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Pan-European Entrepreneurial Summer Academies with Impact: The Case of STARTIFY7

Abstract

Entrepreneurship is viewed as essential to the future prosperity of Europe and creating societies that are socially and economically inclusive. The ICT sector has been identified as an area of great entrepreneurial potential for Europe and yet the continent struggles to create global leaders in the digital start-up space. In response to this challenge, the European Commission launched its Entrepreneurship 2020 Action Plan to stimulate and support young people to become entrepreneurs and exploit the potential of ICT, in terms developing new digital products and services. This chapter reports on a project to develop and deliver a series of pan-European summer academies for entrepreneurship training funded by Horizon 2020. We detail the process of developing the academies and offer reflections on the impacts of the project.

1. Introduction

Europe is struggling to create new businesses, make them grow and turn them into global leaders. This is particularly true of digital startups, where the most innovative high growth enterprises have been created outside of Europe. With the global digital economy growing rapidly this represents a significant problem in Europe. That said, the digital economy possesses great potential for European entrepreneurs, and so to realise this potential as a part of the Entrepreneurship 2020 Action Plan the European Commission announced the launch of specific actions for ICT entrepreneurs (European Commission, 2014). The aim of the European Commission's strategy is to stimulate and support young people to become entrepreneurs and exploit the potential of ICT, in terms developing new digital products and services.

The Action Plan is built on three pillars, 1) developing entrepreneurial education and training; 2) creating the right business environment; and, 3) role models and reaching out to specific groups, placing entrepreneurial education at the forefront of efforts. Despite this determination, understanding the effectiveness of interventions in this area remains a contested topic of discussion (Fayolle et al, 2016). Introducing a special issue on *The Theoretical and Methodological Foundations of Entrepreneurship Education Research*, Fayolle et al (2016) argue that it remains a field that is relatively under-served in terms of conceptual underpinning and robust findings on the impacts of interventions.

This chapter discusses a case study of pan-European entrepreneurship education through the lens of a project focused on the ICT sector. Focused on the first pillar of the Entrepreneurship 2020 Action Plan, it centres on a Horizon 2020 project to research, design, develop and deliver a thematic, lean, team based model of pan-European entrepreneurship education for young people. We frame our chapter's contribution to this volume on entrepreneurship education as providing insights from the first wave of Horizon 2020 actions to deliver an innovative model of entrepreneurship education on a Europe-wide basis, integrating entrepreneurial learning and practice.

The remainder of this Chapter is structured as follows: in Section 2 we discuss the European context, outlining the challenges and opportunities of the entrepreneurial landscape and policy context; in Section 3, we reflect critically on existing provision of entrepreneurship training in Europe before Section 4 presents an overview of the STARTIFY7 academy model for young aspiring ICT entrepreneurs and discusses the emerging outcomes and impacts of STARTIFY7 ; and finally in Section 5 we conclude the chapter by reflecting on the challenges of delivering and sustaining such a model of entrepreneurial learning.

2. The European 'Entrepreneurial' Landscape: Challenges & Opportunities

In recent years, entrepreneurship has come to be widely regarded as an engine of economic growth and societal development. Consequently, entrepreneurship has become a political imperative in Europe where the importance of economic participation for social justice and inclusive societies is acknowledged. It has been identified that entrepreneurship represents one path towards moving Europe's 26 million unemployed people who are actively seeking work into economic participation (OECD / European Commission, 2015), as well as forming an important part of future economic development across Member States as an important source of prosperity for the future. In this sense, entrepreneurship is about enabling social and economic participation today, but also about contributing to inclusive societies of the future.

Of particular concern within this broader picture is the experience of younger people. Among the groups of European citizens who have most experienced the damaging effects of recession, young people (15-24) are finding themselves out of work, for example youth unemployment rates in Spain and Greece have exceeded 50% in recent years (Eurostat, 2016). It has been suggested that self-employment and entrepreneurship may represent one way of addressing the kinds of problems encountered by the unemployed youth in the labour market. More than creating employment, the European Commission's vision for entrepreneurship is much broader, and about embracing the development of human potential – investing in the skills of young people to innovate. The development of such entrepreneurial skills is about fostering the initiative, confidence, calculated risk-taking, creativity, organisation, and tenacity in young people, and inspiring them about the opportunities to pursue entrepreneurial careers (European Council, 2014).

The Commission's Entrepreneurship 2020 Action Plan (2013a) observed that between 2004 and 2013, the number of people preferring self-employment to being an employee fell in 23 out of 27 EU Member States. Perhaps unsurprisingly during the recession, decline continued to be apparent with 45% of Europeans regarding self-employment was their first choice in 2010 but by 2013 the percentage had fallen to 37%. These rates of preference for self-employment are contrasted with reports from the USA and China where this proportion is much higher at 51% and 56% respectively. According to the OECD and European Commission report on *The Missing Entrepreneurs*, individuals aged between 15 and 24 years old are less-likely to be self-employed than the adult population more widely (OECD / European Commission, 2015). This is attributed to young people generally being less confident than others about possessing the skills and knowledge to start a business as

well as regarding self-employment as higher risk than being an employee. Given the importance ascribed to entrepreneurship in European policy there is a real desire to foster a new generation of entrepreneurs as both the engine for continued economic recovery and future economic growth. However, if entrepreneurship is to provide a potential solution to the economic challenges facing Europe, then there is a need for entrepreneurship to be productive and ambitious (Baumol, 1990; Bosma and Schutjens, 2007). It is not simply the case that Europe needs more entrepreneurs. What matters is generating entrepreneurship-led growth in Europe, with startups that create wealth and employment.

