49	0.000	-0.53	0.000	-0.51	0.000
UF	-0.40	0,001	-0,49	0,000	-0,17	0,217	-0,27	0,050
Non-man	-0,14	0,043	-0,03	0,653	-0,14	0,064	0,24	0,002
Counsellors	0,23	0,043	0,17	0,152	0,05	0,707	0,21	0,092
Time with counsellors	-0,26	0,018	-0,24	0,048	-0,27	0,027	-0,12	0,336
Over funding in JA work	0,14	0,105	0,20	0,025	0,17	0,055	0,03	0,758
Above average in school work	0,24	0,000	0,23	0,000	0,25	0,000	0,30	0,000
Recommend UF (1-10)	0,24	0,000	0,27	0,000	0,20	0,001	0,21	0,001
Non-man*UF entrepreneurship	0,23	0,028	0,30	0,008	0,29	0,012	0,40	0,001

Table 12: The impact of JA on how female, non-binary and other gender identity students perceive they develop generic entrepreneurial competences.

Table 13	Networking	P	Economic understanding	P	Company competences	P	Entrepreneurial intentions	P
Previous level	-0.45	0.000	-0.40	0.000	-0.41	0.000	-0.32	0.000
UF	-0.34	0,012	0,14	0,295	0,62	0,000	0,20	0,171
Man	-0,02	0,728	0,00	0,966	-0,02	0,658	0,09	0,165
Counsellors	0,14	0,273	0,15	0,222	-0,03	0,784	-0,11	0,399
Time with counsellors	-0,22	0,071	-0,37	0,003	-0,27	0,014	0,02	0,882
Over funding in JA work	0,06	0,506	0,11	0,213	0,15	0,070	0,18	0,079
Above average in school work	0,16	0,013	0,11	0,076	0,07	0,196	-0,01	0,834
Recommend UF (1-10)	0,31	0,000	0,23	0,000	0,28	0,000	0,43	0,000
Parents without tertiary education *Unemployment	0,37	0,004	0,25	0,042	0,01	0,951	0,20	0,137

Table 14	Creativity	P	Teamwork	P	Problem solving	P	Endurance	P
Previous level	-0.54	0.000	-0.49	0.000	-0.53	0.000	-0.51	0.000
UF	-0.36	0,003	-0,44	0,001	-0,12	0,365	-0,15	0,273
Man	0,04	0,46	-0,10	0,073	0,01	0,819	0,06	0,284
Counsellors	0,22	0,052	0,16	0,180	0,04	0,773	0,19	0,122
Time with counsellors	-0,29	0,008	-0,28	0,021	-0,30	0,011	-0,17	0,171
Over funding in JA work	0,14	0,085	0,21	0,018	0,18	0,042	0,04	0,637
Above average in school work	0,24	0,000	0,22	0,000	0,25	0,000	0,29	0,000
Recommend UF (1-10)	0,24	0,000	0,27	0,000	0,19	0,001	0,20	0,001
Parents without tertiary education	0,20	0,073	0,31	0,012	0,27	0,031	-0,22	0,088

Table 13: The impact of participation in JA on the perceived development of business-specific competences by students whose parents do not have a tertiary education.

Table 14: The impact of participation in JA on the perceived development of general entrepreneurial competences by students whose parents do not have higher education.

The results clearly show that there is a clear variation in students' perceptions of how JA developed them and their entrepreneurial competences. This is most evident for female students and students who do not identify as male. They perceive that they have consistently developed more in all competences. Previous analyses indicated that it was mainly students with high confidence in their academic ability who experienced a development of entrepreneurial competences. The results from the interaction analyses indicate that among JA students, it is especially those who have low confidence in their academic ability and those who have parents who lack higher education, who experience that they have developed entrepreneurial competences.

Table 15	Networking	P	Economic understanding	P	Company competences	P	Entrepreneurial intentions	P
Previous level	-0.46	0.000	-0.40	0.000	-0.41	0.000	-0.32	0.000
UF	-0.46	0,004	0,13	0,041	0,57	0,000	-0,21	0,210
Man	-0,02	0,789	0,01	0,921	-0,02	0,665	0,09	0,152
Counsellors	0,13	0,302	0,15	0,236	-0,03	0,781	-0,12	0,384
Time with counsellors	-0,23	0,066	-0,37	0,003	-0,27	0,013	0,02	0,889
Over funding in JA work	0,14	0,146	0,15	0,126	0,17	0,055	0,20	0,053
Average/below average in school work	-0,31	0,000	-0,17	0,035	-0,10	0,163	0,04	0,675
Satisfied with UF competition	0,07	0,547	0,10	0,427	0,15	0,161	0,31	0,021
Satisfied with teachers	0,05	0,558	-0,11	0,211	0,08	0,305	-0,10	0,303
Satisfied with mentor	-0,13	0,199	0,13	0,195	0,09	0,310	-0,13	0,227
Recommend UF (1-10)	0,31	0,000	0,22	0,000	0,28	0,000	0,43	0,000
Average/below average in school work * JA enterprise	0,34	0,006	0,14	0,261	0,07	0,525	0,11	0,396

Table 15: The impact of participation in JA on how students, who have low confidence in their academic ability, perceive that they develop business-specific competences.

