Crossing borders of employability

CROSSING BORDERS OF EMPLOYABILITY

The Career Preparedness of Dutch Liberal Arts Graduates

Milan Kovačević

Crossing Borders of Employability: The Career Preparedness of Dutch Liberal Arts Graduates

Milan Kovačević

Crossing Borders of Employability: The Career Preparedness of Dutch Liberal Arts Graduates
Milan Kovačević

ISBN: 978-90-834134-5-7

Layout and printing: proefschriftenprinten.nl

Crossing Borders of Employability: The Career Preparedness of Dutch Liberal Arts Graduates

DISSERTATION

To obtain the degree of Doctor at Maastricht University,
on the authority of the Rector Magnificus,
Prof. dr. Pamela Habibović
in accordance with the decision of the Board of Deans,
to be defended in public on
Thursday, 11 April 2024, at 10:00 hours

by

Milan Kovačević

Supervisor

Prof. dr. Teun Dekker, Maastricht University

Co-Supervisor

Prof. dr. Rolf van der Velden, Maastricht University

Assessment Committee

Chair: Prof. dr. Tim Huijts, Maastricht University

Members: Prof. dr. Simon Beausaert, Maastricht University

Prof. dr. Susan te Pas, Utrecht University

Prof. dr. Marijk van der Wende, Utrecht University

This project has received funding from the European Union Horizon 2020 research and innovation programme under the Marie Sklodowska-Curie grant agreement No 847596

SUMMARY

This dissertation explores the relationship between liberal arts education (LAE) bachelor's programmes in the Netherlands and the world of work. Its main goal is to understand how the distinctive features of Dutch university colleges influence the career preparedness and labour market prospects of their graduates. To achieve this, the thesis follows university college graduates as they move across the borders of employability from higher education to employment. The four stages of the graduates' path towards the labour market correspond to the four individual studies comprising the dissertation. These studies examine the LAE graduates' career preparedness in terms of acquiring relevant skills during the bachelor's programme, obtaining specialized master's degrees, securing their first jobs, and achieving further professional success.

Study 1 looks at how employability develops in university college students compared to their peers from a conventional bachelor's programme. Drawing on the graduate capital model, the study focuses on six skills that enhance employability: creativity, lifelong learning, career decidedness, self-efficacy, resilience, and personal initiative. The study's findings reveal that attending a LAE undergraduate programme leads to visible progression in a range of career-relevant skills. When compared to the conventional programme, LAE students exhibit notable gains in creativity and personal initiative, reflecting the impact of interdisciplinary learning and self-tailored curriculum structure.

Study 2 examines whether the relative lack of disciplinary knowledge in the bachelor's stage hinders the ability of university college students to specialize at the master's level. The study focuses on three specialized master's programmes at Maastricht University– in international business, psychology, and neuroscience. It compares the academic performance of two groups of students in these programmes: graduates from a university college, and their peers with discipline-focused bachelor's degrees in a matching field. The results indicate that there are no major differences between the two groups in terms of dropout rates, GPA, and master's thesis grades. Despite having less subject-specific knowledge, university college graduates proved to be prepared equally well for specialized master's studies as their counterparts with a matching disciplinary background.

Study 3 investigates how Dutch employers view university college bachelor's degrees. Through semi-structured interviews with 20 recruiters, the study delves into the graduate job selection process, examining the relative importance of different factors in employers' decisions and the different kinds of signals that a university college degree might send in the labour market. The study's findings reveal a predominantly neutral signalling effect

associated with LAE degrees. Dutch employers demonstrate limited familiarity with university colleges and tend to assign less significance to the bachelor's degree when it is accompanied by a master's degree in a relevant field.

Study 4 compares the employment outcomes of LAE graduates to those of their peers who pursued conventional, subject-specific bachelor's degrees. The study uses data from four rounds of the Dutch National Alumni Survey, including 14,933 respondents who completed a master's programme at a Dutch research university, with 210 of them holding a university college degree. The analysis focuses on eight labour market outcomes: employment status, time between graduation and first paid job, career development opportunities, job satisfaction, vertical and horizontal matches, and hourly wage from regular work. The results reveal that the labour market performance of LAE graduates is on par with their peers who pursued a conventional undergraduate programme. While a LAE bachelor's degree proved to have a negative effect on obtaining employment in STEM professions, no statistically significant differences, neither negative nor positive, were found in other outcomes.

Overall, the findings from the four studies offer a comprehensive perspective on the career preparedness of LAE graduates. The overarching conclusion that can be drawn from them is that students from university colleges are well-prepared for the challenges of the labour market. These programmes foster skill development and adequately equip their graduates for specialized master's studies. Moreover, they do not hinder their entry into the labour market and allow them to achieve career success comparable to their peers with conventional bachelor's degrees. As an innovative development in the Dutch higher education system, university colleges established themselves as undergraduate programmes that provide a particular group of students the alternative, self-tailored academic path they need, without compromising their future labour market prospects.

In addition to its findings on the career preparedness of university college graduates, this dissertation also holds wider implications across a range of related themes. These implications speak to the broader discourses of employability skills development, the importance of generic skills for career success, the structure of the undergraduate curriculum and timing of specialization, the reception of innovative study programmes in the labour market, and the impact of bachelor's degrees on the employment prospects of master's degree holders. They offer valuable insights and recommendations, benefiting not only stakeholders in liberal arts education, but also the wider higher education community, policymakers, and employers.

SAMENVATTING

Dit proefschrift onderzoekt de relatie tussen Liberal Arts & Sciences (LAS) onderwijs aan University Colleges in Nederland en de positie van hun afgestudeerden op de arbeidsmarkt. Het belangrijkste doel is om te ontdekken hoe de onderscheidende kenmerken van University Colleges de arbeidsmarktvooruitzichten van hun studenten beïnvloeden. Om dit te begrijpen volgt het proefschrift afgestudeerden van University Colleges in het traject van hoger onderwijs naar werk. De vier fasen van dit traject corresponderen met de vier individuele onderzoeken waaruit het proefschrift bestaat. Deze onderzoeken kijken naar de loopbaanperspectieven van LAS-afgestudeerden in termen van het verwerven van relevante vaardigheden tijdens de bacheloropleiding, het volgen van een gespecialiseerde masteropleiding, het vinden van hun eerste baan, en hun verdere carrière.

Studie 1 onderzoekt hoe de employability van University College studenten zich ontwikkelt in vergelijking met studenten in een traditionele bacheloropleiding. Op basis van het graduate capital-model richt het onderzoek zich op zes vaardigheden die de employability van studenten vergroten: creativiteit, levenlang leren, loopbaan besluitvaardigheid, zelfeffectiviteit, veerkracht, en persoonlijk initiatief. Uit de resultaten blijkt dat het volgen van een LAS-undergraduate-programma leidt tot significante vooruitgang in een reeks carrièrerelevante vaardigheden. Vergeleken met studenten van traditionele opleidingen maken LAS-studenten een opmerkelijke ontwikkeling door in creativiteit en persoonlijk initiatief. Dit weerspiegelt de impact van interdisciplinair onderwijs en een op maat gemaakte curriculumstructuur.

Studie 2 onderzoekt of het relatieve gebrek aan disciplinaire kennis het vermogen van University College studenten om zich te specialiseren op masterniveau belemmert. De studie richt zich op drie gespecialiseerde masterprogramma's aan Maastricht University: International Business, Psychologie, en Neurowetenschappen. Het onderzoek vergelijkt de academische prestaties van twee groepen studenten in deze opleidingen: afgestudeerden van een University College, en studenten met een disciplinair bachelordiploma in een relevant vakgebied. De resultaten geven aan dat er geen grote verschillen zijn tussen de twee groepen wat betreft uitval, cijfergemiddelden, en cijfers voor masterscripties. Ondanks dat ze over minder vakkennis beschikken, blijken University College-afgestudeerden even goed voorbereid op een gespecialiseerde masteropleiding als masterstudenten met een disciplinaire achtergrond.

Studie 3 onderzoekt hoe Nederlandse werkgevers tegen bachelordiploma's van University Colleges aankijken. Door middel van semi-gestructureerde interviews met

twintig recruiters, duikt het onderzoek in het selectieproces van afgestudeerden, waarbij het relatieve belang wordt onderzocht van verschillende factoren die de beslissingen van werkgevers beïnvloeden en de verschillende soorten signalen die een universitair diploma op de arbeidsmarkt kan afgeven. De bevindingen van het onderzoek onthullen een overwegend neutraal signaaleffect van LAS-diploma's. Nederlandse werkgevers hebben weinig kennis van University Colleges en hechten doorgaans minder belang aan het bachelordiploma als dit gepaard gaat met een masterdiploma in een relevant vakgebied.

Studie 4 vergelijkt de arbeidsmarktpositie van LAS-afgestudeerden met die van studenten die een traditionele, vakspecifieke bacheloropleiding volgden. Het onderzoek maakt gebruik van gegevens uit vier rondes van de Nationale Alumni Enquête, waaronder 14.933 respondenten die een masteropleiding aan een Nederlandse universiteit hebben afgerond, waarvan er 210 in het bezit zijn van een LAS diploma. De analyse richt zich op acht arbeidsmarktresultaten: arbeidsmarktstatus, tijd tussen afstuderen en eerste betaalde baan, mogelijkheden voor loopbaanontwikkeling, werktevredenheid, verticale en horizontale match, en uurloon uit regulier werk. Uit de resultaten blijkt dat de arbeidsmarktprestaties van LAS-afgestudeerden vergelijkbaar zijn met die van studenten die een traditioneel bachelorprogramma hebben gevolgd. Alhoewel een LAS-bachelordiploma een negatief effect blijkt te hebben op het vinden van werk in STEM-beroepen, werden er geen statistisch significante verschillen, negatief of positief, gevonden in de andere arbeidsmarktresultaten.

Over het geheel genomen bieden de resultaten van de vier onderzoeken een goed beeld van de loopbaanperspectieven van LAS-afgestudeerden. De overkoepelende conclusie die daaruit getrokken kan worden is dat studenten van University Colleges goed voorbereid zijn op de uitdagingen van de arbeidsmarkt. Deze opleidingen bevorderen de ontwikkeling van vaardigheden en rusten hun afgestudeerden adequaat uit voor gespecialiseerde masterstudies. Bovendien belemmeren ze hun toegang tot de arbeidsmarkt niet en stellen ze hen in staat een arbeidsmarktpositie te verwerven die vergelijkbaar is met die van afgestudeerden met een traditioneel bachelordiploma. Als innovatieve ontwikkeling in het Nederlandse hoger onderwijs hebben University Colleges zich ontwikkeld tot bacheloropleidingen die een bepaalde groep studenten het alternatieve, individuele academische pad bieden dat ze nodig hebben, zonder hun arbeidsmarktvooruitzichten in gevaar te brengen.

Naast de bevindingen over de employability van afgestudeerden van University Colleges, heeft dit proefschrift ook bredere implicaties voor een reeks verwante thema's, zoals de ontwikkeling van algemene vaardigheden, het belang van generieke vaardigheden voor carrièresucces, de structuur van het bachelorcurriculum en de optimale timing van

specialisatie, de ontvangst van innovatieve studieprogramma's op de arbeidsmarkt, en de waarde van bachelordiploma's op de arbeidsmarkt. Deze resultaten leveren waardevolle inzichten op en aanbevelingen, waar niet alleen belanghebbenden in het LAS onderwijs van profiteren, maar ook de bredere hogeronderwijsgemeenschap, beleidsmakers, en werkgevers.

Table of contents

1 INTRODUCTION

1.1 Renewing Liberal Arts in Europe: The Dutch University College Model

During the past two decades, liberal arts education[1] (abbreviated as LAE hereafter) has become increasingly popular in Europe. This significant contemporary development in European higher education has been recognized as a re-emergence or renaissance of the liberal arts (Dekker, 2017; van der Wende, 2011). Although commonly associated with undergraduate higher education at residential colleges and collegiate universities in the United States, the origins of liberal arts can be traced back to Europe. Rooted in ancient Greece and Rome, the seven *artes liberales*, comprising the *trivium* (grammar, rhetoric, and logic) and *quadrivium* (arithmetic, geometry, astronomy, and music) formed the basis of medieval European universities. These studies served as a general preparation for further education in fields such as medicine, law, and theology (Godwin & Altbach, 2016; Mehrens, 2017).

Further reinforced during the Renaissance, studies in the liberal arts remained the cornerstone of European higher education until the mid-nineteenth century (Mehrens, 2017). The Enlightenment, industrial revolution, Humboldtian academic reforms, and the raising need for advanced scientific and technical knowledge led to the emergence of new academic models, pushing the liberal arts to the margin of the European educational agenda in favour of more specialized and utilitarian concepts (Godwin & Altbach, 2016; Peterson, 2012; Tachikawa, 2016). While losing its importance in Europe, liberal arts education maintained a strong position in the United States, closely aligned with the ideals of American democracy and citizenship (Cooper, 2018).

In recent decades, however, the development of liberal arts education has taken a global turn, with a number of programmes being set up worldwide. Although the number of students enrolled in these programmes is still very small, LAE initiatives are appearing to be successful in various national and cultural contexts (Godwin & Altbach, 2016; Nishimura & Sasao, 2019a). Perhaps the most prominent of these developments concerns the resurgence of liberal arts education in Europe, which has been taking place since the late 1990s. According to van der Wende (2011), it is the need to differentiate the massified and prematurely specialized, monodisciplinary European systems, coupled with the Bologna initiative, which introduced a more clear-cut division between undergraduate and

1 Throughout this dissertation, the terms 'liberal arts education', 'liberal arts', and 'liberal arts and sciences' are used interchangeably. Although the word 'arts' might cause confusion, it is important to stress that liberal arts education can—and mostly does—include scientific and technical disciplines. In the Dutch context, the term 'university college' is used as an equivalent for liberal arts education. While the usage of the term 'university college' can vary in different countries, in the Netherlands, it specifically denotes a liberal arts bachelor's programme.

graduate studies, that facilitated the rise of liberal arts colleges in Europe at the turn of the century.

In the European higher education space, the re-emergence of liberal arts education has taken a great variety of forms. It is estimated that there are currently about one hundred European-based liberal arts programmes and institutions located in 18 countries. This includes 3 private independent liberal arts colleges, 13 branches of private American institutions, 15 public university colleges, 32 public liberal arts programmes, 34 institutions featuring curricular innovations directly inspired by liberal arts ideals, as well as 11 organizations and associations promoting the liberal arts (Kontowski, 2020). Certainly, the diversity of liberal arts-related developments implies that in the European context, liberal arts and sciences should be primarily understood as an educational philosophy rather than a specific model (Balli, 2017; Schreel, 2017).

The reintroduction of liberal arts education has been particularly pronounced in the Netherlands. The country stands out both in terms of the number of liberal arts programmes and their position within the national education system. Since 1998, ten university colleges have been established.[2] These colleges have emerged in a binary higher education system that consists of academically oriented research universities and vocationally oriented universities of applied science, respectively accommodating around one-third and two-thirds of the country's student population. Embedded within reputable research universities, Dutch LAE colleges developed as internationally oriented, publicly funded programmes offering three-year bachelor's degrees in liberal arts and sciences (Reumer & van der Wende, 2010).

Inspired by the American liberal arts college model but maintaining their own specificities, Dutch university colleges are defined by several important features. Outlined in the 'Statement on the Role, Characteristics, and Cooperation of Liberal Arts and Sciences Colleges in the Netherlands', these shared characteristics clearly distinguish university colleges from conventional bachelor's programmes. Considering the lack of consensus about what constitutes a modern liberal arts education, the statement is particularly useful in providing a clear definition of LAE in the Dutch context. To a large extent, its main principles are in line with the holistic approach of contemporary liberal arts education pointed out by Mehrens (2017). Specifically, this refers to:

2 These ten colleges are: Utrecht University College, University College Maastricht, Roosevelt University College in Middleburg, University College Tilburg, Amsterdam University College, Leiden University College, Erasmus University College in Rotterdam, University College Twente, University College Groningen, and University College Fryslân.

- A radically open, self-tailored curriculum consisting of a variety of courses across the humanities, social sciences, natural and life sciences;
- Intended learning outcomes that encompass acquiring educational breadth along with depth in a chosen concentration area, fostering inter- and multidisciplinary learning, developing strong academic skills including research, communication, and critical thinking, promoting active participation as citizens in society, and encouraging intellectual curiosity;
- 'Small-scale and intensive education', characterized by a low student/teacher ratio and a high level of interaction between students and teachers;
- A community spirit that goes beyond the classroom, actively encouraging synergy between the curriculum and extracurricular activities;
- International character and openness to diversity (University College Deans Network [UCDN], 2017).

Another distinctive characteristic of Dutch university colleges refers to their selective admission, which is typically limited to around 200 students a year per college. In order to be admitted, candidates are required to meet specific criteria. The selection procedure usually involves the assessment of prior academic performance, letters of recommendation from former teachers, a motivation letter and personal essay, as well as an admission interview (Reumer & van der Wende, 2010). Selective admission policies of university colleges represent a major exception from the egalitarian norm of Dutch higher education. On the one hand, selectivity can be seen as a response to the massification of Dutch research universities, where admissions are traditionally non-selective, resulting in high first-year dropout rates (Cooper, 2018). For a liberal arts education institution, on the other hand, keeping the total number of students 'small enough to create a viable community' is also a necessity (Boon, 2014, p. 40).

Both in terms of educational features and recruitment of students, therefore, university colleges occupy a specific place within the Dutch higher education system. In contrast to these programmes, conventional undergraduate education in the Netherlands is characterized by narrow(er), monodisciplinary, professionally oriented curricula and teaching in larger groups, where little attention is devoted to the individual needs of each student. Furthermore, conventional programmes offer considerably less freedom in choosing and combining courses, resulting in a more fixed curriculum. Lastly, as noted earlier, most conventional programmes do not have a selective admission policy (Cooper, 2018; Dekker, 2017). Table 1.1 provides an overview of differences between LAE and traditional bachelor's programmes in the Netherlands.

Table 1.1 Distinguishing features: university colleges versus conventional bachelor's programmes at Dutch research universities

University Colleges	Conventional Undergraduate Programmes
General academic	Professionally oriented
Self-tailored curriculum (freedom of choice)	Fixed curriculum
Interdisciplinarity	Monodisciplinary
Small-scale, student-centred learning environment	Teaching in large(r) groups
Selectivity	Loose admission requirements

The place of university colleges within the Dutch higher education system distinguishes the discourse surrounding them from the more prevalent discussions on liberal arts education in the United States. The most significant aspect of the LAE discourse in the US arises from a narrow interpretation that equates LAE only with studies in the arts and humanities. As a result, the discussion about the employability of LAE graduates often corresponds to the debate on STEM versus humanities degrees in the labour market. A related topic is the cost of LAE, as some liberal arts colleges in the US, especially private institutions, have considerably higher tuition fees than other programmes. This raises questions about the return on investment, and whether attending a LAE programme is justified when considering potential student debt and the perceived lack of professional training. Another common theme is the 'small LAE college versus big research university' debate, where LAE advocates emphasize the more intimate and personalized educational experience, while proponents of larger research universities highlight their comprehensive academic opportunities and extensive resources. Yet, liberal arts and sciences majors are also available at large US universities, implying that the type of institution and chosen fields of study are not necessarily indicative of a liberal arts education (Rossman et al., 2020).

Consequently, identifying what constitutes a LAE programme proves to be a more challenging task in the US compared to the Dutch higher education landscape. When interpreting the content of this dissertation, it is important to recognize that its primary focus is the comparison between general academic, interdisciplinary, flexible university college programmes and subject-specific, monodisciplinary, fixed conventional bachelor's degrees. This clarifies the distinction between LAE and non-LAE programmes in the Netherlands, differentiating it from the US context, where a precise definition of LAE is lacking.

1.2 The Practicality of Liberal Arts Degrees: Academic Enrichment Versus Labour Market Relevance

In an era dominated by rapid scientific and technological developments, a liberal arts education committed to laying out a broad foundation of general knowledge might appear counterintuitive. On the one hand, this dedication to 'educating the whole person and not just training the specialist' (van der Wende, 2013, p. 295) can be seen as a response to a paradox arising from the growing processes of globalization and equally intense tendencies towards hyper-specialization. In a 21st-century world that is increasingly 'interconnected, plural, and globalized' (Watt, 2012, p. 213), the ability of narrowly educated people to deal with global problems is becoming highly questionable (Boetsch, 2017). For this reason, a liberal arts education providing students with sufficient breadth could be particularly relevant for fostering 'global citizens' (Nussbaum, 2010; van der Wende, 2011). Such an education equips individuals with a more profound understanding of the world at large, especially in terms of its cultural, social, and political intricacies, as well as the moral dimensions of their professions (Watt, 2012). The need to take an interdisciplinary approach to global challenges and the importance of holistic education promoting civic engagement and social responsibility is what van der Wende (2013) terms the epistemological and social arguments in favour of liberal arts education.

Still, despite the intrinsic value of the all-encompassing education provided by the liberal arts, most evident in the cultivation of self-aware, enlightened individuals, it remains uncertain to what extent such programmes can improve one's position in a job market that tends to favour highly specialized knowledge (Peirce, 2017; Telling, 2018). When entering higher education, students are confronted with a dilemma of whether they should approach it as a transformational experience emphasizing personal growth, or as a transactional experience focused on labour market preparation and financial returns to a degree (Fischman & Gardner, 2022). What is good for the students' personal intellectual development may not necessarily enhance their employability. Likewise, a tension might exist between what society needs, on the one hand, and what the economy needs, on the other; between participating in a democracy and participating in the workforce (Harris, 2018).

The labour market value of LAE has been a long-standing debate, arising from its non-vocational, 'studying for the sake of study' nature (Mehrens, 2017). In this regard, one of the most common critiques of liberal arts education underlines an assumed dichotomy between 'learning for learning's sake' and 'learning for career preparation' (Logan & Curry, 2015, p. 71). Colloquial remarks about the liberal arts being 'a luxury reserved for those who do not need to make a living' (Rowen, 2016, p. 51), 'worthless courses that offer no chances of getting people jobs' (Kingkade, 2013), producing graduates with a prospect

of 'working at Starbucks and living in their parents' basement until they're 40' (Stillman, 2019) can often be heard, especially in the US. Even the former US President, Barrack Obama, publicly discouraged people from pursuing a liberal arts education, saying that 'folks can make a lot more, potentially, with skilled manufacturing or the trades than they might with an art history degree'—a remark for which he later apologized (Office of the Press Secretary, 2014).

While in the US much of the criticism revolves around the stereotyped notion of vocational irrelevance and 'uselessness' of LAE, in Europe, there is an additional element of distrust related to the relative newness of this educational development. In fact, in most countries outside of North America, liberal arts education is still marginalized and faced with a lack of understanding and recognition (Nishimura & Sasao, 2019b). As Godwin (2015) notes, in places where LAE represents an exception to the norm of specialized undergraduate curricula, the atypical nature of a liberal arts degree may exacerbate concerns about its practicality, potentially exposing students to unemployment risks.

In response to critics, proponents of liberal arts education provide utilitarian arguments in support of the model. They emphasize the development of 21st-century skills that enable graduates to become creative, critical thinkers capable of solving complex problems, mastering new knowledge quickly, cooperating in teams, and communicating across linguistic, cultural, and disciplinary boundaries (Schreel, 2017; van der Wende, 2013). Commonly referred to as 'generic skills', 'transferable skills', and 'employability skills', these abilities are seen as crucial in today's globalized economy that requires a 'more flexible, globally competent, and critical labour force' (Godwin & Altbach, 2016, p. 6).

In the view of liberal arts proponents, therefore, liberal and professional education are not at odds with each other (van der Wende, 2013). Or, as Gombrich (2016) puts it, the intrinsic and instrumental values of education are not mutually exclusive. Rather than being opposed to labour market developments, liberal arts education corresponds to them by answering 'a genuinely new economic demand for flexible employable workforces' (Dirksen, 2017, p. 2). Hence, the distinctness of LAE does not lie in the fact that it is exempt from the economic framework, but in the way it fits it—by focusing on educational outcomes and learning experience instead of developing a stricter qualification focus.

1.3 Research Question and Objectives

This dissertation aims to investigate the labour market significance of LAE bachelor's programmes in the Netherlands. More specifically, the main goal of this research is to determine how the distinctive features of Dutch university colleges translate into

outcomes related to the career preparedness of their graduates. The general research question it seeks to answer is: *Are graduates of Dutch university colleges well-prepared for their future careers in terms of acquiring relevant skills, completing a specialized master's programme, securing their first jobs, and achieving further professional success*?

The specific aspects of this question are addressed in four separate papers, intended for publication in peer-reviewed academic journals. As detailed in subsection 1.4, these studies trace the progression of LAE graduates from higher education to employment, encompassing skill development in the bachelor's programme, successful completion of a specialized master's degree, job attainment, and subsequent job performance. The choice of research themes was motivated by the desire to explore various relevant dimensions within the ongoing debate on whether LAE is able to respond to the economic demands of our time. Furthermore, the chosen topics also reflect the key debates and issues observed in the literature on liberal arts education, as well as the more general studies on graduate skills and employability, aiming to bring these two strands of research closer together.

Although there is a growing body of literature advocating the need for further development of liberal arts education in Europe, evidence in support of this notion remains mostly rhetorical. Various assumptions about the suitability of the liberal arts model for preparing students to meet the demands of the 21st century have been made in the literature without ever being tested. Therefore, a prevailing research gap in the literature concerning European liberal arts education can be identified in the form of missing empirical evidence. The ambition of this dissertation is to overcome this gap by introducing an empirical component that will enable to investigate whether the actual experiences of graduates and employers support the case for the liberal arts. By collecting and analysing data on graduate outcomes and employers' perspectives, this research aims to provide concrete evidence regarding the effectiveness of LAE in preparing students for the challenges of the contemporary job market.

To ensure a comprehensive empirical examination, the thesis employs a variety of research methods, both quantitative and qualitative. Its data collection and analytical methods include an evaluative survey of students' skills, statistical analyses of academic performance and labour market outcomes data, and semi-structured interviews with employers. Moreover, what makes this research particularly valuable is the fact that it compares university college graduates to their peers with conventional, discipline-focused bachelor's degrees. Having a control group is a major strength, allowing for a thorough examination of the advantages and disadvantages of LAE in the labour market and the influence of its distinctive characteristics. Within the discourse on European liberal arts

education, this is the first time that such a comparison has been made. Methodologically, this enhances the rigor and quality of this dissertation, distinguishing it from existing studies in the field.

Despite being a prominent topic of discussion, it should be noted that the economic rationale for liberal arts education is not universally embraced by its supporters. In fact, many LAE proponents argue that the liberal arts should not be justified solely—or even not at all—on economic grounds. As Vannatta (2016) notes, responses to external demands to demonstrate the utility of liberal arts comprise a spectrum that spans from 'reactionary' and 'conservative' to 'pragmatist' and 'presentist' views. The former rigidly insist that liberal arts education can only have an end in itself, while the latter are more responsive to students' interests, evolving social problems, and market pressures. Along similar lines, Kerwick (2015) dismisses a resolutely non-utilitarian perspective of LAE, along with overly instrumental, careerist and activist views that equate LAE with job preparation and promotion of political goals, arguing that LAE should primarily be understood as a 'conversation' involving a plurality of voices.

While acknowledging that wider aims related to democratic citizenship, social responsibility, and holistic personal development are indeed an essential and immensely valuable component of liberal arts education, this research consciously aims attention at its economic aspect. The pragmatic, labour market focus of the research should therefore not be interpreted as an attempt to instrumentalize liberal arts education and present it as mere job training, but rather as an inquiry into its capacity to prepare students for success in the economy. In other words, this thesis is not guided by the conviction that economic arguments are the only ones (or even the strongest ones) to be made in favour of the liberal arts, but by a realization that education should be able to respond to the vital needs of our time—including the ones related to the future of work—as well as a belief that the existence of an economic rationale does not undermine the humanistic value of the liberal arts.

Furthermore, there may be doubts about the extent to which bachelor's studies influence one's employment prospects. When compared to other educational experiences–such as prior schooling, master's programmes, or lifelong learning through internships and on-the-job-training–an undergraduate degree might seem to carry less weight in terms of career preparedness. However, this scepticism does not undermine the relevance of the research question, especially given the consistent critiques from opponents of liberal arts education, who argue that a LAE bachelor's degree does make a difference—negatively. Even if the goal is to demonstrate that the bachelor's programme does not significantly affect employability, the question remains a valid and valuable area for exploration.

In addition to advancing knowledge on the career preparedness of Dutch university college graduates, this dissertation also engages in broader discussions across a range of relevant themes. Firstly, the research highlights the crucial role of learning environments and programme features in facilitating skill development within higher education. Secondly, it considers the structure of the undergraduate curriculum and optimal timing of specialization, exploring the delicate balance between general and specialized education. Thirdly, the dissertation examines the labour market significance of generic skills, providing valuable perspectives on their influence on employment outcomes. Furthermore, it looks into the hiring preferences of employers, providing a comprehensive understanding of the graduate job selection process. The thesis also investigates the relative weight of the bachelor's degree in determining the employment outcomes of master's degree holders, an issue that has not been sufficiently studied before. Lastly, the dissertation explores the intricate process of how a new type of higher education programme is received in the labour market. By addressing these aspects, the thesis makes substantial contributions to the broader fields of higher education and labour market studies.

1.4 Overview of the Dissertation

In this dissertation, the relationship between LAE and the world of work is examined by looking at what can be broadly referred to as 'borders of employability'. These figurative borders encompass the various phases and obstacles that university college graduates need to cross during their transition from higher education to employment. The individual studies comprising the thesis form a sequential exploration of this border-crossing process.

The journey towards the labour market begins during the bachelor's programme, as students acquire the skills and abilities needed for success in the modern workplace. This aspect is explored in Study 1 (Chapter 3 of this dissertation), which looks at how employability develops in university college students compared to their peers from a conventional bachelor's programme. Drawing on the graduate capital model, an established employability framework, the study focuses on six skills that enhance employability: creativity, lifelong learning, career decidedness, self-efficacy, resilience, and personal initiative. The study's findings reveal that attending a LAE undergraduate programme leads to visible progression in a range of career-relevant skills. When compared to the conventional programme, LAE students exhibit notable gains in creativity and personal initiative, reflecting the impact of interdisciplinary learning and self-tailored curriculum structure.

After completing their bachelor's studies, LAE graduates typically continue their journey by pursuing a master's degree. This presents them with the challenge of specialization.

Due to the broad nature of the LAE curriculum, university college graduates enter the master's phase with less subject-specific knowledge and skills compared to their peers from conventional bachelor's programmes. The question of whether the broad foundation of knowledge and generic skills provided by LAE can compensate for this relative lack of disciplinary depth has been a topic of extensive debate. Study 2 (Chapter 4 of the dissertation) addresses this issue through a case study of Maastricht University, focusing on three specialized master's programmes–in international business, psychology, and neuroscience. It compares the academic performance of two groups of students in these programmes: graduates from a university college, and their peers with discipline-focused bachelor's degrees in a matching field. The results from this study indicate that there are no major differences between the two groups in terms of dropout rates, GPA, and master's thesis grades. Despite having less subject-specific knowledge, university college graduates proved to be prepared equally well for specialized master's studies as their counterparts with a matching disciplinary background.

Entering the labour market can be a challenging task for LAE graduates, as they must navigate a competitive selection process to secure their first jobs. Given the unconventionality of LAE degrees in the Dutch context, their transition from university to work is bound to be strongly influenced by employers' perceptions of this educational model. Using a qualitative approach, Study 3 (Chapter 5 of the dissertation) investigates how Dutch employers view university college bachelor's degrees. Through semi-structured interviews with 20 recruiters, the study delves into the graduate job selection process, examining the relative importance of different factors in employers' decisions and the different kinds of signals that a university college degree might send in the labour market. The study's findings reveal a predominantly neutral signalling effect associated with LAE degrees. Dutch employers demonstrate limited familiarity with university colleges and tend to assign less significance to the bachelor's degree when it is accompanied by a master's degree in a relevant field.

Lastly, the journey of LAE graduates into the world of work demands that they not only obtain employment but also perform well in their jobs, making use of the skills and knowledge acquired during their bachelor's studies. As a result, they should be able to earn competitive salaries, find satisfaction in their work, and secure employment that matches their education, while also providing opportunities for career development. Study 4 (Chapter 6 of the dissertation) seeks to investigate whether this is indeed the case and to assess whether holding a university college degree is associated with any particular advantages or disadvantages in the job market. To do so, it compares the employment outcomes of LAE graduates to those of their peers who pursued conventional, subject-specific bachelor's degrees. Using data from the Dutch National Alumni Survey, the analysis includes 14,933 respondents who completed a master's programme at a Dutch

research university, with 210 of them holding a university college degree. Eight labour market outcomes were assessed: employment status, time between graduation and first paid job, career development opportunities, job satisfaction, vertical and horizontal matches, and hourly wage from regular work. The results of this study reveal that the labour market performance of LAE graduates is on par with their peers who pursued a conventional undergraduate programme. While a LAE bachelor's degree proved to have a negative effect on obtaining employment in STEM professions, no statistically significant differences, neither negative nor positive, were found in other outcomes.

Table 1.2 provides an overview of the research questions, methods, data, and analytical approaches used in each of the four studies within the dissertation. Preceding these studies is Chapter 2, which contains the literature review. This chapter presents a comprehensive exploration of the current state of the literature on the labour market value of liberal arts education, offering insights into existing knowledge, research, and debates within the field. The dissertation concludes with Chapter 7, which reviews the main findings, discusses the links between various aspects of the research, and reflects on its wider implications.

Table 1.2 Research Overview per Study

Study	Research Question	Research Design	Data	Analytical Method
Study 1 – Employability Development in Undergraduate Programmes: How Different Is Liberal Arts Education?	How does employability develop in university college students during the course of their studies compared to their peers from a conventional programme?	A cross-sectional pseudo-cohort research design, comparing 1st-, 2nd-, and 3rd-year student cohorts (Difference-in-Difference approach).	Data was collected through an online survey, resulting in 558 responses.	6 OLS regression models were estimated, including an interaction term between study year and programme variables to assess score differences between cohorts.
Study 2 – The Effect of a General Versus Narrow Undergraduate Curriculum on Graduate Specialization: The Case of a Dutch Liberal Arts College	How successful are university college graduates in pursuing specialized master's studies compared to their counterparts with a matching discipline-focused bachelor's degree?	A multiple case study design involving three master's programmes at Maastricht University, with a focus on comparing the academic performance of two student groups.	Academic performance and background data were obtained from university records, encompassing a final sample of 3,875 master's students who registered between Sep 1, 2008 and Feb 1, 2020.	OLS and probit regression analyses were performed, including 8 different models: 2 for dropouts, 4 for master GPA, and 2 for the thesis grade as outcome variables.
Study 3 – Signals of Excellence or Indifference? Dutch Employers' Perceptions of Liberal Arts Bachelor's Degrees	What kind of signals does a university college bachelor's degree send to employers?	A qualitative investigation into how Dutch employers perceive university college bachelor's degrees.	Qualitative data was obtained from semi-structured interviews with 20 recruiters from 19 companies in the Netherlands.	The interview data underwent thematic analysis, following a deductive approach.
Study 4 – Liberal Arts Graduates in the Labour Market: A Comparative Study of Dutch University Colleges and Conventional Bachelor's Programmes	How do university college graduates fare in the labour market compared to their peers with a conventional bachelor's degree from a Dutch research university?	A comparative quantitative analysis of employment outcomes between LAE graduates and their peers who pursued subject-specific bachelor's degrees.	The study used data from the Dutch National Alumni Survey, including 14,933 respondents who completed a master's programme at a research university.	The study employed logistic, multinomial, and OLS regression analyses on eight labour market outcome variables. Propensity score matching (PSM) was used as a robustness check.

1.5 Positionality

While working on this dissertation, I was employed as a PhD Candidate at University College Maastricht. My first supervisor, Teun Dekker, holds the position of Professor in Liberal Arts and Sciences Education, and is recognized for his research on European LAE, as well as his commitment to advancing this educational model across the continent. As part of my PhD, I also undertook a secondment for a period of one semester at the European Consortium of Liberal Arts and Sciences (ECOLAS) and the Bratislava International School of Liberal Arts (BISLA).