ICT & Entrepreneurship

The European Commission's Entrepreneurship 2020 Action Plan identified the growth potential of the ICT sector to the EU economy. One challenge particularly acute in the ICT sector is that despite the comparative strength of Europe in ICT research and development, typically the new enterprises founded grow slower in the EU than in the USA or emerging economies, and fewer join the ranks of the world's largest firms. The ICT sector already accounts for almost 5% of the total EU GDP and a c.2.7% proportion of employment (European Commission, 2014). However, it is acknowledged that Europe has an ICT growth problem relative to the USA, which is in part attributed to lower levels of specialisation in ICT (Veugelers, 2012). Cincera and Veugelers (2013) note that Europe is missing young leading innovators in the areas of internet connectivity and software services in particular, while there are also opportunities for ICT to aid traditional industries through productivity improvements. As such the digital economy remains underexploited in Europe.

In a global context while the ICT sector is significant for the European economy, it is comparatively smaller than other major G20 economies, where the digital economy constitutes up to 8% of GDP. Consequently, the European Commission (2016) identified that EU has ground to make up, recognising that '…if all EU countries mirrored the performance of the USA or the best-performing EU countries, 400,000 to 1.5 million new jobs could be created in the EU internet economy.' Realising this opportunity across the EU as whole, however, represents a significant challenge. There have been concerns that shortages of relevant and higher-level ICT skills could hamper the growth of this sector across the EU. Within this context, the European Commission has developed and implemented its response to boosting entrepreneurship and the digital economy in the EU through the Entrepreneurship 2020 Action Plan (2013a).

Alongside the Entrepreneurship 2020 Action Plan, €80 billion has been committed to research and innovation under Horizon 2020, the largest ever EU funding programme, between 2014 and 2020. Horizon 2020 also includes increased support for testing, piloting, and demonstrating new technologies to meet the needs of innovative entrepreneurs and SMEs. One programme to support entrepreneurship saw €15m allocated for projects to 'transform entrepreneurial culture, give students the confidence, knowhow and support to set up their own businesses and to help promising web startups launch in Europe and go global.' (European Commission, 2013b). The

funding was aimed specifically at young people with a view to generating cross-border projects for young potential digital and ICT entrepreneurs.

Different means of achieving these desired ends were identified by the Commission, in particular emphasising a focus on pan-EU efforts. Competitions for ICT start-up ideas, collaborative projects designed to foster collaboration and ICT summer academies to both inspire and develop the next generation of ICT entrepreneurs. Under this intervention programme the European Commission has sought to support projects that adopt novel or innovative pan-European approaches that embrace more applied and practical approaches to learning. The synergies between the Entrepreneurship 2020 Action Plan and Horizon 2020 highlight the importance of developing the entrepreneurial capacity and capabilities of young people in Europe as the next generation of innovator entrepreneurs.

STARTIFY7 is a project created in response to this call from the European Commission and the remainder of this chapter focuses on this Horizon 2020 project funded to deliver a series of Entrepreneurship Summer Academies for young people to learn and apply entrepreneurial skills to different areas of specialisation relevant to the digital and ICT sectors. STARTIFY7 was one of a series of projects funded to pilot approaches to pan-European entrepreneurship education and respond to gaps in existing provision. The remainder of this chapter presents an overview of the project from characterising current provision, conducting a training needs analysis and using these insights to design a curriculum for the pan-European programme. Thereafter we detail the implementation of summer academies along with initial findings as to their impacts.

3. Reviewing & Researching Entrepreneurial Education and Training

In designing and developing STARTIFY7 the first phase of the project was to review existing provision and establish a clear understanding of the training needs that STARTIFY7 was seeking to address. Despite entrepreneurship being a priority of the European Commission, Wilson (2008) suggests that educationally the is field still trying to find its home. Indeed, it has been characterised by an unbalanced emphasis on content *about* entrepreneurship rather than education and training *for* entrepreneurship (Kirby, 2004; Fayolle et al, 2016). Arguably it is the (lack of) pedagogical strategies underpinning much entrepreneurial education and training that presents a challenge for Pillar 1 of the Entrepreneurship 2020 Action Plan in developing the next generation of young entrepreneurs.

The Commission often draws comparisons with economies in the USA or Asia. It has been noted that entrepreneurship education programmes undertaken in the USA are associated with placing an emphasis on business practice with courses generally more oriented towards experiential learning. Such engagement of participants with real business-world developments and competition through fast prototyping, business modelling and pitching is characterised as being largely absent from the training experience in Europe. In reviewing and researching entrepreneurial education and training, the STARTIFY7 teams sought to identify and validate the approach of the project drawing on a range of approaches. The aim was to develop a multi-perspectival approach from policy and

practitioner debates as well as from reviewing academic studies of entrepreneurial education and pedagogy.

While inevitably drawing generalisations here, provision in Europe has been discussed in terms of what it is lacking. The general perceived absence of 'learning-by-doing' training approaches reflects a tendency towards linear training processes through which future entrepreneurs supposedly receive the needed knowledge and the capabilities to start and grow business enterprises. This predominantly didactic training mode, however, provides little attention to the actual involvement of the potential entrepreneur in a more 'hands-on' and practical experience. It is akin to studying books when trying to develop the skills of a practical craft; the learning process is not aligned with the intended outcomes (Biggs and Tang, 2007).