Table 16: The impact of participation in JA on how students, who have low confidence in their academic ability, perceive that they develop general entrepreneurial competences.

Table 16	Creativity	P	Teamwork	P	Problem solving	P	Endurance	P
Previous level	-0.54	0.000	-0.49	0.000	-0.54	0.000	-0.52	0.000
UF	-0.46	0,001	-0,51	0,001	-0,25	0,105	-0,31	0,051
Man	0,04	0,421	-0,10	0,086	0,02	0,761	0,07	0,261
Counsellors	0,22	0,057	0,16	0,197	0,03	0,812	0,19	0,134
Time with counsellors	-0,30	0,008	-0,28	0,019	-0,31	0,010	-0,18	0,157
Over funding in JA work	0,20	0,024	0,27	0,004	0,25	0,007	0,12	0,226
Average/below average in school work	-0,34	0,000	-0,33	0,000	-0,38	0,000	-0,43	0,000
Recommend UF (1-10)	0,23	0,000	0,26	0,000	0,19	0,001	0,19	0,001
Average/below average in school work * JA enterprise	0,23	0,040	0,24	0,049	0,30	0,031	0,32	0,010

ENGAGE JA STUDENTS: different in their school work

The questionnaire distributed to students at the end of their third year of secondary school focused on how they engaged with their school work, how they felt they were perceived by teachers and how they had experienced their teaching and teachers. This study includes students who participated in the study in their second year of secondary school, as well as a new

group of students from schools where JA entrepreneurship was taught in the third year. For students in the first group, the study examines the long-term and delayed effects of the programme, while for the second group, the study examines the direct effects. As the interpretation of these results has different meanings, they will be presented separately.

IMPACT IN: long and short term

The limited number of respondents in this study affects the number of variables that can be included. The risk is that subgroups (respondent clusters) include too few respondents, which can lead to the responses of individual students having too much influence. Therefore, only gender and whether they participated in JA or not were included in the analysis. Three of the dependent variables in this study focus on how students engage with their learning and how they perceive their teachers to do so. *Table 17* presents the extent to which students who participated in JA in their third year of upper secondary school, compared to students in the control group, perceive that:

- 1) their schooling was more meaningful and engaging
- 2) their teachers perceived them as curious, self-motivated and easy to engage
- 3) their teachers perceived them as co-operative and involved in group work.

Table 18 presents the same, but for students in schools where JA was

taught in the second year of upper secondary school. In the short term, i.e. for students who participated in JA in their third year of upper secondary school, there are no significant differences in these dimensions, compared to students who did not experience JA. However, students who participated in JA the year before consider that their teachers perceived them as more curious and self-motivated. In order to investigate whether students experienced the school year when they participated in JA in a different way, three of the study's dependent variables focused on this. *Table 19* presents the extent to which students who participated in JA in their third year of upper secondary school felt that in this year:

- 1) the teaching was more motivating and meaningful
- 2) the focus was more on action-oriented teaching methods
- 3) their teachers were more supportive and encouraging.

Table 20 presents the same for students who participated in JA in the previous upper secondary year.

			Teachers see me as...			
	School engagement	p	Independent	p	Co-operative	p
UF	0,14	0,400	0,19	0,245	0,23	0,152
Man	-0,31	0,052	-0,29	0,073	-0,34	0,032

Table 17: Short-term effects of JA entrepreneurship on third year students

			Teachers see me as...			
	School engagement	p	Independent	p	Co-operative	p
UF	-0,24	0,125	0,34	0,033	0,24	0,128
Man	0,17	0,286	-0,05	0,753	-0,12	0,462

Table 18: Delayed effects of JA entrepreneurship on third year students

Compared to year two, year three had more focus on...						
	Meaningful education	p	Action-orientated learning	p	Perceived teacher support	p
UF	0,01	0,929	0,70	0,000	-0,02	0,905
Man	-0,07	0,652	0,02	0,913	0,13	0,422

Table 19: How students in schools with JA in the third year of upper secondary school experience this in comparison to their second year of upper secondary school.

Compared to year three, year two had more focus on...						
	Meaningful education	p	Action-orientated learning	p	Perceived teacher support	p
UF	-0,25	0,128	0,39	0,018	0,18	0,281
Man	0,19	0,273	0,15	0,355	-0,24	0,161

Table 20: How students in schools with JA-entrepreneurship in the second year of upper secondary school experience this year of upper secondary school compared to their third year of upper secondary school.