My position as a researcher of liberal arts education employed at a university college entails ethical considerations that are necessary to acknowledge. This situation, which may be classified as 'insider research', can pose a threat to research integrity if not managed carefully. In particular, the fact that the subject of the research is the institution where I am employed introduces the risk of bias, as my personal involvement may influence the objectivity of my research.

It should be kept in mind that before starting this PhD, I had no prior contact with liberal arts education—neither through attending liberal arts institutions nor researching them. Therefore, my position is not that of a typical insider whose ability to produce impartial accounts might be compromised. Nevertheless, it was crucial to acknowledge my positionality from the beginning and adopt strategies to ensure fairness and neutrality in the research.

To minimize bias in the research process, a number of measures have been taken. Expressing awareness of this issue and reflecting on it was the first step in this process. In light of the acknowledged positionality, it was imperative that all research in this dissertation is conducted transparently, with methods, data, and results clearly and fully disclosed. Transparency allows others to examine the procedures and replicate the studies as necessary, reinforcing research integrity. To ensure ethical standards were met, the studies underwent approval by Maastricht University's Ethical Research Committee for the Inner City Faculties. Furthermore, co-supervision by Rolf van der Velden, a prominent scholar in the field of education and labour market studies, who is also an 'outsider' not connected to liberal arts education, was greatly helpful in mitigating potential biases and enhancing the rigor of my research. As this PhD project is article-based, involving the submission and publication of research findings in academic journals, a similar role was played by the peer-review process.

As a final point, it should be noted that the goal of this project was not to advocate for liberal arts education, but rather to attain a truthful understanding of it. While the research

did highlight some advantages of LAE, affirming the assumptions of its supporters, it also identified weaknesses and areas of concern. These latter findings provide equally, if not more valuable information for the LAE community, paving the way for improvements. Ultimately, what LAE programmes care about the most is having good data about the results of their education, if only to better it. Therefore, the interests of objective research align with those of the liberal arts community, as both seek unbiased findings.

1.6 References

Balli, V. (2017). Models of LAS programmes in the EU. In *Guide to emerging liberal arts and sciences practices in the EU* (pp. 14–43). ECOLAS. http://www.ecolas.eu/eng/wp-content/uploads/2017/11/Handbook-final-BLASTER.pdf

Boetsch, L. (2017). The purpose and characteristics of a liberal arts and science education. In *Guide to emerging liberal arts and sciences practices in the EU* (pp. 1–12). ECOLAS. http://www.ecolas.eu/eng/wp-content/uploads/2017/11/Handbook-final-BLASTER.pdf

Boon, L. (2014). Liberal arts and sciences in the Netherlands: Development and relation to interdisciplinary education. In B. Padberg & P. Weingart (Eds.), *University experiments in interdisciplinarity: obstacles and opportunities* (pp. 37–48). Transcript Verlag.

Cooper, N. (2018). Evaluating the liberal arts model in the context of the Dutch University College. *Educational Philosophy and Theory*, *50*(11), 1060–1067. https://doi.org/10.1080/00131857.2017.1341299

Dekker, T. (2017). Liberal arts in Europe. In M. Peters (Ed.), *Encyclopedia of educational philosophy and theory* (pp. 1–6). Springer Singapore. https://doi.org/10.1007/978-981-287-532-7_569-1

Dirksen, J. T. (2017). Liberal arts education in Europe, a student's view of. In M. Peters (Ed.), *Encyclopedia of educational philosophy and theory* (pp. 1–7). Springer Singapore. https://doi.org/10.1007/978-981-287-532-7_565-2

Fischman, W., & Gardner, H. (2022). *The real world of college: What higher education is and what it can be*. The MIT Press.

Godwin, K. A. (2015). The counter narrative: Critical analysis of liberal education in global context. *New Global Studies*, *9*(3). https://doi.org/10.1515/ngs-2015-0033

Godwin, K. A., & Altbach, P. G. (2016). A historical and global perspective on liberal arts education. *International Journal of Chinese Education*, *5*(1), 5–22. https://doi.org/10.1163/22125868-12340057

Gombrich, C. (2016). Polymathy, new generalism, and the future of work: A little theory and some practice from UCL's arts and sciences degree. In W. C. Kirby & M. C. van der Wende (Eds.), *Experiences in liberal arts and science education from America, Europe, and Asia* (pp. 75–89). Palgrave Macmillan US. https://doi.org/10.1057/978-1-349-94892-5_6

Harris, A. (2018). The liberal arts may not survive the 21st century. *The Atlantic*. https://www.theatlantic.com/education/archive/2018/12/the-liberal-arts-may-not-survive-the-21st-century/577876/

Kerwick, J. (2015). The liberal arts as conversation. *Academic Questions*, *28*(2), 159–164. https://doi.org/10.1007/s12129-015-9495-y

Kingkade, T. (2013). Pat McCrory lashes out against 'educational elite' and liberal arts college courses. *HuffPost*. https://www.huffpost.com/entry/pat-mccrory-college_n_2600579?guccounter=1

Kontowski, D. (2020). *European liberal education, 1990-2015: A critical exploration of commonality in the visions of eight first leaders* [PhD Thesis]. University of Winchester.

Logan, J., & Curry, J. (2015). A liberal arts education: Global trends and challenges. *Christian Higher Education*, *14*, 66–79. https://doi.org/10.1080/15363759.2015.973344

Mehrens, P. (2017). Liberal arts education. In M. Peters (Ed.), *Encyclopedia of educational philosophy and theory* (pp. 1288–1293). Springer Singapore. https://doi.org/10.1007/978-981-287-588-4_483

Nishimura, M., & Sasao, T. (Eds.). (2019a). *Doing liberal arts education: The global case studies*. Springer Singapore. https://doi.org/10.1007/978-981-13-2877-0

Nishimura, M., & Sasao, T. (2019b). Liberal arts education: Changes, challenges, and choices. In M. Nishimura & T. Sasao (Eds.), *Doing liberal arts education: The global case studies* (pp. 1–4). Springer Singapore. https://doi.org/10.1007/978-981-13-2877-0_1

Nussbaum, M. C. (2010). *Not for profit: Why democracy needs the humanities*. Princeton University Press.

Office of the Press Secretary. (2014). *Remarks by the President on opportunity for all and skills for America's workers*. https://obamawhitehouse.archives.gov/the-press-office/2014/01/30/remarks-president-opportunity-all-and-skills-americas-workers

Peirce, A. (2017). Liberal arts: Why don't you get a job? In J. T. Dirksen, D. Kontowski, & D. Kretz (Eds.), *What is liberal education and what could it be? European students on their liberal arts education* (pp. 11–15). LESC.

Peterson, P. M. (2012). A global framework: Liberal education in the undergraduate curriculum. In P. M. Peterson (Ed.), *Confronting challenges to the liberal arts curriculum* (pp. 1–23). Routledge.

Reumer, C., & van der Wende, M. C. (2010). Excellence and diversity: Selective admission policies in Dutch higher education - A case study on Amsterdam University College. *UC Berkeley: Center for Studies in Higher Education*. https://escholarship.org/uc/item/4502w5pj

Rossman, D., Wilson, M., Alamuddin, R., Karon, J., Joo, J., & Hill, C. B. (2020). *Measuring a liberal education and its relationship with labor market outcomes: An exploratory analysis*. Ithaka S+R. https://doi.org/10.18665/sr.313872

Rowen, C. (2016). So much more than salary: Outcomes research in the liberal arts. *New Directions for Institutional Research*, *2016*(169), 51–60. https://doi.org/10.1002/ir.20169

Schreel, L. (2017). Setting up a liberal arts and sciences program. In *Guide to emerging liberal arts and sciences practices in the EU* (pp. 41–62). ECOLAS. http://www.ecolas.eu/eng/wp-content/uploads/2017/11/Handbook-final-BLASTER.pdf

Stillman, J. (2019). Stop bashing liberal arts degrees. This new analysis shows they're a good investment. *Inc. Magazine*. https://www.inc.com/jessica-stillman/new-economic-analysis-getting-a-liberal-arts-degree-is-totally-a-good-investment.html

Tachikawa, A. (2016). Development of liberal arts education and colleges: Historical and global perspectives. In I. Jung, M. Nishimura, & T. Sasao (Eds.), *Liberal arts education and colleges in East Asia: Possibilities and challenges in the global age* (pp. 13–25). Springer Singapore. https://doi.org/10.1007/978-981-10-0513-8_2

Telling, K. (2018). Selling the liberal arts degree in England: Unique students, generic skills and mass higher education. *Sociology*, *52*(6), 1290–1306.

University College Deans Network. (2017). *Statement on the role, characteristics, and cooperation of liberal arts and sciences colleges in the Netherlands*. https://www.universitycolleges.info/

van der Wende, M. (2011). The emergence of liberal arts and sciences education in Europe: A comparative perspective. *Higher Education Policy*, *24*(2), 233–253. https://doi.org/10.1057/hep.2011.3

van der Wende, M. (2013). Trends towards global excellence in undergraduate education: Taking the liberal arts experience into the 21st century. *International Journal of Chinese Education*, *2*(2), 289–307. https://doi.org/10.1163/22125868-12340025

Vannatta, S. C. (2016). What use is instrumentalism? Conservative pragmatism in liberal learning. *Education and Culture*, *32*(2), 18. https://doi.org/10.5703/educationculture.32.2.0018

Watt, C. A. (2012). World history, liberal arts, and global citizenship. *The Journal of General Education*, *61*(3), 211. https://doi.org/10.5325/jgeneeduc.61.3.0211

2 LITERATURE REVIEW

The Economic Case for Liberal Arts Education

This chapter reviews the literature related to the labour market value of liberal arts education and introduces the key theoretical concepts and debates that frame the context of this thesis. Section 2.1 reviews the concept of generic skills and classifies the underlying economic arguments that have been put forward in favour of LAE. The literature considered here is primarily related to Europe—and, to a lesser extent, the global, non-US context of liberal arts education. Section 2.2 deals with the research gap related to the lack of empirical evidence underpinning the considered economic argumentations. As the European literature on LAE is marked by an almost complete absence of empirical studies, the literature review is extended to include the most relevant studies from the North American context. These works are considered in section 2.3, providing a more comprehensive framework for discussion.

2.1 Skills for the 21st Century: The Labour Market Value of LAE

Economic arguments in support of liberal arts education generally underpin its ability to provide an optimal response to the demands associated with the contemporary workplace. This question is part of a broader narrative related to the evolving nature of work and employment in the 21st century—an ongoing shift driven by the advancement of the knowledge economy, rapid technological progress, globalization, increasing uncertainty, and organizational change (Humburg & van der Velden, 2017; Wilson, 2013). Compared to the industrial society and its stable environment, occupations in the knowledge society are more fluid and have an increasingly interdisciplinary character, requiring a broader range of skills and continuous learning (Griffin et al., 2012; Smith, 2017; World Bank, 2019).

In this context, the main justification for the labour market utility of liberal arts education is based on the premise of changed skill needs, highlighting the increased significance of generic skills and the capacity of LAE to provide them. Specifically, it is argued that the growing need for critical thinking, problem solving, flexibility, global competence, innovation and creativity, and lifelong learning skills has increased the economic value of LAE. Although liberal arts education is often perceived as non-vocational, in the sense that it does not provide special training enabling a person to practice a particular profession, such as medicine, law or engineering (Becker, 2014; Jenkins, 2014), it is believed to provide students with many valuable generic skills, enhancing their performance in the labour market, especially under changing economic conditions.

In simple terms, generic skills are those that are not specific to a particular field, occupation or industry and which can potentially be applied across a range of disciplines, contexts, and circumstances (Bennett et al., 1999; Cornford, 2005). While higher education institutions are devoting increased attention to the development of these skills, their conceptual

understanding is still marked by a considerable lack of standardization. Numerous lists and classifications exist, along with differing views on what generic skills graduates should possess (Tight, 2021; Williams, 2019). Internationally, generic skills are known by a wide variety of terms, including 'basic skills', 'core skills', 'common skills', 'essential skills', 'key competences', 'key qualifications', 'critical enabling skills', and 'workplace know-how' (National Centre for Vocational Education Research [NCVER], 2003, p. 2). Most commonly and more recently, they are referred to as 'employability skills', 'transferable skills', and '21st-century skills'.

Although the basic meaning of these concepts is fairly similar, the terminological clutter, along with the absence of a standardized taxonomy, have resulted in a lack of precision and even theoretical confusion (Cornford, 2005; Green et al., 2009). The conceptual vagueness is particularly pronounced when it comes to identifying the particular skills included in this category. Various classifications of generic skills often lump together all sorts of competencies (Taylor, 2005), failing to make a clear distinction between cognitive and non-cognitive general human capital (Kuzminov et al., 2019). A related challenge involves distinguishing actual skills—which can be learned—from personality traits, motivations, and character—which are not easily changed and possibly also hereditary (Heckman & Kautz, 2012).

Before identifying and classifying the various links between liberal arts education, generic skills, and the future of work, it is necessary to review and clarify the associated terminology. The remainder of this section will therefore discuss the concepts of employability skills, transferable skills, soft and hard skills, and 21st-century skills, highlighting their content and differences.

Notwithstanding the abundant conceptual ambiguities, one thing that has been increasingly pointed out is the labour market value of generic skills. In this sense, the term 'employability skills' seems particularly useful, as it stresses the connection between possessing these skills and performing well in the job market. The Australian National Centre for Vocational Education Research defines them as 'skills which enable people to gain, keep and progress in employment, including skills in the clusters of work readiness and work habits, interpersonal skills and learning, thinking and adaptability skills' (Naidu et al., 2017, p. 48). More explicitly, these skills include communication, teamwork, problem solving, initiative and enterprise, planning and organizing, self-management, learning, and technology (Wibrow, 2011).

In the European context, the term 'transferable skills' has recently gained greater attention, finding its way into economic policy documents of the European Commission (Balcar et al., 2011). As the name suggests, these skills are transferable because they can be applied

across different tasks and jobs, whereby transferability is not a binary, have or have-not quality, but varies on a spectrum—the more general skills are more transferable, and *vice versa* (Balcar et al., 2011, p. 9).

A connected distinction worth introducing here is the one between hard skills, which are particular or specialized, job-specific and/or sector-specific, and soft skills, which are cross-cutting across jobs and sectors. Unlike the easily observed and measured hard skills, which mostly concern technical and analytical abilities, soft skills are intangible, difficult to teach, and more closely related to personal and social competences (UNESCO, 2013). Balcar et al. (2011, p. 25) further distinguish between generic and specific hard skills, depending on whether they can be applied in a smaller or greater number of companies, occupations, and sectors. Together with soft skills, generic hard skills comprise the category of transversal skills, characterized by a high level of transferability.

A detailed analysis of skills transferable across economic sectors in Europe carried out by Balcar et al. (2011) has shown that contrary to the usual assumption, not all soft skills are generic (that is, transferable). Of the 22 soft skills included in the study, only five were found to have a high level of transferability (cooperation, communication, achievement orientation, problem solving, and autonomy), while the remaining seventeen showed moderate (self-control and stress resistance, flexibility, interpersonal understanding, customer orientation, impact/influence, concern for order, quality and accuracy, initiative, planning and organizing, and analytical thinking) or low (self-confidence, creativity, lifelong learning, organization awareness, leadership, developing others, information exploring, and conceptual thinking) levels of transferability. On the other hand, six hard skills demonstrated a high level of transferability, and were therefore labelled as generic hard skills (legislative/regulatory awareness, economic awareness, basic competencies in science and technology, environmental awareness, ICT skills, knowledge of foreign languages) (Balcar et al., 2011, pp. 48–49). Above all, the study stresses the need for transferable skills with regard to employability, adaptability and occupational mobility in the new economy, when workers can hardly expect to remain in the same job, company or sector throughout their entire career (Balcar et al., 2011, p. 7).

With this in mind, the term '21st-century skills' appears particularly relevant. Clearly, the name stresses the importance of these skills in the contemporary and future context, especially considering the economic, technological, cultural, social, and environmental challenges of today. As Pellegrino and Hilton (2012) point out, rather than emerging overnight, these skills have been valued for many centuries. Still, their current relevance lies in the universal need to attain these competences in order to be successful in the workplace. According to the authors, the most crucial characteristic of 21st-century skills refers to their transferability and applicability to new situations (Pellegrino & Hilton,

2012, p. 22). Binkley et al. (2012) identified ten 21st-century skills, grouping them into four categories: 1) ways of thinking (creativity and innovation; critical thinking, problem solving, decision making; learning to learn, metacognition); 2) ways of working (communication; collaboration—teamwork); 3) tools for working (information literacy; ICT literacy); and 4) ways of living in the world (citizenship—local and global; life and career; and personal and social responsibility—including cultural awareness and competence).

The notion of 21st-century skills is closely connected to the discussion on the economic value of liberal arts education, which stresses its relevance to the future of work and employment. Proponents of liberal arts education typically emphasize its capacity to equip graduates with an array of such skills. As these are becoming increasingly important in the workplaces of tomorrow—the line of reasoning goes—liberal arts education programmes offer their students a comparative advantage in the job market (van der Wende, 2013).

Still, the argumentation in support of this standpoint is problematic for at least three reasons. The first important point is that generic skills are also developed in specialized higher education programmes. As Humburg and van der Velden (2017) note, specific, disciplinary programmes can be an effective vehicle for the development of these skills, which is strongly context-bound. As explained by Perkins and Salomon (1989), generic skills are always learned within a specific context and function in contextualized ways. For this reason, it would be wrong to assume that these skills can only be learned in general programmes. In fact, even in liberal arts programmes, the acquisition of generic skills is most likely to occur through specific, disciplinary courses. Therefore, one may only argue that due to their student-centred learning environment the liberal arts do a better job in teaching generic skills compared to conventional programmes (see, for example, Virtanen and Tynjälä, 2019), but not that these skills can only be acquired through a liberal arts education.

Secondly, the relative value of generic versus specific skills is a subject of ongoing debate. While the importance of generic skills for success in the contemporary labour market is increasingly emphasized (Kuzminov et al., 2019), many studies provide evidence that occupation-specific skills and professional expertise still have the primacy, at least when it comes to the preferences of employers (Humburg & van der Velden, 2015; van der Velden & Allen, 2011). Lastly, the presentation of economic arguments in the liberal arts literature is seldom elaborate and clear-cut. This fuzziness is particularly pronounced when it comes to elaborating the changed conditions underpinning the current relevance of generic, 21st-century skills—and, consequently, liberal arts education.

The following subsections attempt to systematize the various arguments mentioned in the literature covering European (and, to a smaller extent, non-US) liberal arts education. All of these argumentations are essentially based on the same general premise—the increased

significance of 21st-century skills—but provide different explanations of why these skills are relevant for the present and future workplace. Although they are all closely entwined with each other, in order to better identify the processes and mechanisms underpinning the assumed labour market value of the liberal arts, these justifications will be classified into three groups. Flexibility and adaptability are in the focus of the first group of arguments. The second justification emphasizes innovation and creativity, while the third centres around globalization and the need for global knowledge and competences.

2.1.1 Flexibility

In the context of employment, flexibility can be viewed in different ways. For instance, Calmand et al. (2011) distinguish between external flexibility, which concerns labour market transitions (switching employers, occupations, or the type of work contract), and functional flexibility, which is related to workplace changes within an organization (the altered content of work tasks). In the most general sense, flexibility entails the capacity to deal with change. This can be understood from two different perspectives. In order to be flexible, first of all, one needs to be capable to adapt to the changed circumstances. Alternatively, one may also take a more proactive approach, changing the environment, instead of just passively adapting to it (Allen & van der Velden, 2011). The understanding of flexibility in the European LAE literature is mostly in line with the former notion, centring around adaptability. The proactive stance is more commonly linked to innovativeness and entrepreneurship, which will be discussed in a separate subsection.

This subsection considers the arguments presented in the European LAE literature that concern the adaptive dimension of flexibility. A common theme across these views is the inherent instability and uncertainty that characterize the 21st-century economy. This ever-changing environment requires a particular type of flexibility, which is believed to be fostered by the liberal arts. To perform a more systematic analysis, the discussion separates this issue into two distinct aspects: the major trends and challenges underpinning the increasing need for flexibility, on the one hand, and the liberal arts skills and competences that offer a response to these trends, on the other.

Apart from the general discourse about 'more volatile labour markets and careers' (van der Wende, 2013, p. 300), 'dynamic social and economic environments' (Becker, 2014, p. 18), 'the fluidity of the labour market in the global knowledge economy' (Godwin & Altbach, 2016, p. 18), 'the complexity of the modern world and economy' (Lewis, 2018, p. 26), 'loosening ties between degrees, skills, and jobs' (Kirby & van der Wende, 2016, p. 8), 'the increasing complexity and volatility of employment' and 'the changing nature of work—which favours more flexible and shorter-term assignments' (Penprase, 2018, p. 220), it is possible to identify two sets of more specific accounts that stress the increasing need for flexibility.

The first of these pertains to the *unpredictable nature of future jobs*. According to some predictions, students graduating today can expect to have 'an average of at least six different kinds of jobs throughout their lives' (Dirks, 2016, pp. 119–120). With shrinking prospects for a one-company or one-industry career, no single skillset will any longer be able to guarantee a lifetime employment (Gombrich, 2016; Penprase, 2018). Faced with such prospects, students need to be prepared to continuously 'transform' and 'reinvent' their professional selves (Dirks, 2016, p. 120).

Secondly—and very much related to the previous point—*rapid technological change* is often pointed to as one of the principle drivers of instability. In a time when automation, machine learning and robotics are ushering in a fourth industrial revolution (Gleason, 2018), technology becomes obsolete quicker than ever. Hence, narrow training in today's technology is no longer a sufficient response—what is needed instead is an education that cultivates the ability to respond to new situations and cope with changing outlooks (McPherson, 1998). A related factor concerns technological unemployment (see, for instance, Peters, 2017; Peters et al., 2019), and the rising number of jobs in which machines are either complementing or completely substituting human labour.

The unpredictable future of work and rapid technological change are therefore the two main reasons behind the increasing need for flexibility. The assumed adequacy of LAE in responding to these circumstances is attributed to its curricular breadth and depth, as well as its emphasis on polymathy (defined as possessing knowledge in multiple areas of study). Additionally, LAE's commitment to lifelong learning and the development of transferable 21st-century skills further contribute to its effectiveness in responding to these challenges.

In light of the breadth of liberal arts education, Gombrich (2016) sees the resurgence of *polymathy and generalism* as central to the future of work, predicting the rise of 'big-picture generalists' and the demise of specialization. Still, most proponents of LAE rightfully note that its idea is not to replace, but complement—and precede—academic specialization, providing both depth and breadth (Lewis, 2018; Logan & Curry, 2015; University College Deans Network [UCDN], 2017). In this regard, it is pointed out that the solid academic basis provided by the liberal arts even enhances the possibilities for further disciplinary specialization (Task Force on Higher Education and Society, 2000, p. 89). In the literature, the need to combine generic with more specific skills is widely acknowledged under the so-called T-shaped skills concept (Conley et al., 2017).

When it comes to polymathy, nonetheless, the chief strength of the liberal arts model lies in its capacity to transcend disciplinary limitations and boundaries, combining qualitative and quantitative components, soft skills and STEM competences (Kirby & van der Wende,

2016; Sun, 2018). As Lewis (2018) points out, it is the inclusion of natural sciences and technical subjects along with social sciences and humanities in the liberal arts curriculum that makes it the kind of education particularly suitable to meet the complex demands of the 21st century.

In response to an uncertain job outlook, the transferability of 21st-century skills is seen as a crucial factor. By increasing the stocks of transferable skills, one can expect to decrease the risk of unemployment and increase occupational mobility (Balcar et al., 2011). Along these lines, it is argued that liberal arts education is not non-vocational, but *pan-vocational*, in the sense that it enables graduates to work in any profession, including the ones that are 'not yet invented', instead of a specific job (Tilghman, 2010, as cited in van der Wende, 2013, p. 300).

Adopting a more critical view of the link between liberal arts education and employability, Telling (2018) highlights a paradox between the notably generic skills associated with liberal arts degrees and the promotional narrative that presents LAE graduates as 'unique'. In her view, the incompatible narrative of tying non-vocational degrees to employability stems from the market pressures to present tradition as innovation. The notion that 'new, flexible and interdisciplinary degrees' are needed in a rapidly changing world is thereby posited by LAE institutions in order to stay competitive in the educational marketplace (Telling, 2018, p. 1303).

The impacts of the fourth industrial revolution and subsequent need for 'cognitive flexibility' (Lewis, 2018) are crucially related to one specific outcome of liberal arts education. Namely, keeping pace in a world where today's technology becomes obsolete tomorrow gives particular weight to *lifelong learning*. Developing the ability to quickly acquire new knowledge, to develop new skills, and accept novel approaches—in other words, learning how to learn and adapt through learning—lies at the hearth of liberal arts education, making it a valid educational response to the challenges of technological change (Lewis, 2018; Penprase, 2018).

The threat of technological unemployment, on the other hand, is most pronounced when it comes to jobs dominated by routine tasks that can be fully codified in computer software—such as bookkeeping, administrative support, data entry, and other similar, middle-skill jobs (Autor, 2015). This puts a real premium on non-routine skills that involve problem solving, adaptability, interpersonal interaction, and creativity (Autor, 2015; van Damme, 2016). The latter will be further discussed in the corresponding section below.

2.1.2 Capacity for Creativity and Innovation

In addition, but also closely connected to flexibility, the labour market value of LAE is often

justified on the basis of its presumed capacity to contribute to the development of creative and/or innovative qualities of its students. This subsection examines the arguments supporting the growing importance of these competencies. As a more active way of dealing with change, innovativeness and creativity are considered particularly relevant within the general context of work in the knowledge economy, as well as the more specific demands associated with technological unemployment and entrepreneurship.

While there is a lack of clarity regarding the conceptualisation of innovation and creativity in the LAE literature (these are often presented as particular 21st-century skills, but sometimes also as a more complex capacity that involves a set of other (sub-)skills), a causal relationship between liberal arts education, innovation and creativity, and success in the knowledge economy is generally recognized. More specifically, it is suggested that the demands resulting from *the innovative character of the knowledge economy* is what makes these skills important and desirable prerequisites (van Damme, 2016; van der Wende, 2013).

As mentioned in the previous subsection, the importance of developing creative (thinking) skills is highlighted by the potential of new technologies to replace human workers in routine tasks. As big data algorithms and artificial intelligence are starting to take over an increasing number of non-routine operations, the threat of *technological unemployment* is becoming even more serious (Peters, 2017). Still, as pointed out by Su et al. (2021), when it comes to creativity, AI is more likely to complement humans rather than to replace them entirely. This perspective aligns with Autor's (2015) notion of Polanyi's paradox, emphasizing the existence of 'tacit knowledge' intrinsic to humans that machines cannot replicate. Accordingly, tasks that require flexibility, judgement, common sense, and creativity are the ones most difficult to automate.

In line with this, Fossen and Sorgner (2019) find that the main difference between 'rising star' occupations (in which transformations caused by new technologies are likely to occur, but the risk of destructive, job-taking digitization is low) and 'collapsing' occupations (in which complete automation is highly viable) lies in the creative and social intelligence that the former require. Therefore, as van Damme (2016) notes, it is not so much the level, but more the nature of skills graduates will need to possess that will be crucial for their employability.

An interesting finding by Avvisati et al. (2013) suggests that the most important skills that separate highly innovative from less innovative professionals are not related to the mastery of a specific discipline, but involve a broader set of skills including creativity ('coming up with new ideas and solutions'), critical thinking ('willingness to question ideas'), presentation skills, 'alertness to new opportunities', analytical thinking, the 'ability

to coordinate activities', and the 'ability to acquire new knowledge'. This challenges the conventional belief that STEM graduates owe their innovative success primarily to their technical, highly specialized skills, highlighting the importance of generic skills and the possibility of their strengthening regardless of the study field. In that sense, preparedness for highly innovative jobs is also found to be more closely associated with practice-based higher education pedagogies, such as student-led projects and problem-based learning (Avvisati et al., 2013). With this in mind, a connection between the desired learning outcomes of LAE (which generally correspond to the skills mentioned above) and success in innovative jobs and industries can be inferred.

While the capacity of LAE to serve as a catalyst and facilitator of creativity and innovation is frequently assumed by its proponents, the more specific literature points out that the possession of generic skills may be a necessary, although not sufficient condition for innovation. On the one hand, work in the knowledge economy involves unstructured decision-making (Humburg & van der Velden, 2017). It is reasonable to expect that liberal arts graduates, accustomed to taking responsibility for their own learning path, would be well prepared to deal with unstructured environments (Claus et al., 2018). On the other hand, however, for graduates to be involved in innovative activities in organizations, a specific competence profile is required. In order to be innovative, in other words, it is necessary to be equipped both with general skills (analytical thinking, problem solving, ability to come up with new ideas and approach problems from different angles, intellectual curiosity, and so on) and domain-specific knowledge (Humburg & van der Velden, 2017; Paul, 2011).

Both in the context of liberal arts education and the knowledge economy, the link between *interdisciplinarity* and innovation is frequently stressed. In the discussion on the interdisciplinary character of the LAE curriculum, it is pointed out that the most significant innovations tend to occur on the borders between different disciplines (Dekker, 2017; van Damme, 2016). The ability to work in teams comprising of professionals with diverse disciplinary backgrounds is also said to represent an integral part of working in the innovation-generating sectors of the knowledge economy (Humburg & van der Velden, 2017). With this in mind, the propensity of liberal arts graduates to embrace interdisciplinarity might be a particularly important competence related to innovation. In that respect, the interdisciplinary nature of liberal arts programmes, and the students' associated ability to approach problems from a plurality of perspectives, is a valuable preparation for functioning professionally in a complex environment that involves collaboration across a variety of different fields (Dekker, 2017).

Interdisciplinarity, creativity, and innovation are also held to be the intersection between liberal arts education and *entrepreneurship*, which may be seen both as a relevant form of enhancing the graduates' self-employability and an aptitude that is crucial for success

in all sectors of the knowledge economy (Humburg & van der Velden, 2017). Because of its creative nature, Rennie (2008) argues, entrepreneurship has more in common with the liberal arts than the narrower fields of business and economics. Unlike conventional paid employment, it involves a greater degree of universality, calling for a broader set of skills and knowledge rather than narrow specialization (Baker & Powell, 2019), which makes a holistic education particularly suitable to meet its demands. Entrepreneurship encompasses 'every area of human endeavour including the arts, natural sciences, humanities, and social sciences, including business'; it is a form of creative, free thinking, and a creative act. As such, entrepreneurship can be seen as a liberal art *sui generis* (Rennie, 2008, p. 210). As Hines (2005, p. 4) put it, 'the ideal liberally educated student of the twenty-first century'—an open-minded, intellectually curious, interculturally aware, socially responsible, self-actualizing lifelong learner—epitomizes the multifaceted qualities of an entrepreneur.

2.1.3 Global Competence

The third set of economic arguments in support of LAE emphasizes its relevance in the context of globalization, focusing on the need for global competence and the capacity of LAE institutions to foster it. A process of growing planetary integration and interconnectedness, *globalization* involves the emergence of a single system of global production, distribution, and consumption. In a globalized and interdependent world, the ability to communicate across linguistic and cultural boundaries, as well as to deal with diverse environments, is becoming a necessity—both in the workplace and outside of it. For this reason, liberal arts graduates equipped with competencies such as knowledge of foreign languages, intercultural awareness, international understanding, and the ability to collaborate in diverse teams are considered to be particularly well-suited to thrive in a globalized economy (van der Wende, 2013).

The adequacy of LAE in responding to the challenges of globalization chiefly lies in its commitment to fostering *global knowledge*. Usually absent from conventional undergraduate education, even at top-level institutions (van der Wende, 2011), this specific feature of liberal arts education stems from its intentionally targeted international student body[3] and global outlook (Schreel, 2017). Through a living and learning environment that exposes students to a variety of cultures and forces them to engage respectfully with a range of ideas they are unfamiliar or even uncomfortable with (Lewis, 2018), liberal arts programmes are committed to fostering 'global citizens' (Nussbaum, 2010; Watt, 2012)

3 The international aspect is specific to European LAE, distinguishing it from the US, where the emphasis might be more on inclusivity and diversity in terms of race and social status. Additionally, while internationalisation is an integral part of Dutch university colleges, it may not be characteristic of LAE institutions in other European countries, such as smaller liberal arts programmes in Eastern Europe, which have a less international profile.

endowed with a more profound and inclusive understanding of the world at large. This kind of education is said to provide excellent preparation for life—as well as work—in a global, cosmopolitan, and/or multicultural setting (Lewis, 2018).

Cross-cultural competence might also be relevant in the European context, but little has been written about this aspect. As Kirby and van der Wende (2016, pp. 5–6) note critically, EU education policies have been guided primarily by economic rationales of boosting competitiveness and driving economic growth. This has led to a utilitarian focus on skills, undermining values that could 'underpin European identity and citizenship as a basis for further social and political integration'.

2.2 The Missing Evidence

The discussion in the previous section has exposed several important gaps that require further attention. Firstly, a wider debate on European liberal arts education is largely missing. Unlike the US, where policy-makers, politicians and the general public are continuously engaged in discussions about the value of the liberal arts, it seems that Europeans are generally unaware of this educational model. Certainly, this has a lot to do with the fact that the development of liberal arts programmes in Europe is still at its infancy, enrolling less than one percent of all students (Dekker, 2017). While European liberal arts education is receiving increased scholarly attention, the phenomenon is still widely overlooked by the mainstream.

Secondly—and most importantly—the vast majority of the literature on European liberal arts education tends to be purely theoretical, with a focus that is either very broad and general or introductory. As such, its consideration of the economic relevance of liberal arts education is far from elaborate. Despite the various arguments that are presented in favour of the labour market utility of LAE, little or no research has been done with regard to testing these assumptions. The existing literature mostly provides rhetorical and anecdotal support rather than empirical evidence. The absence of empirical studies in the discourse on the economic value of European liberal arts education constitutes a major research gap that needs to be filled in order to better understand the link between this specific type of higher education and competence in the workplace.

So far, the only empirical research on European liberal arts education is the Liberal Arts and Sciences Programmes alumni survey conducted in the Netherlands in 2017. Commissioned by the University Colleges Deans' Network and carried out by the Research Centre for Education and the Labour Market (ROA, 2018), this comprehensive survey included 3,040 Dutch university college alumni who graduated between 2001 and

2017. 89% of these alumni pursued further graduate education, typically by enrolling in a master's programme. When it comes to employment, the study found that only 7% of alumni who entered the labour market were unemployed, while 93% held a job. Among the latter, 68% were working with an employer, 4% were freelancing, 3% ran their own company, while the remaining 25% were engaged in other forms of employment (ROA, 2018).

The sizeable share of employed graduates who are '(very) satisfied with their job' (76%) and consider they have '(very) many career opportunities' (71%) is another noteworthy finding. On the other hand, 56% of alumni indicated that 'multidisciplinary breadth of academic knowledge combined with depth of knowledge in a chosen concentration area' is required in their current job to a (very) high extent. International and intercultural understanding, social skills, and skills for engaged citizenship were reported to be relevant in 66% of cases; the 'ability to approach questions or issues in an interdisciplinary way' in 69%. 'Intellectual curiosity, reflexivity, and an open mind' and 'excellent academic skills including communication skills, critical thinking skills, research skills and learning skills' proved to be more important job requirements, as indicated by 79% and 80% respondents respectively (ROA, 2018).

The mixed results concerning the extent to which particular skillsets are required in the workplace are open questions that call for further investigation. While employers' increased demand for generic, 21st-century skills is almost universally referred to, evidence for the supposed shift in skill needs remains elusive. Nonetheless, the surveyed LAE alumni reported to possess a considerable stock of the aforementioned skills (between 82 and 95%), attributing them largely to their liberal arts undergraduate education (ROA, 2018). This suggests that LAE graduates might possess more competences that they are required to use in their jobs. Still, this information is not sufficient for drawing any conclusions regarding the possible oversupply or underutilization of generic skills.