Entrepreneurial Training Needs Analysis

A core element of the STARTIFY7 project is understanding what knowledge, skills and attitudes we should seek to develop among participants of each summer academy. A Training Needs Analysis was conducted to inform the design and development of the STARTIFY7 programme and curriculum, which involved four phases:

1. Research evidence review
2. Support provision review
3. Entrepreneur interviews
4. Learner Survey and (Online) Focus groups

Research evidence review

The first step of the research project was focused on exploring published research on entrepreneurship education and training to identify gaps and limitations at the frontiers of the field. The academic literature has been accepted with reservations around the potentially out-dated nature of available evidence. The evidence was discussed among the entrepreneurship educators in the consortium at this stage and further checks were conducted (stage three, below) through obtaining the views of practicing entrepreneurs.

Support provision review

While we reviewed the ICT entrepreneurs' support provision in USA, Canada and Israel to inform our understanding, the primary focus was on the European startup scene. Salido et al, (2014) reviewed the private entrepreneurial support ecosystems of European countries (France, Germany, Italy, the Netherlands, Spain, Sweden, the United Kingdom, Czech Republic, Slovakia and Ireland) and found that across the continent, Europe boasts a dynamic and healthy landscape of accelerator and incubator initiatives: more than 260 startup programmes, when the United States counts approximately 200. Therefore, both markets are comparable in terms of the number of

programmes, however this positive outlook wanes somewhat as the USA's population of around 320 million is compared with the 500 million living in the EU-28.

Nevertheless, the compound annual growth rate for accelerators in Europe more than doubled in the last 12 years to 29% post (2007/8) crisis, up from 14% pre-crisis, and increased by nearly 400% since the start of the crisis. This reflects an impressive counter-cyclical capacity of startup initiatives across the continent (Salido et al, 2014).

Entrepreneur interviews

Semi-structured interviews were conducted with experienced entrepreneurs on the skills which are in their view critically important for ICT entrepreneurship. The generic skills indicated by our interviewees highlighted the importance of being able to *understand others* and *engage* fruitfully with customers and team members. This reflects an interesting indication that ICT entrepreneurs would see themselves as much more sensitive to others, than the typical image of a technically-oriented company the public may have. Next, *creativity* captures this unique ability to work out solutions not often seen, conceived or implemented by others. Also, our interviewees pointed to *effectiveness*, understood as resilience, persistence or 'getting things done.'

Responses to questions on the key business-related skills required attached importance to the ability to plan and think ahead – from technological foresight, through to strategic planning and operational action plans. Also some more focused skills connected with project management, marketing and public relations have been indicated throughout the interviews we have had. A third category of responses focused on skills connected with handling complex situations emphasising problem solving, analytical thinking and the capacity to adapt to the environment.

Learner survey and focus groups

The questionnaire was distributed to the target group of university and secondary school students by project partners in the UK, Netherlands, Germany, Poland, Italy, Greece and Spain. The primary data collected focused on the priorities (critical skills), the missing skills, the requirements and needs of young people aspiring to become entrepreneurs in relation to ICT technology. Focus groups were conducted to identify key enterprising and entrepreneurial knowledge, skills and attitudes. In addition, the focus groups highlighted the importance of the academies being theme-led.

From Training Needs Analysis to Curriculum Design

The objective of the training needs analysis was to provide a basis for identifying the learning components to develop a curriculum model for STARTIFY7. The research, as outlined above, informed STARTIFY7 with the core three areas identified as entrepreneurial knowledge, skills and attitudes. In keeping with the overarching aims of the EU ICT 35 call for proposals to which STARTIFY7 responded, each of the areas was broken down into a series of components. The learning components detailed in Table 1 were identified as the core knowledge (c), skills (s) and attitudes (a) necessary to enable participants to develop ideas and turn them into action.

Component	Description
C1	Technical and IT-related knowledge in the field of [ACADEMY]
C2	Awareness of real world business challenges and opportunities in the field of [ACADEMY]
C3	Principles of lean business planning in the [ACADEMY] sector
C4	Awareness of the startup ecosystem and support available across Europe
S1	Opportunity Identification
S2	Design thinking (**person centred** approach to **meeting needs)**
S3	Planning pitches
S4	Delivering pitches
S5	Team formation, Teamwork, Working in groups
S6	Time management
S7	Negotiating
A1	Entrepreneurial orientation
A2	Flexibility in entrepreneurial contexts
A3	Creativity in entrepreneurial contexts
A4	Initiative/Leadership in entrepreneurial contexts
A5	Problem Solving in entrepreneurial contexts
A6	Risk understanding/taking in entrepreneurial contexts
A7	Responsibility in entrepreneurial contexts

Table 1: Curriculum Learning Components: Knowledge (C1-C4), Skills (S1-S7) and Attitudes (A1-A7)

4. The STARTIFY7 Academy: Overview and Impact

Responding to the EU ICT 35 call for proposals, STARTIFY7 was a project premised on a thematically-focused lean training summer academy programme for young entrepreneurs in the ICT and digital field. The themes were: digital health, digital transport, videogames, cyber security, industrial simulations, digital social enterprise and the internet of things – reflecting key domains of the digital economy. While applied learning and activities were central to our approach, the design of STARTIFY7 was conscious not to follow blindly down a path of practical experience above all other forms of learning. Heeding Rideout and Gray's (2013, p. 346) caution that entrepreneurship education '…appears to be one of those phenomena where action and intervention have raced far ahead of the theory, pedagogy and research needed to justify and explain it', careful consideration was given to the design of the STARTIFY7 programme.