Of the three variables, only the students' perception of how much focus there has been on action-oriented teaching methods differs significantly. It seems that this is especially true for those students who have recently experienced JA and who have the teaching methods in fresh memory, but the difference is also significant for

those students who participated in JA the year before. There are no significant differences in the extent to which they find JA teaching more meaningful and motivating, or whether they found their teachers more supportive and encouraging in the year they participated in JA.

WHAT DOES THIS MEAN: these results?

The results, based on the larger survey, show clear and significant differences between students who have experience of JA entrepreneurship and those who do not. This is particularly true for the more business-specific competences, but there are also significant differences in the more general entrepreneurial competences. It is interesting to observe how external factors, such as whether an advisor was attached to the teaching, and the extent to which students were exposed to this advisor, influenced how they felt they had developed. It is clear that counsellors have a positive impact on students, but the results also indicate that those who had contact with the counsellor more than once a week felt that they had progressed less. We can only speculate why we see this result. One explanation could be that the time they spent with their counsellor exceeded the time they had with their teacher. Another explanation could be that those who met with their counsellor this frequently received too much help and did not have to solve their problems themselves.

It is also clear that internal factors, such as their self-perception of their achievements related to JA and the extent to which they enjoyed the programme, have a clear impact on the extent to which they feel they developed entrepreneurial competences. This is not a surprising result, but it shows that the influence of JA on students varies significantly, which is important to take into account when designing programme evaluations.

It is also clear that the impact of JA entrepreneurship education depends

on the socio-economic background of the students: students whose parents do not have a tertiary education, and students who are less confident in their academic abilities, felt that they developed their entrepreneurial competences significantly more. Again, we cannot fully establish the reasons for this, but it can be assumed that JA, with its focus on action-oriented teaching methods, authentic tasks and interaction with the outside world, may have been perceived as a welcome break for these students who may not have cracked the code of traditional school tasks and classroom teaching. It may also be because students were given the opportunity to use talents other than just the academic ones, and that their teachers, who may have previously focused only on academic achievements in their assessments, now needed to re-evaluate their view of the students and also focus on their other abilities.

It is interesting to see that female JA students and JA students of other gender identities perceive that they have significantly developed their entrepreneurial competences more compared to male JA students. This is significant as several of the competences that they perceive they have developed, such as financial knowledge, dealing with uncertainty and networking, are typically dimensions that are considered to be barriers to female entrepreneurship and which contribute to the fact that, compared to men, few women start businesses (Alsos et al., 2006).

It is therefore clear that there is a wide variation in how different pupils,

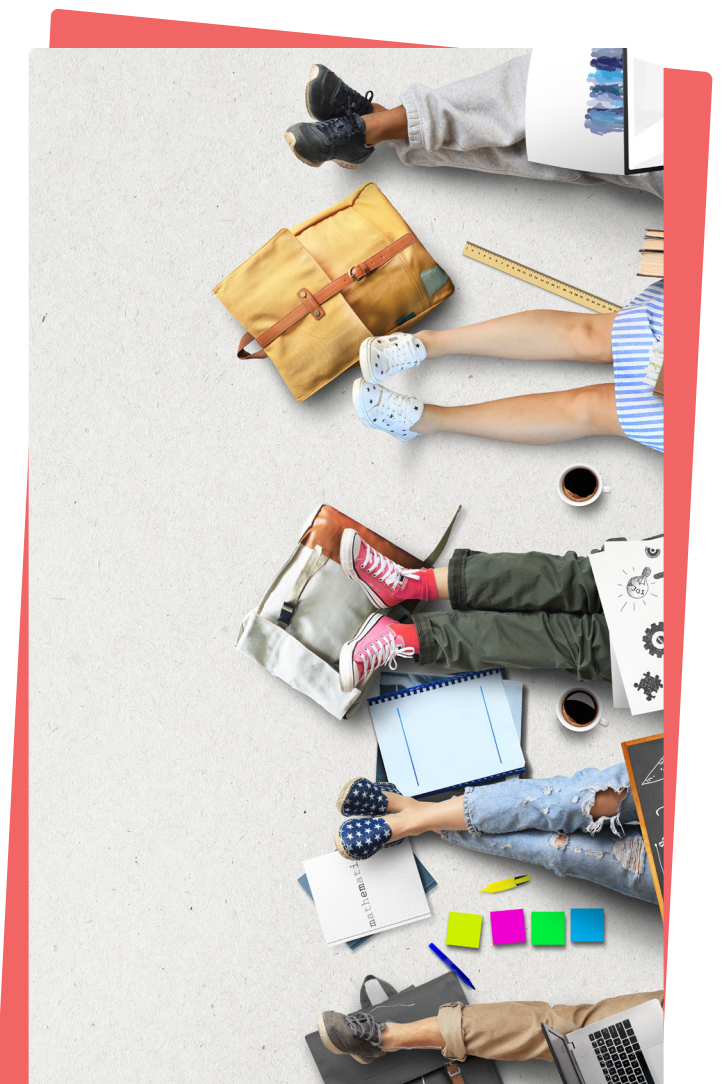
depending on both who they are and what conditions they have had, feel that JA has developed them. Unfortunately, the number of respondents was very limited in the follow-up surveys that focused on the impact of JA teaching on students' views of their education and how they engage with their school work. It was therefore not possible to investigate for whom and under what conditions JA has an impact, only whether it generally had a short-term and immediate effect, or whether the effect was persistent and delayed. The results of these analyses should therefore be interpreted with caution.