In spite of its valuable findings, the ROA study also has a number of limitations. Firstly, it has little to say about the link between the distinctive characteristics of liberal arts programmes and the employment prospects of their graduates. Secondly, the study looks at the problem from a one-sided perspective, not taking into account the views of employers. While doing so, it only provides a snapshot of what the group is doing at the time of the survey, revealing nothing about the graduates' labour market trajectories and job transitions. Furthermore, it gives little information about the individual career experiences of liberal arts alumni and specific challenges they are coping with.

Most importantly, the ROA study did not investigate how liberal arts graduates compare to their peers with traditional, discipline-focused bachelor's degrees. The absence of a

control group is a major drawback, preventing a comprehensive understanding of the economic value and impact of LAE. Without a comparative analysis, the study misses the opportunity to assess the advantages and disadvantages of LAE in the labour market. Comparing university college graduates to their counterparts with traditional degrees could provide insights into the unique skills and versatility that a liberal arts education may offer. It could also help in evaluating whether employers perceive and value LAE degrees differently compared to discipline-focused programmes. Therefore, in order to assess the labour market significance of LAE, it is essential for future research to include a comparative analysis with an appropriate control group.

2.3 Empirical Studies of LAE: An Overview of the North American Literature

While the European literature still needs to deal with the workplace and labour market repercussions of liberal arts education, a considerable number of empirical studies have been conducted in the North American context. Given the lack of empirical investigation into European liberal arts education, the purpose of this section is to provide an overview of the most relevant research that has been carried out in a higher education system where liberal arts undergraduate programmes are much more common.

To provide a comprehensive framework for discussion, this section expands the literature review to include these works. These studies, which encompass a variety of research methods and perspectives, can be roughly classified into two groups. Subsection 2.3.1 considers the first group of studies, looking at the contribution of liberal arts programmes to the development of learning outcomes that are typically ascribed to this type of education. The second, more numerous group of studies examines how the liberal arts and their specific learning outcomes are valued in the labour market. These studies are reviewed in subsection 2.3.2.

2.3.1 LAE Learning Outcomes and Their Development

In an attempt to resolve the first of the two issues mentioned above, Seifert et al. (2008) examined the impact of liberal arts experiences on six educational outcomes theoretically associated with LAE. This study provided empirical evidence that the institutional practices and conditions characteristic of liberal arts education—the high level of student-teacher and student-student interaction within a supportive environment facilitating comprehensive intellectual formation—associate positively with student learning, leading to the development of specific liberal arts educational outcomes. Significant positive relationships were found for four of the six outcomes, including intercultural effectiveness, psychological well-being, inclination to inquire and lifelong learning, and socially

responsible leadership. While consistently predicting 18 out of 20 separate measures, students' liberal arts experiences had no significant effect on the more cognitively-oriented outcomes of effective reasoning and problem solving, as well as moral reasoning (Seifert et al., 2008).

An earlier study by Pascarella et al. (2005) examined how effective liberal arts colleges are compared to other four-year institutions in influencing students' intellectual and personal development. Their research has shown that the type of institution produced mixed effects on learning outcomes. Compared to a national research university or regional institution, attending a liberal arts college most significantly affected students' growth in openness to diversity and challenge, learning for self-understanding, and writing skills. By contrast, liberal arts college students made significantly less progress in the development of mathematical skills and science reasoning, while no significant influences were found when it comes to internal locus of attribution for academic success and plans for a graduate degree (Pascarella et al., 2005).

However, when the comparison was based on institutional ethos rather than institutional type, pedagogical practices and experiences associated with liberal arts education were found to be a more consistent net predictor of students' growth. Irrespective of institutional type, therefore, colleges and universities in general are more likely to foster the intellectual and personal development of their students if they implement good educational practices associated with the liberal arts. Most importantly, this includes extensive student-faculty interactions, a holistic approach, active learning, effective teaching, academic challenge, a supporting campus environment, and extracurricular involvement (Pascarella et al., 2005).

2.3.2 LAE and Job Market Success

Despite the evidence presented in the previous subsection, suggesting that LAE fosters a variety of beneficial learning outcomes, liberal arts colleges are still confronted by the public's lack of trust. Especially when it comes to employment prospects, the economic and political discourse is dominated by the perception that 'a liberal arts education does not provide marketable career skills' (Pascarella et al., 2005, p. 9). In response to this notion, a number of research studies set out to investigate how LAE graduates fare in employment.

Before continuing with the review of these studies, it is important to acknowledge the significant distinctions that exist between the North American and European contexts. Firstly, one should keep in mind the contrasting norms regarding the timing of students' transitions from higher education to the workforce. In the US, it is common for students to enter the labour market right after obtaining their bachelor's degrees. In Europe, on

the other hand, students often choose to pursue a master's degree before starting their careers. Hence, while the US literature provides valuable perspectives, it is essential to exercise caution when applying these insights across different educational landscapes.

Secondly, it is worth noting that the North American studies use varying definitions of liberal arts education. Some compare graduates from applied and technical fields to those majoring in liberal arts, while others look at graduates of liberal arts colleges versus research universities. These definitions mostly differ from the Dutch LAE paradigm, as they adopt a narrower view, encompassing only the arts, humanities, and social sciences. Nevertheless, these studies are considered here because they represent exactly the kind of empirical investigation that hasn't been conducted in the European context.

This subsection will closely examine their research findings, considering the similarities and differences in study types and methodologies. Regarding the type of research that has been conducted, a great variety can be noticed, ranging from institutional analyses and professional reports to academic articles and books. When it comes to research methods, surveys of employers and students seem to prevail, followed by quantitative analyses of earnings, and a smaller number of qualitative, interview-based studies, as well as computer-based analyses of comprehensive labour market data. Both in terms of their findings and methods, therefore, North American studies concentrating on career outcomes of LAE graduates are highly valuable as a means of informing the design and agenda of the thesis research.

Examining public attitudes toward liberal arts education, Hersh (1997) surveyed five groups of stakeholders, including college-bound high school students, their parents, high school and college faculty, recent university and LAE graduates, as well as CEOs and human resource managers. Each of the groups held the view that preparation for a successful career is the principal reason for attending college. When asked about the specific goals of higher education, however, the stakeholders unanimously rated problem solving, critical thinking, writing and oral skills as most important, along with strong work habits, self-discipline, and a respect for others. Considering the high priority given to career preparation, it might be inferred that these abilities—which are traditionally tied to a liberal arts education—are, in fact, career skills (Hersh, 1997).

While 85 percent of high school students and 75 percent of their parents expressed the opinion that getting a practical education and securing a first job is the ultimate goal of going to college, employers ascribed greater value to the long-term outcomes of college education. To them, the practicality of higher education is not in preparing students only for a first job, but for a 'long and variable career'. Although the opportunity to learn more about business was perceived to be absent in liberal arts colleges, employers pointed out

the importance of cognitive, presentation, and social skills, implying that a well-rounded liberal arts education has a somewhat latent, but nonetheless considerable practical weight (Hersh, 1997).

Employers' appreciation of the major learning outcomes that characterize liberal arts education was recognised in a number of more recent studies. A 2013 survey of 318 US employers carried out by Hart Research Associates suggests that workplace success might have more to do with the development of particular skills than with the field of study. 93% of the surveyed company executives agreed that 'a candidate's demonstrated capacity to think critically, communicate clearly, and solve complex problems is more important than their undergraduate major'. Additionally, ethical judgment and integrity, intercultural skills, and the capacity for continued learning and professional development were recognized as important hiring considerations by more than nine in ten survey respondents. Moreover, 95% of employers said they prioritize hiring people with 'the intellectual and interpersonal skills that will help them contribute to innovation in the workplace', while 90% agreed that 'all students should have educational experiences that teach them how to solve problems with people whose views are different from their own'. Even more directly, when familiarized with the definition of a modern liberal arts education, 74% of employers said they would recommend it to young people as the best way to prepare for success in today's global economy. Finally, 55% of employers agreed that having both field-specific and more general knowledge and skills is crucial to long-term success (Hart Research Associates, 2013).

These findings, which imply that the skills developed by liberal arts education are sought after by employers, were somewhat undermined by the succeeding study, which was carried out in 2018, involving 501 business executives and 500 hiring managers. Although broad, cross-disciplinary skills and knowledge were again rated as highly important, LAE graduates' level of preparedness in these skills was generally perceived as low. More specifically, 40% or less business executives and 47% or less hiring managers rated recent graduates as well-prepared in critical thinking, oral communication, and real-world application of skills and knowledge. Even so, the majority of business executives (57%) and hiring managers (60%) still considered that recent graduates are qualified for entry-level jobs, but less than one-third believed graduates have the necessary skills to advance or be promoted (Hart Research Associates, 2018).

LAE students appear to have even less confidence in their own workplace preparedness. A 2017 study by Strada and Gallup revealed that only 32 and 28 percent of liberal arts students believe they would graduate with the knowledge and skills needed to be successful in the workplace and job market, respectively—the lowest percentage among all majors included in the survey. Furthermore, only 40% of liberal arts students reported

they feel confident that their major field of study will lead to good jobs, as opposed to 51% business students, 58% of public service majors, and 62% of students pursuing STEM degrees (Strada Education Network and Gallup, 2017).

As can be observed, the bulk of research highlighting the connection between the generic skills of LAE graduates and labour market demand is based on surveys. In an attempt to provide hard(er) evidence, Rajecki and Borden (2010) set out to statistically test what they termed the 'meritocracy hypothesis'—namely, the widely held assumption that a higher level of generic, liberal arts skills leads to better employment outcomes. To quantitatively express the attainment of skills and quality of jobs held by graduates, the study used data from an alumni survey questionnaire including self-perceptions of generic skill levels (a 34-item list of skills that were converted into five categories: creative thinking, ethics, communication, computer savviness, and numeracy), along with GPA, and work circumstances in the first year after college (relatedness of work to the area of study, job preparedness, salary, and whether or not the job requires a college degree). The sample included two groups of graduates, majoring in psychology, and social sciences and humanities. The analysis revealed that the evidence in support of the meritocracy hypothesis is inconclusive. No significant correlations between skill levels and employment outcomes of relatedness, preparedness, and salary were identified for psychology majors. For social sciences and humanities alumni, statistically significant correlations were found between communication and salary, as well as numeracy and salary. When the variable of whether a college degree is needed or not was taken into account, the results even came out to partially oppose the hypothesis. Paradoxically, for psychology majors working in jobs that require a college degree (comprising 17 graduates, or 51% of the sample), the skills level mean was lower in comparison to their underemployed counterparts, although altogether statistically insignificant (Rajecki & Borden, 2010).

In addition to the small sample size and self-reported nature of the data, the generalizability of Rajecki's and Borden's (2010) findings might appear to be compromised by the fact that the research only considered work experiences in the year following graduation—a seemingly less representative period of employment, when experimentation and exploration are common and understandable. According to a 2018 study by Burning Glass and Strada, however, an inappropriate first job—one that is below a graduate's level of qualification—can permanently distort their career. As reported by the study, two-thirds of graduates who start out underemployed remain so five years later, 74% of whom are still underemployed ten years after their first job. In contrast, 87% of graduates with an appropriate first job maintain positions that correspond to their education after five years, and among them, 91% are still employed in college-level jobs at the 10-year mark. The reason behind this statistic lies in a cumulative advantage arising from the acquirement of on-the-job skills and connections relevant for future career advances—both of which are

absent in the case of underemployed workers, making them less and less competitive in the labour market (Burning Glass Technologies and Strada Institute for the Future of Work [Burning Glass & Strada], 2018).

The research also revealed differences related to the chosen field of study. The underemployment of liberal arts and sciences, general studies, and humanities majors was found to be above-average: 54% started out with a job that does not require a bachelor's degree. Five years later, 39% of them remained underemployed. While majors in certain disciplines—such as STEM—are less likely to face underemployment, long-term career prospects are principally tied to fields in which graduates land their first jobs. In occupational categories with an abundant number of bachelor's-level jobs to progress into (such as IT, finance, or legal services), escaping underemployment is much easier than in the case of professions such as hospitality, retail, maintenance, or transportation, which offer limited opportunities for promotion and skills development (Burning Glass & Strada, 2018).

Transitioning from a liberal arts major to a career might require additional employability awareness. Taking a qualitative approach, Nicholas (2018) examined how liberal arts undergraduates construct and manage narratives related to college-work transitions. Her findings suggest that in the case of LAE graduates, the challenge of professional branding might be particularly pronounced, as it potentially sits at odds with the holistic, broad-based nature of the liberal arts. To present themselves as employable, namely, LAE students are compelled to 'package' their curricular and cocurricular participation in a marketable way. This raises at least two problems. Firstly, establishing coherence across diverse interests, attributes, fields, and skills is a difficult process that requires career planning from the earliest stage. Secondly, many LAE students have a negative attitude towards professional branding, perceiving it as a reduction of pluralism inherent to liberal arts education, as well as their own intellectual identity (Nicholas, 2018). Because the connections between liberal arts majors and specific occupations are often far from straightforward, in addition to skill development, liberal arts institutions need to foster students' transitions to the labour market through appropriate career counselling and guidance (Dorman & Brown, 2018). This highlights the role of advisors, career service professionals and mentors, who can help students to articulate the skills and college experiences that are most relevant for employment (Watson & McConnell, 2018).

While a great deal of research emphasizes the workplace relevance of generic skills, Schneider and Sigelman (2018) suggest that these skills alone may not be enough. Their extensive analysis of 3.8 million entry-level job openings in the US and 78 million resumes has shown that compared to other graduates, LAE degree holders lacking 'identifiable and practical skills' are more likely to experience under-compensation or underemployment.

Still, taking into account the increasing hybridization of jobs, LAE graduates possessing the right combination of skills can easily qualify for a wide(r) range of higher-earning occupations. This includes jobs in faster-growing clusters—such as IT, business and communications, design, and analysis—that do not ask for a specialized degree, but nonetheless do require relevant digital, technical, or practical skills such as data analysis, graphic design, digital marketing, or SQL programming. By adding this kind of practical and technical expertise to their broad liberal arts foundation, LAE graduates may significantly expand their employment opportunities, particularly when it comes to roles characterized by unusual or traditionally disparate skillsets (Schneider & Sigelman, 2018).

The predisposition of liberal arts graduates to thrive in 'bridge-building jobs'—newly emerging hybrid roles that combine some tech knowledge with a considerable amount of nontechnical insight—is also pointed out by Anders (2017). The fact that empathetic, creative, and inquisitive skills are at the heart of these jobs is what makes them particularly suitable for liberal arts graduates. Created by the tech revolution yet not requiring a computer science degree, this new, rapidly-growing category of occupations—referred to as the 'rapport sector'—includes market research, social media, recruiting and career coaching, fund-raising, digital design, and project management (Anders, 2017, pp. 79–105). By the same token, Stross (2017) points to the increasing demand for generalists and the capacity of the liberal arts to prepare for a successful career in any field or industry, including some of Silicon Valley's biggest tech companies.

Even though any bachelor's degree provides a significant advantage over those with just a high school diploma, the field of study still seems to be a strong determinant of labour market performance. When it comes to earnings and employment rates, graduates from applied programmes generally tend to perform better than their peers with liberal arts degrees, especially those majoring in social sciences and humanities (Carnevale et al., 2012). Adamuti-Trache et al. (2006) found that one and five years after graduation, the average salary gap between British Columbia graduates from applied fields and liberal arts programmes was 19 and 16 percent. Compared to graduates from applied programmes, LAE graduates (represented by a sample consisting of students enrolled in social sciences (47%), humanities (23%), life sciences (17%), fine arts (7%), and physical sciences (6%)) also took more time to integrate into the labour market. One and five years after graduating, 51 and 70 percent of LAE majors were engaged in full-time employment, compared to 68 and 80 percent of graduates from applied fields (Adamuti-Trache et al., 2006).

There is no doubt that liberal arts alumni earn less on average compared to graduates from technical fields such as engineering or computer science. Whether and to what extent is this earnings gap persistent over time seems to be the bigger question. Anders (2017) points out that despite the lower starting salaries, by mid-career, liberal arts graduates

often out-earn their college counterparts with vocational degrees. Furthermore, when looking at the lifetime earnings of high achievers, one can identify a surprising prevalence of liberal arts majors within the top tenth (Anders, 2017, pp. 149–176). Observing that the median salaries of psychology and other liberal arts graduates fall into the lower end of distribution both at starting and mid-career points, Rajecki and Borden (2011) reject the idea that LAE graduates can expect to advance over their counterparts in the course of time. In the middle and long term, the wages of liberal arts majors simply do not catch up, indicating that long-term differences in remuneration are primarily related to specific occupations, rather than the level of generic skills (Rajecki & Borden, 2011).

The long-term earning potential of liberal arts majors was the focus of a 2014 report issued by the Association of American Colleges and Universities (AAC&U). Using extensive data from the US Census Bureau's American Community Survey, the report analysed the differences in long-term earnings between liberal arts college graduates with a four-year degree in humanities or social sciences and three other categories of graduates: those with a degree in science and mathematics, engineering, and professional fields (such as business or nursing). The comparison revealed some notable differences and similarities. Firstly, it showed that the median annual earnings of graduates in all fields increase consistently over time. At peak earning ages (56-60), humanities and social science graduates make around $40,000 more per annum than they did in the years following graduation (at ages 21-25). When it comes to the salary gap, however, the differences appear to persist and even increase over time. Compared to science and engineering majors, graduates with a degree in a humanities or social sciences tend to earn considerably less, especially in the long run. Over the longer term, the median annual earnings of humanities and social science majors catch up only with those of graduates with a professional field degree, exceeding them by around $2,000 after the age of 56 (Humphreys & Kelly, 2014).

When advanced degree holders are taken out of the equation, however, the catch-up effect is no longer visible. For humanities and social science graduates with a baccalaureate degree only, that is, the earning gap (approximately $5,000 per year) persists, highlighting the effect of acquiring an advanced degree (Humphreys & Kelly, 2014). As noted by Adamuti-Trache et al. (2006), the delayed labour market integration of LAE graduates has a lot to do with the fact that relative to their applied programmes counterparts, a larger proportion of liberal arts degree holders tends to pursue further education. Although the attainment of an advanced degree seems to matter more for individuals holding a liberal arts bachelor's, Humphreys and Kelly (2014) found that only 40 percent of them also hold a master's, professional, or doctoral degree. This is slightly more than in the case of engineering (39%) and professional fields (30%), but still lower compared to science and mathematics (53%).

The AAC&U report has also shown that compared to those who major in other fields, liberal arts graduates make careers in a wider array of professions. This includes highly paid jobs in marketing, management, IT, law, and finance, but also—and more frequently—lower-paid but socially vital positions in education and social services, where humanities and social sciences graduates tend to predominate. Despite paying less well than business or engineering, these professions represent invaluable assets for both the economy and society in general (Humphreys & Kelly, 2014). In addition to individual earnings, therefore, the employment outcomes of LAE graduates also relate to the wider, societal contribution of their professional engagement.

The focus on wages as the only criterion for evaluating post-college success has been much criticized for its narrow outlook. As Rowen (2016) points out, the dialogue about what success looks like for graduates of liberal arts colleges needs to be expanded to include a variety of wider, non-monetary outcomes. While objective measures of career success (such as employment rates and earnings) are easier to compare, individual aspirations and motives, along with other subjective factors, such as decision autonomy and recognition, constitute equally (if not more) meaningful determinants of the quality of employed life. Reflecting the comprehensive nature of liberal arts education, the assessment of its impacts should therefore go beyond salary to include evidence related to career growth and long-term labour market trajectories of graduates, their job satisfaction, work-life balance, volunteering and entrepreneurial endeavours, civic engagement, and the impact on the well-being of others (Adamuti-Trache et al., 2006; Nicholas, 2018; Rajecki & Borden, 2011; Rowen, 2016).

With these measurement deficiencies in mind, Gallup and Purdue University created an index that can provide a more holistic view of college outcomes, including workplace engagement and well-being. Their 2014 study has found that 41 percent of arts, humanities, and social science graduates feel fully engaged at work. This is slightly higher compared to those majoring in science (38 percent) and business (37 percent). Although the difference is minimal, it does suggest that liberal arts majors are more likely to experience fulfilment at work. The most important determinants of workplace engagement, however, are not related to the type, size, or rating of the attended institution, but the students' educational experience. As shown by the study, graduates who reported having 'a professor who cared about them as a person, made them excited about learning, and encouraged them to pursue their dreams' were more than twice as likely to be engaged at work. The same is true when it comes to involvement in internships, extracurricular and cocurricular activities, and long-term projects (Gallup and Purdue University, 2014, p. 10). This resonates strongly with the findings of Seifert et al. (2008) and Pascarella et al. (2005) regarding the beneficial impacts of a liberal arts learning environment on the development of specific educational outcomes.

Highlighting the disparity between individual outcomes and those that contribute to society, Detweiler (2021) examined the impact of liberal arts educational experiences on six life outcomes. Derived from the history and philosophy of education, these outcomes include leading a life of consequence by being a leader and civic altruist, leading a life of inquiry through continued learning and cultural involvement, and leading a life of accomplishment by achieving fulfilment and personal success. Through interviews with 1,000 alumni from both LAE and non-LAE colleges in the United States, Detweiler found that liberal arts college graduates are more likely to achieve these goals. His overall conclusion is that liberal arts educational experiences make a significant difference in the way people live their lives as adults, contributing to 'life impact and success' (Detweiler, 2021, p. 186).

Altogether, the evidence from the North American literature suggests several major points. Firstly, although the results are not robust enough to make definitive conclusions, there is proof that liberal arts institutions do provide the skills and learning outcomes that are traditionally ascribed to this type of education. Secondly, employers generally show high appreciation of generic, liberal arts skills. However, their perception is not unambiguous. On the one hand, company executives acknowledge the value of outcomes such as problem solving, critical thinking, writing, and communication skills. On the other hand, LAE graduates' level of workplace preparedness is often seen as insufficient. Furthermore, the persisting salary gap between liberal arts majors and their vocational counterparts, as well as the former's relatively high risk of underemployment, raise a series of concerns related to the validity of the hypothesized correlation between liberal arts skills and job quality. Along these lines, there is a continuing discussion about whether having the right skillset matters more than the field of study; whether and to what extent generic, cross-disciplinary skills need to be supplemented with technical expertise; how valuable a master's degree is in the workplace; and what are the most meaningful measures of career success.

In addition to these findings, the review of the North American literature has exposed the advantages and disadvantages of various research methods that can be used to test the relationship between liberal arts education and employment outcomes. Much of the research has adopted an approach based on self-reported survey responses. Although this method is very common in studies that investigate graduate employability, its main problem—especially when it comes to reporting skill levels—is that it relies on the respondents' perceptions, rather than actual practice. Compared to self-reported surveys, quantitative analyses of objective data certainly offer a greater degree of reliability. Still, as discussed earlier, the focus on earnings and other quantifiable aspects of employment might divert attention from subjective elements that are equally important, yet much more difficult to measure. A method that can allow for these factors to be taken into consideration

is qualitative interviewing. As noted by Rowen (2016), interviews can be a particularly valuable tool for exploring the deeper outcomes of liberal arts education, yielding findings that are both fine-grained in detail and contextually valid. On the other hand, the studies by Anders (2017) and Stross (2017) have shown that a qualitative approach can also have drawbacks, one of which is related to the possible lack of statistical representation. The fact that both of these works are based on interviews with a relatively small number of very successful graduates strongly undermines the generalizability of their conclusions, making them more anecdotal than scientific. Lastly, computer-based analyses of labour market information (such as resumes and job postings) extracted from large internal databases have clear advantages over other methods, but remain restricted to subjects who have the adequate infrastructural and institutional capacity to perform them.

Together with the literature on liberal arts education in Europe and graduate skills, the studies considered in this section constitute the theoretical foundation guiding this thesis' research. Although the North American context is very different from the European reality, where liberal arts degrees are not nearly as common, major themes and discussions appear to be present in both strands of the literature. Unlike the US, however, a wider debate on the value of liberal arts education is largely missing in Europe. Very little is known about the workplace experiences of European liberal arts graduates—their pathways from college to employment, labour market outcomes, and specific career-related challenges—and even less about how European liberal arts degrees are perceived by employers.

The following four chapters present the concrete research that addresses this vast empirical gap. Chapter 3 examines how employability develops in university college students compared to their peers from a traditional bachelor's programme. Chapter 4 addresses a common critique of liberal arts education—the notion that LAE graduates are unprepared for a specialized master's programme. Chapter 5 looks into the employers' perceptions of LAE and the different kinds of signals that a university college degree might send in the labour market. Finally, Chapter 6 investigates the labour market outcomes of university college graduates—their employment status, salary, job satisfaction, and other relevant indicators.

Since these chapters were written as separate academic papers, each intended to be read on its own, instances of repetition and overlap between them were bound to occur. Readers should keep this in mind while engaging with the dissertation. It is also worth noting that due to the COVID-19 pandemic and practical considerations, the sequence in which the studies are presented in the dissertation does not precisely match the chronological order of the research. Study 2 was conducted first, followed by Study 1. Study 3 and Study 4 were then worked on simultaneously.

2.4 References

Adamuti-Trache, M., Hawkey, C., Schuetze, H. G., & Glickman, V. (2006). The labour market value of liberal arts and applied education programs: Evidence from British Columbia. *Canadian Journal of Higher Education*, *36*(2), 49–74.

Allen, J., & van der Velden, R. (2011). Introduction. In J. Allen & R. van der Velden (Eds.), *The flexible professional in the knowledge society: New challenges for higher education* (Vol. 35, pp. 1–14). Springer. https://doi.org/10.1007/978-94-007-1353-6

Anders, G. (2017). *You can do anything: The surprising power of a "useless" liberal education*. Little, Brown and Company.

Autor, D. H. (2015). Why are there still so many jobs? The history and future of workplace automation. *Journal of Economic Perspectives*, *29*(3), 3–30. https://doi.org/10.1257/jep.29.3.3

Avvisati, F., Jacotin, G., & Vincent-Lancrin, S. (2013). Educating higher education students for innovative economies: What international data tell us. *Tuning Journal for Higher Education*, *1*(1), 223. https://doi.org/10.18543/tjhe-1(1)-2013pp223-240

Baker, T., & Powell, E. E. (2019). Entrepreneurship as a new liberal art. *Small Business Economics*, *52*(2), 405–418. https://doi.org/10.1007/s11187-018-0099-0

Balcar, J., Blažíčková, J., Braňka, J., Czesaná, V., Gavenda, M., Grygerová, Š., Havlena, J., Havlíčková, V., Hladká, M., Homolová, E., Janoš, J., Karásek, Z., Karásková, J., Kavan, L., Kotíková, J., Larsen, C., Micková, E., Rand, S., Schmid, A., . . . Zacharová, L. (2011). *Transferability of skills across economic sectors: Role and importance for employment at European level*. Publications Office of the European Union. https://doi.org/10.2767/40404

Becker, J. A. (2014). What a liberal arts education is... And is not. In J. A. Becker & P. Fedchin (Eds.), *Contemporary liberal arts and sciences education: Experiences from the United States and Europe* (pp. 12–40). St. Petersburg State University.

Bennett, N., Dunne, E., & Carré, C. (1999). Patterns of core and generic skill provision in higher education. *Higher Education*, *37*(1), 71–93. https://doi.org/10.1023/A:1003451727126

Binkley, M., Erstad, O., Herman, J., Raizen, S., Ripley, M., Miller-Ricci, M., & Rumble, M. (2012). Defining twenty-first century skills. In P. Griffin, B. McGaw, & E. Care (Eds.), *Assessment and teaching of 21st century skills* (pp. 17–66). Springer Netherlands. https://doi.org/10.1007/978-94-007-2324-5_2

Burning Glass Technologies and Strada Institute for the Future of Work. (2018). *The permanent detour: Underemployment's long-term effects on the careers of college grads*. Burning Glass Technologies.

Calmand, J., Frontini, M., & Rostan, M. (2011). "Being flexible": Graduates facing changes in their work environment. In J. Allen & R. van der Velden (Eds.), *The flexible professional in the knowledge society: New challenges for higher education* (pp. 83–109). Springer. https://doi.org/10.1007/978-94-007-1353-6_4

Carnevale, A. P., Cheah, B., & Strohl, J. (2012). *College majors, unemployment and earnings: Not all college degrees are created equal*. Georgetown University Center on Education and the Workforce.

Claus, J., Meckel, T., & Pätz, F. (2018). The new spirit of capitalism in European liberal arts programs. *Educational Philosophy and Theory*, *50*(11), 1011–1019. https://doi.org/10.1080/00131857.2017.1341298

Conley, S. N., Foley, R. W., Gorman, M. E., Denham, J., & Coleman, K. (2017). Acquisition of T-shaped expertise: An exploratory study. *Social Epistemology*, *31*(2), 165–183. https://doi.org/10.1080/02691728.2016.1249435

Cornford, I. (2005). Challenging current policies and policy makers' thinking on generic skills. *Journal of Vocational Education & Training*, *57*(1), 25–45. https://doi.org/10.1080/13636820500200273

Dekker, T. (2017). Liberal arts in Europe. In M. Peters (Ed.), *Encyclopedia of educational philosophy*

and theory (pp. 1–6). Springer Singapore. https://doi.org/10.1007/978-981-287-532-7_569-1

Detweiler, R. A. (2021). *The evidence liberal arts needs: Lives of consequence, inquiry, and accomplishment*. The MIT Press.

Dirks, N. B. (2016). The liberal arts and the university: Lessons for China in the history of undergraduate education in the USA and at the University of California. In W. C. Kirby & M. C. van der Wende (Eds.), *Experiences in liberal arts and science education from America, Europe, and Asia* (pp. 109–125). Palgrave Macmillan US. https://doi.org/10.1057/978-1-349-94892-5_8

Dorman, S., & Brown, K. (2018). The liberal arts: Preparing the workforce of the future. *Liberal Education*, *104*(4), 58–63.

Fossen, F., & Sorgner, A. (2019). Mapping the future of occupations: Transformative and destructive effects of new digital technologies on jobs. *Foresight and STI Governance*, *13*(2), 10–18. https://doi.org/10.17323/2500-2597.2019.2.10.18

Gallup and Purdue University. (2014). *Great jobs, great lives: The 2014 Gallup-Purdue Index report*. Gallup.

Gleason, N. W. (2018). Introduction. In N. W. Gleason (Ed.), *Higher education in the era of the fourth industrial revolution.* Springer Singapore. https://doi.org/10.1007/978-981-13-0194-0

Godwin, K. A., & Altbach, P. G. (2016). A historical and global perspective on liberal arts education. *International Journal of Chinese Education*, *5*(1), 5–22. https://doi.org/10.1163/22125868-12340057

Gombrich, C. (2016). Polymathy, new generalism, and the future of work: A little theory and some practice from UCL's arts and sciences degree. In W. C. Kirby & M. C. van der Wende (Eds.), *Experiences in liberal arts and science education from America, Europe, and Asia* (pp. 75–89). Palgrave Macmillan US. https://doi.org/10.1057/978-1-349-94892-5_6

Green, W., Hammer, S., & Star, C. (2009). Facing up to the challenge: Why is it so hard to develop graduate attributes? *Higher Education Research and Development*, *28*(1), 17–29. https://doi.org/10.1080/07294360802444339

Griffin, P., Care, E., & McGaw, B. (2012). The changing role of education and schools. In P. Griffin, B. McGaw, & E. Care (Eds.), *Assessment and teaching of 21st century skills* (pp. 1–15). Springer Netherlands. https://doi.org/10.1007/978-94-007-2324-5_1

Hart Research Associates. (2013). *It takes more than a major: Employer priorities for college learning and student success*. Hart Research Associates.

Hart Research Associates. (2018). *Fulfilling the American dream: Liberal education and the future of work*. Hart Research Associates.

Heckman, J. J., & Kautz, T. (2012). Hard evidence on soft skills. *Labour Economics*, *19*(4), 451–464. https://doi.org/10.1016/j.labeco.2012.05.014

Hersh, R. H. (1997). Intentions and perceptions: A national survey of public attitudes toward liberal arts education. *Change*, *29*(2), 16–23.

Hines, S. M. (2005). The practical side of liberal education: An overview of liberal education and entrepreneurship. *Peer Review*, *7*(3), 4–7.

Humburg, M., & van der Velden, R. (2015). Skills and the graduate recruitment process: Evidence from two discrete choice experiments. *Economics of Education Review*, *49*, 24–41. https://doi.org/10.1016/j.econedurev.2015.07.001

Humburg, M., & van der Velden, R. (2017). What is expected of higher education graduates in the twenty-first century? In J. Buchanan, D. Finegold, K. Mayhew, & C. Warhurst (Eds.), *The Oxford handbook of skills and training* (pp. 201–220). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199655366.013.10

Humphreys, D., & Kelly, P. (2014). *How liberal arts and sciences majors fare in employment: A report on earnings and long-term career paths*. Association of American Colleges and Universities.

Jenkins, W. K. (2014). Today's engineering education is a liberal arts education of the future. *Proceedings of the IEEE*, *102*(9), 1306–1309. https://doi.org/10.1109/JPROC.2014.2341311

Kirby, W. C., & van der Wende, M. C. (2016). A global dialogue on liberal arts and sciences: Re-

engagement, re-imagination, and experimentation. In W. C. Kirby & M. C. van der Wende (Eds.), *Experiences in liberal arts and science education from America, Europe, and Asia* (pp. 1–16). Palgrave Macmillan US. https://doi.org/10.1057/978-1-349-94892-5_1

Kuzminov, Y., Sorokin, P., & Froumin, I. (2019). Generic and specific skills as components of human capital: New challenges for education theory and practice. *Foresight and STI Governance*, *13*(2), 19–41. https://doi.org/10.17323/2500-2597.2019.2.19.41

Lewis, P. (2018). Globalizing the liberal arts: Twenty-first-century education. In N. W. Gleason (Ed.), *Higher education in the era of the fourth industrial revolution* (pp. 15–38). Springer Singapore. https://doi.org/10.1007/978-981-13-0194-0_2

Logan, J., & Curry, J. (2015). A liberal arts education: Global trends and challenges. *Christian Higher Education*, *14*, 66–79. https://doi.org/10.1080/15363759.2015.973344

McPherson, M. S. (1998). The economic value of a liberal arts education. *About Campus: Enriching the Student Learning Experience*, *3*(4), 13–17. https://doi.org/10.1177/108648229800300406

Naidu, R., Stanwick, J., & Frazer, K. (2017). *Glossary of VET*. National Centre for Vocational Education Research (NCVER).

National Centre for Vocational Education Research. (2003). *Defining generic skills*. Australian National Training Authority.

Nicholas, J. M. (2018). Marketable selves: Making sense of employability as a liberal arts undergraduate. *Journal of Vocational Behavior*, *109*, 1–13. https://doi.org/10.1016/j.jvb.2018.09.001

Nussbaum, M. C. (2010). *Not for profit: Why democracy needs the humanities*. Princeton University Press.

Pascarella, E. T., Wolniak, G. C., Seifert, T. A., Cruce, T. M., & Blaich, C. (2005). *Liberal arts colleges and liberal arts education: New evidence on impacts. ASHE higher education report: Vol. 31*. Wiley.

Paul, J.-J. (2011). Graduates in the knowledge and innovation society. In J. Allen & R. van der Velden (Eds.), *The flexible professional in the knowledge society: New challenges for higher education* (pp. 111–137). Springer. https://doi.org/10.1007/978-94-007-1353-6_5

Pellegrino, J. W., & Hilton, M. L. (2012). *Education for life and work: Developing transferable knowledge and skills in the 21st century*. National Academies Press.