There are different interpretations around what pedagogic approaches work in terms of entrepreneurial education. STARTIFY7 blends the traditional and theoretical elements of entrepreneurial education with Reis' (2011) lean methodology. This model spanned the pedagogic portfolio of entrepreneurial education elaborated by Neck and Greene (2011) to take participants

from description to action. STARTIFY7 focused on both the 'process world' and 'method world' perspectives of entrepreneurship education. The process approach emphasises planning and implies a greater degree of certainty and clarity of focus than is often present during business startup to provide participants with some structures. In contrast, approaching entrepreneurship as a method is about helping participants understand, develop, and practice the skills and techniques to be more entrepreneurial and enterprising. The remainder of this section first provides an overview of STARTIFY7 before exploring the impact of STARTIFY7 on participants.

Programme Overview

The academies took the form of intensive, 10-day experiences in developing businesses for startup in the ICT sector. Each academy had between 40 and 50 participants, selected from applications made online during the preceding few months. To ensure consistency across the STARTIFY7 academies a blueprint was created, with the 10 days divided into two parts. During the first week, the academies were mainly focused on master classes of technical arguments and on activities to enhance the team formation among the participants and to stimulate idea generation. Among the team building activities, the coaches guided the participants for the formation of balanced teams in terms of academic background and knowledge and site visits to academy-relevant businesses were arranged. The programmes also included activities for the validation of the ideas that emerged during the idea generation labs. During the second week, the contents of the programme were focused on the business aspect of the idea and iterating through versions of the lean canvas and developing a prototype. Central to the action based approach of the academies, participants were continually engaged with different groups of experts as well as engaging directly with industry stakeholders and customers.

Delivered in this way the STARTIFY7 academy blueprint provided a model that was sufficiently flexible for each academy to have a common core while ensuring it delivered its thematic focus. The blueprint provided a framework for all of the academies to follow, so regardless of the host or theme there was a common experience for participants. This was also ensured through the participation of staff in the academies from across the project team. In addition, the project team developed a common training framework, including methods and materials, to facilitate training and learning. Moreover, all academies established a network of experts with technical, industrial entrepreneurial and academic expertise who were invited to contribute. Working as mentors these individuals spent time with teams helping them to improve their entrepreneurial idea and forge pathways to entrepreneurial action. The mentors involved had experience and credibility in relation to the academy theme, with the entrepreneur mentors in particular serving as an important source of inspiration as well as an offering support by mentoring and coaching the teams

Each academy culminated in a 'Demo Day' with teams being required to submit and present their entrepreneurial idea. The submission comprised four elements 1) a business concept note; 2) a completed lean business canvas; 3) a five-minute pitch presentation to the judging panel; and 4) a minimum viable product, prototype or mock-up. The Demo Days of each academy were held the last day of the programme, where the teams presented their ideas in front of a selected jury comprised of investors, industry leaders and entrepreneurs from the respective field of the

academy. The three strongest participant teams were shortlisted and provided with further mentoring to develop their ideas by the STARTIFY project team. The remainder of this section considers the impact of STARTIFY7 by assessing the knowledge, skills and attitudes of participants before and after the 10-day academy.

Assessing the Impact of STARTIFY7

Measuring the effectiveness of entrepreneurship education in developing skills is notoriously difficult (Fayolle et al, 2006). As outlined above, the STARTIFY7 academies were concerned with developing the entrepreneurial Knowledge, Skills, and Attitudes of learners as identified by the Training Needs Analysis. All participants were surveyed pre-academy and post-academy to create two sampling points and ensure that any impact can be attributed to STARTIFY7 (as opposed to other factors). Student self-assessments tend to be higher than when evaluated by teachers and trainers, and our findings suggest this to be true of enterprise skills and entrepreneurial capabilities. To mitigate the over-evaluation of skills pre-academy, all participants were also asked to identify the impact STARTIFY7 had on the development of their skills in different areas as high, medium or low.

By measuring relevant factors before and after the STARTIFY7 academy and getting a qualitative assessment of impact on individual learners, the findings offer an unbiased assessment as to the impact of the programme. The results are broken down according to the three areas (Knowledge (C1-C4), Skills (S1-S7) and Attitudes (A1-A7) as set out in Table 1 above, with the underlying data presented in Appendix 1. The statistical significance of findings has been tested, and where *not* statistically significant they are clearly marked in the text and on charts and graphs with an asterisk (*). The surveys benefit from concurrent validity with the surveys completed by participants attending academies with different thematic foci but ostensibly completing the same programme. The remaining sections present an overview of the data and discuss the implications of the STARTIFY7 academies.

The first section of the survey addressed the participants' perceptions of their Knowledge (C1-C4). As shown in Figure 1 across the pre-academy and post-academy survey the participants identified their knowledge to have increased in all domains: C1 by 1.60, C2 by 1.52, C3 by 1.21 and C4 by 1.29. A T-TEST shows that there is a significant positive relationship in the change of participants' perception of each component (and overall) upon completing the STARTIFY7 programme[1]. These components of the curriculum are more about 'know what' than 'know how' which explains why all four components have had a significant impact on participants. Of the four components, C1 relating to developing the technical and IT-related knowledge in the thematic field of the academy had the greatest impact, increasing from 6.42 to 8.02.