It is clear that both students who experienced JA the year before and students who experienced JA during the year, perceive that their teaching had more focus on action-oriented teaching methods. The results also show that students who participated in JA the year before perceive that their teachers see them as more self-motivated, curious and easy to engage in school work. So it seems that JA has a delayed effect on this. The fact that we do not see an effect on the students who experienced JA entrepreneurship during the year may be due to methodological shortcomings. These students have their JA teachers as a frame of reference rather than teachers of other subjects.

A somewhat surprising finding is that it does not appear that JA entrepreneurship affects students' school engagement, either directly or as a delayed effect. Previous studies (see e.g. Moberg, 2014a, 2014b and Moberg et al., 2015) clearly show that entrepre-

neurship education has a clear impact on students' school engagement, at least during the time that students experience the education. However, the participants in these earlier studies were somewhat younger, and it is possible that school engagement is not a variable to be included in surveys distributed at the end of students' upper secondary education.

However, how students are able to use their entrepreneurial competences to engage in their learning is greatly influenced by the environment and whether their school work and teachers encourage and inspire this. This aspect has been the central focus of the qualitative study presented next.





04. Qualitative Interview Study

For those interested in getting
a more nuanced and deeper
insight into the results

As the research project has focused primarily on investigating the impact of teaching JA, it relies mainly on quantitative data. In the initial discussions about the focus and design of the study, the question of how teachers perceived students with experience in JA was often raised. Do they think there is something specific that sets JA students apart? Is it different to teach these students? In order to avoid answers that are overly influenced by their own desires and self-fulfilling assumptions, teachers who work in JA schools but who have no experience of teaching JA themselves were interviewed. This specific focus meant that the study was designed as a stand-alone part of the report. Although the research question and purpose are different from the quantitative report, it is an important complement to gain a more holistic understanding of the interplay between JA teaching and the surrounding school context.

BACKGROUND: design and execution

The basic aim of the interview study was to gain insight into how teachers, based on their different contexts and experiences, perceive JA students. As the interviewees had no experience of teaching entrepreneurship, it was important that the interview guide was adapted accordingly. As entrepreneurship education has a clear link to action-oriented teaching methods and is often based on students carrying out an entrepreneurial project over a longer period, the link to project-based

learning is clear. Project-based learning, or PBL as it is also often called, is a well-known teaching method that is part of teacher education and was therefore a good starting point for the different themes of the interview guide. As the teachers' experience with PBL can be considered to influence their views on action-oriented and entrepreneurial learning, the teachers in this study are categorised on this basis.

As the interviews were to be conducted by UF staff, who did not necessarily have experience in qualitative research, the interview guide was structured very precisely. It was therefore very much in the form of a multi-question questionnaire where respondents were asked to give numerical values to express the extent to which they agreed with various statements. The questions were therefore more straightforward than exploratory, but in order to avoid leading answers, respondents were asked to justify and elaborate their answers after each question.

In order to help interviewees distinguish between entrepreneurial learning and PBL, the interviews started with questions about PBL and its effects. The interview then circled back to questions about whether they felt that JA enterprise developed skills that students could use in their further schooling and later in life. The resulting themes and categories therefore overlap to a relatively high degree. To allow space for the teachers' own expression of their thoughts and experiences, interpretations of the emerging themes are limited in the running text.

Instead, these are brought together in the concluding reflective summary. In this way, it is the teachers' own voices and perspectives that are given space in the overall understanding of the study's results.

The following 3 themes are analysed:

- 1) What competences do students develop through PBL and JA?
- 2) How is it recognised that students have participated in JA?
- 3) How do teachers perceive action-oriented teaching?

WHAT SKILLS DO STUDENTS DEVELOP: through PBL vs. JA entrepreneurship?