Penprase, B. E. (2018). The fourth industrial revolution and higher education. In N. W. Gleason (Ed.), *Higher education in the era of the fourth industrial revolution* (pp. 207–229). Springer Singapore. https://doi.org/10.1007/978-981-13-0194-0_9

Perkins, D. N., & Salomon, G. (1989). Are cognitive skills context-bound? *Educational Researcher*, *18*(1), 16–25. https://doi.org/10.3102/0013189X018001016

Peters, M. A. (2017). Technological unemployment: Educating for the fourth industrial revolution. *Educational Philosophy and Theory*, *49*(1), 1–6. https://doi.org/10.1080/00131857.2016.1177412

Peters, M. A., Jandrić, P., & Means, A. J. (Eds.). (2019). *Education and technological unemployment*. Springer Singapore. http://link.springer.com/10.1007/978-981-13-6225-5 https://doi.org/10.1007/978-981-13-6225-5

Rajecki, D. W., & Borden, V. M. H. (2010). Liberal arts skills, psychology baccalaureates, and first-year employment: Notes on a meritocracy hypothesis. *Teaching of Psychology*, *37*(3), 157–164. https://doi.org/10.1080/00986283.2010.488550

Rajecki, D. W., & Borden, V. M. H. (2011). Psychology degrees: Employment, wage, and career trajectory consequences. *Perspectives on Psychological Science*, *6*(4), 321–335. https://doi.org/10.1177/1745691611412385

Rennie, H. G. (2008). Entrepreneurship as a liberal art. *Politics & Policy*, *36*(2), 197–215. https://doi.org/10.1111/j.1747-1346.2007.00101.x

Research Centre for Education and the Labour Market. (2018). *Liberal arts and sciences programmes alumni survey factsheet 2017*. Maastricht University.

Rowen, C. (2016). So much more than salary: Outcomes research in the liberal arts. *New Directions for Institutional Research*, *2016*(169), 51–60. https://doi.org/10.1002/ir.20169

Schneider, M., & Sigelman, M. (2018). *Saving the liberal arts: Making the bachelor's degree a better path to labor market success*. American Enterprise Institute and Burning Glass Technologies.

Schreel, L. (2017). Setting up a liberal arts and sciences program. In *Guide to emerging liberal arts and sciences practices in the EU* (pp. 41–62). ECOLAS. http://www.ecolas.eu/eng/wp-content/uploads/2017/11/Handbook-final-BLASTER.pdf

Seifert, T. A., Goodman, K. M., Lindsay, N., Jorgensen, J. D., Wolniak, G. C., Pascarella, E. T., & Blaich, C. (2008). The effects of liberal arts experiences on liberal arts outcomes. *Research in Higher Education*, *49*, 107–125. https://doi.org/10.1007/s11162-007-9070-7

Smith, C. (2017). Skill demands and developments in the advanced economies. In J. Buchanan, D. Finegold, K. Mayhew, & C. Warhurst (Eds.), *The Oxford handbook of skills and training* (pp. 491–508). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199655366.013.23

Strada Education Network and Gallup. (2017). *2017 college student survey: A nationally representative survey of currently enrolled students*. Gallup.

Stross, R. (2017). *A practical education: Why liberal arts majors make great employees*. Stanford University Press.

Su, Z., Togay, G., & Côté, A.-M. (2021). Artificial intelligence: A destructive and yet creative force in the skilled labour market. *Human Resource Development International*, *24*(3), 341–352.

Sun, Y. (2018). Liberal arts education and the modern university. *European Review*, *26*(2), 272–284. https://doi.org/10.1017/S1062798717000667

Task Force on Higher Education and Society. (2000). *Higher education in developing countries: Peril and promise*. The World Bank and UNESCO.

Taylor, A. (2005). What employers look for: The skills debate and the fit with youth perceptions. *Journal of Education and Work*, *18*(2), 201–218. https://doi.org/10.1080/13639080500085984

Telling, K. (2018). Selling the liberal arts degree in England: Unique students, generic skills and mass higher education. *Sociology*, *52*(6), 1290–1306.

Tight, M. (2021). Twenty-first century skills: Meaning, usage and value. *European Journal of Higher Education*, *11*(2), 160–174. https://doi.org/10.1080/21568235.2020.1835517

UNESCO. (2013). *IBE glossary of curriculum terminology*. UNESCO International Bureau of Education.

University College Deans Network. (2017). *Statement on the role, characteristics, and cooperation of liberal arts and sciences colleges in the Netherlands*. https://www.universitycolleges.info/

van Damme, D. (2016). Transcending boundaries: Educational trajectories, subject domains, and skills demands. In W. C. Kirby & M. C. van der Wende (Eds.), *Experiences in liberal arts and science education from America, Europe, and Asia* (pp. 127–142). Palgrave Macmillan US. https://doi.org/10.1057/978-1-349-94892-5_9

van der Velden, R., & Allen, J. (2011). The flexible professional in the knowledge society: Required competences and the role of higher education. In J. Allen & R. van der Velden (Eds.), *The flexible professional in the knowledge society: New challenges for higher education* (pp. 15–53). Springer. https://doi.org/10.1007/978-94-007-1353-6_2

van der Wende, M. (2011). The emergence of liberal arts and sciences education in Europe: A comparative perspective. *Higher Education Policy*, *24*(2), 233–253. https://doi.org/10.1057/hep.2011.3

van der Wende, M. (2013). Trends towards global excellence in undergraduate education: Taking the liberal arts experience into the 21st century. *International Journal of Chinese Education*, *2*(2), 289–307. https://doi.org/10.1163/22125868-12340025

Virtanen, A., & Tynjälä, P. (2019). Factors explaining the learning of generic skills: A study of university students' experiences. *Teaching in Higher Education*, *24*(7), 880–894. https://doi.org/10.1080/13562517.2018.1515195

Watson, C. E., & McConnell, K. D. (2018). What really matters for employment? *Liberal Education*, *104*(4), 12–17.

Watt, C. A. (2012). World history, liberal arts, and global citizenship. *The Journal of General Education*, *61*(3), 211. https://doi.org/10.5325/jgeneeduc.61.3.0211

Wibrow, B. (2011). *At a glance: Employability skills*. National Centre for Vocational Education Research (NCVER).

Williams, R. (2019). National higher education policy and the development of generic skills. *Journal of Higher Education Policy and Management*, *41*(4), 404–415. https://doi.org/10.1080/1360080X.2019.1606690

Wilson, R. (2013). Skills anticipation—The future of work and education. *International Journal of Educational Research*, *61*, 101–110. https://doi.org/10.1016/j.ijer.2013.03.013

World Bank. (2019). *World development report 2019: The changing nature of work*. World Bank. https://doi.org/10.1596/978-1-4648-1328-3

3 SKILL GAINS IN THE BACHELOR'S STAGE

Employability Development in Undergraduate Programmes: How Different Is Liberal Arts Education?[4]

4 This study has been published with the following citation: Kovačević, M., Dekker, T. J., & van der Velden, R. (2023). Employability development in undergraduate programmes: How different is liberal arts education? *Teaching in Higher Education*, 1–21. https://doi.org/10.1080/13562517.2023.2212602

Abstract

This paper examines how students' employability develops during undergraduate studies at a Dutch liberal arts college compared to a conventional bachelor's programme in law at the same university. Drawing on the graduate capital model, the study focuses on six skills that enhance employability: creativity, lifelong learning, career decidedness, self-efficacy, resilience, and personal initiative. To measure employability growth, a cross-sectional pseudo-cohort research design is adopted, comparing first-, second-, and third-year student cohorts. The results show that liberal arts students make significant progress in five out of the six examined employability-related skills. Compared to the conventional programme, the gains in creativity and personal initiative particularly stand out, reflecting the differences between interdisciplinary and monodisciplinary learning, and self-tailored and fixed curriculum structures. This refutes the stereotype that a liberal arts degree does not prepare students for the labour market and points to the relevance of programme-specific features for employability development in higher education.

Keywords

graduate employability, employability skills, skill development, liberal arts education, undergraduate students

3.1 Introduction

The changing nature of work and employment in the 21st century is imposing new challenges on higher education institutions (HEIs) worldwide. Driven by rapid technological advancements, globalization, and the emergence of a knowledge-intense economy, these changes are profoundly affecting the relationship between higher education (HE) and the world of work. In light of the widespread labour market uncertainty and the expansion of higher education, the topic of graduate employability has risen to prominence, becoming a central concern shared by universities, students, employers, governments, and society at large (Tomlinson, 2012).

In Europe, the overarching importance of employability has been emphasized since the beginning of the Bologna Process, which acknowledged it as one of the top priorities of higher education reform (Sin & Neave, 2016). While the expectation placed on universities to produce employable graduates may be ubiquitous, there is no consensus regarding the skills[5] graduates need to have to be able to deal with an increasingly volatile and uncertain employment climate (Behle, 2020; Suleman, 2018). The same can be said about the role of different pedagogies in providing these skills, the understanding of which is still limited (Humburg & van der Velden, 2017; Teichler, 2009), as well as the relevance of structural and organizational features of higher education, which are often overlooked within policy-level decision-making (Tholen, 2014).

Higher education systems and institutions have developed different responses to the growing demands for improving graduate employability. In some countries, this resulted in increasing curricular specialization and a greater emphasis on professional skills, internships and work placements; in others, it lead to the incorporation of general skills such as communication, problem solving, IT literacy, entrepreneurship, as well as labour market training, into university programmes (Clarke, 2018; Teichler, 2013).

In the European context, a novel approach concerns the resurgence of liberal arts education (LAE), a model for general undergraduate studies most commonly associated with the United States. The reintroduction of LAE has been particularly pronounced in the Netherlands, where ten university colleges have been established since the late 1990s. Developed as internationally oriented, publicly funded institutions offering three-year liberal arts and science bachelor's degrees, Dutch university colleges represent an exception from conventional university programmes (van der Wende, 2011). In broad terms, this distinctiveness concerns the fact that university colleges provide a general academic education rather than aiming to prepare students for a specific profession. More

5 The term skills will be used to refer to knowledge, skills, and attitudes.

explicitly, the distinctive nature of university colleges comes down to a number of shared principles related to their self-tailored, interdisciplinary curricula, student-centred pedagogy, and selective admission.

The most prominent feature of LAE programmes is the open curriculum, which includes three key aspects: curricular breadth, interdisciplinarity, and freedom of choice. Unlike most conventional undergraduate programmes, which are narrow and monodisciplinary, university colleges have a broad, radically open curriculum that promotes interdisciplinary learning through a diverse range of subjects spanning the humanities, social sciences, and natural sciences. Moreover, LAE programmes are based on students' freedom of choice, allowing them to build a self-tailored academic profile. Another salient feature of university colleges is related to their distinctive pedagogy that emphasizes small-scale and intensive education. The student-teacher ratio is low, allowing for a more interactive learning experience compared to conventional programmes, which often lack individual attention due to large class sizes. Finally, what distinguishes Dutch university colleges from other bachelor's programmes also concerns their selective admission, which includes the assessment of the candidates' prior academic performance and personal motivation (Cooper, 2018; Dekker, 2017; University College Deans Network [UCDN], 2017).

Dutch university colleges have been lauded for their commitment to academic excellence, but also criticized for the alleged impracticality of their degrees. While the proponents of liberal arts education stress its ability to provide an optimal response to the demands associated with the contemporary workplace, little is known as to how the distinctive characteristics of LAE programmes relate to enhancing their students' employability. The current paper addresses this research gap. Its main goal is twofold. Firstly, it seeks to propose an alternative, developmental approach to assessing the contribution of undergraduate programmes to fostering employability. Secondly, it aims to determine how a university college performs in this regard compared to a conventional bachelor's programme. It does so by applying the graduate capital model, a well-established employability framework proposed by Michael Tomlinson (2017), and using it to answer the following research question: *How does employability develop in university college students during the course of their studies compared to their peers from a conventional programme*? It shows that attending a LAE undergraduate programme leads to visible progression in a range of career-relevant skills.

The paper proceeds as follows. Section 2 discusses the concept of employability and the drawbacks of using employment outcomes to evaluate its development in higher education. Section 3 introduces the adapted graduate capital framework for assessing employability gains from HE. It explains the employability components and skills included in the study, and hypothesizes the impact of LAE on their development. Section 4 presents

the method and data used in the empirical analysis, the results of which are reported in Section 5. Section 6 discusses the findings and concludes the paper.

3.2 Employability and Higher Education: The Problem of Employment-Based Measures

To address the issue of how higher education contributes to graduate employability, it is first necessary to define what we are seeking to evaluate and consider what is the most appropriate approach for achieving this. The most widely used definition of employability is that proposed by Yorke (2006, p. 8), who described it as 'a set of achievements–skills, understandings and personal attributes–that makes graduates more likely to gain employment and be successful in their chosen occupations'.

Given the variety of definitions in circulation, which often confuse employability with employment, it is important to distinguish between the two terms. In this regard, it should be stressed that employability is not an empirical, but rather a relational concept (Holmes, 2017, pp. 362–363). As such, it can only be measured indirectly. Most commonly, this involves using employment outcomes such as labour force status and income as valid, empirically observable indicators of employability. Despite being connected, however, employability and employment are not interchangeable concepts, as the former denotes the capacity to perform a job, while the latter implies its actual acquisition, which is determined not only by individual skills, but also the supply and demand dynamics of the labour market, as well as socio-biographical factors. In other words, employability is a necessary but insufficient condition for gaining employment (Yorke, 2006).

In the context of higher education, the overreliance on employment-based indicators leads to a problem of having an unclear understanding of what universities produce in terms of employability and work-readiness of their graduates. By and large, the impact of higher education on employability is assessed by looking at the early career success of graduates and using post-graduation employment statistics as measures of higher education quality. Yet, to assume a direct link between higher education, employability and employment is overly simplistic and misleading, as there is a wide range of external factors that are not taken into consideration (Harvey, 2001).

As Wilton (2011, p. 87) points out, a graduate may be 'employable, yet unemployed or underemployed'. This can happen due to outside causes such as the oversupply of labour or lack of vacancies in certain regions, occupations, and sectors, restrictive employment policies and regulations, adverse macroeconomic conditions, personal circumstances like caring responsibilities or access to resources, as well as discriminatory practices in

recruitment related to age, ethnicity, gender, and social class (Behle, 2020; Harvey, 2001; Sin & Neave, 2016). Consequently, approaches relying on graduate employment rates as measures of employability development evaluate universities based on outcomes that are beyond their control. Thereby, such indicators and rankings also fail to account for the role of distinct pedagogies and higher education features, leading to a situation where the actual contribution of HEIs to employability remains a 'black box' (Teichler, 2013, p. 425). This is even more problematic at the undergraduate level, given the fact that an increasing proportion of graduates go on to complete a master's degree before entering the labour market.

Hence, if the goal is to look at *the contribution of HEIs to employability*, a different approach is required. As Lawton (2019, p. 55) notes, the assessment of teaching quality and employability gains from higher education should be based upon 'what goes on in the classroom' and whether students make good progress and develop relevant skills. The approach adopted in this paper intends to achieve exactly this, measuring the extent to which students from two different types of undergraduate programmes have developed important skills that enhance employability. Yet, this opens another complex question: which skills are the most relevant determinants of employability? This issue is addressed in the following section, which sets out a framework for assessing the employability contribution of HEIs.

3.3 Assessing Employability Gains From Higher Education: The Developmental Approach

As argued in the previous section, any attempt to assess the employability contribution of undergraduate programmes should take into account the students' growth in employability-related skills during the course of their degree. Still, the relevant literature is marked by a lack of consensus as to what constitutes employability, and, more specifically, what are the skills that HEIs should provide in this regard. This section reviews the suitability of existing employability frameworks. It makes a case for the use and adaptation of Tomlinson's (2017) graduate capital model and explains the factors that will be considered in the empirical analysis.

Owing to the multiplicity of perspectives from which employability can be approached and the various dimensions it encompasses (Römgens et al., 2020; S. Williams et al., 2016), a great number of theoretical frameworks and models[6] have been developed. While these frameworks have a high degree of overlap, there are also considerable differences

6 The terms 'framework' and 'model' are used interchangeably.

among them, often leading to conceptual contradictions. For example, McQuaid and Lindsay's (2005) framework takes into account external, labour market and policy factors in addition to individual aspects, thereby conflating employability with employment. Likewise, 'positional' individual characteristics such as social class, gender, and ethnicity are sometimes also considered as determinants of employability (Holmes, 2013; Okay-Somerville & Scholarios, 2017). Another common problem in employability research, especially in the graduate context, concerns the models' practical applicability. Certain frameworks, such as the USEM model (Knight & Yorke, 2004), are theoretically too intricate for practical use (Dacre Pool & Sewell, 2007). Others, like Behle's (2020), claim to have been developed for measurement purposes, but lack the operational specificity that would enable it. For example, the possibilities for measurement and comparison of factors such as 'individual circumstances', 'enabling support systems', and 'the labour market' are questionable at best. Even highly cited frameworks, such as Dacre Pool and Sewell's (2007) CareerEDGE model and the career management model proposed by (Bridgstock, 2009), tend to lack empirical validation (Römgens et al., 2020).

The most widely used and empirically supported employability frameworks are built around the notion of 'capital' or 'resources'. Fugate et al. (2004) defined employability as a person-centred construct encompassing three dimensions: social and human capital, career identity, and personal adaptability. Similarly, the career capital framework proposed by Inkson and Arthur (2001) is based on three 'ways of knowing': knowing-how, knowing-why, and knowing-whom, which reflect human capital, identity, and social capital aspects. Hirschi's (2012) career resources model includes nearly identical elements: human capital, social, psychological, and identity resources. Drawing on these frameworks, Tomlinson (2017) developed a model comprising five forms of 'graduate capital'—human, social, cultural, identity, and psychological capital—each consisting of resources acquired through HE that can be utilized in the labour market.

This paper builds on Tomlinson's (2017) graduate capital model, adapting it to fit the study's purpose. This model has been chosen for two main reasons. Firstly, it is one of the few employability frameworks that refers specifically to the higher education context. Secondly, although this model has not yet been applied in quantitative studies[7], it is largely based on the work of Fugate et al. (2004), which has received considerable empirical verification (see, for example, McArdle et al., 2007; González-Romá et al., 2018).

While the graduate capital model provides a useful conceptual framework for understanding employability in the HE context, its practical application bears a number of

7 So far, the model has only been used in qualitative research (see, for instance, Benati & Fischer, 2020).

difficulties. A major obstacle stems from taxonomic fuzziness. By and large, the framework is imprecise when it comes to identifying the elements included in each category. A further problem concerns the overlooked effect of different educational models. The framework provides a conception of what constitutes graduate employability, but it does not consider the role various HE features and pedagogies can play in helping students to develop it. To overcome these issues, the graduate capital model has been slightly adjusted by means of excluding certain aspects, along with narrowing down and specifying the factors that each of the capital dimensions entails. This has been done to ensure that the framework is compatible with the study's purpose and coherent enough for quantitative empirical analysis. The framework adjustment has been guided by four main considerations.

First of all, if employability is being analysed as an outcome of higher education, the focus should be on graduate skills that can be attained or strengthened through university studies. This implies the exclusion of fixed traits and constructs that cannot be further developed. Furthermore, universities may not be the most appropriate place to develop certain skills. For example, entrepreneurial skills might be more efficiently acquired through work experience or employment-based training (Humburg & van der Velden, 2017; Tymon, 2013).

With this in mind, secondly, particular attention should be placed on the role of the higher education learning environment. As Knight and Yorke (2003) pointed out, employability development is rooted in good student learning, which is bound up with the entire educational environment. For this reason, employability should be viewed as being integral to whole undergraduate programmes and institutions, rather than an additive that is provided by means of various modules and one-off trainings.

The emphasis on learning environments leads to the third point, which concerns the specificities of liberal arts education. If 'the student learning that makes for strong claims to employability comes from years, not semesters; through programmes, not modules; and in environments, not classes' (Knight & Yorke, 2003, p. 4), the analysis should concentrate on employability factors reflecting the distinctive features of different university programmes. Within the many employability constituents developed through HE, this study is particularly interested in the ones that are most profoundly related to the curriculum and learning environment of liberal arts bachelor programmes.

As a final point, the inclusion of factors is also based on practical choices related to measurability and comparability.

Thus, among the constituents of graduate employability considered by Tomlinson (2017), the study focuses on those which: (a) are malleable and can be developed within higher

education, (b) fundamentally stem from the overall learning environment, (c) are expected to reflect the distinctive features of LAE, and (d) can be measured with adequate instruments. The adaptation of the graduate capital model is discussed in the following subsection. It examines the three forms of graduate capital included in the study, defines the individual factors comprising them, and theorizes how LAE contributes to their development.

3.3.1 The Employability Contribution of LAE: Adapting the Graduate Capital Framework

The graduate capital model includes five dimensions: human, social, cultural, identity, and psychological capital. These are defined as 'key resources that confer benefits and advantages onto graduates' (Tomlinson, 2017, p. 339). Two of these aspects—social and cultural capital—will be left out of the analysis. Their exclusion is mainly based on the fact that although being relevant for employability, social and cultural capital are rather difficult to measure and compare. Additionally, the COVID-19 pandemic has reduced the university experience to online classes, considerably limiting opportunities for growth in these areas. Hence, this subsection focuses on the three other dimensions—human capital, identity capital, and psychological capital—and the more specific elements they entail.

3.3.1.1 Human capital: creativity and lifelong learning

According to human capital theory (Becker, 1964), there is a direct link between the skills people acquire through education and their subsequent job productivity and labour market outcomes. In Tomlinson's (2017) framework, the human capital component of employability pertains to the skills that graduates obtain during the course of their studies. This includes both specialized, subject-specific skills, and ones that are of a more general or transferable nature.

The category of generic skills appears in nearly all employability models as a major component of human capital. Commonly termed transferable skills, 21st-century skills, and key competences, generic skills are those that can potentially be applied across a range of fields, contexts, and circumstances, in the sense that they are not discipline- or occupation-specific (Chan et al., 2017). While HEIs are devoting increased attention to the development of these skills, their conceptual understanding is still marked by a considerable lack of standardization, with differing views on what generic skills graduates should possess (R. Williams, 2019). Various lists and classifications of generic skills often lump together all sorts of competencies and attitudes (Green et al., 2009), failing to make a clear distinction between cognitive and non-cognitive general human capital (Kuzminov et al., 2019).

As the graduate capital model does not include a list of generic skills, in this study, they are referred to in line with Binkley et al.'s (2012) classification[8], focusing on two skills from the 'ways of thinking' category: creativity and lifelong learning. Creativity is understood as divergent thinking—a form of creative cognition that produces new and original ideas (Cropley, 2011; Runco, 2011), while lifelong learning denotes an individual's ability and readiness to deliberately engage in learning over the longer term (Knapper & Cropley, 2000). The selection of these skills is based on the expected impact of LAE on their development and the availability of viable measures.

The cultivation of creativity is commonly ascribed to LAE, largely on the grounds of its interdisciplinary character and the students' associated ability to approach problems from multiple perspectives (Dekker, 2017; van Damme, 2016). The link between LAE and lifelong learning is also frequently stressed. Both the theoretical and empirical literature suggest that the teaching practices and intellectual climate of liberal arts institutions greatly support the development of attitudes and abilities associated with lifelong learning (Jessup-Anger, 2012; Kovačević, 2022; Pascarella et al., 2005; Seifert et al., 2008). Active, student-centred pedagogies and the use of diversified teaching and assessment methods were found to be linked to the development of creativity and lifelong learning-related skills, as well as a range of other generic, higher-order thinking skills. Likewise, conventional forms of university teaching, such as lecturing, were shown to inhibit the learning of creativity (Kember et al., 2007; Virtanen & Tynjälä, 2019).

The second component of human capital concerns specialist, subject-specific skills. Although subject-specific skills constitute an essential aspect of employability, they will not be considered in the current analysis, as they do not contribute to a useful comparison of skill development in two different fields of study.

3.3.1.2 Identity capital: career decidedness

Tomlinson (2017) defines identity capital as a graduate's capacity to develop an emerging career identity and shape it into a cohesive professional narrative. Other authors use similar concepts, such as career identity (Fugate et al., 2004), career decidedness (Fearon et al., 2018), pre-professional identity (Jackson, 2016), and vocational identity (Creed et al., 2020). Fugate et al. (2004, pp. 19–21) describe career identity as the way people define themselves in the career context, in the sense of 'who I am' or 'who I want to be'. Serving as a 'cognitive compass', career identity aids the pursuit of desired career goals and avoidance of undesired ones.

8 Binkley et al. (2012) identified ten 21st-century skills, grouping them into four categories: ways of thinking, ways of working, tools for working, and living in the world. Ways of thinking include: (a) creativity and innovation, (b) critical thinking, problem solving, decision making, and (c) learning to learn, metacognition.

Given its focus on undergraduate students whose identities are still in formation, this paper will analyse identity capital through the closely related concept of career decidedness. According to Fearon et al. (2018, p. 269), career decidedness refers to 'the extent to which students are certain about intended career paths they would like to pursue and develop after leaving university'. As noted by Tomlinson (2017), identity capital is strongly influenced by the HE learning environment. As such, professional identity development is an area where the differences between general and specialized programmes, as well as fixed and flexible curricula, can strongly come into play (Trede et al., 2012).

Regarding both of these aspects, the open curriculum model of university colleges bears important consequences for the development of their students' career decidedness. On the one hand, curricular breadth and freedom of choice can be seen as useful vehicles for fostering career decidedness, allowing students to try different courses before determining what subjects and disciplines match their interests and future goals (Dekker, 2021). On the other hand, it has also been pointed out that forming a strong career identity is more challenging in programmes that do not prepare students for a particular profession (Lairio et al., 2013).

3.3.1.3 Psychological capital: the capacity to deal with change

Tomlinson's (2017) conception of psychological capital relates to the graduates' capacity for navigating a quickly changing job market, withstanding career setbacks, and dealing with job pressures and other employment-related challenges. It includes two main psychological resources: proactive career adaptability and resilience. The author also stresses the role of self-efficacy and locus of control but doesn't provide a clear-cut classification. The broader employability literature offers two prevailing definitions. According to Luthans et al. (2015), psychological capital consists of four dimensions: self-efficacy, hope, optimism, and resilience. Fugate et al. (2004) labelled it as (pro) active personal adaptability. Understood as the willingness and ability to accept, respond to, and initiate change in the work domain, this component is expressed through five individual attributes: optimism, propensity to learn, openness, internal locus of control, and generalized self-efficacy.

To avoid confusion with cognitive skills caused by the broad connotation of the term, this study will consider psychological capital as the capacity to deal with change, encompassing the following non-cognitive skills:

- Self-efficacy, which refers to 'beliefs in one's capabilities to organize and execute the courses of action required to manage prospective situations' (Bandura, 1995, p. 2);
- Resilience, which is generally defined as 'the positive psychological capacity to rebound, to "bounce back" from adversity, uncertainty, conflict, failure or even positive change, progress and increased responsibility' (Luthans et al., 2015, pp. 144–145);

- Personal initiative, a work behaviour that is 'characterized by its self-starting nature, its proactive approach, and by being persistent in overcoming difficulties that arise in the pursuit of a goal' (Frese & Fay, 2001, p. 134).

In light of current economic uncertainties and unpredictable university-to-work transition, HEIs should be able to foster the development of these psychological resources, or at least raise awareness of their importance (Tomlinson, 2017). As noted by Kautz et al. (2014), such non-cognitive skills are equally strong predictors of later-life outcomes as measures of cognition. Most importantly, these capacities are not fixed traits determined solely by genes, but abilities that can be learned and improved. In fact, compared to cognitive skills, 'non-cognitive skills are more malleable at later ages' (Kautz et al., 2014, p. 2). In that respect, research has shown that self-efficacy, resilience, and personal initiative can be developed in higher education (Holdsworth et al., 2018; Tymon & Batistic, 2016; van Dinther et al., 2011).

The inherent self-directedness of liberal arts education can be seen as highly relevant to the development of their students' self-efficacy, resilience, and proactive behaviour. In contrast to conventional undergraduate programmes, which are tightly structured, at a university college, students (with the help of academic advisors) are responsible for organizing and structuring their own educational path. Hence, a self-tailored curriculum requires constant self-awareness (Claus et al., 2018), enabling liberal arts students to develop a strong sense of initiative and self-responsibility. The same can be said of the active pedagogy that involves intense learning in small groups and diverse assessment methods, requiring students to continuously read, discuss, write, problem-solve, and collaborate. In other words, the demanding nature of the programme presupposes a capacity to cope with difficulties and accomplish diverse academic tasks set at high standards.

An overview of the adjusted graduate capital model is shown in Table 3.1. This framework will be applied in the empirical analysis to assess the employability gains of liberal arts undergraduates and compare them to those of their peers in a conventional, subject-specific bachelor's programme. In view of the preceding theoretical discussion, several basic assumptions can be made to guide the analysis.

Table 3.1 Measuring employability gains through the adapted graduate capital framework

Forms of graduate capital	Skills and resources
Human capital	*Generic skills*: - Creativity - Lifelong learning
Identity capital	Career decidedness
Psychological capital	*Capacity to deal with change*: - Self-efficacy - Resilience - Personal initiative

With regard to human and psychological capital, it can be expected that LAE students experience significant growth as they progress through their studies. Given that these employability constituents are closely related to LAE, one can also assume that the gains of LAE students would be greater than or comparable to those of their peers from a conventional programme. Finally, due to the selective admission criteria of university college programmes, it can be expected that LAE students enter university with a higher level of most skills, with the exception of career decidedness. As being unsure about a career path is one of the main reasons for enrolling in a LAE programme in the first place, it is expected that first-year LAE students will be less decided than their counterparts attending a subject-specific programme. The following sections test these general assumptions.

3.4 Method

In line with Hoareau McGrath et al. (2015), employability growth is considered from the perspective of 'distance travelled', or the difference in the level of skills identified over a period of time. As an alternative to monitoring a single cohort of students at two timepoints, this study follows Flowers et al. (2001) in using a cross-sectional pseudo-cohort research design, simultaneously looking at multiple cohorts in different years of their study. More precisely, employability development is assessed by comparing first-, second-, and third-year cohorts at a LAE programme and a conventional undergraduate programme. The major advantage of this approach is that it accounts for differential selection into programmes, as it focuses on the development of skills across year groups within each programme. This basically resembles a Difference-in-Difference (DiD) approach, accounting for unobserved heterogeneity. However, it assumes that the characteristics of the year cohorts do not change over time.

3.4.1 Data Collection

Data was collected from students enrolled in two undergraduate programmes at a Dutch research university: a LAE bachelor, and a bachelor in EU and international law (henceforth referred to as Law). The Law programme was chosen as a reference group to ensure comparability in terms of student profiles and programme characteristics. Both programmes have a broad scope, an international orientation, and are taught in English. Since all study programmes at the given university employ problem-based learning, there is also a high degree of similarity with regard to educational methods, although the LAE programme has more contact hours and teaching is generally conducted in smaller groups.

There are three key differences between the programmes. The first relates to the structure of their curricula—specifically, the degree of freedom in choosing and combining courses. The LAE programme has an open curriculum. Its mandatory, 'core' component and bachelor's thesis account for 50 ECTS credits, while 130 credits are earned through electives. Students can choose from over 150 courses, projects, and skills trainings, which can be combined in countless ways. As a result, no two students follow the exact same trajectory. On the other hand, the Law programme has a more fixed curriculum, consisting of 120 credits of compulsory courses and 60 credits in electives. Thus, Law students have fewer choices to make with respect to course selection and combination. The second crucial difference between the programmes is related to what they teach, or the content of their curricula. While the Law programme is monodisciplinary, with a focus on legal studies, the LAE programme is highly interdisciplinary, offering courses across a wide range of fields and requiring students to take courses outside of their major. Hence, while the two programmes are fairly similar in terms of teaching methods (both use problem-based learning), what they teach is substantially different. Finally, the programmes also differ in their admission criteria: Law has a non-selective admission policy, while the LAE programme has a selective admission process.

Students were asked to take an online survey lasting approximately 20 minutes. Participants were recruited through flyers handed out on campus, student portal announcements, social media posts, and during tutorials and lectures. Incentives for participation included a personal feedback report and a charity donation of €200 for every 100 responses from a study year. Prior to taking the survey, participants were presented with an informed consent statement and freely gave their consent. The survey ran between September 20 and December 19, 2021.

Following the removal of incomplete and duplicate responses, ineligible participants from other programmes, students over the age of 30, and those who were in their eighth semester or higher, a total of 558 responses were included in the final sample. 308 respondents were LAE students and 250 were studying Law, respectively accounting for approximately 39%

and 23% of the total number of students enrolled in these two programmes. At the time of the survey, most participants were in the first semester of their first, second, or third year. A few respondents, who started their studies in February, were in their second, fourth, and sixth semester. Some third-year students were in their seventh semester. A full overview of study respondents is provided in Table 3.2.

Table 3.2 Study sample per programme, semester, and study year

Study year/ Semester	S1	S2	1st year	S3	S4	2nd year	S5	S6	S7	3rd year	Total
Liberal Arts	92	14	**106**	81	8	**89**	80	1	32	**113**	***308***
Law	81	0	**81**	79	0	**79**	77	1	12	**90**	***250***
Total	173	14	**187**	160	8	**168**	157	2	44	**203**	***558***

3.4.2 Measures

Guilford's (1967) Alternate Uses Task (AUT) was used to assess *creativity*. The AUT measures divergent thinking ability by asking participants to list as many different possible uses for an everyday object within a fixed amount of time. The objects used in this study were a newspaper and an umbrella. The allotted time was 2 minutes per object. The AUT was scored based on fluency—the number of acceptable uses. Grading was conducted by the first author.

Lifelong learning was assessed using Wielkiewicz and Meuwissen's (2014) Lifelong Learning Scale (WielkLLS). The WielkLLS measures an individual's tendency to engage in behaviours and activities related to lifelong learning. It comprises 16 items rated on a 5-point scale. Cronbach's alpha in this study was 0.88. Example items include 'I converse with others about new things I have learned' and 'I browse libraries or bookstores for interesting books or magazines'. The authors suggest that this scale is particularly suitable for tracking and evaluation of lifelong learning development in higher education, as well as the working world.

Career decidedness was measured on a scale developed by Lounsbury et al. (2005). The scale has 6 items with responses made on a 5-point Likert scale. Example items include 'I am having a difficult time choosing among different careers' and 'I know what kind of job I would like to have someday'. Alpha was 0.84.

Self-efficacy was assessed via the General Self-Efficacy Scale (Schwarzer & Jerusalem, 1995). It contains 10 items rated on a 4-point Likert-type scale. Example items include 'I can solve most problems if I invest the necessary effort' and 'It is easy for me to stick to my aims and accomplish my goals'. Alpha was 0.82.

The brief resilience scale (BRS) was used to measure the demonstration of *resilience*. This unidimensional scale was created by Smith et al. (2008) for assessing the general ability to bounce back or recover from stress. It consists of 6 items rated on a 5-point Likert scale. Example items include 'I tend to bounce back quickly after hard times' and 'It is hard for me to snap back when something bad happens'. Alpha was 0.78. As suggested by Fisher and Law (2021), outcome-focused measures of resilience are best suited for developmental evaluation purposes.

Personal initiative was measured using the situational judgement test (SJT-PI) developed by Bledow and Frese (2009). Instead of the original 12-item test, this study used a shorter version with 6 items, which were selected to best fit the research context (test items 1, 4, 6, 8, 9, and 12 were included). The SJT-PI presents respondents with work-related scenarios, asking them to choose the response options they would be most and least likely to perform. Depending on the level of personal initiative, each response is graded as +1, 0 or -1, giving each question a score that can range between -2 and +2. An example scenario is: you are dissatisfied with how team meetings are organized by your superintendent, but you know he gets irritated when criticized. Possible answers include: stepping forward and organizing the meetings more efficiently, asking colleagues about how to best approach the superintendent, staying away from team meetings, and trying not to get upset and make the most out of the meetings. As noted by the SJT-PI authors, Cronbach's alpha is not an appropriate reliability measure for this kind of test, and high internal consistency is not to be expected. However, past research has established satisfactory test-retest reliability of the SJT-PI (Bledow & Frese, 2009).

These six employability constituents were used as the dependent variables of this study. AUT fluency was measured as the total number of acceptable uses across both objects. Scores in lifelong learning, career decidedness, self-efficacy, resilience, and personal initiative were calculated as the mean of items comprising each measure. The study programme (1 = LAE; 0 = Law) and study year served as the main independent variables.