[1] T-TEST RESULTS FOR KNOWLEDGE (C1-C4)
C1, $r(140) = .80$ $p < 0.05$; C2, $r(140) = .80$ $p < 0.001$; C3, $r(140) = .72$ $p < 0.05$; C4, $r(140) = .73$ $p < 0.05$

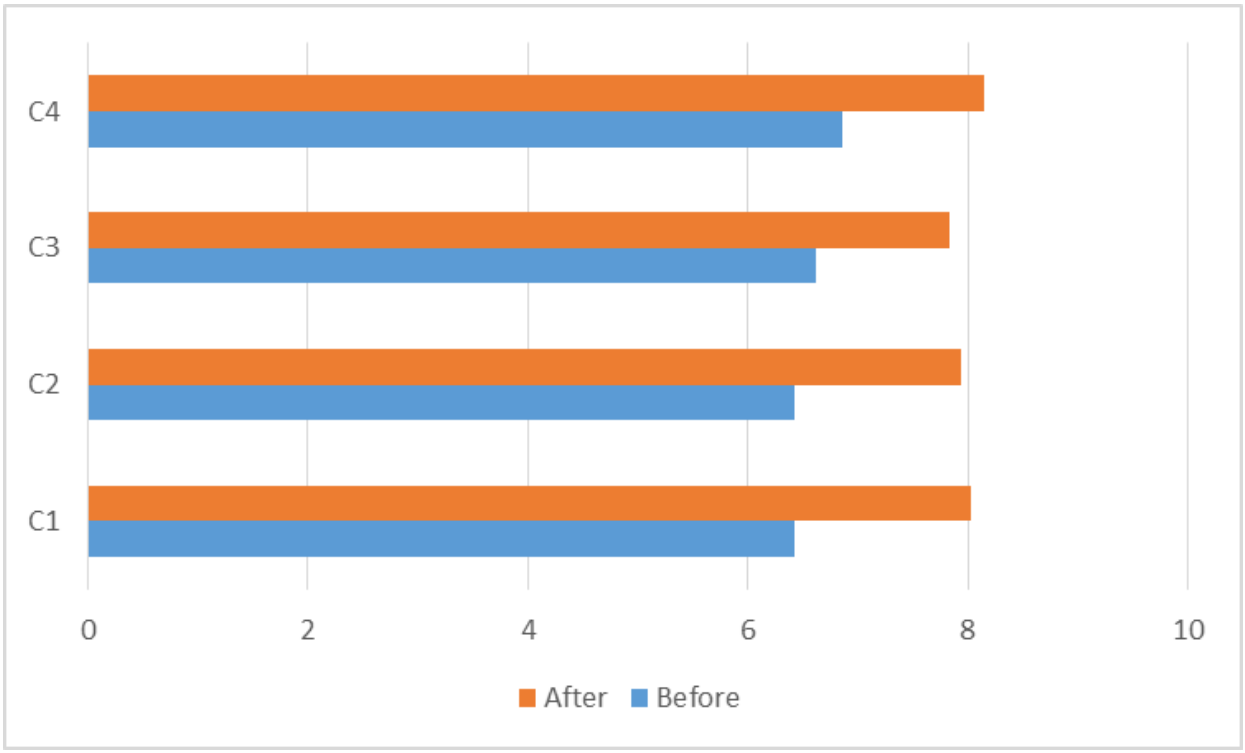

Figure 1: Pre-academy and post-academy self-reported perception of Knowledge (C1-C4)

The perceptions of participants on the impact of STARTIFY7 on their Knowledge (C1-C4) was striking, with the vast majority of participants considering the extent to which they had developed their knowledge in these areas to be medium or high. For future academies there is scope to consider the level and volume of material with a view to increase impact. In all components over 71% of participants deemed the academy to be high impact, with 96% stating the impact to be high and medium. In this respect the importance of developing the contextual and technical knowledge of STARTIFY7 participants is important, and provides the foundations of the academies.

The second section of the survey addressed the participant's perceptions of their Skills (S1-S7). As shown in Figure 2 across the pre-academy and post-academy survey the participants identified their knowledge to have increased in all domains: S1 by 1.94; S2 by 1.88; S3 by 2.06; S4 by 1.94; S5 by 1.06; S6 by 0.88; and S7* by 0.50. A T-TEST shows that there is a significant positive relationship in the change of participant's perception for components S1-S6 upon completing the STARTIFY7 programme.[2] The skills components emphasised 'knowing how to', with those components increasing the most being S1) Opportunity Identification, S2) Design thinking, S3) Planning pitches and S4) Delivering pitches. Although there was a marginal increase in S7) Negotiating, it was not statistically significant across the participants with only more advanced teams engaging in negation-related activities.