The analysis showed that teachers considered that the action-oriented teaching on which JA and PBL are based leads to pupils developing competences that are useful for their further schooling and life in general. It is clear that it is competences of a more general nature that teachers focused on. They often emphasised that this form of teaching promoted pupils' autonomy by teaching them to manage their time well and to accept that not everything is prepared just when it is needed. This, they said, was something that gave JA students a drive and flexi-

bility in their learning.

"[...] somewhere you also learn to take responsibility and be able to plan and carry out a task without being told minute by minute what to do."

- Teacher with a lot of experience in PBL

"[...] a certain amount of responsibility and initiative... that you have to be a bit more autonomous."

- Teacher with limited experience of PBL

Co-operation and teamwork were also characteristics that teachers consistently gave as examples of general competences that students developed. In addition to the more general competences that PBL develops, it was clear that teachers felt that JA also promoted more specific competences related to entrepreneurship, such as daring to try new things, and being able to develop, test and implement ideas.

"[...] more than independence, I think. And precisely this ability to deal with problems that arise, how to solve them. Ingenuity, initiative are the pieces and that creativity, and that you have to take hold of something that may arise. [...] Maybe you also get a feeling that you dare to try things. Having run a business can also be the starting point for daring to start a business yourself in the future."

- Teacher with a lot of experience in PBL

"[...] collaboration and as well as something of their own driving, as well as developing their ideas and implementing them."

- Teachers with limited experience of PBL

Overall, however, teachers linked the more entrepreneurial competences to the more action-oriented competences, arguing that one resulted because of the other.

"Yes, now these skills may primarily appear in economics subjects. But somewhere along the line, this is also about being able to use common sense, which is really what it is. We want to teach them here to be able to work in a scientific way."

- Teacher with a lot of experience in PBL

"I think part of running a JA company is that you have to make a lot of contact with people outside the school. [...] This particular aspect, this social competence, will be of enormous benefit in the future, including perhaps presenting something. That's also part of this, to dare to do those things. It's great training. It's not just in school subjects, but also in your future professional role, probably whatever you do, or in studies too. I absolutely believe that, and also to be able to see how to plan things. I think so too, because it takes a lot of planning to run a JA company."

- Teacher with medium experience in PBL

It is interesting to note that despite differences in teachers' experience with project-based learning and their varying familiarity with JA and entrepreneurship education, they generally agreed on the competences this type of education develops. However, when the focus shifts to how, and to what extent, students are recognised as having experience with JA, it becomes clear that teachers' backgrounds have a greater impact.



HOW IS IT MARKED THAT STUDENTS: have participated in JA entrepreneurship?

Teachers' examples of the impact of JA on students focused mainly on how this experience affected individuals, rather than how it affected the group. However, it was clear that the behaviours they gave as examples were also characteristics that can make a class or group more active, enterprising and engaged.

"[...] they have a pretty good drive in general. I probably think more about, as well as what I see also during the time they work, that this engages them very much it is something that feels more real, so to speak." - Teacher with very extensive experience of PBL

"They are a bit more on the ball, I can't think of anything really good. They can be enthusiastic, they want something. And then it may not be everyone in a class, but there are the students I think who have it." - Teacher with extensive experience in PBL

Several of the teachers' examples centred on maturity and development. Although this is something that happens naturally during the upper secondary school years, they felt that for some students, participation in JA had clearly influenced this process. This was particularly true of their confidence in making contact and interacting with the outside world.

"They are maturing a bit more. I don't know if it's a skill, but that they help themselves in a different way. In the beginning, they may hardly dare to call anyone and ask for anything. But that you might grow a little as... well, a little

adult point in some way in that. You can sometimes see that JA has done a lot for individuals, those who were quite small, so to speak, when they arrived, but who have grown along the way."

- Teacher with very extensive experience of PBL

"Many of them also become more confident in themselves. The fact that you then start a new project, whatever it may be, means that they dare to be more assertive. Perhaps they also dare to make mistakes without it being so, well, without being afraid of making mistakes, because some mistakes are always made; you learn. And so on, so that they realise that they benefit from it." - Teacher with a lot of experience in PBL

Where the class or group was the focus, this was exemplified by the impact on the individual. So even when it came to changing group behaviour, teachers were clear that their focus was on how students were affected.

"[They] get a sense of community in the group and class. And the pupils then perhaps also develop a way of dealing with this group dynamic, because things don't always go as planned either. So, you shouldn't paint a picture of everything working perfectly when you work together. But sometimes these collaborations have worked less well. As a student, you have to deal with that sometimes and perhaps express disappointment in our evaluations about it. This can be the case." - Teacher with a lot of experience in PBL

"There's a kind of basic common sense in that, that you know when you need to perform against a third party, so to speak. So when you see the difference, when you can read situations, when you have to represent yourself and to some extent perhaps the school and that you then to some extent feel a weight in it, so feel a responsibility in that situation perhaps." - Teachers with limited experience of PBL

Teachers repeatedly emphasised that the outcome was highly influenced by the individual characteristics of the students and their experience of JA entrepreneurship. At the same time, their experience of teaching using project-based methods was evident in their responses. The responses of two teachers, who felt they had limited experience of PBL, illustrate this clearly.