In order to account for possible compositional differences between the cohorts, several controls for student background characteristics have been collected. This is to ensure that the differences in scores between groups reflect the impact of undergraduate studies rather than the different structure of the cohorts. These control variables include:

- Age;
- Gender (1 = male; 0 = female and other);
- Type of secondary education (1 = academic secondary education; 0 = non-academic general or vocational/technical secondary education);
- High school GPA ranking compared to other students in graduating class (on a 5-point

scale, ranging from 1 = much lower than the average to 5 = much higher than the average);
- Gap year after high school (1 = yes; 0 = no);
- First-generation university student (1 = yes; 0 = no);
- Non-study-related work experience before higher education (1 = one month or more; 0 = less than one month);
- Non-study-related work experience during higher education (1 = one month or more; 0 = less than one month);
- Country (group) of high school graduation.

A detailed overview of descriptive statistics per study programme and study year is presented in Table 3.3.

Table 3.3 Descriptive statistics per study programme and study year

	Liberal Arts			Law			Grand
	1st year (N = 106)	2nd year (N = 89)	3rd year (N = 113)	1st year (N = 81)	2nd year (N = 79)	3rd year (N = 90)	**Total** (N = 558)
AUT fluency							
Mean (SD)	8.45 (3.71)	10.23 (4.43)	10.36 (4.09)	7.00 (4.43)	8.51 (3.69)	8.22 (4.34)	8.89 (4.26)
Min, Max	1.0, 19.0	1.0, 28.0	2.0, 24.0	0.0, 21.0	2.0, 21.0	0.0, 23.0	0.0, 28.0
Lifelong learning							
Mean (SD)	3.82 (0.53)	3.95 (0.55)	3.92 (0.50)	3.85 (0.53)	3.84 (0.56)	3.85 (0.51)	3.87 (0.53)
Min, Max	2.7, 4.9	2.6, 4.9	2.3, 4.9	2.3, 4.9	2.4, 4.9	2.6, 5.0	2.3, 5.0
Career decidedness							
Mean (SD)	2.53 (0.86)	2.79 (0.85)	2.66 (0.84)	3.29 (0.81)	3.05 (0.95)	2.87 (0.86)	2.84 (0.89)
Min, Max	1.2, 4.7	1.0, 5.0	1.0, 4.5	1.5, 5.0	1.0, 5.0	1.0, 4.8	1.0, 5.0
Self-efficacy							
Mean (SD)	2.98 (0.36)	3.20 (0.38)	3.06 (0.39)	3.15 (0.34)	3.16 (0.36)	3.05 (0.40)	3.09 (0.38)
Min, Max	2.2, 3.8	2.2, 4.0	1.8, 3.9	2.3, 4.0	2.3, 4.0	2.2, 3.9	1.8, 4.0
Resilience							
Mean (SD)	3.14 (0.68)	3.37 (0.60)	3.22 (0.66)	3.32 (0.57)	3.28 (0.64)	3.16 (0.71)	3.24 (0.65)
Min, Max	1.7, 4.7	2.0, 4.8	1.3, 4.7	2.0, 4.5	1.7, 4.7	1.7, 4.7	1.3, 4.8
Personal initiative							
Mean (SD)	0.37 (0.68)	0.66 (0.53)	0.62 (0.65)	0.58 (0.58)	0.46 (0.56)	0.44 (0.59)	0.52 (0.61)
Min, Max	-1.3, 1.7	-1.0, 1.7	-1.5, 1.7	-1.0, 1.7	-1.2, 1.7	-1.2, 1.5	-1.5, 1.7
Age							
Mean (SD)	18.85 (1.39)	20.02 (1.14)	20.98 (1.10)	19.15 (1.89)	20.05 (1.72)	21.50 (1.60)	20.11 (1.75)
Min, Max	16.0, 24.0	18.0, 26.0	19.0, 26.0	17.0, 26.0	18.0, 28.0	19.0, 28.0	16.0, 28.0
High school GPA ranking							
Mean (SD)	4.04 (0.82)	3.88 (0.89)	3.99 (0.84)	4.11 (0.79)	4.11 (0.78)	4.12 (0.82)	4.04 (0.83)
Min, Max	2.0, 5.0	1.0, 5.0	2.0, 5.0	2.0, 5.0	3.0, 5.0	1.0, 5.0	1.0, 5.0
Gender							
Female and other	84 (79.2%)	69 (77.5%)	87 (77.0%)	53 (65.4%)	59 (74.7%)	63 (70.0%)	415 (74.4%)
Male	22 (20.8%)	20 (22.5%)	26 (23.0%)	28 (34.6%)	20 (25.3%)	27 (30.0%)	143 (25.6%)
Type of secondary education							
Non-academic	6 (5.7%)	6 (6.7%)	10 (8.8%)	4 (4.9%)	4 (5.1%)	1 (1.1%)	31 (5.6%)
Academic	100 (94.3%)	83 (93.3%)	103 (91.2%)	77 (95.1%)	75 (94.9%)	89 (98.9%)	527 (94.4%)

Gap year							
No	68 (64.2%)	42 (47.2%)	67 (59.3%)	59 (72.8%)	64 (81.0%)	66 (73.3%)	366 (65.6%)
Yes	38 (35.8%)	47 (52.8%)	46 (40.7%)	22 (27.2%)	15 (19.0%)	24 (26.7%)	192 (34.4%)
First generation student							
No	84 (79.2%)	78 (87.6%)	99 (87.6%)	68 (84.0%)	64 (81.0%)	75 (83.3%)	468 (83.9%)
Yes	22 (20.8%)	11 (12.4%)	14 (12.4%)	13 (16.0%)	15 (19.0%)	15 (16.7%)	90 (16.1%)
Work before HE							
No	41 (38.7%)	33 (37.1%)	49 (43.4%)	40 (49.4%)	42 (53.2%)	51 (56.7%)	256 (45.9%)
Yes	65 (61.3%)	56 (62.9%)	64 (56.6%)	41 (50.6%)	37 (46.8%)	39 (43.3%)	302 (54.1%)
Work during HE							
No	78 (73.6%)	49 (55.1%)	44 (38.9%)	55 (67.9%)	43 (54.4%)	35 (38.9%)	304 (54.5%)
Yes	28 (26.4%)	40 (44.9%)	69 (61.1%)	26 (32.1%)	36 (45.6%)	55 (61.1%)	254 (45.5%)
Country/region							
Netherlands	26 (24.5%)	16 (18.0%)	27 (23.9%)	3 (3.7%)	9 (11.4%)	9 (10.0%)	90 (16.1%)
Germany	17 (16.0%)	26 (29.2%)	31 (27.4%)	7 (8.6%)	11 (13.9%)	10 (11.1%)	102 (18.3%)
Belgium	16 (15.1%)	11 (12.4%)	15 (13.3%)	9 (11.1%)	7 (8.9%)	15 (16.7%)	73 (13.1%)
Other OECD countries	37 (34.9%)	27 (30.3%)	30 (26.5%)	42 (51.9%)	37 (46.8%)	36 (40.0%)	209 (37.5%)
Other countries (non-OECD)	10 (9.4%)	9 (10.1%)	10 (8.8%)	20 (24.7%)	15 (19.0%)	20 (22.2%)	84 (15.1%)

3.4.3 Analysis

Following the theoretical arguments, the primary goal of the analysis was to assess the employability development of LAE students and compare it to that of their peers in the Law programme. To do so, the study employed a DiD approach, looking at the differences in the development students make within a programme.

Six OLS regression models were estimated—one for each dependent variable. All analyses were conducted in Stata 17, using the command *regress* with robust standard errors. To determine whether the scores significantly differ between first-, second-, and third-year cohorts in each of the programmes, an interaction term was included between the study year and study programme variables. This interaction term was then dissected by using the *margins* and *contrast* commands.

3.5 Results

The full regression results are presented in Table 3.4. Table 3.5 illustrates how second- and third-year cohorts compare to the base category of first-year students in the LAE and Law programmes. The comparisons are visualized by means of *marginsplot* graphs, which show the adjusted means of outcome variables by study programme and study year with 90% confidence intervals. The asterisks in the graphs indicate statistically significant differences as presented in Table 3.5 (i.e., comparing second- and third-years' scores to year one within the same programme).

Table 3.4 OLS regression results for all outcome variables

	AUT fluency	Lifelong learning	Career decidedness	Self-efficacy	Resilience	Personal initiative
Study year						
2	1.503**	-0.065	-0.249*	-0.008	-0.005	-0.140
	(0.692)	(0.086)	(0.141)	(0.056)	(0.096)	(0.096)
3	1.205	-0.082	-0.459***	-0.161**	-0.130	-0.183*
	(0.791)	(0.085)	(0.144)	(0.065)	(0.105)	(0.101)
Study programme						
LIBERAL ARTS	1.394**	-0.019	-0.723***	-0.151***	-0.173*	-0.191*
	(0.629)	(0.076)	(0.123)	(0.052)	(0.092)	(0.098)
Study year#Study prog.						
2#LIBERAL ARTS	0.024	0.159	0.520***	0.181**	0.230*	0.389***
	(0.888)	(0.113)	(0.188)	(0.077)	(0.132)	(0.127)
3#LIBERAL ARTS	0.552	0.090	0.572***	0.166**	0.212	0.377***
	(0.869)	(0.101)	(0.172)	(0.076)	(0.134)	(0.129)
Age	0.003	0.021	0.038	0.015	-0.026	0.017
	(0.159)	(0.016)	(0.028)	(0.011)	(0.017)	(0.017)
Male	0.197	-0.049	0.022	0.147***	0.282***	-0.031
	(0.402)	(0.051)	(0.081)	(0.034)	(0.058)	(0.063)
Academic secondary ed.	-0.010	0.022	-0.112	0.041	0.097	-0.001
	(0.785)	(0.095)	(0.190)	(0.073)	(0.111)	(0.121)
High school GPA rank	0.142	0.148***	0.045	0.037**	0.020	0.104***
	(0.219)	(0.027)	(0.045)	(0.018)	(0.034)	(0.030)
Gap year	0.942**	-0.041	-0.010	0.011	0.033	0.018
	(0.453)	(0.050)	(0.087)	(0.039)	(0.067)	(0.057)
First generation student	-0.340	-0.028	0.111	-0.043	0.016	0.075
	(0.505)	(0.059)	(0.098)	(0.042)	(0.070)	(0.071)
Work before HE	0.468	0.070	0.068	0.025	0.067	0.096*
	(0.405)	(0.047)	(0.080)	(0.034)	(0.058)	(0.054)
Work during HE	0.410	0.121**	-0.083	0.079**	0.122**	0.054
	(0.382)	(0.047)	(0.080)	(0.035)	(0.058)	(0.055)
Constant	6.477*	2.825***	2.459***	2.584***	3.534***	-0.358
	(3.332)	(0.362)	(0.625)	(0.248)	(0.397)	(0.372)
Country Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	535	557	558	557	558	554
R^2	0.116	0.121	0.105	0.114	0.072	0.082

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

The main effect for study programme shows the difference in scores between first-year LAE and first-year Law students. The main effect for study year shows how second- and third-year Law students compare to first-year students in the Law programme, which is the base category. The coefficients in the study year by study programme interaction show the additional effect of LAE compared to that of Law. For example, 2#LIBERAL ARTS shows the difference in the effect between second-year LAE students and second-year Law students compared to their base groups (first-year LAE and Law students, respectively).

Table 3.5 Simple effects of the second and third year (vs first year) by study programme

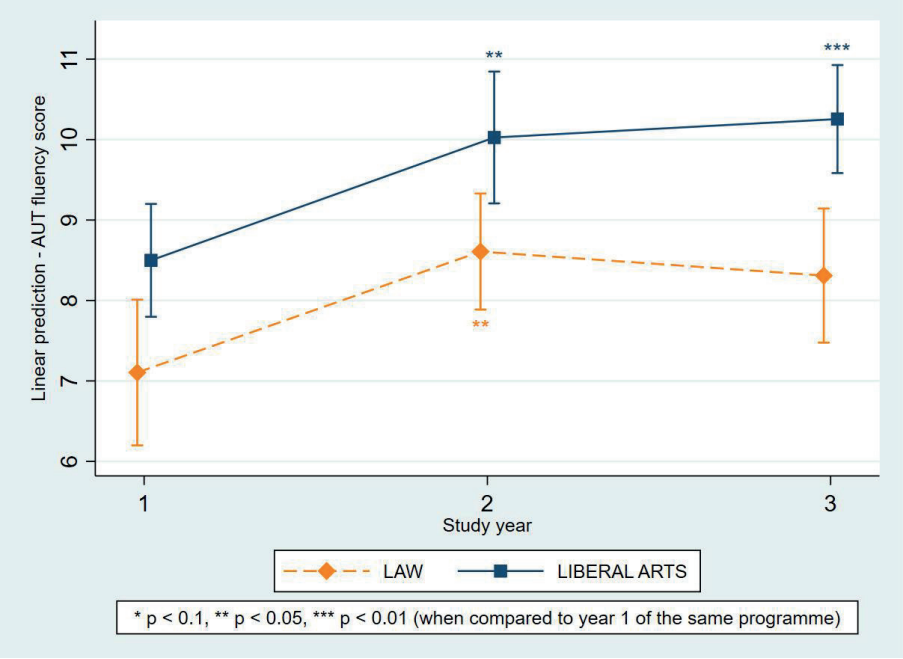
Study_year@Study_prog.	AUT fluency	Lifelong learning	Career decided-ness	Self-efficacy	Resilience	Personal initiative
(2 vs 1) LAW	1.503**	-0.065	-0.249*	-0.008	-0.005	-0.140
	(0.692)	(0.086)	(0.141)	(0.056)	(0.096)	(0.096)
(2 vs 1) LIBERAL ARTS	1.527**	0.094	0.271**	0.173***	0.225**	0.249***
	(0.662)	(0.076)	(0.128)	(0.056)	(0.093)	(0.089)
(3 vs 1) LAW	1.205	-0.082	-0.459***	-0.161**	-0.130	-0.183*
	(0.791)	(0.085)	(0.144)	(0.065)	(0.105)	(0.101)
(3 vs 1) LIBERAL ARTS	1.757***	0.007	0.113	0.005	0.083	0.193*
	(0.643)	(0.075)	(0.125)	(0.057)	(0.096)	(0.100)

Standard errors in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

3.5.1 Creativity

AUT fluency scores are presented in Figure 3.1. Compared to freshmen, second- and third-year LAE students were able to generate a significantly higher number of acceptable answers. Second- and third-year Law students also provided more acceptable answers than freshmen. However, the effect of being a third-year versus a first-year Law student proved statistically insignificant at the 10% level. Overall, all three LAE cohorts achieved higher scores.

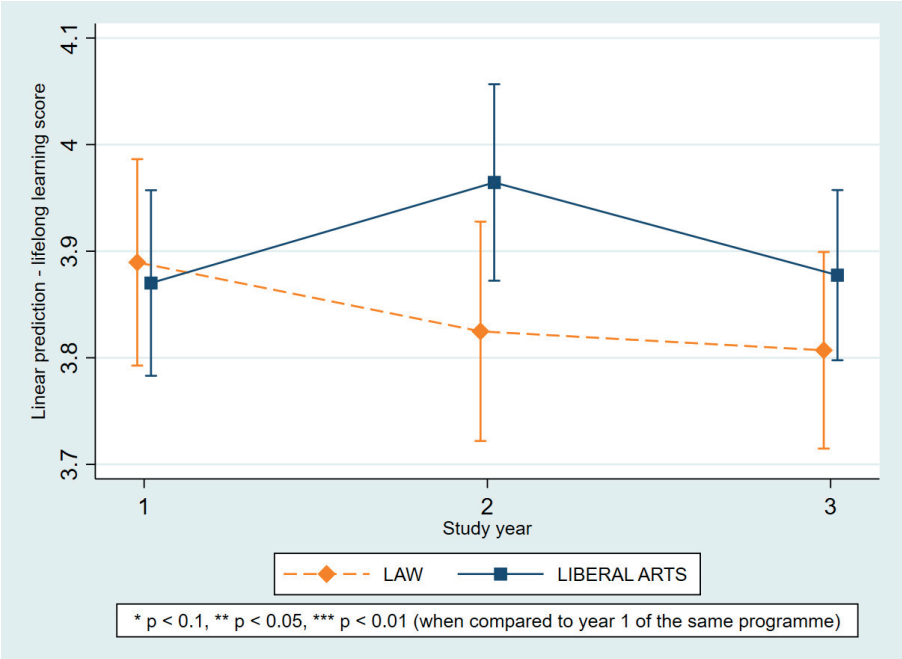
Figure 3.1 Adjusted means of AUT fluency scores with 90% CIs



3.5.2 Lifelong Learning

As shown in Figure 3.2, the effects of study programme and study year on lifelong learning scores were found statistically insignificant in all cases. When it comes to lifelong learning, in other words, the scores of first-, second-, and third-year LAE and Law cohorts do not significantly differ.

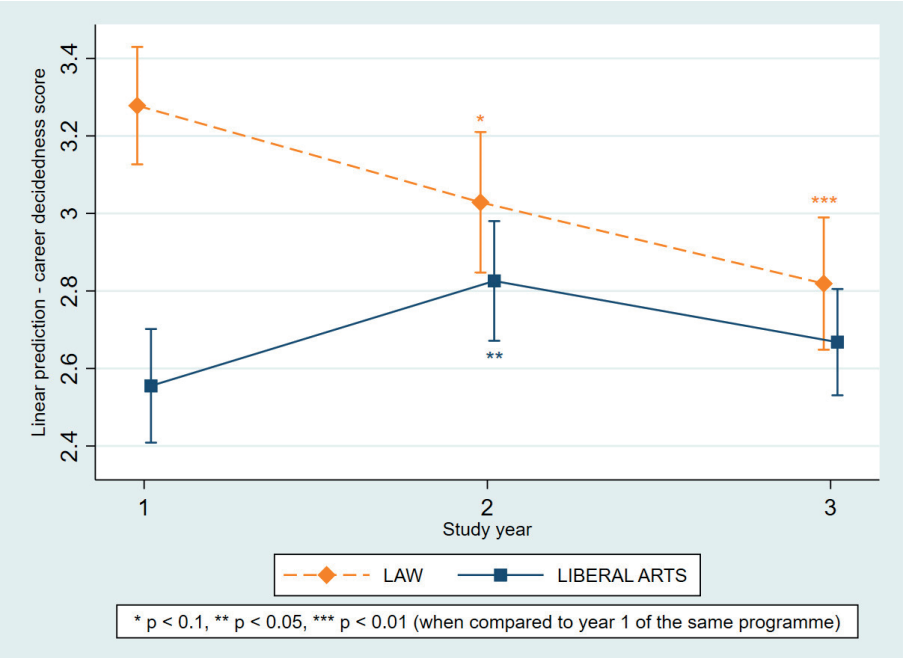
Figure 3.2 Adjusted means of lifelong learning scores with 90% CIs



3.5.3 Career Decidedness

Career decidedness scores (illustrated in Figure 3.3) reveal very different patterns in LAE and Law cohorts. Although first-year Law students showed considerably higher levels of decidedness than their LAE counterparts, a continuous decline in scores is visible in the second-year and third-year cohorts. LAE students have a lower starting point, but follow an upward trajectory, displaying significantly higher scores in year two, then somewhat slipping back in year three to a level that is higher yet statistically insignificant compared to year one.

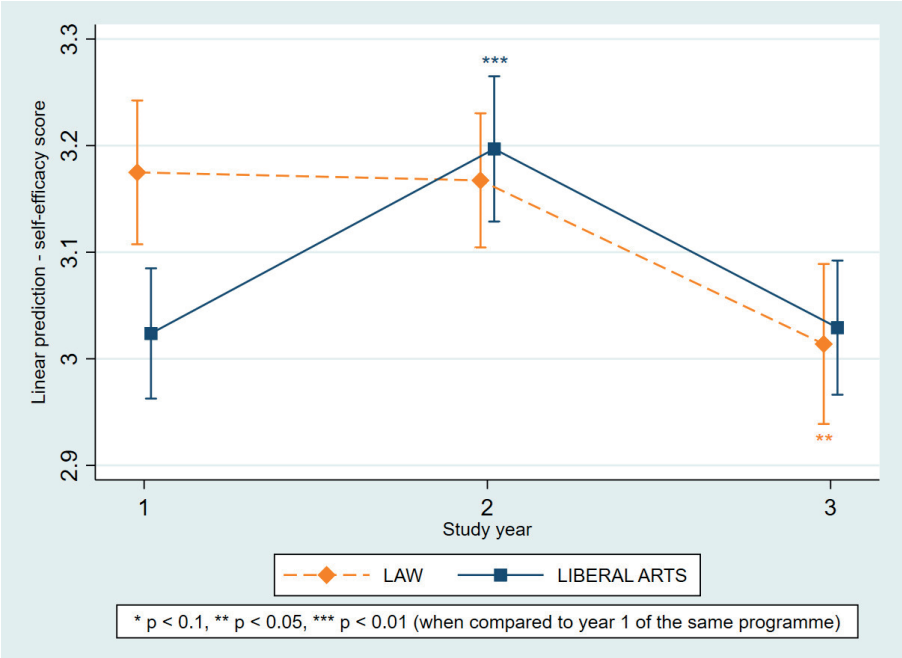
Figure 3.3 Adjusted means of career decidedness scores with 90% CIs



3.5.4 Self-efficacy

As can be seen from Figure 3.4, the major difference in self-efficacy scores pertains to the significantly higher starting point of Law students. The scores of second-year and third-year cohorts were quite similar across programmes. In comparison with their respective first-year cohorts, however, second-year LAE students scored significantly higher, while third-year Law students achieved significantly lower scores. In the case of second-year Law and third-year LAE cohorts, the differences in scores were statistically insignificant.

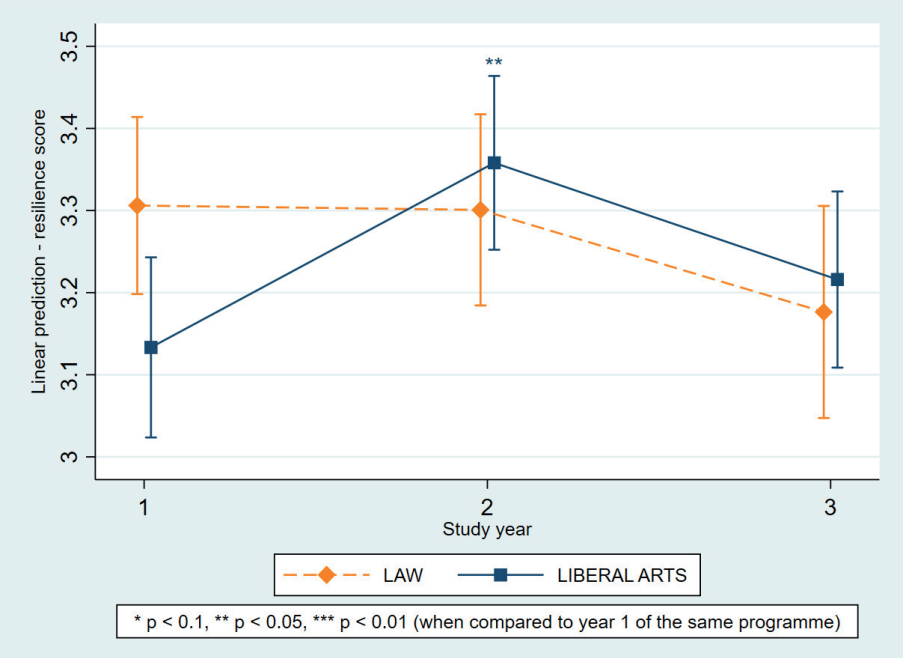
Figure 3.4 Adjusted means of self-efficacy scores with 90% CIs



3.5.5 Resilience

Resilience scores (illustrated in Figure 3.5) show patterns that are similar to those of self-efficacy. The scores of second- and third-year LAE students were higher than those of freshmen, but the difference was found statistically significant only in year two. Law freshmen scored higher than their LAE peers, but there were no statistically significant differences in scores between first-, second-, and third-year Law students.

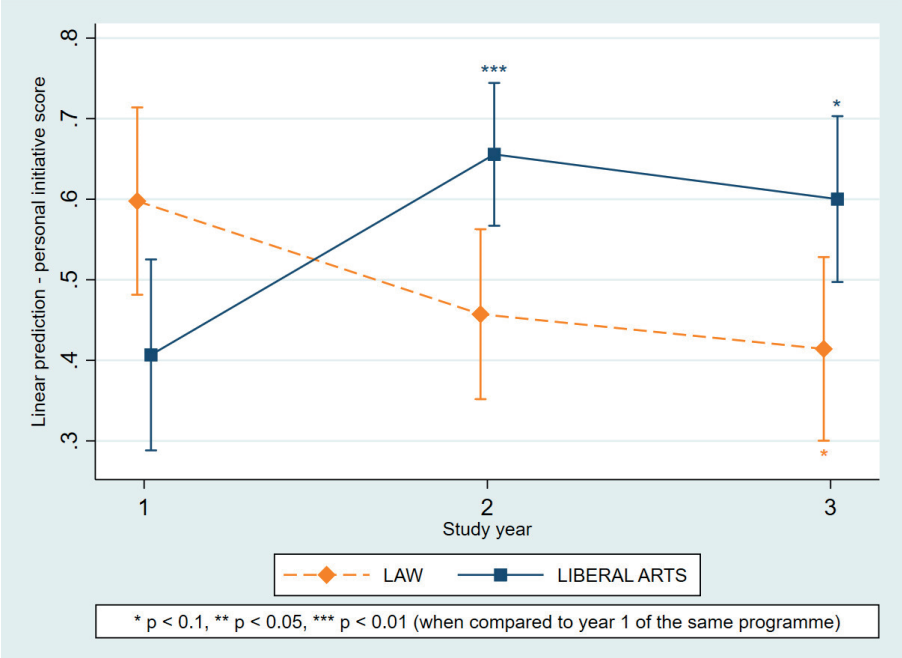
Figure 3.5 Adjusted means of resilience scores with 90% CIs



3.5.6 Personal Initiative

Personal initiative scores are shown in Figure 3.6. While LAE freshmen scored lower than their Law counterparts, second- and third-year LAE cohorts showed higher levels of personal initiative. Second-year and third-year LAE students both scored significantly higher than freshmen. In the Law programme, on the other hand, second- and third-year cohorts achieved lower scores than freshmen.

Figure 3.6 Adjusted means of personal initiative scores with 90% CIs



3.6 Discussion and Conclusion

The empirical analysis revealed several important findings regarding the effectiveness of liberal arts education in fostering employability development. Firstly, the results suggest that university college students make notable progress in a range of employability-relevant skills. This is especially the case with regard to creativity and personal initiative, in which second- and third-year LAE students both scored significantly higher than freshmen. As for career decidedness, self-efficacy, and resilience, significant gains were found for second-year LAE cohorts. Lifelong learning scores revealed no significant differences between the three study years. Still, considering the overall high average scores in lifelong learning, it may well be that the students already entered university with a strongly positive attitude towards learning, maintaining this mindset over the course of their studies.

Secondly, the comparison between the two programmes points to the relevance of LAE-specific features for the development of certain skills. Most notably, this concerns the greater creativity and personal initiative gains of LAE students, which seem to be stemming from the two most distinctive characteristics of the university college programme. With regard to fostering creativity, the profoundly interdisciplinary character of LAE and the

students' associated ability to approach problems from a plurality of perspectives might have played a crucial role. Likewise, the higher growth in personal initiative can be seen as a consequence of the LAE open curriculum, which pushes the students to be proactive and take charge of their own educational journey. Hence, it can be inferred that the discrepancy in creativity and personal initiative gains of LAE and Law students reflects the differences between interdisciplinary and monodisciplinary learning, as well as self-tailored and fixed curriculum structures.

The opposite seems to be true for self-efficacy and resilience. The highly similar scores of second- and third-year LAE and Law students in these skills suggest that their development is not unique to the university college programme, in the sense that it does not stem from the open curriculum and interdisciplinary learning. Still, this might also mean that self-efficacy and resilience are more related to university college features that are shared by Law—the student-centred pedagogical approach and demanding workload.

Another notable difference revealed by the comparison concerns the opposite career decidedness trajectories of Law and LAE students. It appears that Law students experience a considerable decline in career decidedness, possibly because their initial perception of the study field changes over time, leading to doubts about what kind of career they wish to pursue. On the other hand, the increasing career decidedness of LAE students can be interpreted as a result of the open curriculum, which gives students the possibility to explore a broad spectrum of academic disciplines before deciding what they want to focus on. In that respect, this study has shown that curricular freedom of choice can be useful in facilitating the formation and development of career identity.

One concern might be whether the findings truly reflect the different characteristics of the two programmes, rather than their disparate student populations. However, by using the DiD design, the analysis mainly focused on differential skill development within both groups, thus effectively controlling for unobserved heterogeneity. Moreover, one can see that the groups are rather similar in terms of student composition, and comparability was further enhanced by controlling for observed student characteristics. Thus, the DiD design strongly suggests that the differences in skill gains between LAE and Law students are determined by programme-specific features.

Two of the findings were surprising. Firstly, one may wonder why third-year students slipped back in some of the skills, scoring lower than second-year cohorts. As to career decidedness, self-efficacy, and resilience, this setback was evident in both groups. While nonlinear skill development is not unusual (Arts et al., 2006), in this particular case, the observed setback may have to do with the subjective measurement of non-cognitive skills and their dependence on situational factors. For example, one's self-efficacy beliefs are

known to decrease in the presence of negative feelings such as anxiety (van Dinther et al., 2011). In that sense, the beginning of the third year is a period that confronts students with new challenges and important decisions about their future, introducing more uncertainty into their lives, which may have lowered their perception of career decidedness, self-efficacy, and resilience.

Secondly, the comparatively lower scores of LAE freshmen in self-efficacy, resilience, and personal initiative contradicted the expectation that they would start off at a higher level as a result of the selection process. While surprising, this does not necessarily imply that selectivity did not affect the first-years students' scores in these non-cognitive skills; rather, it could be that it manifested itself differently than anticipated. When students are asked to self-assess their skills, their evaluation can be influenced by the group to which they compare themselves. This is known as the big-fish-little-pond effect (Marsh, 1987). In a non-selective programme such as Law, the first-year cohort is comprised of individuals with more variation in skills, with 'filtering' in year one. At a university college, on the other hand, the selection process is done beforehand, and first-year dropout rates are considerably lower (van der Wende, 2011). Hence, the higher scores of Law first-year students may be an overestimation caused by a less selective comparison group. However, one would still expect that Law students who made it to year two would have higher levels of self-efficacy, resilience and personal initiative than freshmen, which was not the case. Considering the importance of non-cognitive skills for the labour market and later life success, the potential for and extent of their development in HE is a topic that deserves more research.

These two unexpected findings point to the main limitation of this study—its reliance on self-reported data. While its subjectivity is related to a number of problems, self-assessment is still the most feasible way to simultaneously examine a wider range of skills (Allen & van der Velden, 2005), especially in cases when objective data cannot be easily obtained. Another drawback of this study concerns its cross-sectional design. One should keep this in mind when interpreting the results in the context of student development. To measure individual growth over time, a longitudinal research design would be required. Such a study could provide more insight into students' individual skill development trajectories between enrolment and graduation. Lastly, the scope of this study's findings is also limited by its exclusion of social and cultural capital. Further research is needed to look deeper into the role of these factors in shaping individual outcomes, and to develop measures that can capture their complexity.

Overall, this paper has shown that a seemingly impractical liberal arts undergraduate degree provides students with a range of career-relevant skills. This points to two wider conclusions. First of all, it refutes the stereotype that LAE has no economic value. As

they transition into the labour market, nonetheless, LAE graduates are still likely to face barriers stemming from the inability to showcase the full range of their skills to employers, since many (including the ones analysed in the present study) are not formally assessed in higher education. Coupled with the relative newness and unconventionality of LAE degrees in the European context, this may hamper the employment prospects of LAE graduates. In addition to making sure their students develop relevant skills, therefore, LAE institutions should put further effort into making these skills—as well as the liberal arts education model in general—more visible to employers.

Furthermore, and perhaps most importantly, this paper indicates that the dichotomy between 'learning for learning's sake' and 'learning for career preparation', often assumed by LAE critics (Logan & Curry, 2015, p. 71), is false. As Knight and Yorke (2003) pointed out, even without directly aiming to advance graduate employability, a good learning environment is highly compatible with employability-enhancing policies and practices. Along these lines, it is crucial to stress that employability development in higher education can only be substantially achieved at the programme level, through the creation of suitable learning environments, rather than through bolt-on activities and isolated interventions. To that end, this study's findings suggest that the heterogeneous skill-building effects resulting from exposure to programme-specific features should not be underestimated. Future employability research should place greater emphasis on identifying which HE characteristics and practices are most strongly tied to the development of skills that are necessary for graduates in the 21st century.

3.7 References

Allen, J., & van der Velden, R. (2005). The role of self-assessment in measuring skills. *REFLEX Working Paper 2*, 1–24.

Arts, J., Gijselaers, W., & Boshuizen, H. (2006). Understanding managerial problem-solving, knowledge use and information processing: Investigating stages from school to the workplace. *Contemporary Educational Psychology*, *31*(4), 387–410. https://doi.org/10.1016/j.cedpsych.2006.05.005

Bandura, A. (1995). Exercise of personal and collective efficacy in changing societies. In A. Bandura (Ed.), *Self-efficacy in changing societies* (pp. 1–45). Cambridge University Press. https://doi.org/10.1017/CBO9780511527692.003

Becker, G. S. (1964). *Human capital: A theoretical and empirical analysis, with special reference to education*. NBER.

Behle, H. (2020). Students' and graduates' employability. A framework to classify and measure employability gain. *Policy Reviews in Higher Education*, *4*(1), 105–130. https://doi.org/10.1080/23322969.2020.1712662

Benati, K., & Fischer, J. (2020). Beyond human capital: Student preparation for graduate life. *Education + Training*, *63*(1), 151–163. https://doi.org/10.1108/ET-10-2019-0244

Binkley, M., Erstad, O., Herman, J., Raizen, S., Ripley, M., Miller-Ricci, M., & Rumble, M. (2012). Defining twenty-first century skills. In P. Griffin, G. McGaw, & E. Care (Eds.), *Assessment and teaching of 21st century skills* (pp. 17–66). Springer Netherlands. https://doi.org/10.1007/978-94-007-2324-5_2

Bledow, R., & Frese, M. (2009). A situational judgment test of personal initiative and its relationship to performance. *Personnel Psychology*, *62*(2), 229–258. https://doi.org/10.1111/j.1744-6570.2009.01137.x

Bridgstock, R. (2009). The graduate attributes we've overlooked: Enhancing graduate employability through career management skills. *Higher Education Research & Development*, *28*(1), 31–44. https://doi.org/10.1080/07294360802444347

Chan, C. K., Fong, E. T., Luk, L. Y., & Ho, R. (2017). A review of literature on challenges in the development and implementation of generic competencies in higher education curriculum. *International Journal of Educational Development*, *57*, 1–10. https://doi.org/10.1016/j.ijedudev.2017.08.010

Clarke, M. (2018). Rethinking graduate employability: The role of capital, individual attributes and context. *Studies in Higher Education*, *43*(11), 1923–1937. https://doi.org/10.1080/03075079.2017.1294152

Claus, J., Meckel, T., & Pätz, F. (2018). The new spirit of capitalism in European liberal arts programs. *Educational Philosophy and Theory*, *50*(11), 1011–1019. https://doi.org/10.1080/00131857.2017.1341298

Cooper, N. (2018). Evaluating the liberal arts model in the context of the Dutch university college. *Educational Philosophy and Theory*, *50*(11), 1060–1067. https://doi.org/10.1080/00131857.2017.1341299

Creed, P. A., Kaya, M., & Hood, M. (2020). Vocational identity and career progress: The intervening variables of career calling and willingness to compromise. *Journal of Career Development*, *47*(2). https://doi.org/10.1177/0894845318794902

Cropley, A. (2011). Definitions of creativity. In M. Runco & S. Pritzker (Eds.), *Encyclopedia of creativity* (pp. 358–368). Elsevier. https://doi.org/10.1016/B978-0-12-375038-9.00066-2

Dacre Pool, L., & Sewell, P. (2007). The key to employability: Developing a practical model of graduate employability. *Education + Training*, *49*(4), 277–289. https://doi.org/10.1108/00400910710754435

Dekker, T. (2017). Liberal arts in Europe. In M. Peters (Ed.), *Encyclopedia of educational philosophy*

and theory (pp. 1–6). Springer Singapore. https://doi.org/10.1007/978-981-287-532-7_569-1

Dekker, T. (2021). The value of curricular choice through student eyes. *The Curriculum Journal*, *32*(2), 198–214. https://doi.org/10.1002/curj.71

Fearon, C., Nachmias, S., McLaughlin, H., & Jackson, S. (2018). Personal values, social capital, and higher education student career decidedness: A new 'protean'-informed model. *Studies in Higher Education*, *43*(2), 269–291. https://doi.org/10.1080/03075079.2016.1162781

Fisher, D. M., & Law, R. D. (2021). How to choose a measure of resilience: An organizing framework for resilience measurement. *Applied Psychology*, *70*(2), 643–673. https://doi.org/10.1111/apps.12243

Flowers, L., Osterlind, S. J., Pascarella, E. T., & Pierson, C. T. (2001). How much do students learn in college? *The Journal of Higher Education*, *72*(5), 565–583. https://doi.org/10.1080/00221546.2001.11777114

Frese, M., & Fay, D. (2001). Personal initiative: An active performance concept for work in the 21st century. *Research in Organizational Behavior*, *23*, 133–187. https://doi.org/10.1016/S0191-3085(01)23005-6

Fugate, M., Kinicki, A. J., & Ashforth, B. E. (2004). Employability: A psycho-social construct, its dimensions, and applications. *Journal of Vocational Behavior*, *65*(1), 14–38. https://doi.org/10.1016/j.jvb.2003.10.005

González-Romá, V., Gamboa, J. P., & Peiró, J. M. (2018). University graduates' employability, employment status, and job quality. *Journal of Career Development*, *45*(2), 132–149. https://doi.org/10.1177/0894845316671607

Green, W., Hammer, S., & Star, C. (2009). Facing up to the challenge: Why is it so hard to develop graduate attributes? *Higher Education Research and Development*, *28*(1), 17–29. https://doi.org/10.1080/07294360802444339

Guilford, J. P. (1967). *The nature of human intelligence*. McGraw-Hill.