[2] T-TEST RESULTS FOR SKILLS (S1-S7)
S1, $r(22) = 0.24$ $p < 0.001$; S2, $r(22) = .55$ $p < 0.001$; S3, $r(22) = .47$ $p < 0.001$; S4, $r(22) = .34$ $p < 0.05$;
S5, $r(22) = -0.11$ $p < 0.05$; S6, $r(22) = .90$ $p < 0.001$; S7, not significant

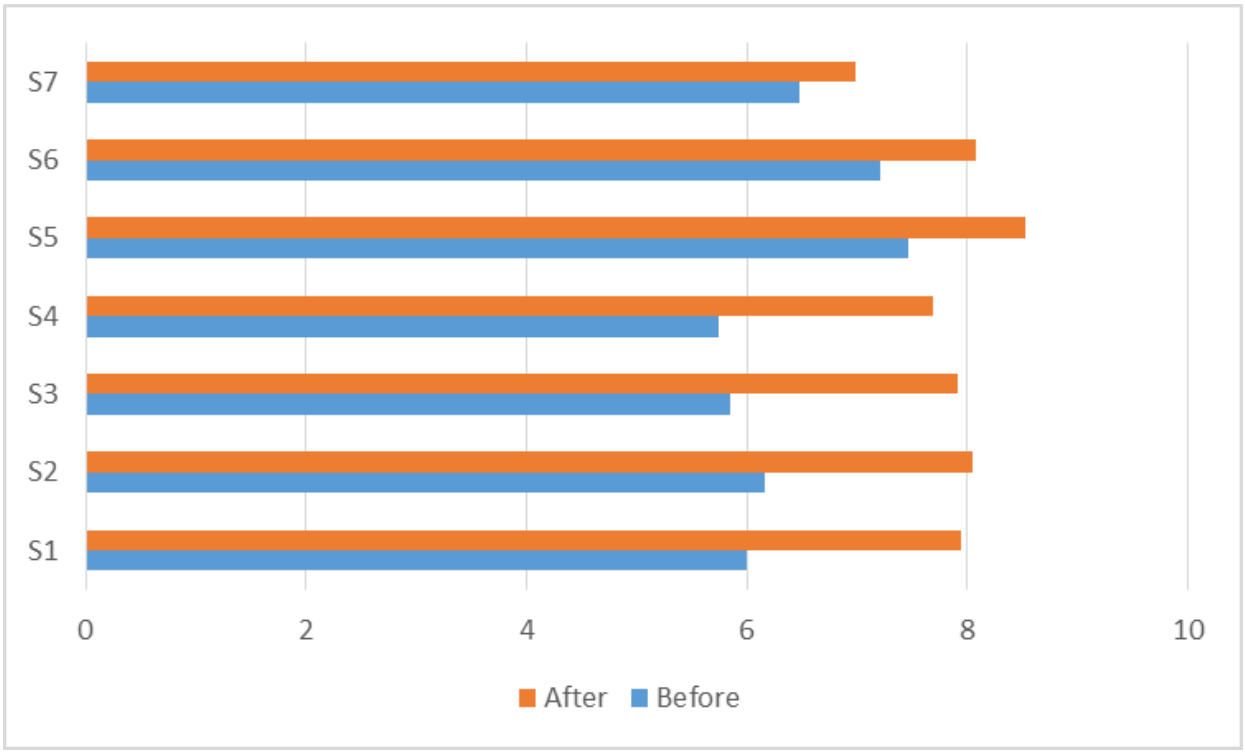

Figure 2: Pre-academy and post-academy self-reported perception of Skills (S1-S7)

The participants' perceptions of the impact of STARTIFY7 on their Skills (S1-S7) development is shown in Figure 2. The data suggests that the impact on the skills development of participants was positive, with 92% rating the impact on their development to be high or medium. For S6 (Time management) and S7* (Negotiation) the impact was deemed to be medium or low for the components by 63% and 72% respectively. Arguably Skills S1-S4 (Opportunity Identification, Design thinking, Planning pitches, Delivering pitches) are immediately related to entrepreneurial practice while Skills S6 and S7 (Time management and Negotiation) were more peripheral. There is a need for future academies to focus on the development of Team formation & Teamwork (S5), as this too is an important skill in developing entrepreneurial ventures.

The third section of the survey addressed the participant's perceptions of their Attitudes (A1-A7). As shown in Figure 3 across the pre-academy and post-academy survey the participants identified their knowledge to have increased in all domains: S1 by 1.58; S2 by 1.17; S3 by 0.96; S4 by 0.96; S5 by 1.17; S6 by 1.21; and A7 by 1.06. A T-TEST shows that there is a significant positive relationship in the impact on the attitude of participants in each component (and overall) upon completing the STARTIFY programme.[3] Clearly the importance of developing positive attitudes towards entrepreneurial activity will increase the likelihood of participant looking favourably at entrepreneurial opportunities both now and in the future.