"I can't single out in a class who has [participated in JA], it depends on what you have brought with you before. Some have worked independently on different things. It may be a summer job or whatever. But of course they have good use of things they have done. Planning, there is a lot of planning and a lot of work in these courses [...] then we have some students and some groups where it has gone very well. The companies have done well and they have also put in a lot of work. It is clear that it has been instructive for them." - Teacher with very extensive experience of PBL

"I would say that it depends on the individual because there are some students who don't notice it at all, and some students have perhaps absorbed more. But in general, I can't say that I notice that this class has worked with JA but this one has not. I have not noticed that difference."

- Teacher with limited experience of PBL

The analysis shows that, in general, teachers consider that JA has a positive impact on students, and that they grow with the tasks they have been set, some more than others. However, the impact on group or class behaviour is considered limited. It seems that teachers consider that this action-orientated teaching is something that needs to be worked on continuously if it is to influence how students engage with their learning as a group.

"If you do the JA year and then feedback and make something more of it and build on it, perhaps in another project or in some way feedback to it. Then the students will get it in a more concrete way. If you do the course, it's finished and you never mention it; but then there will be nothing more, I think."

- Teacher with very extensive experience of PBL

Thus, it seems that the teachers' focus is more on how the individual students develop, rather than how the class as a group develops. In the final part of the analysis, the focus will be more on how the teachers experience JA as a form of teaching, how this form relates to other types of teaching and how it relates to the school context in general.

HOW DO TEACHERS PERCEIVE: action-orientated teaching?

It is clear that teachers with more experience of project-based learning are more likely to see JA as a building block in a wider context. The focus is not so much on what JA can contribute to the other subjects, but rather on how the other subjects can strengthen and enrich what students have worked on in their JA projects.

"[I] have tried to push a line that we need to work more together. That the programme is linked to our degree objectives and not the sum of 27 courses."
- Teacher with a lot of experience in PBL

"We work subject-integrated and together quite closely in a small team around the classes and we attach quite a lot of importance to the whole of the education and we participate in each other's projects as far as we can and have time and also try to design projects so that we are all involved. [...] on the whole, I have to have a bit of a rubber band around my plantings and give and take a bit. And it's very good and especially when our students see that we are all involved in different projects, that we work together and that there is a greater whole in what you do gives very good effect for the students' continued learning and simply what they actually get with, which you think young people should get with when they come out of school." - Teacher with very extensive experience of PBL

Teachers see many benefits for both pupils and teachers in more project-focused and cross-curricular teaching. For example, it can be useful for teachers to observe and evaluate pupils' performance in other subjects and then integrate these experiences into their own teaching. However, for this to be possible, teachers themselves need to be curious about the teaching of their colleagues, and to be willing to co-operate on joint projects. Unfortunately, this can be seen as time-consuming, and in many schools it is not something that resources are allocated to.

"On the other hand, it's good for you as a teacher to see students in a different situation. I think that there may be students who are very good in economics subjects, but who may be a little weaker in English or in Swedish, and that you then get to see them act in a different way because they have a different security." - Teacher with extensive experience of PBL

"It depends so much on what the teachers do [...] We pick up a lot here, and it's also very much linked to our JA teachers. [...] here it's her baby, you could say, it's her baby, what she's passionate about. And then it's also very, very good, and then it's also very easy for the rest of us to get involved, do more of it, give feedback. And then it becomes much more." - Teacher with very extensive experience of PBL

"It would be nice if there was more time because it's great fun to work on these projects but it's the time that is... that is lacking, almost always and where you feel that you want to do much more, you want the students to see the common thread and that time is not always available."
- Teacher with medium experience of PBL

Several of the teachers referred to cross-cutting topics that they worked on together with other teachers. On several occasions, they exemplified their PBL-based teaching with how they taught scientific method. They feel that JA, with its focus on entrepreneurship as a method, is related to this type of teaching. However, it is interesting to see that none of them seemed to see entrepreneurship as specifically cross-cutting, or comparable to the scientific method.