Harvey, L. (2001). Defining and measuring employability. *Quality in Higher Education*, *7*(2), 97–109. https://doi.org/10.1080/13538320120059990

Hirschi, A. (2012). The career resources model: An integrative framework for career counsellors. *British Journal of Guidance & Counselling*, *40*(4), 369–383. https://doi.org/10.1080/03069885.2012.700506

Hoareau McGrath, C., Guerin, B., Harte, E., Frearson, M., & Manville, C. (2015). *Learning gain in higher education*. RAND Corporation. https://doi.org/10.7249/RR996

Holdsworth, S., Turner, M., & Scott-Young, C. M. (2018). … Not drowning, waving. Resilience and university: A student perspective. *Studies in Higher Education*, *43*(11), 1837–1853. https://doi.org/10.1080/03075079.2017.1284193

Holmes, L. (2013). Competing perspectives on graduate employability: Possession, position or process? *Studies in Higher Education*, *38*(4), 538–554. https://doi.org/10.1080/03075079.2011.587140

Holmes, L. (2017). Graduate employability: Future directions and debate. In M. Tomlinson & L. Holmes (Eds.), *Graduate employability in context* (pp. 359–369). Palgrave Macmillan UK. https://doi.org/10.1057/978-1-137-57168-7_17

Humburg, M., & van der Velden, R. (2017). What is expected of higher education graduates in the twenty-first century? In C. Warhurst, K. Mayhew, D. Finegold, & J. Buchanan (Eds.), *The Oxford handbook of skills and training* (pp. 201–220). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199655366.013.10

Inkson, K., & Arthur, M. B. (2001). How to be a successful career capitalist. *Organizational Dynamics*, *30*(1), 48–61. https://doi.org/10.1016/S0090-2616(01)00040-7

Jackson, D. (2016). Re-conceptualising graduate employability: The importance of pre-professional identity. *Higher Education Research & Development*, *35*(5), 925–939. https://doi.org/10.1080/07294360.2016.1139551

Jessup-Anger, J. E. (2012). Examining how residential college environments inspire the life of the

mind. *The Review of Higher Education*, *35*(3), 431–462. https://doi.org/10.1353/rhe.2012.0022

Kautz, T., Heckman, J., Diris, R., Weel, B. ter, & Borghans, L. (2014). *Fostering and measuring skills: Improving cognitive and non-cognitive skills to promote lifetime success*. National Bureau of Economic Research. https://doi.org/10.3386/w20749

Kember, D., Leung, D. Y., & Ma, R. S. (2007). Characterizing learning environments capable of nurturing generic capabilities in higher education. *Research in Higher Education*, *48*(5), 609–632. https://doi.org/10.1007/s11162-006-9037-0

Knapper, C., & Cropley, A. (2000). *Lifelong learning in higher education*. Stylus Publishing.

Knight, P., & Yorke, M. (2003). Employability and good learning in higher education. *Teaching in Higher Education*, *8*(1), 3–16. https://doi.org/10.1080/1356251032000052294

Knight, P., & Yorke, M. (2004). *Learning, curriculum and employability in higher education*. RoutledgeFalmer.

Kovačević, M. (2022). The effect of a general versus narrow undergraduate curriculum on graduate specialization: The case of a Dutch liberal arts college. *The Curriculum Journal*, *33*(4), 618–635. https://doi.org/10.1002/curj.158

Kuzminov, Y., Sorokin, P., & Froumin, I. (2019). Generic and specific skills as components of human capital: New challenges for education theory and practice. *Foresight and STI Governance*, *13*(2), 19–41. https://doi.org/10.17323/2500-2597.2019.2.19.41

Lairio, M., Puukari, S., & Kouvo, A. (2013). Studying at university as part of student life and identity construction. *Scandinavian Journal of Educational Research*, *57*(2), 115–131. https://doi.org/10.1080/00313831.2011.621973

Lawton, C. (2019). Conceptions of quality: Some critical reflections on the impact of 'quality' on academic practice. In A. Diver (Ed.), *Employability via higher education: Sustainability as scholarship* (pp. 53–65). Springer International Publishing. https://doi.org/10.1007/978-3-030-26342-3_4

Logan, J., & Curry, J. (2015). A liberal arts education: Global trends and challenges. *Christian Higher Education*, *14*(1-2), 66–79. https://doi.org/10.1080/15363759.2015.973344

Lounsbury, J. W., Hutchens, T., & Loveland, J. M. (2005). An investigation of big five personality traits and career decidedness among early and middle adolescents. *Journal of Career Assessment*, *13*(1), 25–39. https://doi.org/10.1177/1069072704270272

Luthans, F., Youssef, C. M., & Avolio, B. J. (2015). *Psychological capital and beyond*. Oxford University Press.

Marsh, H. W. (1987). The big-fish-little-pond effect on academic self-concept. *Journal of Educational Psychology*, *79*(3), 280–295. https://doi.org/10.1037/0022-0663.79.3.280

McArdle, S., Waters, L., Briscoe, J. P., & Hall, D. T. (2007). Employability during unemployment: Adaptability, career identity and human and social capital. *Journal of Vocational Behavior*, *71*(2), 247–264. https://doi.org/10.1016/j.jvb.2007.06.003

McQuaid, R. W., & Lindsay, C. (2005). The concept of employability. *Urban Studies*, *42*(2), 197–219. https://doi.org/10.1080/0042098042000316100

Okay-Somerville, B., & Scholarios, D. (2017). Position, possession or process? Understanding objective and subjective employability during university-to-work transitions. *Studies in Higher Education*, *42*(7). https://doi.org/10.1080/03075079.2015.1091813

Pascarella, E. T., Wolniak, G. C., Seifert, T. A., Cruce, T. M., & Blaich, C. (2005). *Liberal arts colleges and liberal arts education: New evidence on impacts. ASHE higher education report*. Wiley.

Römgens, I., Scoupe, R., & Beausaert, S. (2020). Unraveling the concept of employability, bringing together research on employability in higher education and the workplace. *Studies in Higher Education*, *45*(12), 2588–2603. https://doi.org/10.1080/03075079.2019.1623770

Runco, M. (2011). Divergent thinking. In M. Runco & S. Pritzker (Eds.), *Encyclopedia of Creativity* (pp. 400–403). Elsevier. https://doi.org/10.1016/B978-0-12-375038-9.00077-7

Schwarzer, R., & Jerusalem, M. (1995). Generalized self-efficacy scale. In M. Johnston, S. Wright, & J. Weinman (Eds.), *Measures in health psychology: A user's portfolio. Causal and control beliefs*

(pp. 35–37). NFER-NELSON.

Seifert, T. A., Goodman, K. M., Lindsay, N., Jorgensen, J. D., Wolniak, G. C., Pascarella, E. T., & Blaich, C. (2008). The effects of liberal arts experiences on liberal arts outcomes. *Research in Higher Education*, *49*, 107–125. https://doi.org/10.1007/s11162-007-9070-7

Sin, C., & Neave, G. (2016). Employability deconstructed: Perceptions of Bologna stakeholders. *Studies in Higher Education*, *41*(8), 1447–1462. https://doi.org/10.1080/03075079.2014.977859

Smith, B. W., Dalen, J., Wiggins, K., Tooley, E., Christopher, P., & Bernard, J. (2008). The brief resilience scale: Assessing the ability to bounce back. *International Journal of Behavioral Medicine*, *15*(3), 194–200. https://doi.org/10.1080/10705500802222972

Suleman, F. (2018). The employability skills of higher education graduates: Insights into conceptual frameworks and methodological options. *Higher Education*, *76*(2). https://doi.org/10.1007/s10734-017-0207-0

Teichler, U. (2009). *Higher education and the world of work: Conceptual frameworks, comparative perspectives, empirical findings*. Sense Publishers. https://doi.org/10.1163/9789087907563

Teichler, U. (2013). Universities between the expectations to generate professional competences and academic freedom: Experiences from Europe. *Procedia - Social and Behavioral Sciences*, *77*, 421–428. https://doi.org/10.1016/j.sbspro.2013.03.097

Tholen, G. (2014). Graduate employability and educational context: A comparison between Great Britain and the Netherlands. *British Educational Research Journal*, *40*(1), 1–17. https://doi.org/10.1002/berj.3023

Tomlinson, M. (2012). Graduate employability: A review of conceptual and empirical themes. *Higher Education Policy*, *25*(4), 407–431. https://doi.org/10.1057/hep.2011.26

Tomlinson, M. (2017). Forms of graduate capital and their relationship to graduate employability. *Education + Training*, *59*(4), 338–352. https://doi.org/10.1108/ET-05-2016-0090

Trede, F., Macklin, R., & Bridges, D. (2012). Professional identity development: A review of the higher education literature. *Studies in Higher Education*, *37*(3), 365–384. https://doi.org/10.1080/03075079.2010.521237

Tymon, A. (2013). The student perspective on employability. *Studies in Higher Education*, *38*(6). https://doi.org/10.1080/03075079.2011.604408

Tymon, A., & Batistic, S. (2016). Improved academic performance and enhanced employability? The potential double benefit of proactivity for business graduates. *Teaching in Higher Education*, *21*(8), 915–932. https://doi.org/10.1080/13562517.2016.1198761

University College Deans Network. (2017). *Statement on the role, characteristics, and cooperation of liberal arts and sciences colleges in the Netherlands*. https://www.universitycolleges.info/

van Damme, D. (2016). Transcending boundaries: Educational trajectories, subject domains, and skills demands. In W. C. Kirby & M. C. van der Wende (Eds.), *Experiences in liberal arts and science education from America, Europe, and Asia* (pp. 127–142). Palgrave Macmillan US. https://doi.org/10.1057/978-1-349-94892-5_9

van der Wende, M. C. (2011). The emergence of liberal arts and sciences education in Europe: A comparative perspective. *Higher Education Policy*, *24*(2), 233–253. https://doi.org/10.1057/hep.2011.3

van Dinther, M., Dochy, F., & Segers, M. (2011). Factors affecting students' self-efficacy in higher education. *Educational Research Review*, *6*(2), 95–108. https://doi.org/10.1016/j.edurev.2010.10.003

Virtanen, A., & Tynjälä, P. (2019). Factors explaining the learning of generic skills: A study of university students' experiences. *Teaching in Higher Education*, *24*(7), 880–894. https://doi.org/10.1080/13562517.2018.1515195

Wielkiewicz, R. M., & Meuwissen, A. S. (2014). A lifelong learning scale for research and evaluation of teaching and curricular effectiveness. *Teaching of Psychology*, *41*(3), 220–227. https://doi.org/10.1177/0098628314537971

Williams, R. (2019). National higher education policy and the development of generic skills. *Journal of Higher Education Policy and Management*, *41*(4), 404–415. https://doi.org/10.1080/1360080X.2019.1606690

Williams, S., Dodd, L. J., Steele, C., & Randall, R. (2016). A systematic review of current understandings of employability. *Journal of Education and Work*, *29*(8), 877–901. https://doi.org/10.1080/13639080.2015.1102210

Wilton, N. (2011). Do employability skills really matter in the UK graduate labour market? The case of business and management graduates. *Work, Employment and Society*, *25*(1), 85–100. https://doi.org/10.1177/0950017010389244

Yorke, M. (2006). *Employability in higher education: What it is – what it is not*. The Higher Education Academy.

4 SUCCES IN SPECIALIZED MASTER'S STUDIES

The Effect of a General Versus Narrow Undergraduate Curriculum on Graduate Specialization: The Case of a Dutch Liberal Arts College[9]

9 This study has been published with the following citation: Kovačević, M. (2022). The effect of a general versus narrow undergraduate curriculum on graduate specialization: The case of a Dutch liberal arts college. *The Curriculum Journal, 33*(4), 618–635. https://doi.org/10.1002/curj.158

Abstract

Whether a broad undergraduate curriculum prepares students well for academic and professional specialization is a much-debated question. This discussion is particularly relevant in the context of European liberal arts bachelor's programmes, which recently re-emerged as an exception to the continental norm of specialized undergraduate curricula. While liberal arts proponents contend that the broad foundation of knowledge and generic skills provided by this educational model facilitate specialization rather than hindering it, critics point to the relative lack of disciplinary depth. To investigate this problem, the paper looks at three specialized master's programmes at Maastricht University—in international business, psychology, and neuroscience. It compares the academic performance of two groups of students in these programmes: graduates from University College Maastricht, a liberal arts institution, and their peers with discipline-focused bachelor's degrees in a matching field. Results from probit and OLS regression models show that there are no major differences between the two groups in terms of dropout rates, GPA, and master's thesis grades. Despite having less subject-specific knowledge, university college graduates proved to be prepared equally well for specialized master's studies as their counterparts with a matching disciplinary background. These findings suggest that an undergraduate curriculum that offers more breadth and flexibility does not represent an obstacle to further specialization.

Keywords

liberal arts education, undergraduate curriculum, specialization, generic skills

4.1 Introduction

During the past two decades, liberal arts education (LAE) has become increasingly popular in Europe. This significant educational development has been recognized as a re-emergence of the liberal arts (Dekker, 2017; van der Wende, 2011), whose roots can be traced back to classical antiquity, the medieval European university, and Renaissance humanism (Mehrens, 2017). The reintroduction of LAE has been particularly pronounced in the Netherlands. Since the late 1990s, ten university colleges have been established within reputable Dutch research universities. Inspired by the American liberal arts college model but maintaining their own specificities, Dutch university colleges developed as internationally oriented, publicly funded institutions offering three-year undergraduate programmes (Cooper, 2018; University College Deans Network [UCDN], 2017; van der Wende, 2011).

An exception to the European norm of specialized, disciplinary undergraduate curricula, university colleges have been both praised for their commitment to broad intellectual and personal development, academic excellence, and cultivation of 21st-century skills, and criticized for the impracticality of their degrees. Unlike traditional university programmes, which are designed to prepare students for professions in specific fields, the liberal arts model of undergraduate education is often perceived as non-profession-related, in the sense that it is more of a general academic nature, and does not provide special training enabling a person to practice a particular occupation, such as medicine, law or engineering (Becker, 2014; Telling, 2018). As such, the emergence of university colleges opens up a number of important questions concerning the purpose and structure of the undergraduate curriculum, and the balance between general and specialized education.

A vital, yet underexplored aspect of this issue concerns the relationship of LAE undergraduate programmes to further specialization of their students. Critics of liberal arts education often suggest that its broad curriculum precludes disciplinary specialization, producing generalists who 'do not have the ability to undertake a serious programme of study in a particular academic field' (Peterson, 2012, p. 6). Responding to these criticisms, LAE supporters point out that its idea is not to replace, but precede and complement academic specialization, providing both breadth and depth (Becker, 2014; Lewis, 2018; UCDN, 2017; van der Wende, 2013). Through its balance of general academic skills and in-depth knowledge in chosen fields, the three-year liberal arts bachelor is supposed to enhance the students' capacity to specialize at the master's level (Dekker, 2017).

The desire to overcome the deficiencies of premature and too narrow specialization was, in fact, one of the main reasons for the establishment of Dutch university colleges. A major problem stemming from too early specialization concerns the inability to remedy wrong

study choices without having to re-enrol in a different programme, resulting in high first-year dropout rates. Additionally, the lack of general academic skills associated with over-specialization represents a challenge closely related to the demands of the knowledge economy, which requires generic competences in addition to professional expertise (van der Wende, 2011). Later specialization, on the other hand, gives students more time to choose a field of study to specialize in, but it provides less field-specific skills (Malamud, 2010). The issue at stake, therefore, is not whether specialization is needed or not, but at what stage it should occur. More precisely, the key question is whether the relative lack of in-depth disciplinary knowledge in the bachelor stage comes at the expense of the liberal arts students' ability to specialize at the master's level.

The present article aims to investigate this problem by looking at the case of Maastricht University, focusing on University College Maastricht (UCM), its liberal arts and sciences college, and three master's programmes—in international business, psychology, and neuroscience. It examines how successful UCM graduates are in these specialized programmes compared to their counterparts with discipline-focused bachelor's degrees. To do so, the paper adopts a quantitative approach, comparing the academic performance of these two groups of students in terms of dropout rates, overall GPA, and master's thesis grades. It shows that despite having less subject-specific knowledge, university college graduates are prepared equally well for further specialized study as students coming from a matching disciplinary background.

The article proceeds as follows. Section 2 outlines the key features of liberal arts education in the Netherlands. Section 3 reviews the literature related to the debate on the (in)ability of liberal arts graduates to specialize, establishing a theoretical foundation that underpins the arguments of both sides. Section 4 discusses the ensuing hypotheses and research questions, while section 5 presents the empirical approach. The results of the statistical analysis are presented in section 6. Section 7 discusses the findings and concludes the paper.

4.2 Distinctive Characteristics of Dutch Liberal Arts Education

Liberal arts education programmes in the Netherlands are defined by several salient features that distinguish them from their more traditional and disciplinary counterparts. By and large, the distinctiveness of university colleges comes down to a number of shared principles related to the flexible structure of their curricula, student-centred pedagogy, and selective admission.

The most prominent of these characteristics concerns the open curriculum model of liberal arts colleges, which entails three elements: curricular breadth, interdisciplinarity, and freedom of choice. Unlike most traditional undergraduate programmes, which are narrow, monodisciplinary and professionally oriented, university colleges have a radically open curriculum that promotes inter- and multidisciplinarity, consisting of a variety of subjects across the humanities, social sciences, natural and life sciences. Furthermore, bachelor's programmes at university colleges are based on the students' freedom of choice, allowing them to build a self-tailored academic profile, combining courses around a chosen area of concentration or specialization (Cooper, 2018; Dekker, 2017; UCDN, 2017). Although each university college has its own specifics, their curricula are comprised of the same building blocks: a 'core' that lays down a foundation of academic knowledge, a chosen area of concentration or specialization, a general education component consisting of a number of courses outside the concentration, as well as a bachelor's thesis. Looking specifically at UCM, it is worthwhile to note how relatively little discipline-focused content its curriculum actually contains. The concentration itself consists of 16 courses with a study load of 80 ECTS credits, as well as 30 credits worth of skills trainings and projects, which are of a more general scope. Together with the capstone (the equivalent of a bachelor's thesis), the concentration courses weigh 90 credits, or 50% of the programme's total study load. What is more, the choice of concentration only involves focusing on one of the three general areas (social sciences, humanities, or natural sciences), within which different academic disciplines can be—and often are—combined. The core includes 4 compulsory courses, 4 skills trainings, and 2 projects, while general education comprises 4 electives (University College Maastricht [UCM], 2019).

What sets Dutch university colleges apart from other undergraduate programmes is not only related to what they teach, but also how teaching is conducted. Small-scale and intensive education is at the core of university colleges, which are characterized by a low student-teacher ratio (UCDN, 2017). This kind of learning environment allows for a far more interactive educational experience than most traditional programmes, where teaching is conducted in large groups, with little attention devoted to the individual needs of each student (Cooper, 2018). University colleges also tend to use a great variety of assessment methods (Becker, 2014). At UCM, for example, students engage in classes of no more than 12. Group-based discussions and research projects constitute the bulk of educational activities, while examination is predominantly based on papers, essay questions, presentations, and group tasks (Maastricht University, 2021).

Finally, Dutch university colleges are also characterized by selective admission policies. In a higher education system that is known for its egalitarianism and loose admission requirements, selectivity represents an exception introduced with the aim of fostering a climate of academic excellence and intellectual ambition (Reumer & van der Wende,

2010). At UCM, the admission is limited to around 225 students per year. The selection procedure involves the assessment of prior academic performance, a motivation letter, and an interview to ascertain whether the applicant's academic interests and motivation correspond to what the programme is offering (UCM, 2019).

Both in terms of curricular breadth and flexibility, as well as educational methods and recruitment of students, therefore, university colleges occupy a specific place within the Dutch higher education system. The following section examines how these specificities are interpreted in light of their influence on academic specialization.

4.3 The Specialization Debate

Despite the intrinsic value of the all-encompassing education offered by liberal arts programmes, their curricular breadth and multidisciplinarity have been heavily questioned by critics, who often perceive it as an obstacle to academic and professional specialization. The notion that LAE graduates lack disciplinary depth and therefore tend to be unprepared for a specialized master's programme and further career (Becker, 2014; Dekker, 2017) is perhaps the most common critique of the liberal arts model. This premise is derived from the idea that liberal arts education represents 'a superficial hopscotch' over random subjects (Peterson, 2012, p. 6). Former scientist and politician Ronald Plasterk, one of the most prominent Dutch critics of liberal arts education, even went so far as to describe university colleges as educational 'amusement parks', where boys and girls 'surf and learn Spanish' instead of doing real science. As he wrote in a newspaper column about his experiences with teaching LAE graduates in natural science master's courses, 'University college students know less, work less hard on average and are generally less interested than students from elsewhere' (Plasterk, 2004).

In the Dutch (and European) higher education context, the assumption that a LAE graduate would have a hard(er) time succeeding in a specialized master's programme is not an unreasonable one to make. In fact, it is quite logical to expect that students with a discipline-focused bachelor's degree would do better than their counterparts coming from a broader, much more diversified undergraduate background. In addition to their concentration (which itself can be and frequently is interdisciplinary), liberal arts students have distribution and academic core requirements obliging them to complete a variety of courses outside their major area, as well as a considerable amount of general academic skills trainings and projects, all of which comes at the expense of content-specific education. In terms of specialized knowledge, therefore, university college graduates enter the master's phase with a relative disadvantage, having taken less courses in the given discipline.

Unlike the US, where a broad undergraduate curriculum is very common, in the Netherlands and elsewhere in Europe, the assumption of monodisciplinarity is deeply rooted, and LAE programmes still struggle with a lack of recognition. As a condition for enrolment, specialized master's programmes at research universities in the Netherlands usually require that the students have obtained a certain amount of ECTS credits in a given subject area. Due to the nature of their degree, university college graduates are not always able to meet these formal requirements (Godwin, 2015, p. 233). It is therefore not surprising that preparedness to pursue specialized study at the master's level is an issue commonly raised not only by critics of university colleges, but also by many LAE stakeholders, including prospective students and their parents (de Waard, 2019).

Contrary to what the critics point out, proponents of LAE contend that the broad foundation of knowledge and holistic learning experience provided by the liberal arts are supposed to facilitate disciplinary specialization rather than hinder it. Somewhat paradoxically, it is suggested that in spite of their relative lack of disciplinary knowledge, liberal arts graduates are well-suited to succeed in a specialized master's programme and future career (Cech, 1999; Dekker, 2017; Task Force on Higher Education and Society, 2000, p. 89). While the type of undergraduate education provided by university colleges may not directly imply preparedness of its students for further specialized study, the underlying mechanism explaining the causal relationship between these two factors concerns the role and development of generic skills. More specifically, it is argued that the generic, transferrable skills attained through a LAE programme is what enables its graduates to adapt to new situations and master new knowledge quickly, making up for their lack of disciplinary expertise (Dekker, 2017). The following subsection elaborates on this argument, discussing the most relevant questions related to the development and transfer of generic skills.

4.3.1 The Role of Generic Skills

Commonly referred to as 'transferable skills', '21st-century skills', and 'key competences', generic skills constitute a widely recognized yet conceptually vague category (Chan et al., 2017). Put simply, generic skills are those that are not specific to a particular field or occupation and which can potentially be applied across a range of disciplines, contexts, and circumstances (Cornford, 2005).

In the context of this discussion, it is particularly relevant to look at the interrelation between liberal arts education and the skills of learning, or the capacity to (quickly) acquire new knowledge, as well as other skills tied with the ability of LAE graduates to succeed in a specialized master's. LAE is generally considered to be strongly related to learning outcomes associated with 'cognitive flexibility' (Lewis, 2018, p. 15), learning to learn (DeNicola, 2012), learning to think (Zakaria, 2015, pp. 72–105), lifelong learning

(Seifert et al., 2008), metacognition (van Damme, 2016, p. 136), 'mental mobility' (Claus et al., 2018, p. 1015), and other related concepts. The literature on liberal arts education suggests that LAE graduates are adept at learning because they have developed a range of generic skills, such as critical thinking, problem solving, logical argumentation, information literacy, communication, and quantitative reasoning (DeNicola, 2012, pp. 125–135). Another skill that might strongly influence academic success is writing, and liberal arts programmes are known for their commitment to excellence in this domain (Zakaria, 2015, pp. 72–105). The same can be said of methodological and research skills (Eschenbruch et al., 2016, pp. 96–97). In fact, all of the general academic skills mentioned above certainly play a role in facilitating transition to a specialized master's. These broad cognitive skills are considered to be transferable from one subject to another, and therefore applicable to studies in many areas (DeNicola, 2012, p. 128).

Taking this into account, the assumption that generic skills allow university college graduates to succeed in a specialized master's despite their relative lack of domain-specific knowledge entails two premises. Firstly, LAE programmes foster generic skills. Secondly, these skills are transferable across disciplines, and are accordingly able to compensate for the students' lack of disciplinary expertise by enabling them to quickly catch up with their peers.

While the cultivation of generic skills is commonly ascribed to LAE, evidence in support of this is not extensive, especially in the European context. US-focused studies by Pascarella et al. (2005) and Seifert et al. (2008) found evidence that the pedagogical practices and learning environment characteristic of LAE associate positively with the development of various general skills, including writing and lifelong learning. Even though studies directly considering LAE are scarce, the literature suggests that active, student-centred pedagogies that involve a variety of assessment methods and extensive teacher-student and student-student interactions are most suitable for nurturing generic capabilities associated with new learning, problem solving, and the ability to operate in new situations (Kember et al., 2007; Virtanen & Tynjälä, 2019).

While these findings give good reason to believe that LAE programmes offer an educational environment that benefits the development of generic skills, the second presumption raises a number of questions related to the very nature of these skills. A vital issue that is often overlooked in the LAE literature concerns the extent to which generic skills are truly generic, in the sense that they can be transferred across disciplines. While the theoretical notion of perfectly transferable generic skills that can be effectively applied across domains is often taken for granted, empirical research cautions against such a conception. A number of studies found that generic skills are always developed within a specific context and function in contextualized ways (Badcock et al., 2010; Clanchy & Ballard,

1995; Cornford, 2005; Cromley; Jones, 2009; Perkins & Salomon, 1989). As noted by Jones (2009), the limited transferability of generic skills essentially stems from the fact that they are almost always taught within a specific discipline, whose content, context and culture strongly influence the formation of these skills. Since the teaching and conceptualization of generic skills differs considerably across disciplines, in reality, each of these skills exists in a variety of subject-specific forms and dimensions.

A related aspect concerns the assessment of generic skills, which does not separate them from discipline-specific knowledge and skills. In other words, the attained level of generic skills is neither independently tested nor explicitly reported, but remains concealed within disciplinary course grades (Badcock et al., 2010). An arising question is whether course grades provide a reliable measure of generic skills. In a study at an Australian university, Badcock et al. (2010) found a statistically significant yet weak positive relationship between the students' GPA and their levels of generic skills, which were measured using a separate test. This led them to conclude that GPA can only be considered a 'coarse indicator' of generic skills acquirement.

Even if the learning of generic skills is strongly context-bound, this still doesn't mean they are entirely non-transferable. As explained by Perkins and Salomon (1989), transfer from one context to another can occur under specific conditions, by means of two different mechanisms. The first one, referred to as the 'low road' to transfer, includes extensive and varied practice of a skill to a high level of mastery or near-automaticity, while the second, 'high road', depends on the learners' ability to mindfully decontextualize knowledge and abstract it into principles (Perkins & Salomon, 1989, pp. 22–23). As Pellegrino (2017) notes, transfer is unlikely to occur unless it is nurtured, which can be achieved by creating a suitable learning environment. This calls for effective instructional methods (engaging learners in challenging tasks, encouraging questioning and elaboration, using cases and examples) and continuous assessment aided by explanatory feedback, both of which promote deeper or meaningful learning, enabling students to 'thoroughly understand academic content and to recognize when, how and why to apply that content knowledge to solve new problems' (Pellegrino, 2017, p. 232).

Clearly, skill transfer does not occur easily nor naturally, but involves a highly complex process that depends on a range of factors, including individual disposition and awareness (Clanchy & Ballard, 1995; Cornford, 2005; Jackson, 2013; Perkins & Salomon, 1989). As DeNicola (2012, p. 133) put it, 'being skilled at reading literature does not entail being skilled at reading philosophy. One can be adroit at writing history, but unable to write poetry. An adept solver of problems in economics may be stumped by problems in chemistry'. Despite this—or precisely because of it—the educational breadth offered by the liberal arts should not be underestimated. As argued by Cech (1999), academic

cross-training in the sciences, arts and humanities can help students gain extra skills and round out existing ones, significantly aiding their analytical, reflective, conceptual and argumentation abilities. Just like cross-training in sports improves the athlete's overall performance, exercising skills in different areas can be more advantageous than taking another course in the same subject (Cech, 1999, p. 209).

Although it does not provide strong empirical support, the literature considered in this section indicates there is reason to believe that the teaching practices and curricula of liberal arts institutions benefit both the acquisition of generic skills and their transfer to new situations and disciplinary contexts. However, as generic skills levels of past students are empirically unobtainable, the degree and significance of their impact on facilitating graduate specialization cannot be tested directly. In view of the complex and contested nature of skill transferability and generalizability, it can be said that the mechanism explaining the preparedness of LAE graduates for specialized master's studies very much resembles a black box. To this end, the present article will only be able to reveal whether or not LAE graduates are successful in pursuing specialized master's studies. The actual contribution of generic skills in this process will have to remain an educated guess. Despite this, the theoretical discourse on the nature of generic skills should be born in mind, not least because the complexities it entails are too often overlooked by LAE supporters.

It is also worth noting that this article does not intend to investigate whether LAE graduates have higher stocks of generic skills compared to their non-LAE peers, nor to prove that they are better learners. What it does attempt to consider is whether or not liberal arts education and specialization sit at odds with each other. Thereby, generic skills constitute a supposed enabling mechanism—a channel which, for all the aforesaid reasons, remains largely invisible, and whose output will be assessed against the benchmark of students with specialized bachelor's degrees. With this in mind, the following section lays down the research questions and assumptions that will guide the empirical analysis.

4.4 Research Hypotheses and Questions

Based on the discussion in the previous section, it can be concluded that there is not enough theoretical ground to assume that LAE graduates will perform better or worse in the master's programmes compared to their peers with a more specialized background. Bearing in mind the arguments of both sides in the debate, two effects can be expected to occur: a negative effect, stemming from the broad nature of the LAE curriculum and resultant relative lack of disciplinary knowledge, and a positive effect, associated with the compensatory role of generic skills.

In line with these premises, the empirical analysis seeks to answer the following research question: *How successful are UCM graduates in pursuing specialized master's studies compared to their counterparts with a matching discipline-focused bachelor's degree*? Thereby, success in the master's programmes is defined as the students' academic achievement, measured by dropout rates, overall GPA, and master's thesis grades. Hence, the main research question is explored through three more specific comparisons.

The first factor that needs to be taken into account concerns students who drop out of the programme, as a higher dropout rate would imply unpreparedness to pursue specialized study at the master's level. The second comparison looks at overall GPA, which is widely regarded as the most relevant indicator of academic achievement. Thirdly, the master's thesis is considered as the final and most comprehensive assessment, which requires students to integrate specific knowledge and skills with general academic competences (Tuononen & Parpala, 2021). Furthermore, the thesis writing takes place at the end of the studies, by when LAE students should have picked up enough subject-specific knowledge to complement their more general background.

4.5 Empirical Analysis

This research uses a multiple case study design involving three master's programmes at Maastricht University:

1. International Business (IB), a one-year MSc at the School of Business and Economics (SBE);
2. Psychology, a one-year MSc at the Faculty of Psychology and Neuroscience (FPN); and
3. Research Master in Cognitive and Clinical Neuroscience, a two-year MSc at FPN.

With regard to specialization, an important shared feature of these programmes is that they are divided into several study tracks, allowing students to concentrate on a particular sub-area. While International Business is a relatively broad programme compared to Psychology and Neuroscience, some of its study tracks (such as controlling, information management, and finance) require more specialized knowledge, whereas others (such as consultancy, strategy, and entrepreneurship) are more general. The Psychology programme involves narrower, basic science (developmental psychology, cognitive neuroscience, and neuropsychology) and broader, applied (legal, work/organizational, and health/social psychology) specialization tracks, while the Neuroscience research master is highly specialized in all its tracks.

The selection of Maastricht University as a case study was based on data availability and the fact that UCM is the second oldest university college in the Netherlands (founded in 2002), providing a sufficient sample of LAE graduates. Focusing on one university also allowed the elimination of possible confounding effects associated with transitional barriers, which can considerably impact study performance in master's programmes (Rienties et al., 2014).

The three master's programmes were chosen for several reasons. Firstly, they represent disparate specialization fields that require different kinds of specific knowledge. Secondly, as previously stated, these programmes and their study tracks also exemplify varying degrees of academic specialization. Furthermore, among the specialized master's programmes at Maastricht University, these three enrolled the highest number of UCM graduates. Finally, the fact that these masters have a corresponding specialized bachelor's programme was a crucial consideration, allowing for a comparison between UCM graduates, on the one hand, and students who completed a bachelor's in International Business at SBE (IB-SBE) or Psychology at FPN, on the other. The empirical analysis focuses on comparing the academic achievement of these two groups.

4.5.1 Data, Sample, and Variables

Pseudonymised data was obtained from the records of SBE and FPN. The initial sample has been restricted to exclude people who are still studying, students holding a bachelor's degree from both UCM and the specialized programme, persons over the age of 30 at the time of enrolment, MSc graduates with a gap of one year or more amid their studies, MSc graduates with study durations longer than 4 years (1460 days) and shorter than 200 days, and observations with missing or erroneous GPA values. Specialization tracks with no UCM students have also been left out of the analysis.