[3] T-TEST RESULTS FOR KNOWLEDGE (C1-C4)
A1, $r(22) = 0.56$ $p < 0.001$; A2, $r(22) = .33$ $p < 0.001$; A3, $r(22) = .38$ $p < 0.05$; A4, $r(22) = .53$ $p < 0.001$;
A5, $r(22) = 0.42$ $p < 0.001$; A6, $r(22) = .23$ $p < 0.001$; A7, $r(22) = .74$ $p < 0.001$

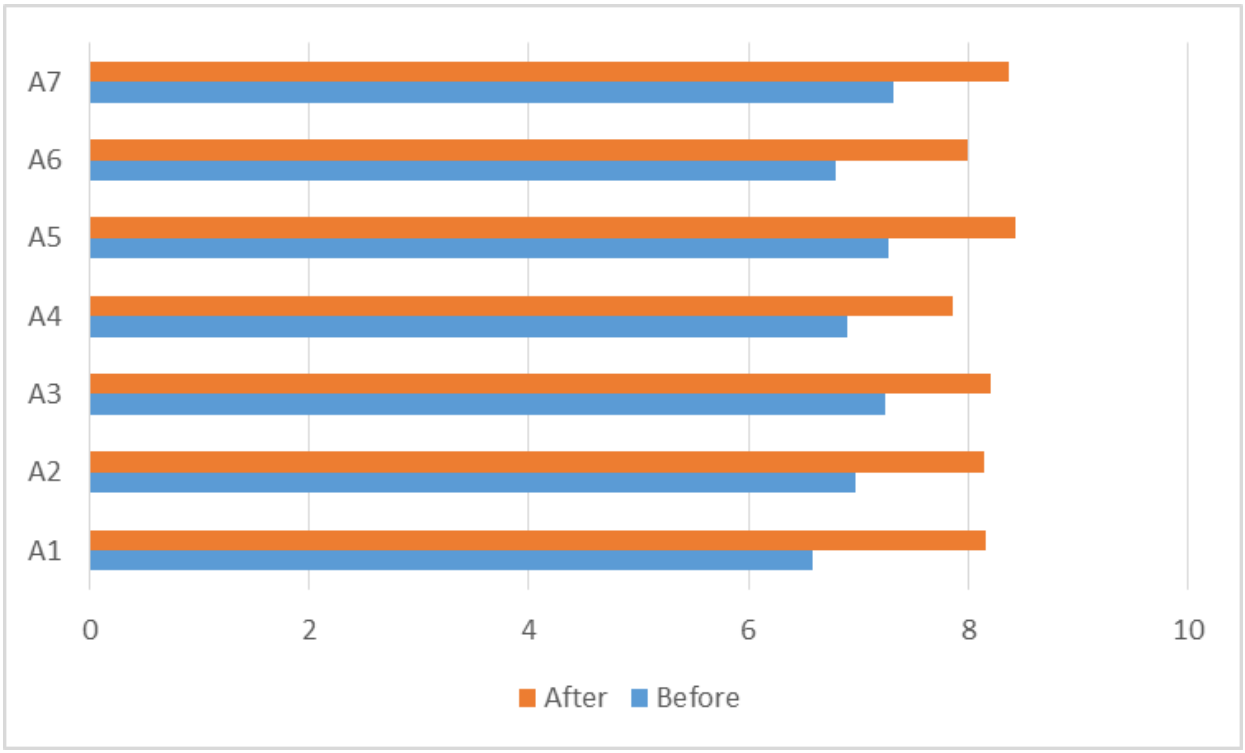

Figure 3: Pre-academy and post-academy self-reported perception of Attitudes (A1-A7)

Further to the statistically significant uplift in self-reported perception of attitudes (pre-academy and post-academy), 77% of participants deemed the impact of STARTIFY7 to be medium or high in relation to the impact on Attitudes (A1-A7). This in part is due to participants developing higher levels of self-awareness about their own attitudes and outlooks. An important aspect of STARTIFY7 is developing more pro-entrepreneurship attitudes, as coupled with the knowledge and skills there participants are more likely to want to pursue entrepreneurial endeavours.

Of course the findings from the pre- and post-academy surveys, characteristic of many impact assessments and evaluations, only measure immediate outputs and outcomes of the STARTIFY7 academies in terms of developing knowledge, skills and attitudes. When looking at learning components (Knowledge (C1-C4), Skills (S1-S7) and Attitudes (A1-A7) as aggregates, as might be expected the level of increase was greatest in core knowledge, then skills while the change in attitudes was lower but still statistically significant. Overall, again across all learning components 58% of participants deemed the impact of the STARTIFY7 academy to have been high, 32% deemed the impact of the STARTIFY7 academy to have been medium and 10% deemed the impact to be low. Given the objectives of the STARTIFY7 project it is not meaningful to measure entrepreneurial action in itself, although this is a desirable medium to long term outcome of the project and will be maintained.

5 Lessons & Implications

Reflecting on the project to-date, there have been some initial signs of success, although it is too early to say with certainty how the impact of STARTIFY7 will play out in the longer-term. Through

the process of developing and delivering STARTIFY7, however, particular challenges have arisen that merit highlighting and reflecting upon in the context of entrepreneurship education.

Gender

Despite our efforts and intentions, principal among our challenges has been raising participation rates among women in the project. Examining the gender balance of participants, in terms of female and male, the gender split was 33% to 67%. This outcome was frustrating because the project team had targeted equal representation of genders in the academies. Working towards this end, efforts were made in how the original academies were promoted and website images constructed to avoid gender-stereotyping around leadership, authority or roles in technical teams. Furthermore, the ethos of the project, including the academies, was around team work and collaboration rather than a narrow sense of competition. Nevertheless, the relatively low participation rates from women at the academies indicates that these efforts need re-doubling and better targeting if gender equality is to be achieved in continuing editions of the STARTIFY7 project. As an output of these experiences, discussions are underway with researchers studying the gender balance in ICT sectors with a view to understanding how the necessary improvements can be achieved in subsequent iterations of STARTIFY7.