"Yes, we also work with subjects such as nationalism and racism and the scientific method. We're supposed to prepare students for university studies, because it's a university preparatory programme. But here I also mean that you can find common denominators that link to JA and such projects. These things are not different abilities that are required, but sometimes the same abilities are also found in being an entrepreneur. For example, that you can use the scientific method to draw conclusions about marketing and sales just as well as you can in reports and essays on other subjects." - Teacher with extensive

experience of PBL
"Yes, it [the scientific approach] touches on a number of aspects really, which are about being able to understand what a scientific method is. To be able to carry it out and to be able to critically analyse results, to be able to express oneself in speech and writing in order to be able to present this. And unfortunately, this is often quite fragmented, while it is an ability that all subjects benefit from. So if we dare to work together on these skills, we will be able to "cash in" on it." - Teacher with a lot of experience with PBL

It is clear, however, that teachers perceive JA teaching, and the action-oriented pedagogy on which it is based, as a teaching method that creates motivation and engagement among students. They often reiterate how the authentic tasks of JA teaching lead students to take their work more seriously and to listen more to the feedback they receive from people outside the school.

"I also think these situations when they are faced with, faced with reality, so to speak, both in these Dragon's Nest competitions and when they are out selling to others outside the school and when you market yourself as something with your own name and so on, so it becomes a... It becomes something that they want to feel proud of, in some way, which I think is rewarding. Which I think they benefit from." - Teacher with very extensive experience of PBL

REFLECTING: summarising

Authentic tasks are central to research on what makes for engaging teaching, but it is interesting to see that the teachers also give clear examples of how JA enables different talents to be utilised, students to collaborate and to take ownership of the process. All the points listed by Newman (1991) in his framework for engaging teaching thus seem to be included in JA entrepreneurship according to these teachers.

"When you manage to do things, you grow quite a lot and that is something that JA provides a very large framework for. Both to try things out and to fail or do things well."

- Teacher with extensive experience of PBL

"[...] traditional teaching [...], it's not always based on the students being innovative either, but part of this is about just learning facts and having tests on it, so to speak. So you don't really get as much benefit from that."

- Teacher with a lot of experience with PBL

"[...] we have sports students at school. [...] they also have this mindset they want to win and so on and usually quite successful. I think this is a good combo."

- Teacher with a lot of experience with PBL

"I think it will be a different anchoring in reality and that you also see a common thread in some way, that you see it from the seed you plan to the finished plant."

- Teacher with medium experience of PBL

The survey shows that when it comes to teachers' perceptions of the impact of JA, their focus is mainly on how it affects students as individuals. It is also clear that they consider that individual variation influences their engagement in JA teaching and what they have gained from their participation. However, it is unclear which type of students benefit most from JA entrepreneurship and the analysis often shows contradictory results. On the one hand, teachers often emphasise how the more entrepreneurial students have done better and that this boosts their confidence for future teaching. A clear example of this was the teacher who felt that JA entrepreneurship was particularly suited to students with a sporting orientation because they were competitive. However, teachers just as often gave examples of how participation in JA has had a compensatory effect, giving confidence to more insecure students and making immature students more mature and responsible.

Surprisingly, however, it does not appear that teachers feel that the change they perceive JA teaching to have on individual students affects their experience of teaching the whole class. Referring back to the Affordance theory presented in the introduction of the report, this result can be understood in terms of the interaction between the students and their environment. It is clear that teachers emphasise the importance of the environment in their observations. Even if JA has an impact on students' individual characteristics, it has limited impact on their further schooling if their environment reverts to traditional education and ceases

to offer entrepreneurial activities and opportunities for action.

From this perspective, teaching JA entrepreneurship can be compared to the experience of using a well-designed cookbook. Not only do you get access to a lot of new recipes, but it develops and moulds you as a cook. Unfortunately, in the world of schools, it seems that this is not enough. While students learn more nuanced recipes, and not to be afraid to get a little spicy at times, they need to have access to the necessary ingredients to be able to prepare imaginative and flavourful dishes. If they don't get this in the other subjects, it doesn't matter so much that their approach, how they see the world and how they interact with it, has changed. Rather, it can lead to frustration and resignation.

Teachers with experience in PBL emphasise the importance of cross-curricular collaboration to integrate activities that occur in different subjects and projects. It is clear that JA, with its group-based projects, outward-facing activities and action-oriented teaching methods, is well suited to this type of school. However, the question is whether the methods used in quantitative programme evaluations can capture this. Students in these schools, who do not participate in JA entrepreneurship, will nevertheless experience a lot of teaching that focuses on projects, practical action and group problem solving. The differences in how these pupils develop entrepreneurial competences compared to pupils participating in JA are likely to be smaller, although the overall impact will be greater.



05. Closing Discussion

For those who want to get an overview of the results, their implications and limitations



This report is the result of a three-year research project that focussed on investigating the impact of participation in JA on upper secondary school students, their perception of developing entrepreneurial competences and their perceptions of their teaching. The results show that JA has a generally positive impact on students, but also that the influence varies depending on who the students are and what conditions they have had. One clear result was that students who indicated that they had had an advisor attached to their JA company also felt that they developed entrepreneurial competences to a greater extent. However, the effect was the opposite if they met their advisor more than once a week. This indicates that there can be *"too much of a good thing"*.