The final sample consists of 3,875 master's students who first registered between September 1, 2008 and February 1, 2020. Among these students, 152 are UCM graduates. 3,637 students completed the programmes, while 238 students dropped out. A detailed overview of study samples is presented in Table 4.1.

Table 4.1 Study samples per type of bachelor's degree

	International Business			**Psychology**			**Neuroscience**		
	IB-SBE	UCM	*Total*	FPN	UCM	*Total*	FPN	UCM	*Total*
Graduated	1,782	57	1,839	1,455	51	1,506	257	35	292
Dropped out	130	5	135	82	2	84	17	2	19
Total	1,912	62	**1,974**	1,537	53	**1,590**	274	37	**311**
Enrolled between	Sep 1, 2008 – Feb 1, 2020			Sep 1, 2008 – Sep 1, 2019			Sep 1, 2008 – Sep 1, 2018		

Three dependent variables are used as measures of academic achievement:

- dropout status (1 = dropped out; 0 = graduated);
- master GPA (10-point scale); and
- thesis grade (10-point scale).

The main independent variable of interest is the type of undergraduate education (1 = UCM degree; 0 = specialized bachelor's).

Control variables include:

- bachelor GPA (standardized to a mean of 0 and standard deviation of 1 to account for possible grading variations across faculties);
- duration of master's studies (in years);
- age (at the time of first registration);
- gender (1 = female; 0 = male);
- academic semester of first enrolment (1 = February; 0 = September);
- academic year of first enrolment;
- specialization track; and
- type of specialization track (1 = narrow/basic science tracks; 0 = broad/more applied tracks).

An overview of specialization tracks and their grouping is provided in Table 4.2. The descriptive statistics per type of bachelor's degree are presented in Table 4.3.

Table 4.2 Specialization track grouping

Narrow/basic science tracks	Broad/applied science tracks
International Business	
Strategic Corporate Finance Information Management Supply Chain Management Marketing-Finance Business Intelligence Controlling Sustainable Finance	Entrepreneurship and SME Management Organization: Management, Change and Consultancy Strategic Marketing Strategy and Innovation
Psychology	
Developmental Psychology Cognitive Neuroscience Neuropsychology	Legal Psychology Work and Organizational Psychology Health and Social Psychology
Neuroscience	
Fundamental Neuroscience Neuropsychology Psychopathology Cognitive Neuroscience Neuroeconomics	

Table 4.3 Descriptive statistics per type of bachelor's degree, excluding dropouts

	International Business		Psychology		Neuroscience	
	IB-SBE (N = 1782)	UCM (N = 57)	FPN (N = 1455)	UCM (N = 51)	FPN (N = 257)	UCM (N = 35)
Master GPA						
Mean (SD)	7.69 (0.49)	7.62 (0.47)	7.57 (0.59)	7.78 (0.57)	8.15 (0.45)	8.29 (0.54)
Min, Max	6.0, 9.4	6.0, 8.5	6.0, 9.3	6.3, 9.0	6.9, 9.3	7.1, 9.3
Thesis grade						
Mean (SD)	7.60 (0.77)	7.55 (0.69)	7.81 (0.79)	7.99 (0.75)	8.63 (0.69)	8.69 (0.72)
Min, Max	5.5, 9.5	6.0, 8.5	6.0, 10.0	6.0, 9.5	6.0, 10.0	7.0, 10.0
Bachelor GPA						
Mean (SD)	7.17 (0.56)	7.36 (0.41)	7.25 (0.52)	7.41 (0.44)	7.95 (0.57)	7.87 (0.47)
Min, Max	5.5, 9.2	6.3, 8.2	5.5, 9.3	6.7, 8.4	6.6, 9.4	7.0, 8.8
Study duration (years)						
Mean (SD)	1.46 (0.55)	1.65 (0.57)	1.30 (0.53)	1.34 (0.60)	2.15 (0.38)	2.16 (0.40)
Min, Max	0.8, 4.0	0.9, 2.9	0.6, 4.0	0.8, 4.0	1.7, 3.9	1.9, 3.5
Age						
Mean (SD)	22.82 (1.48)	22.95 (1.78)	22.96 (1.76)	22.78 (1.63)	22.71 (1.79)	22.51 (1.77)
Min, Max	20.0, 30.0	20.0, 27.0	19.0, 30.0	20.0, 27.0	20.0, 30.0	20.0, 30.0
Gender						
Male	1013 (56.8%)	25 (43.9%)	352 (24.2%)	10 (19.6%)	84 (32.7%)	13 (37.1%)
Female	769 (43.2%)	32 (56.1%)	1103 (75.8%)	41 (80.4%)	173 (67.3%)	22 (62.9%)

4.5.2 Method and Models

Depending on the outcome variable, OLS and probit regression analyses were performed. All analyses were conducted in Stata 16.1, using the commands *regress* and *probit* with robust standard errors clustered at the academic year×specialization track level.

Eight different regression models were estimated: two for dropouts, four for master GPA, and two for the thesis grade as outcome variables. For each of the three dependent variables, a base model including only the UCM dummy and academic year was estimated first, after which the controls were added. The structure of the models was the same for all three MSc programmes, with the exception of the academic semester variable, which was not included in the regressions pertaining to Psychology and Neuroscience, where all students enrolled in September. Model G3, which uses the narrow versus broad specialization variable, was not estimated for Neuroscience, where the specialization tracks do not differ in those terms.

Dropouts are included only in probit regression models (D0 and D1) estimating the effect of bachelor's degree type on dropping out of the master's programme. OLS models G0-G3 use master GPA as the dependent variable. Model G2 includes an interaction term between a UCM degree and bachelor GPA, allowing to compare master GPAs of two groups at different levels of bachelor GPA and thereby check for possible disproportionalities in the

performance of low-achieving and high-achieving students. To examine whether UCM graduates perform better in tracks that are of a more general nature versus those that require more specialized knowledge, model G3 includes an interaction term between a UCM degree and specialization type. In OLS models T0 and T1, the dependent variable is the thesis grade.

4.6 Results

4.6.1 Dropouts

Probit regression results are presented in Table 4.4. Models D0 and D1 show that the type of undergraduate degree has no effect on the dropout rate. The effect of being a UCM graduate on dropping out of the master's programme is statistically insignificant in all three programmes. Significant effects are found for age and gender in the IB and Psychology masters. Older age increases the probability of dropping out, while females are less probable to leave their studies.

Table 4.4 Probit regression results for dropouts

	International Business		Psychology		Neuroscience	
	D0	D1	D0	D1	D0	D1
UCM	0.147 (0.276)	0.176 (0.302)	-0.131 (0.342)	-0.065 (0.380)	-0.020 (0.368)	-0.021 (0.381)
BA_GPA_std		-0.103 (0.059)		-0.070 (0.057)		0.027 (0.113)
age		0.077** (0.026)		0.114*** (0.026)		0.117 (0.064)
female		-0.183* (0.093)		-0.276* (0.125)		0.235 (0.305)
February		0.120 (0.092)				
Constant	-1.218*** (0.077)	-3.005*** (0.615)	-1.469*** (0.152)	-3.907*** (0.653)	-1.498*** (0.290)	-3.851* (1.604)
Academic Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Specialization Dummies	No	Yes	No	Yes	No	Yes
Observations Pseudo R^2	1974 0.027	1968 0.061	1590 0.017	1590 0.085	260 0.034	254 0.089

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
Academic years and specialization tracks with no dropouts are excluded.

4.6.2 Master GPA

OLS regression results for master GPA are presented in Table 4.5. The base model (G0) shows that the coefficient on UCM is statistically insignificant in the IB and Neuroscience masters. In the case of Psychology, there is a modest positive statistically significant effect. For a UCM graduate, master GPA is 0.176 grade points higher than for a student with an FPN bachelor's degree.

The significance and size of the coefficients on UCM for IB and Psychology remain substantially unchanged after the controls are added in model G1. In the IB master, the coefficient on UCM is both substantively small and statistically insignificant. Hence, there is no difference between UCM and IB-SBE graduates in terms of master GPA. In the Psychology master, the effect of being a UCM graduate on GPA is positive and statistically significant. All other factors held constant, a student coming from UCM will have a 0.184 grade points higher GPA compared to an FPN graduate. While the coefficient on UCM in the Neuroscience master is statistically insignificant in model G0, model G1 shows results very similar to those in Psychology. Holding a UCM degree has a statistically significant and slight positive effect (0.146) on master GPA.

Table 4.5 OLS regression results for master GPA

	International Business				Psychology				Neuroscience		
	G0	G1	G2	G3	G0	G1	G2	G3	G0	G1	G2
UCM	-0.035	-0.042	-0.042	-0.058	0.176*	0.184*	0.185*	0.150	0.140	0.146*	0.134*
	(0.050)	(0.043)	(0.043)	(0.040)	(0.084)	(0.075)	(0.073)	(0.098)	(0.099)	(0.060)	(0.053)
BA_GPA_std		0.302***	0.302***	0.296***		0.308***	0.312***	0.309***		0.265***	0.245***
		(0.010)	(0.010)	(0.010)		(0.012)	(0.013)	(0.012)		(0.018)	(0.021)
duration_y		-0.087***	-0.087***	-0.097***		-0.155***	-0.156***	-0.164***		-0.283***	-0.274***
		(0.021)	(0.021)	(0.021)		(0.026)	(0.026)	(0.025)		(0.054)	(0.051)
age		0.012	0.012	0.011		0.013	0.013	0.014		-0.006	-0.008
		(0.006)	(0.006)	(0.006)		(0.008)	(0.008)	(0.008)		(0.011)	(0.011)
female		0.116***	0.116***	0.134***		0.182***	0.181***	0.195***		-0.003	-0.002
		(0.020)	(0.020)	(0.020)		(0.031)	(0.031)	(0.034)		(0.040)	(0.040)
February		0.015	0.014	0.009							
		(0.022)	(0.022)	(0.022)							
UCMxBA_GPA_std			0.022				-0.113				0.184**
			(0.047)				(0.072)				(0.060)
narrow_spec				-0.007				-0.123***			
				(0.022)				(0.032)			
UCMxnarrow_spec				0.099				0.081			
				(0.139)				(0.156)			
Constant	7.716***	7.591***	7.588***	7.682***	7.439***	7.299***	7.301***	7.257***	8.218***	8.693***	8.706***
	(0.050)	(0.158)	(0.159)	(0.145)	(0.111)	(0.192)	(0.191)	(0.192)	(0.089)	(0.305)	(0.312)
Academic Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Full Specialization Dummies	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Observations	1839	1839	1839	1839	1506	1506	1506	1506	292	292	292
R^2	0.015	0.428	0.428	0.420	0.093	0.448	0.449	0.436	0.072	0.545	0.560

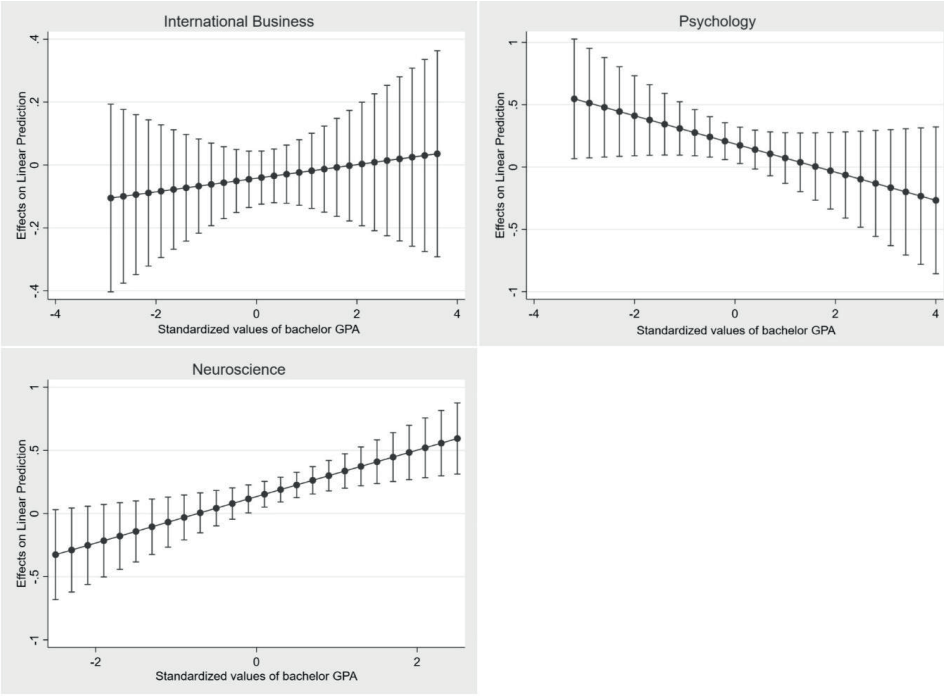
Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Expectedly, the regression results indicate that bachelor GPA is the single most powerful predictor of master GPA. This effect is the strongest in the IB and Psychology masters, where a one standard deviation increase of bachelor GPA is associated with a master GPA increase of 0.302 and 0.308 respectively. As to other controls, the statistically significant effects of study duration and gender are also worth pointing out. The effect of study duration is most pronounced in the two-year Neuroscience master, where studying one year longer is associated with a GPA decrease of 0.283. In IB and Psychology, which are one-year programmes, GPA is affected less severely by prolonged study duration. In these two programmes, additionally, there is a statistically significant positive effect for females not present in the case of Neuroscience. Looking at the size of this effect, it is interesting to notice that in the case of Psychology, the coefficients on UCM and females are nearly the same. February enrolment has no effect on the master GPA of IB students, while the effect of age is minuscule and statistically insignificant in all three cases.

Model G2 reveals that the coefficient on the bachelor GPA-UCM degree interaction term is statistically insignificant in the case of IB and Psychology and significant in the case of Neuroscience. This is further illustrated in Figure 4.1, which shows the marginal effects of a UCM degree at different levels of bachelor GPA. As can be observed from the figure, the performance of UCM graduates and their SBE counterparts is the same at all levels of bachelor GPA. While in the Psychology master the interaction term is also statistically insignificant, the marginal effects plot in Figure 4.1 reveals that UCM students with below-average bachelor GPAs perform better than their FPN counterparts. At higher levels of bachelor GPA, the effect ceases to be statistically significant, suggesting that above-average UCM and FPN graduates do not differ in terms of master GPA. In the Neuroscience programme, by contrast, the positive effect of being a UCM graduate is more pronounced at higher levels of bachelor GPA. While there are no significant differences between low-performing students, UCM graduates with above-average bachelor GPAs have higher master GPAs than their FPN peers.

The results of model G3 reveal no significant effects related to narrow and broad specializations. While UCM students in the IB programme generally avoided narrower specialization tracks, more frequently enrolling in broader tracks, they performed just as good as their SBE peers in both. The interaction term of model G3 is also statistically insignificant in the case of Psychology. In other words, UCM students performed equally well as FPN graduates in more applied and basic science specialization tracks.

Figure 4.1 Marginal effects of a UCM degree at different levels of bachelor GPA



4.6.3 Master's Thesis

OLS regression results for the master's thesis are presented in Table 4.6. When it comes to the effect of being a UCM graduate, using the thesis grade as the outcome variable yields statistically insignificant results in all three cases. While the coefficient on UCM is negative for IB and positive for Psychology and Neuroscience, based on models T0 and T1, it can only be concluded that the thesis grades of UCM degree holders are no different than those of IB-SBE and FPN graduates.

As with model G1, there is a strong effect of bachelor GPA on the master's thesis grade in all three programmes. Compared to master GPA, the thesis grade is more severely affected by prolonged study duration. This is especially the case in the Neuroscience programme, where taking an extra year to graduate leads to a thesis grade decrease of 0.493. Similar to model G1, the effect of gender is statistically significant for IB and Psychology, but not in the case of Neuroscience. The effect of age is only statistically significant for Psychology, but its magnitude is very small.

Table 4.6 OLS regression results for the master's thesis

	International Business		Psychology		Neuroscience	
	T0	T1	T0	T1	T0	T1
UCM	-0.044 (0.097)	-0.027 (0.095)	0.180 (0.112)	0.186 (0.113)	0.062 (0.129)	0.101 (0.104)
BA_GPA_std		0.298*** (0.018)		0.259*** (0.019)		0.207*** (0.036)
duration_y		-0.152*** (0.042)		-0.237*** (0.044)		-0.493*** (0.127)
age		0.018 (0.011)		0.041** (0.012)		0.034 (0.021)
female		0.193*** (0.036)		0.108* (0.049)		0.138 (0.089)
February		-0.030 (0.039)				
Constant	7.697*** (0.080)	7.549*** (0.260)	7.732*** (0.118)	7.093*** (0.278)	8.888*** (0.144)	8.964*** (0.657)
Academic Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Full Specialization Dummies	No	Yes	No	Yes	No	Yes
Observations	1839	1839	1506	1506	292	292
R^2	0.007	0.212	0.020	0.187	0.035	0.262

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

4.7 Discussion and Conclusion

The results of the statistical analysis indicate that there are no major differences in the academic achievements of liberal arts graduates and their peers with a more focused disciplinary background. In the two master's programmes at FPN, UCM students even performed slightly better in terms of GPA. Overall, the empirical findings of this paper suggest that liberal arts education and academic specialization are not at odds with each other.

Looking back at the main research hypotheses, it can be said that the positive effect cancelled out the negative one. Even in narrow specialization tracks, the fact that UCM graduates did less courses in psychology and economics than students with a matching bachelor's degree did not affect their academic success. Moreover, below-average UCM graduates were not outperformed by their counterparts, and those with an above-average bachelor GPA managed to maintain high academic achievements. In other words, LAE graduates were able to compensate for their relative lack of disciplinary knowledge. Yet, what exactly enabled them to achieve this is subject to debate.

The theoretical assumptions postulated in this paper emphasize the role of generic skills. While providing a good indication of whether LAE graduates are prepared for a specialized master, a comparison of academic performance cannot directly reveal the actual extent to which generic skills are responsible for the graduates' success. In that sense, poor performance in the masters would have pointed to an overall incapacity to compensate for the relative lack of specific knowledge. The fact that LAE graduates proved successful rules this out, implying that they were able to transfer their abilities across courses and disciplines. However, based on the available evidence, it is not possible to identify whether any particular skills or abilities played a crucial role in this process. Given the context of the study, one might contend that successful disciplinary specialization would not have been possible without well-developed general academic skills. Alternatively (or complementarily), LAE students may have succeeded despite their lack of disciplinary depth because their interdisciplinary background accustomed them to exploring previously unknown academic fields, resulting in a sustained capacity to effectively gather new knowledge. On the other hand, it may be that the demanding and self-directed nature of the LAE programme trained them to work hard and handle difficulties, fostering a range of valuable non-cognitive skills. Exploring these suppositions requires further research, which is currently underway.

One might also argue that the academic success of LAE students in the master's programmes has less to do with the content and quality of education provided by university colleges as it does with their selective admission criteria. The argument would be that candidates who enrol in LAE programmes are already highly capable individuals bound to succeed regardless of the type of undergraduate education they receive. While this paper's findings cannot empirically disprove such an assumption, it should be borne in mind that although UCM is a selective programme, the opposite is certainly not the case for the International Business and Psychology bachelors, which have also introduced similar admission requirements over the years (Maastricht University, 2020). In this paper, nevertheless, selectivity was not controlled for, which is one of the drawbacks of its method. To explore the selectivity effect of university colleges in full depth, a separate study would be needed.

The main limitation of this research stems from the fact that it involves a relatively small number of LAE graduates and only looks at one university. As university college students have widely ranging academic profiles and tend to pursue master's programmes that are both geographically and disciplinarily dispersed, finding a programme with sufficient LAE student numbers was a challenge. As with every case study, the generalizability of research findings is reduced. Hopefully, future research will be able to conduct more comprehensive analyses in the context of Dutch and European liberal arts education.

The general and most important conclusion that can be drawn from this case study is that attending a liberal arts undergraduate programme does not preclude disciplinary specialization at the master's level. In other words, university college graduates are just as prepared for further specialized study as students who have a discipline-focused bachelor's degree in the same field.

As part of the wider debate on what kind of education is needed to equip graduates for the challenges of the 21st century, these findings have implications for the structure of the undergraduate curriculum and adequate timing of specialization. In this regard, it is widely acknowledged in the literature that universities need to find the right balance between nurturing the graduates' flexibility, which highlights the value of general education and transferable skills, and developing their professional expertise, which requires specific knowledge (van der Velden & Allen, 2011). In a similar vein, it is also pointed out that later specialization can be particularly valuable in changing environments and volatile labour markets (Malamud, 2010). In times of unprecedented uncertainty and change in all spheres of life, it is useful to know that the trade-off between a broad(er) undergraduate curriculum and specialization is not as pronounced as some LAE critics suggested. To that end, an undergraduate curriculum that offers more breadth and flexibility should rather be seen as part of the solution than as part of the problem.

This is not to say that all undergraduate education should be based on LAE. In the wider higher education landscape, university colleges are still an exception, with a student body that is different from that of most traditional programmes in terms of interests and academic motivation (Dekker, 2021). For these people, LAE is proving to work very well. Yet, to what extent other university programmes would benefit from incorporating some of its features is difficult to say—although experiments might be worthwhile.

Lastly, this paper's findings can also be interpreted in light of university college graduates' labour market readiness. Under the reasonable assumption that academic specialization is a pre-condition for professional specialization, success in a more discipline-focus master's programme can serve as a good indication of a student's ability to perform well in a specialized job. Therefore, the capability of liberal arts graduates to specialize represents an important aspect of their career preparedness, as well as a meaningful indicator of the practical, labour market value of liberal arts education.

4.8 References

Badcock, P. B. T., Pattison, P. E., & Harris, K.-L. (2010). Developing generic skills through university study: A study of arts, science and engineering in Australia. *Higher Education*, *60*(4), 441–458. https://doi.org/10.1007/s10734-010-9308-8

Becker, J. A. (2014). What a liberal arts education is... And is Not. In J. A. Becker & P. Fedchin (Eds.), *Contemporary liberal arts and sciences education: Experiences form the United States and Europe* (pp. 12–40). St. Petersburg State University.

Cech, T. R. (1999). Science at liberal arts colleges: A better education? *Daedalus*, *128*(1), 195–216.

Chan, C. K., Fong, E. T., Luk, L. Y., & Ho, R. (2017). A review of literature on challenges in the development and implementation of generic competencies in higher education curriculum. *International Journal of Educational Development*, *57*, 1–10. https://doi.org/10.1016/j.ijedudev.2017.08.010

Clanchy, J., & Ballard, B. (1995). Generic skills in the context of higher education. *Higher Education Research & Development*, *14*(2), 155–166. https://doi.org/10.1080/0729436950140202

Claus, J., Meckel, T., & Pätz, F. (2018). The new spirit of capitalism in European liberal arts programs. *Educational Philosophy and Theory*, *50*(11), 1011–1019. https://doi.org/10.1080/00131857.2017.1341298

Cooper, N. (2018). Evaluating the liberal arts model in the context of the Dutch university college. *Educational Philosophy and Theory*, *50*(11), 1060–1067. https://doi.org/10.1080/00131857.2017.1341299

Cornford, I. (2005). Challenging current policies and policy makers' thinking on generic skills. *Journal of Vocational Education & Training*, *57*(1), 25–45. https://doi.org/10.1080/13636820500200273

Cromley, J. *Learning to think, learning to learn: What the science of thinking and learning has to offer adult education*. National Institute for Literacy.

Dekker, T. (2017). Liberal arts in Europe. In M. Peters (Ed.), *Encyclopedia of educational philosophy and theory* (pp. 1–6). Springer Singapore. https://doi.org/10.1007/978-981-287-532-7_569-1

Dekker, T. (2021). The value of curricular choice through student eyes. *The Curriculum Journal*, *32*(2), 198–214. https://doi.org/10.1002/curj.71

DeNicola, D. R. (2012). *Learning to flourish: A philosophical exploration of liberal education*. Continuum International Publishing Group.

de Waard, M. (2019). Theme-based teaching and interdisciplinary learning: A case study at Amsterdam University College, the Netherlands. In M. Nishimura & T. Sasao (Eds.), *Doing liberal arts education: The global case studies* (pp. 47–59). Springer Singapore. https://doi.org/10.1007/978-981-13-2877-0_5

Eschenbruch, N., Gehrke, H.-J., & Sterzel, P. (2016). University College Freiburg: Toward a new unity of research and teaching in academia. In W. C. Kirby & M. C. van der Wende (Eds.), *Experiences in liberal arts and science education from America, Europe, and Asia* (pp. 91–108). Palgrave Macmillan US. https://doi.org/10.1057/978-1-349-94892-5_7

Godwin, K. A. (2015). The counter narrative: Critical analysis of liberal education in global context. *New Global Studies*, *9*(3). https://doi.org/10.1515/ngs-2015-0033

Jackson, D. (2013). Business graduate employability – where are we going wrong? *Higher Education Research & Development*, *32*(5), 776–790. https://doi.org/10.1080/07294360.2012.709832

Jones, A. (2009). Generic attributes as espoused theory: The importance of context. *Higher Education*, *58*(2), 175–191. https://doi.org/10.1007/s10734-008-9189-2

Kember, D., Leung, D. Y., & Ma, R. S. (2007). Characterizing learning environments capable of nurturing generic capabilities in higher education. *Research in Higher Education*, *48*(5), 609–632. https://doi.org/10.1007/s11162-006-9037-0

Lewis, P. (2018). Globalizing the liberal arts: Twenty-first-century education. In N. W. Gleason (Ed.), *Higher education in the era of the Fourth Industrial Revolution* (pp. 15–38). Springer Singapore.

https://doi.org/10.1007/978-981-13-0194-0_2

Maastricht University. (2020). *Regulations on selection for bachelor's programmes at Maastricht University with restricted intake, 2021/2022 Academic Year*. https://www.maastrichtuniversity.nl/file/ssc-reglementselectiefixus20202021en

Maastricht University. (2021). *University College Maastricht: Why this programme?* https://www.maastrichtuniversity.nl/education/bachelor/university-college-maastricht/why-this-programme

Malamud, O. (2010). Breadth versus depth: The timing of specialization in higher education. *LABOUR*, *24*(4), 359–390. https://doi.org/10.1111/j.1467-9914.2010.00489.x

Mehrens, P. (2017). Liberal arts education. In M. Peters (Ed.), *Encyclopedia of educational philosophy and theory* (pp. 1288–1293). Springer Singapore. https://doi.org/10.1007/978-981-287-588-4_483

Pascarella, E. T., Wolniak, G. C., Seifert, T. A., Cruce, T. M., & Blaich, C. (2005). *Liberal arts colleges and liberal arts education: New evidence on impacts. ASHE higher education report: Vol. 31*. Wiley.

Pellegrino, J. W. (2017). Teaching, learning and assessing 21st century skills. In S. Guerriero (Ed.), *Pedagogical knowledge and the changing nature of the teaching profession* (pp. 223–251). OECD Publishing. https://doi.org/10.1787/9789264270695-12-en

Perkins, D. N., & Salomon, G. (1989). Are cognitive skills context-bound? *Educational Researcher*, *18*(1), 16–25. https://doi.org/10.3102/0013189X018001016

Peterson, P. M. (2012). A global framework: Liberal education in the undergraduate curriculum. In P. M. Peterson (Ed.), *Confronting challenges to the liberal arts curriculum* (pp. 1–23). Routledge.

Plasterk, R. (2004, June 18). Creche voor rijkeluiskinderen. *De Volkskrant*.

Reumer, C., & van der Wende, M. C. (2010). Excellence and diversity: Selective admission policies in Dutch higher education - A case study on Amsterdam University College. *UC Berkeley: Center for Studies in Higher Education*. https://escholarship.org/uc/item/4502w5pj

Rienties, B., Luchoomun, D., & Tempelaar, D. (2014). Academic and social integration of master students: A cross-institutional comparison between Dutch and international students. *Innovations in Education and Teaching International*, *51*(2), 130–141. https://doi.org/10.1080/14703297.2013.771973

Seifert, T. A., Goodman, K. M., Lindsay, N., Jorgensen, J. D., Wolniak, G. C., Pascarella, E. T., & Blaich, C. (2008). The effects of liberal arts experiences on liberal arts outcomes. *Research in Higher Education*, *49*, 107–125. https://doi.org/10.1007/s11162-007-9070-7

Task Force on Higher Education and Society. (2000). *Higher education in developing countries: Peril and promise*. The World Bank and UNESCO.

Telling, K. (2018). Selling the liberal arts degree in England: Unique students, generic skills and mass higher education. *Sociology*, *52*(6), 1290–1306.

Tuononen, T., & Parpala, A. (2021). The role of academic competences and learning processes in predicting Bachelor's and Master's thesis grades. *Studies in Educational Evaluation*, *70*, 101001. https://doi.org/10.1016/j.stueduc.2021.101001

University College Deans Network. (2017). *Statement on the role, characteristics, and cooperation of liberal arts and sciences colleges in the Netherlands*. https://www.universitycolleges.info/

University College Maastricht. (2019). *UCM student handbook 2019-2020*. University College Maastricht (UCM).

van Damme, D. (2016). Transcending boundaries: Educational trajectories, subject domains, and skills demands. In W. C. Kirby & M. C. van der Wende (Eds.), *Experiences in liberal arts and science education from America, Europe, and Asia* (pp. 127–142). Palgrave Macmillan US. https://doi.org/10.1057/978-1-349-94892-5_9

van der Velden, R., & Allen, J. (2011). The flexible professional in the knowledge society: Required competences and the role of higher education. In J. Allen & R. van der Velden (Eds.), *The flexible professional in the knowledge society: New challenges for higher education* (pp. 15–

53). Springer. https://doi.org/10.1007/978-94-007-1353-6_2

van der Wende, M. C. (2011). The emergence of liberal arts and sciences education in Europe: A comparative perspective. *Higher Education Policy*, *24*(2), 233–253. https://doi.org/10.1057/hep.2011.3

van der Wende, M. C. (2013). Trends towards global excellence in undergraduate education: Taking the liberal arts experience into the 21st century. *International Journal of Chinese Education*, *2*(2), 289–307. https://doi.org/10.1163/22125868-12340025

Virtanen, A., & Tynjälä, P. (2019). Factors explaining the learning of generic skills: A study of university students' experiences. *Teaching in Higher Education*, *24*(7), 880–894. https://doi.org/10.1080/13562517.2018.1515195

Zakaria, F. (2015). *In defense of a liberal education*. W. W. Norton & Company.

5 JOB ENTRY

Signals of Excellence or Indifference? Dutch Employers' Perceptions of Liberal Arts Bachelor's Degrees

Abstract

This paper investigates how Dutch employers perceive university college bachelor's degrees. These programmes were introduced as part of an excellence initiative in Dutch higher education, offering broad, interdisciplinary, and selective undergraduate degrees in liberal arts and sciences. By conducting semi-structured interviews with 20 recruiters based in the Netherlands, the study explores the graduate job selection process, examining the relative importance of different factors in employers' decisions and the signals sent by university college degrees to employers. The findings reveal a predominantly neutral signalling effect associated with university college degrees. Dutch employers demonstrate limited familiarity with university colleges and tend to assign less significance to the bachelor's degree when it is accompanied by a master's degree in a relevant field. This underscores the challenge of integrating innovative educational models into the traditionally egalitarian research university segment of Dutch higher education.

Keywords

liberal arts education, university colleges, job selection, labour market, signalling, bachelor's degrees

5.1 Introduction

The Dutch higher education system has often been described as a 'plain without peaks' (Reumer & van der Wende, 2010). Consisting of two main types of institutions–academically oriented research universities and vocationally oriented universities of applied science–Dutch higher education is known for its high and nearly equal quality nationwide within these two categories. Apart from the difference between research universities and universities of applied science, there is an almost complete absence of vertical differentiation (Kaiser & Vossensteyn, 2009). This lack of 'peaks' has been in the focus of several initiatives aimed at making more room for excellence in higher education. In 2003, a national committee (*Commissie Ruim baan voor talent*) was formed, paving the way for a set of experiments with selective admission, tuition fee differentiation, and the introduction of honours programmes and tracks for highly talented and motivated students (Commissie Ruim baan voor talent, 2007).

One of the most significant excellence initiatives has been the emergence of university colleges, ten of which have been established within reputable research universities over the past two decades. Based on the principles of liberal arts education (LAE), a model for general undergraduate studies most commonly practised in the US, Dutch university colleges developed as a response to the massified, overly egalitarian, and prematurely specialized higher education system (van der Wende, 2011). University colleges are marked by several distinctive characteristics that set them apart from traditional undergraduate programmes. Their three-year LAE bachelor's degrees are general academic studies without a professional focus. In contrast to traditional bachelor's programmes in the Netherlands, which follow a monodisciplinary approach, with fixed curricula, large-scale teaching, and non-selective admission, LAE degrees are interdisciplinary in their nature. Through a flexible curriculum, students can combine courses across various fields, creating a personalized academic profile with a concentration in one of the three major areas: natural and life sciences, social sciences, and the humanities. University colleges feature small-scale teaching, student-centred pedagogies, extensive student-faculty interactions, and a strong academic community. Additionally, these programmes also have a selective admissions procedure, limiting yearly enrolment to around 250 students per college (Cooper, 2018; Dekker, 2017; University College Deans Network [UCDN], 2017).

As a 'new branch of excellence' in Dutch higher education, university colleges have proved highly successful in terms of teaching quality, student satisfaction, retention rates, and acceptance of graduates into competitive master's programmes (Reumer & van der Wende, 2010, p. 4; UCDN, 2017). Still, little is known about how employers view this novel educational development. Given the relative newness and unconventionality of liberal arts degrees in the Dutch context, the transition of LAE graduates into the labour market

is bound to be strongly influenced by employers' perceptions of this educational model. As noted by Godwin (2015), in places where LAE represents an exception to the norm of specialized, monodisciplinary curricula, the atypical nature of the degree might make it more difficult for LAE graduates to find employment. On the other hand, it may also be that employers recognize university college degrees as a sign of prestige and academic excellence. However, considering the lack of empirical research on this topic, what exactly is being signalled by a LAE degree and whether these signals are positive or negative is largely unknown.

The current paper aims to look deeper into this issue through a qualitative investigation of employers' views on LAE degrees in the Dutch labour market. The main research question it addresses is: *What kind of signals does a university college bachelor's degree send to employers*? To answer this question, semi-structured interviews were conducted with 20 recruiters from 19 different companies in the Netherlands. This qualitative inquiry explored three crucial aspects, aiming to provide a comprehensive understanding of the job selection process, particularly in the context of graduate positions and traineeships. Firstly, it examined how employers evaluate a job candidate's bachelor's degree when they also hold a master's degree. Furthermore, it investigated the most important factors that employers look for in candidates and how these are inferred during the selection process. Finally, it considered whether employers recognize the distinctive features of university college programmes and how they perceive LAE degrees when making hiring decisions. The findings from the qualitative analysis reveal a predominantly neutral signalling effect associated with LAE degrees. Dutch employers demonstrate limited familiarity with LAE programmes and tend to assign less significance to the bachelor's degree when it is accompanied by a master's degree in a relevant field.

The article proceeds as follows. Section 2 provides an overview of the main theories explaining how academic credentials are assessed in the job selection process. Section 3 discusses the possible signals conveyed by a university college degree in the Dutch labour market. Section 4 presents the study's empirical approach, outlining the participant selection and interview procedures. The results of the qualitative analysis are presented in section 5. Section 6 discusses the findings and concludes the paper.

5.2 Theoretical Overview

The way in which employers evaluate a candidate's educational credentials in the job selection process can be explained by several economic and sociological theories. The oldest and perhaps most influential is the human capital theory (Becker, 1964). According to this approach, employers make hiring decisions based on the applicants' stock of

knowledge and skills, which are acquired through education. By building human capital, education enhances individual productivity, which translates into favourable labour market outcomes.

Yet, assessing the human capital of job candidates can pose a challenge for potential employers, as it may not be directly observable. This difficulty is stressed by the signalling theory (Spence, 1973). Since the actual productivity of a job seeker is uncertain to the employer, the hiring decision is based on the interpretation of available observable characteristics, such as diplomas, which act as signals about the underlying skills. It is important to note that signalling theory aligns closely with human capital theory, as it does not dispute the relevance of skills acquired in education (Glebbeek & van der Velden, in press).