Evaluating outcomes

Initial responses from participants in terms of early-stage outcomes and overall satisfaction suggest that the immediate target audience feels that they have benefited significantly. However, while the full outcome data from the project are, at the time of writing, still being analysed, it is apparent already that a number of participants and teams have built on their successes in STARTIFY7. Several individuals have used their contacts developed through the project to obtain incubator space for their latest digital entrepreneurial venture, others have leveraged their experiences to join startups while at least two teams are in the latter stages of selection for prestigious incubator or accelerator programmes. Nevertheless, a particular difficulty in seeking to assess the effectiveness of the STARTIFY7 approach is that successful ventures rooted in the programme may well take years to emerge such that our evidence of effectiveness is dislocated from the initial activities. The project team has taken steps to help track the progress of teams and individuals following their engagement with the project but there are significant hurdles such as maintaining contacts and obtaining worthwhile data to help understand the effects of STARTIFY7 on participants.

European impacts

A particular feature of STARTIFY7 is its cross-border, pan-European approach. In this regard it is an attempt to propose a European solution to the European problems of stimulating ICT entrepreneurship among young people. However, making headway against the challenges facing Europe will require a much wider reach than can be achieved through a single project. To this end, the project must now achieve wider adoption and implementation to generate a difference that impacts a wider range of stakeholders. Engaging with these broader stakeholder groups will not only extend the beneficial impact of STARTIFY7 but will also help to ensure its sustainability.

One response to this challenge of extending the scope of STARTIFY7 has been to develop versions for different audiences. Extending the STARTIFY7 approach and ethos can also be pursued through replication and adaptation. STARTIFY-mini has been designed for high school students so that the essence of STARTIFY7 can be delivered in a format relevant to younger participants with different learning needs and who cannot attend a 10-day residential academy. Furthermore, with greater attention being paid to the role of older people in Europe's entrepreneurial economy (OECD / European Commission, 2015), a case can be made for developing STARTIFY7 for participants with significant accumulated life and work experiences. However, in light of the challenges associated with providing robust evidence around concrete outcomes, persuading people to engage with the programme in its various forms might pose a hurdle to achieving wider reach.

Politics and entrepreneurship education in Europe

During the delivery of the STARTIFY7 academies, voters in the United Kingdom opted to leave the EU. There are also reports of dissatisfaction with the EU elsewhere in Europe. At the time of writing there is no clear path forward or indications as to what effect the so-called 'Brexit' will have on collaboration across borders in Europe, especially for scholars and participants from the UK. In the immediate future there has been no impact on the funding provision for STARTIFY7 as the supported part of the project is coming to a close. It may be anticipated, however, that consequences will emerge for the nature of entrepreneurship education projects in Europe, not least around the provision of and participation in collaborative projects such as STARTIFY7.

Conclusions

In this chapter we have presented and reflected upon a case study of pan-European entrepreneurship education through the lens of a project focused on the ICT sector. It centred on a Horizon 2020 project to research, design, develop and deliver a thematic, lean, team based model of entrepreneurship education for young people. In presenting experiences and outcomes from the first wave of Horizon 2020 actions to deliver an innovative model of entrepreneurship education, integrating entrepreneurial learning and practice, we share these formative insights into pan-European entrepreneurship education projects.

In addition to setting out the research and pedagogy underpinning our approach, as well as indicating the project's degrees of impact, we have reflected on areas that still require further attention if STARTIFY7 is to prove sustainable over the longer-term. In each of these areas the team is taking steps to overcome the challenges and limitations discovered and, as such, STARTIFY7 remains in a process of ongoing refinement and improvement to achieve a sustainable model. Alongside the changes that we can make as a project team to develop and advance STARTIFY7, the wider political context could create further challenges that must be addressed.

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Appendix 1: Knowledge, Skills and Attitudes Data

Component	Statistical Significance	Pearson r	Significance	Before	After	Difference
C1	0.0002	0.8037	Significance p < 0.05	6.42	8.02	1.60
C2	0.0001	0.8020	Significance p < 0.001	6.42	7.94	1.52
C3	0.0016	0.7240	Significance p < 0.05	6.63	7.83	1.21
C4	0.0039	0.7283	Significance p < 0.05	6.85	8.15	1.29
S1	0.0001	0.2400	Significance p < 0.001	6.00	7.94	1.94
S2	0.0000	0.5496	Significance p < 0.001	6.17	8.04	1.88
S3	0.0004	0.4696	Significance p < 0.001	5.85	7.92	2.06
S4	0.0010	0.3424	Significance p < 0.05	5.75	7.69	1.94
S5	0.0134	-0.1057	Significance p < 0.05	7.46	8.52	1.06
S6	0.0001	0.8964	Significance p < 0.001	7.21	8.08	0.88
S7*	0.0744	0.7096	Not Significant	6.48	6.98	0.50
A1	0.0002	0.5581	Significance p < 0.001	6.58	8.17	1.58
A2	0.0003	0.3314	Significance p < 0.001	6.98	8.15	1.17
A3	0.0037	0.3807	Significance p < 0.05	7.25	8.21	0.96
A4	0.0010	0.5280	Significance p < 0.001	6.90	7.85	0.96
A5	0.0001	0.4204	Significance p < 0.001	7.27	8.44	1.17
A6	0.0000	0.2322	Significance p < 0.001	6.79	8.00	1.21
A7	0.0000	0.7351	Significance p < 0.001	7.31	8.38	1.06