Female JA students and students of other gender identities also experienced greater development. As entrepreneurship is a male-dominated field, it is important to identify effective methods to stimulate women's entrepreneurship. It is therefore interesting that JA, an initiative that has a general orientation without a specific focus on women, appears to be an effective method for doing just that. However, in the world of schools, girls are not the problem. It is therefore positive to see that students who have low self-esteem in terms of their academic abilities and students whose parents do not have a tertiary education, perceive that they are developing entrepreneurial competences to a greater extent. This indicates that JA, with its focus on action-oriented teaching methods and opportunities to make use of different talents, can contribute to reducing social differences rooted in students' family background. This is in line with previous research projects that have shown that entrepreneurship educa-

tion has a positive effect on students in disadvantaged neighbourhoods and their experience of interacting with the surrounding community (EVA, 2020; Moberg & Rasmussen, 2020). These students found it very important that they were taken seriously when they approached organisations and people outside school.

The results of the analysis that focussed on the impact of JA on students' perceptions and engagement in their learning were less clear. Students perceive JA teaching as more action-oriented, and there appears to be a lagged effect on the extent to which students perceive their teachers to be engaged, curious and easily energised. Unfortunately, there were too few respondents in this study to investigate whether the influence varied depending on who the students were and what their circumstances were.

However, the results of the qualitative study provide some insight into how teachers perceive the opportunities JA students have to use their entrepreneurial competences and to engage in their further education. They believe that students learn important and useful competences and that through their participation in JA they mature and grow. However, at class level, they do not feel that teaching students with JA experience is any different. This depends a lot on how the surrounding school is structured. Teachers find it challenging to capture the projects and drive of the JA students when the surrounding teaching does not allow for collaboration across different subjects. So even if they clearly notice if a student has participated in JA, the question remains whether this leads to them also noticing that several students have participated in JA.

LIMITATIONS: and future research

Evaluation studies of ongoing educational initiatives are limited to studying what is happening in the schools included in the study. Unfortunately, it was not possible to randomise which students would participate in JA and which would be included in the comparative control group. This leads to problems of selection bias and the results may have been distorted by variables not observed in the study. Another problem with this type of study is that educational initiatives that take place over a long period of time, in many different locations and for many different types of learners, tend to differ in both design and implementation. A strength of JA is that several teaching materials and several teaching elements are common. However, in order for the programme to suit different types of learners and education, the programme structure is flexible. Thus, it cannot be assumed that a homogeneous educational initiative is being tested. The fidelity level of the programme's implementation is thus limited, and it was unfortunately not practical to include an implementation protocol for the participating teachers.

One way to control for this to some extent is to use multilevel analysis and include group effects, such as school or class influence, in the analysis. In this way, the common experience of

students, their influence on each other, and the common influence of their teachers on them can be included in the analysis. However, this requires that the number of respondents in each group is sufficient.

For the majority of students in the study, JA entrepreneurship was a compulsory part of their programme, but they had of course chosen the educational programme themselves, so self-selection bias is problematic. A large number of external and internal variables were therefore included in the study. The analyses clearly showed that JA had heterogeneous effects. To identify the reasons for this, future studies should endeavour to ensure that participating schools follow clear implementation protocols and that data on teachers and their teaching practices are collected through separate questionnaires. Consideration could also be given to whether activities and teaching moments, or interventions within the programmes themselves, should be randomised, so that it is these aspects that are examined rather than the overall teaching structure of the programmes.

THE WAY: forward

Several studies have shown that entrepreneurship education can be an effective tool to inspire more people to start businesses (Elert et al., 2015) and to equip students with competences that are central to establishing and running a business, as well as to succeed in life in general (Moberg, 2020). Entrepreneurial competences can be fostered in many ways, but focusing on entrepreneurship as a teaching method appears to have many advantages as it offers a uniform teaching structure that is nevertheless flexible enough to suit several teaching programmes and student types. Although JA with its elaborate teaching structure, which includes both basic teaching activities for teachers and common teaching materials, creates good conditions for this type of teaching to be scaled up and implemented widely, the question remains how this is done most effectively.

The extent to which students' entrepreneurial attitudes and skills are realised depends very much on how the school environment is structured. It is of course important to explore how we can create the conditions for more students to develop action-oriented competences and gain new perspectives on the world, as well as an understanding of how to successfully navigate it. However, it is also important to explore how we can create learning environments that encourage entrepreneurial thinking and behaviour, and provide opportunities for those who have this experience to use their skills, so that JA does not become an isolated phenomenon that is perceived as deviant and different. This study has shown that JA has a clear impact on upper secondary school students; future studies could usefully explore the structure and conditions that best capitalise on this.

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