Screening theories offer a different perspective. They also assume that academic qualifications improve one's chances of getting hired. However, this is not necessarily due to the added value in terms of productivity and human capital, but rather because these qualifications convey a signal about the candidate's underlying general cognitive abilities and traits, such as learning potential and perseverance (García-Aracil & Albert, 2017). A more specific version of this approach is the queuing or job competition theory (Thurow, 1975). Its main assumption is that the productivity of employees is contingent on work-specific skills, which are acquired through on-the-job training rather than through formal education. Hence, educational credentials mainly serve as an indicator of trainability, signalling lower or higher training costs to the employer and thereby determining a job candidate's relative position in the labour queue.

In contrast to these economic explanations, the theory of cultural capital (Bourdieu, 1986) maintains that educational credentials are rewarded in the labour market primarily because they signify desirable cultural traits, such as status and prestige. Cultural capital can take the form of embodied (interpersonal dispositions), objectified (cultural objects such as books, instruments, paintings, etc.), and institutionalized capital (academic qualifications), the latter of which is particularly relevant in the labour market because it represents a certification of cultural competence. Yet, as individual levels of cultural capital largely stem from family background, its impact on labour market outcomes is inextricably linked to the other two forms of capital described by Bourdieu, economic and social capital (Bourdieu, 1986). While the theory is unclear as to whether educational institutions merely certify pre-existing cultural capital or also contribute to its development, it maintains that educational attainment is valued by employers subjectively, through the lens of its socio-cultural significance, rather than its productivity-enhancing worth (Bills, 2003).

While these general theories highlight the effects of different mechanisms in the recruitment process, they should be viewed as complementary rather than mutually exclusive, as they are likely to coexist in guiding the employers' hiring decisions (Bills, 2003; van de Werfhorst, 2011; Glebbeek & van der Velden, in press). The main focus of this paper is the first phase of the graduate recruitment process, in which the employers scan the applicants' CVs. In the context of studying how a particular observable characteristic—namely, a LAE undergraduate degree—is considered in the initial stage of job selection, the signalling theory appears to be the most relevant. Drawing on the approach used by van Belle et al. (2020), this paper's theoretical framework will centre around a broader version of the signalling perspective, integrating it with the other mechanisms outlined above. More specifically, the signalling effect of a university college degree will be considered by grouping the signals it may send to prospective employers into three categories, namely:

a) signals of human capital,
b) signals of trainability, and
c) signals of cultural capital.

This approach is based on the assumption that while these qualities are not directly observable, they can be inferred based on the employer's perceptions of LAE. Human capital refers to the knowledge and skills acquired during the three-year bachelor's programme. Trainability concerns the graduates' ability to effectively learn skills on-the-job, which is reflected in lower training costs. Cultural capital is to be understood in relation to institutional prestige, which can confer a notion of distinction and act as a marker of a privileged socio-economic background.[10] The following section examines how the distinctive features of Dutch LAE bachelor's programmes might manifest themselves in relation to these three groups of labour market signals.

5.3 Possible Signals Sent by a LAE Degree: Working Assumptions

5.3.1 Signals of Human Capital

The first group of LAE-related labour market signals concerns the graduates' human capital. In this respect, several aspects of LAE programmes may be particularly relevant: their general academic nature, interdisciplinarity, open curricula, and selective admission. First of all, the skills and knowledge acquired by university college graduates differ from those of their peers from traditional, discipline-focused bachelor's programmes. While the

10 As an indicator of social status, cultural capital is difficult to separate from social capital. In the Bourdieusian sense, social capital refers to the resources that come from actual and potential contacts that form a durable network of relationships (Bourdieu, 1986). As social capital is much more likely to manifest itself directly in the job search process, rather than to be inferred from one's educational credentials, the present study will not consider it as a separate factor.

latter aim to prepare students for specific professions and provide them with specialized knowledge and skills, LAE programmes offer a general undergraduate education. The relatively broader academic profile of LAE graduates could be interpreted both as a positive and a negative signal.

On the one hand, it is widely argued by LAE proponents that this educational model provides many valuable generic or 21st-century skills that allow students to perform well in the labour market, especially under changing economic conditions (Gombrich, 2016; van der Wende, 2013). Previous research has drawn connections between LAE and the development of a wide range of generic skills. These encompass critical thinking (Dekker, 2020), effective written and verbal communication (Zakaria, 2015), and cross-cultural competence (Lewis, 2018; Seifert et al., 2008). Additionally, LAE has been associated with fostering flexibility, resilience, and responsiveness to change (Claus et al., 2018; Smith, 2018), along with creativity and innovation (Dekker, 2017; Kovačević et al., 2023; van Damme, 2016), and personal initiative (Claus et al., 2018; Kovačević et al., 2023).

Much of the recent discourse on graduate employability has been built around approaches emphasizing the importance of generic skills (Tomlinson & Holmes, 2017). While these skills can also be developed in specialized programmes, the advantage of the liberal arts model lies in its capacity to foster specific kinds of 21st-century skills. A particularly valuable set of skills is related to the interdisciplinary character of the LAE curriculum. LAE students are taught to think in an interdisciplinary way, transcending disciplinary limitations and boundaries. This greatly enhances their ability to approach problems from a plurality of perspectives and combine insights from various disciplines, which is considered to be an essential requirement for functioning successfully in a complex 21st-century work environment that involves collaboration across a variety of different fields (Dekker, 2017; Lewis, 2018; Ming et al., 2023; van Damme, 2016). This gives reason to believe that a LAE degree as a marker of strong 21st-century skills might send a positive signal to employers.

On the other hand, the relative importance of generic skills in the job market remains a topic of continuous discussion, with previous research providing evidence that occupation-specific skills are the ones that take precedence when it comes to the preferences of employers (Humburg & van der Velden, 2015). Compared to a traditional programme, the general LAE bachelor offers less occupation-specific skills and knowledge. While recent research has shown that the LAE graduates' relative lack of specific skills is compensated for at the master's level (Kovačević, 2022), employers might still perceive it as a negative signal. Especially in the Netherlands, where 'the education system has a tighter coupling between qualifications and the labour market' (García-Aracil & Albert, 2017, p. 2538), employers might favour occupation-specific degrees as more reliable indicators of human

capital. As argued by Di Stasio and van de Werfhorst (2016), in such an institutional context, the skill-signalling role of the field of study is much more pronounced than in Anglo-Saxon countries with generalist education systems. As a generalist degree in an occupationally oriented system, the LAE bachelor could therefore be at higher risk of being depreciated by employers.

With regard to the field of study, another important aspect concerns the LAE self-tailored curriculum. Unlike traditional undergraduate programmes, university colleges produce graduates whose disciplinary profiles can vary significantly, ranging from natural sciences to social sciences and humanities. Accordingly, the skill-signalling effect of LAE may turn out to be rather heterogenous, reflecting the different choices of undergraduate major and specialization field. The diversity of graduate profiles produced by a LAE programme might be a source of confusion for employers, making it difficult to form expectations about what a LAE graduate knows.

Lastly, Dutch university colleges are among the very few study programmes in the country that are allowed to have selective admission requirements. Introduced as a way of promoting academic excellence, selective admission policies represent a major exception from the egalitarian norm of Dutch higher education (van der Wende, 2011). In such a system, a degree from a selective programme may be viewed as a signal of above-average (pre-existing) abilities and motivation, improving one's employment prospects.

5.3.2 Signals of Trainability

A university college degree could also act as a signal of trainability, which may be related to three characteristics of LAE. Firstly, LAE programmes are known for their commitment to lifelong learning. The strong link between LAE and the skills of learning has been recognised in a number of studies (DeNicola, 2012; Jessup-Anger, 2012; Kovačević, 2022; Seifert et al., 2008), pointing to assets such as educational breadth, cognitive flexibility, and exposure to various disciplinary perspectives. The intensive, interdisciplinary character of LAE programmes requires students to constantly take courses in previously unknown subjects. Because of this, LAE graduates are held to be adept at quickly gathering new knowledge and developing new skills, and applying them to unfamiliar contexts. Against the backdrop of a rapidly changing world of work, the labour market utility of LAE is often justified on the grounds that it produces self-directed lifelong learners prepared to continuously transform and reinvent their professional selves (Claus et al., 2018; Gombrich, 2016). Assuming that a job candidate's general learning capacity is an important determinant of perceived trainability, a LAE degree should send a positive signal.

Yet, whether and to what extent employers actually recognize the learning-related virtues of LAE programmes is difficult to assume. In the Dutch labour market, it is perhaps more

likely that trainability is inferred from the occupational specificity of the degree. As argued by Klein (2011), graduates from specialized study programmes are more likely to get hired because employers perceive them as having more job-specific skills and thus requiring less additional training than students who graduate from more general study programmes. Relying on occupational specificity as the key determinant of trainability might therefore result in a negative interpretation of LAE degrees.

Another important factor that may affect the employers' perception of trainability is the selectivity of the study programme. It has been argued that employers prefer graduates from selective programmes over their peers in non-selective programmes because selective programmes send strong signals about pre-existing skills and trainability (van der Velden & Wolbers, 2007). Assuming that employers recognize the distinction in selectivity between LAE and traditional programmes, this may translate into a positive signal, indicating lower training costs.

5.3.3 Signals of Cultural Capital

The third group of signals that a LAE degree could send to employers is related to cultural capital. This kind of signalling may occur on the basis of institutional prestige. While Dutch university colleges operate as programmes or departments within existing universities, they are often described as elite institutions (Dekker, 2017; Kaiser & Vossensteyn, 2009). This is not only due to their selectivity, but also because they are more expensive than regular programmes, which is reflected in the students' socio-economic status. In its final report, the *Ruim baan voor talent* Committee found that university college students come from a higher social background than students in other programmes (Commissie Ruim baan voor talent, 2007, p. 19). The elitist label also has a lot to do with the indefinite professional prospects of LAE, which is sometimes interpreted as appealing only to socially and economically privileged students (Godwin, 2015). Former Dutch politician Ronald Plasterk, a prominent critic of LAE, even called university colleges 'expensive day-care centres for rich kids' (Plasterk, 2004).

If prospective employers view university colleges as distinctively prestigious study programmes, this might translate into a positive signal. Previous studies have shown that institutional prestige can play a major role in the recruitment process, which often involves a considerable amount of cultural 'screening' and 'matching', especially in elite firms (Rivera, 2012; Tomlinson & Anderson, 2020). More importantly, the notion of distinction associated with attending an elite college can create a halo effect, making graduates more attractive to employers irrespective of the content of their education (Rivera, 2011). On the other hand, given that the research university segment of Dutch higher education does not have a clear hierarchical structure, there are also good reasons to believe that this kind of signalling would be far less significant than in countries such

as the UK or USA, whose education systems are not as standardized (Di Stasio & van de Werfhorst, 2016).

5.3.4 Additional Considerations and Assumption Recap

In addition to the factors discussed above, the signalling effect of LAE degrees may depend on several wider aspects. First of all, it is important to point out that the vast majority of graduates from research university bachelor's programmes in the Netherlands attain a master's degree before entering the labour market. According to available data, 89% of university college graduates and 80-85% of their counterparts from conventional undergraduate programmes pursue further graduate studies (Allen & Belfi, 2020; Research Centre for Education and the Labour Market [ROA], 2018). This implies that the signalling strength of a university college degree is largely determined by how extensively employers examine a job candidate's bachelor's degree in the presence of a master's degree.

Previous research has examined the effect of bachelor's versus master's degrees in the hiring process, but only as the highest attained level of education. While most of these studies have shown that employers prefer to hire graduates with master's degrees (Byrne, 2020; Verhaest et al., 2018), opposite findings have also been reported (Humburg & van der Velden, 2015). In the context of higher education expansion and the resulting oversupply of similarly qualified graduates, it has been argued that employers are more likely to base their hiring decisions upon a wider spectrum of factors (Tomlinson, 2008). However, to the best of the author's knowledge, the relative importance of the bachelor's degree in assessing job applicants who also completed a master's programme has not been investigated so far. If the significance employers attach to the bachelor's degree is relatively low, it is in fact possible that the signalling effect of a LAE degree is neutral or absent.

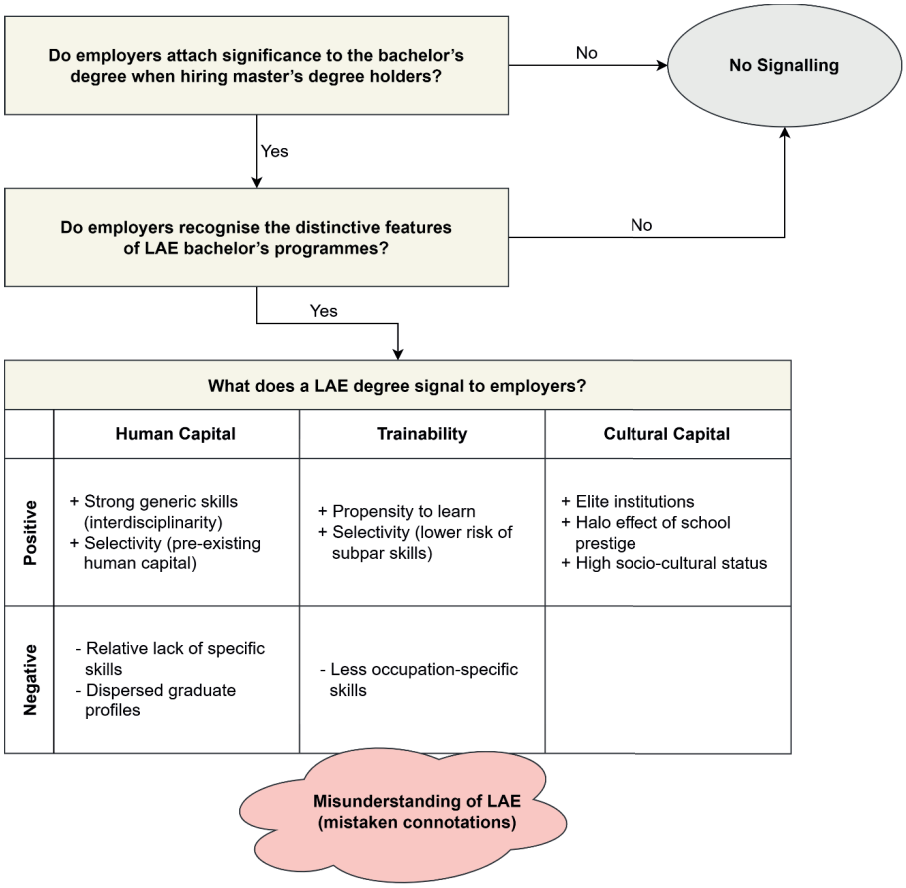
Another factor that may considerably influence the overall signalling effect of LAE is the visibility and recognition of university colleges among employers. Given their interdisciplinary and small-scale character, LAE programmes stand out as a unique entity within the Dutch higher education system. Yet, the fact that university colleges are different from traditional bachelor's programmes still does not mean that employers will perceive them as such. If the distinctive features of university colleges are unrecognized or perceived as irrelevant, this would also indicate the absence of signalling effects linked to LAE degrees.

Lastly, while the employers' inability to distinguish LAE from regular bachelor's programmes may result in neutral signals, some of them may also misjudge LAE degrees, assigning them incorrect interpretations. Although LAE is relatively well established in

the Netherlands compared to the rest of Europe, it might still face a lack of awareness in the labour market, leading to misconceptions. For example, the word 'arts' may cause employers to confuse LAE with creative fields such as sculpture and painting, or assume that the programme exclusively focuses on the humanities. Similarly, employers might mistake university colleges for other types of educational institutions in the Netherlands, some of which also feature the word 'college' in their names. These misconceptions could result in an overshadowing negative signal, harming the hiring prospects of university college graduates.

The assumed signalling effects of university college degrees are summarized in Figure 5.1. As noted in the theoretical discussion, these signals are intertwined and may exist simultaneously; the presence of one does not exclude the others. For example, selectivity may be viewed as a signifier of high trainability, but also as indicative of pre-existing human capital. It should also be kept in mind that the relative importance of different signals in the hiring process may vary across jobs and labour market segments (Bills, 2003). The remainder of the paper aims to test the assumptions laid out in this section by conducting a qualitative investigation into the job selection process of Dutch employers and the key criteria they consider when evaluating candidates.

Figure 5.1 The signalling effects of a LAE degree



5.4 Method

The data collection method used in this study involved semi-structured interviews conducted with employers based in the Netherlands. Semi-structured interviews were chosen as the most suitable method to explore an issue that lacked prior research and contained many unknown factors. In contrast to quantitative methods such as vignette studies, which emphasize job selection outcomes, adopting a qualitative approach allowed for a deeper understanding of the underlying factors influencing employers' decision-making in the selection process. While a vignette study could have provided a larger sample of employers, it would have only revealed their hiring preferences, without uncovering the reasoning behind them. Therefore, by employing semi-structured interviews, the primary goal was to gain insight into employers' thought processes, determine the relative significance of different factors in their decisions, and understand their perception of candidates with LAE degrees.

5.4.1 Participants

The selection of employers was guided by three main considerations. Firstly, it was imperative to choose companies with regular graduate job openings, around which the interviews could be centred. This is because employers tend to place less emphasis on educational qualifications when applicants have more work experience (Tholen, 2023). Secondly, it was necessary to ensure that these job openings are suitable for LAE graduates. Since university college graduates span diverse fields, the interviews focused on the selection of candidates for more general graduate traineeship programmes and entry-level jobs. While some of these positions were more specialized than others, they generally welcomed applicants from different disciplinary backgrounds. Highly specialized jobs that require specific qualifications and technical expertise, such as engineering, were not considered. Thirdly, larger, internationally-oriented companies were targeted due to their extensive array of graduate jobs and the demanding nature of these positions.

Participants were recruited through four channels. Firstly, companies with suitable graduate jobs and traineeship programmes were identified, and the recruiters responsible for these positions were contacted and invited for interviews. However, due to a very low initial response rate, recruiters were also approached during a student career event held at Maastricht University. Additionally, some participants were recruited through personal connections, including three LAE alumni who helped establish contacts within their organizations without disclosing the study's specific focus. Lastly, snowballing was utilized, with interviewees recommending recruiters from other companies who could participate in the research. An overview of the study sample is presented in Table 5.1.

In total, 20 respondents from 19 companies were interviewed. The interviewees included recruiters, talent acquisition specialists, and, in two cases, managers, all of whom were directly involved in hiring recent graduates.[11] The interviews took place between November 2022 and August 2023. Most interviews were conducted online, except for one held in-person at the interviewee's workplace. The average duration of interviews was 45 minutes.

11 While not all participants held the formal title of 'recruiter', they will be referred to as such for the sake of convenience.

Table 5.1 Study sample summary

	n
Company size	
Small (< 50)	2
Medium (50-249)	1
Large (> 250)	16
Industry	
Professional Services and Consultancy	5
Staffing and Recruiting	4
Chemical Solutions and Manufacturing	2
Financial Services	2
Automotive	1
Electronics	1
Logistics	1
Research Services	1
Software Development	1
Telecommunications	1
Area of job discussed in the interview	
Consulting	5
Finance and Financial Advisory	3
Strategy, Management and Innovation	3
Business Operations	2
Supply Chain Management	2
Analytics	1
Legal Affairs	1
Sales and Marketing	1
Talent Acquisition	1

5.4.2 Procedure

Prior to the interviews, participants were acquainted with the study's purpose, avoiding mention of LAE degrees to prevent bias, and instead referring to bachelor's degrees in general. They were asked for permission to record the interview and requested to review and sign a consent form. An interview protocol was developed to guide the conversation and ensure a systematic and consistent interview process.

The interview consisted of two parts, revolving around a particular job opening at the interviewee's company. The first part of the interview was concerned with the selection process in general. Interviewees were asked to talk about the most relevant factors that influence their decisions when selecting early-career candidates. This was followed by probing questions that sought to explore the perceived importance of human capital, trainability, and cultural capital factors in the selection process, and the role of bachelor's degrees in signalling these. In the second part of the interview, the recruiters were shown a résumé of a fictitious job applicant and asked to go through it and comment on the person's suitability for the role. After that, they were asked directly about the LAE degree and their thoughts on university colleges.

The mock résumé was put together by analysing LinkedIn profiles of LAE students and alumni, aiming to reflect a representative university college graduate. The fictitious candidate was a Dutch male with a bachelor's degree in liberal arts and sciences (social science concentration) from University College Maastricht and a recently obtained master's degree in a field relevant to the job description. In addition to this, the résumé included a 6-month internship undertaken during the master's programme, as well as one volunteering experience (project manager at a student organization) and one extracurricular activity (participation in Model UN) completed during the bachelor's programme. The résumé also included a 'top skills' section highlighting a set of generic skills that are typically associated with LAE, as well as a 'languages' and 'hobbies and interests' section. The master's degree and internship were the only elements in the résumé that varied across the interviews, while the other components were held constant. This was done in order to achieve a satisfactory match between the candidate's master's degree and internship experience and the job role, which one would expect in a real-life situation.

By not explicitly emphasizing LAE degrees from the beginning, the chosen interview approach aimed to minimize the possibility of socially desirable answers. Furthermore, the use of actual job openings created a realistic scenario for recruiters, avoiding the drawbacks of methods that are based on hypothetical situations, which are difficult to talk about. Altogether, the chosen approach allowed to assess the signalling effect of the LAE degree indirectly, by examining whether LAE-related qualities are among the factors deemed important by recruiters, as well as directly, through testing whether their assessment of the fictitious résumé is influenced by the LAE bachelor's degree, and further probing into their views on university colleges.

5.4.3 Analysis

The qualitative data obtained from the interviews underwent thematic analysis (Hawkins, 2017). Anonymized interview transcripts were imported into ATLAS.ti software for coding. The coding process involved breaking down the text into segments and assigning descriptive labels that capture the main themes. Themes were identified following a deductive approach, where categories were created based on the study's theoretical framework and assumptions. Sub-categories were then established to account for more specific factors within each category. The main categories pertained to the relevance of human capital, trainability, and cultural capital factors, their identification in the selection process, the relative importance of the bachelor's degree, and recruiters' perceptions of LAE.

5.5 Results

5.5.1 Human Capital

5.5.1.1 Desirable skills from the recruiters' perspective

Recruiters were asked an open-ended question about the skills they value most in early-career candidates. Table 5.2 provides an overview of the skills mentioned. Flexibility and adaptability were the qualities most often brought up, usually in the context of handling change and working comfortably in unstructured environments. Additionally, effective communication and presentation skills were highly appreciated, especially in consultancy-type jobs, where being able to explain things in a clear and understandable way is considered crucial. Teamwork and proficiency in analytical tools such as R and Excel were also frequently mentioned.

Table 5.2 Most highly regarded skills by recruiters

Skill	Frequency of Mentions
Flexibility and adaptability, ability to deal with change	7
Communication and presentation	6
Collaboration and teamwork	5
Mastery of analytical software	5
Analytic mindset	4
Determination and perseverance	4
Openness to learn, curiosity	4
Unspecified interpersonal and social skills	4
Proactiveness, taking initiative	3
Quantitative analysis	3
Commercial awareness	2
Critical thinking, reflection	2
Cross-cultural competence	2
English language	2
Leadership	2
Attention to detail	1
Coming up with new ideas	1
Emotional intelligence	1
Entrepreneurship	1
Stakeholder management	1

Recruiters were additionally prompted to discuss the relative importance of broader, generic and soft skills compared to specialized, hard skills in the selection process. Most recruiters noted that this varies depending on the job. For example, in jobs involving interaction with clients, communication and interpersonal skills are more critical than in less customer-facing roles. Regardless of the job type, recruiters emphasized the significance of possessing both types of skills at a sufficient level.

Some recruiters pointed out that the importance of possessing a particular skill for getting hired depends on whether it can be easily learned on-the-job. In this sense, the hard skill fundamentals were seen as more difficult to acquire through workplace learning. On the other hand, several recruiters questioned the teachability of soft skills, viewing them as inherent traits that cannot be easily changed or improved:

> *I think it depends on whether the hard skills are easy to teach. For example, for a lot of positions we use SAP and Excel, you need to be able to use that, but if you have a certain working and thinking level, you will be able to be trained on that. Whereas on the other hand, if I need someone that is proactive and a team player, et cetera, that's also partly your personality. [...] Then I rather look at the soft skills and the personality and whether that would match [...] in case the hard skills would be able to be trained.*

Recruiters seldom intentionally seek out candidates with interdisciplinary backgrounds. None of the interviewees mentioned interdisciplinarity as a skill they actively look for or prioritise during the selection process. When directly asked about interdisciplinary skills, recruiters generally held a positive view of them or, at the very least, didn't perceive them negatively:

> *I think on paper, we value that definitely because that also probably shows that you can connect things in a more strategic view in your head, and you can navigate easily through those things. Again, need to test that in practice.*

Having a background in different fields was especially valued in roles that involve collaboration across company departments, interaction with clients from various industries, involvement in diverse projects, and positions with frequent rotations. Importantly, recruiters often emphasized that candidates should be able to demonstrate that their interdisciplinary profile is a result of a deliberate plan for self-development tailored to a specific career path, rather than a series of random transitions between study areas:

> *If someone who has done a lot of different things is able to explain how come, because the person took a certain strategy to develop himself or... I think there, I would really like to understand, is it just a lack of focus, to put it very negatively, or is it because someone really likes to develop himself? If it's the latter, I think that would be a very big strength.*

5.5.1.2 Identifying skills

Recruiters typically begin screening the CVs of early-career candidates by evaluating their academic qualifications. However, in most cases, the study background is seen as a baseline requirement to qualify for the job, rather than a determining factor in the selection process. Hence, university credentials are primarily checked to confirm the presence of a relevant degree. Especially when it comes to general abilities and attitudes,

such as initiative or perseverance, recruiters tend to prioritize relevant work experience, internships, extracurricular activities, and participation in projects and student organizations as stronger signals. These are commonly regarded as additional qualities that can set a candidate apart:

> *The extras, the things that make you stand out, because you have a lot of graduates from the same university, but you need to have a little bit extra. For instance, if I have somebody who is heading up a society, the student association at the university, I'll pay attention to that CV more if there's no other experience.*

Some recruiters even considered these experiences more important than the reputation of the attended university programme:

> *If they have nothing on their CV besides the education, like let's say if I have a candidate with previous internships or voluntary work, and somebody who maybe even has Harvard but didn't do anything besides that, if somebody comes from a better university but did nothing besides studies, then I would also probably discard that candidate if I have a lot to choose from.*

Among other factors in the 'Education' section of the CV, study duration is commonly assessed, and prolonged study periods may raise concerns. While good grades are appreciated, their overall significance tends to be minor. In fact, a great majority of recruiters emphasized that work experience and extracurriculars carry more weight than grades.

When it comes to the overall skill evaluation of early-career candidates, the CV screening is the starting point that comprises a minor part of the selection process. In fact, recruiters rarely rely on the CV to form conclusions about candidates. While anyone can claim skills in their résumé, it is necessary to prove them. This is typically done through several rounds of interviews, providing a complete picture of the job candidate:

> *A lot of the decisions I make are based on the conversations that I have with candidates, especially for junior positions, to see their motivation, their level of energy, how engaged they are, how interested they are, how eager they are.*

Furthermore, companies tend to incorporate a variety of assessments into their selection process. These typically include standardized tests covering numerical skills, verbal intelligence, abstract thinking, and personality traits, among other aspects. Such tests are usually conducted early in the selection process, after the CV screening, serving as the main filter for deciding who advances to the interview stage. Additionally, the selection procedure may involve tasks such as presentations, case studies, and various group assignments, which mostly take place in the later stages. Overall, the initial CV screening phase appears to be less strict, with recruiters often giving candidates the benefit of the doubt and trusting that subsequent assessments will identify the most capable individuals:

To be honest, if I look at graduate hiring, the experience is limited. There's not a lot of info. You're looking at, does the person have the right background, do they fit in? To be honest, in this process, we're very lenient in our screening. We literally said, if somebody has finalized that and we are clear that they can do it, we just include them in the process, because for this role specifically, we also used directly a personality assessment at the beginning of the process, and also a capability assessment at the beginning of the process. That was more our hard screening tool. What we in the end did was select the 40 candidates who passed those assessments with the highest marks.

5.5.2 Trainability

Employers agreed that trainability is one of the foremost qualities to seek in graduate job candidates. It is considered a defining characteristic for junior roles, where individuals are expected to be mentored and undergo continuous learning. Recruiters mostly understand being trainable as having a strong willingness to learn, grow, and develop oneself further:

In these broader traineeship programmes, we're looking for growth profiles. People who show learning adaptability, who, yes, they've done a certain subject, but show also interest and willingness to learn on other topics, people who are curious, who are interested in others, want to learn from others.

While most recruiters value candidates who can acquire new skills quickly, some pointed out that a genuine desire to learn holds greater importance than the speed of learning:

If a person is eager or curious, he's better at learning than someone who's not interested. So it's not the quick learner, it's more [...] that you have the curiosity.

Although completing a demanding study programme and exploring diverse interests during their university years can suggest a candidate's potential for trainability, recruiters emphasize that this trait is not easily discerned from the CV alone. In their evaluation of trainability, grades are rarely taken into account. Typically, trainability is identified during interviews through situational and behavioural questions, as well as the candidate's attitude and response when presented with training opportunities within the company. One interviewee highlighted two questions they use regularly to identify individuals with higher trainability:

What is the last book that you read? [If] money isn't an issue, what is the first training that I'm going to send you to?

Some companies assess trainability through tests measuring learning agility, and conversations with psychologists. Moreover, a smaller number of recruiters noted that the candidates' existing skills play a vital role in assessing their trainability:

Training somebody completely from scratch is more difficult because you have to teach them more and [it takes longer]. Even if somebody is a very quick learner, if you need to teach everything from scratch, it's a bit difficult, right?

The type of study programme was rarely mentioned as being particularly relevant in the context of trainability. For more specialized jobs, interviewees pointed out that the study background can be useful in telling 'how easily [one] can pick up on certain things'. In less specialized roles, the emphasis is more on the graduates' general learning abilities, which are not necessarily associated with a particular study field or programme type:

> *I think the mistake universities still make [is] that they believe they need to have a specific curriculum to match something like that. I think it becomes less and less important because in all fairness, in most cases with the digital revolution, what you are studying now next year or two years later is not valid anymore. [...] I would say universities should more focus on [training students] to become more learning agile and learn different things in a fast way.*

5.5.3 Cultural Capital

Cultural fit is determined by how well an individual aligns with the company's organizational culture. This primarily pertains to possessing desirable attributes (being entrepreneurial, for example), which can vary from one company to another. These qualities are identified through the candidate's demonstrated experience and activities in their CV, and are further substantiated by how they present themselves during the interviews:

> *If they show that they're passionate, that they're enthusiastic, and that they have that strive for success, then that would be a cultural fit for me. [...] We have certain values that we really appreciate, and we have what is called our [company] DNA [...] and if they have these key characteristics and skills, then it'll be a cultural match.*

There were no indications of recruiters looking for cultural capital in the Bourdieusian sense, nor was cultural fit associated with the educational institution attended.While positive experiences with graduates from certain programmes may serve as recommendations, overall, recruiters in the Netherlands do not seem to favour hiring from a particular school or university. In fact, there are companies that deliberately refrain from the practice of targeting a single programme when recruiting graduates:

> *I think as a company, you can become better if you get more diverse perspectives, ideas, opinions in your organization. I think that also starts with not specifically focusing on one university, but on multiple.*

The interviewees denied drawing conclusions about the candidate's cultural fit based on their hobbies and interests, which are merely seen as conversation starters during interviews. Many companies, especially larger firms and those in the public sector, implement diversity and inclusion hiring policies. These policies aim to achieve a certain percentage of international staff, individuals with disabilities, or females within the organization. Regardless of this, most recruiters emphasized their deliberate efforts to build diverse teams in terms of employees' interests and backgrounds. However, this does

not come at the expense of meeting the necessary skill requirements, which are always imperative.

5.5.4 The Relative Importance of the Bachelor's Degree

When evaluating job applicants with a master's degree, recruiters generally do not give substantial weight to their bachelor's degree. They tend to perceive the bachelor's stage as a time when young people are still exploring and finding themselves. In that sense, even a bachelor's degree in an unrelated field is not considered an exclusionary factor, as long as the candidate is able to explain their path:

> *I would obviously see what the bachelor's was about as well, and see if the master's [...] makes sense to what they studied before, but that doesn't really... I mean, I see it because I'm curious, but it's not like I make a decision based on what they did before. Maybe they didn't like it so they did a master's in something else. That doesn't really matter to me.*

Hence, when the job applicant has a master's degree in a relevant field, the bachelor's degree receives less attention. However, there were indications in the interviews that the bachelor's degree holds greater significance in specialized jobs compared to general positions, as it may suggest a strong(er) foundation of occupation-specific knowledge and skills.

5.5.5 Recruiters' Perceptions of LAE

While screening the mock résumé, recruiters made very few specific comments about the university college degree. Those who took note of it tended to focus more on the study major than the institution. While the master's degree underwent closer scrutiny, recruiters primarily directed their attention to the 'Work Experience' and 'Extracurriculars & Volunteering' sections of the résumé, reviewing the organizations, tasks, and types of work performed.

When directly asked about university colleges, only 7 out of 20 recruiters indicated they were familiar with these programmes. Among those who were unfamiliar, most correctly guessed that it is a more general undergraduate education, but they couldn't provide much more detail. Many expressed their intention to look it up online for more information. Some recruiters confused university colleges with universities of applied science, while one thought LAE was 'something artistic'. Nevertheless, the recruiters' lack of familiarity with the bachelor's programme did not negatively impact their assessment, which was mainly based on the candidate's master's degree and previous experiences.

When asked about their first associations and knowledge of university colleges, recruiters acquainted with these programmes most frequently mentioned their suitability for

students who are uncertain about their future career paths. The broad, self-tailored curriculum, demanding nature of the programme, limited enrolment, and the presence of intelligent and motivated students were also brought up. One respondent mentioned higher tuition fees. Nonetheless, even with a solid understanding of the programme's key features, possessing a university college degree does not make one stand out in the eyes of recruiters, as they neither favour nor disfavour LAE graduates over other educational backgrounds. Reflecting on whether university college degrees come across as distinctive, one study participant explained:

> *Interviewer: When you see that somebody is from a university college, do you think that they're in any ways different, in terms of their skills or anything else, than people from a regular university programme?*
>
> *Interviewee: No, not specifically. Also, what you did besides your studies will tell you something a little bit more about whether you're special or not. Myself, I always think, when you start your studies, you are like 18. [...] I do not think you're more special, for instance, if you choose liberal arts and science or a bachelor of business administration or tax law or something.*

In response to the same question, another interviewee remarked:

> *It's not really a plus, but it's also not really a minus. [...] For me, you are not better because you did the liberal arts and sciences, no.*

A third recruiter noted:

> *It doesn't mean, for me at least, that I'm more interested in this candidate than I am in someone who studied business administration or someone who studied economics, depending on the position, of course.*

Recruiters perceive LAE graduates as well-versed in soft and generic skills, which makes them excellent candidates for broader and multifaceted roles. When it comes to more specialized positions, on the other hand, some recruiters expressed doubts about whether a LAE graduate possesses a sufficient foundation of specific skills. If a candidate holds a specialized master's degree, a LAE bachelor's degree is not considered a deal-breaker. However, during the interview, they will likely be questioned about their academic journey, and the evaluation of their specialized skills could be more rigorous. As one respondent pointed out:

> *I think it would be enough, but I would just question because the bachelor's would be liberal arts and sciences, and then the master's in sustainable finance, how the finance aspect is. I would question that, but I would definitely invite this candidate.*

Along the same lines, a different interviewee explained:

> *I would be a bit more critical during the interview if someone has sufficient technical skills obtained during the master's. If you also have a technical bachelor's, then there's a bit more trust that you have that fundament.*

While highly specialized positions were not addressed in the interviews, some recruiters were also responsible for filling such roles in their companies. These recruiters were presented with a hypothetical *ceteris paribus* situation where they would have to choose between a candidate holding a subject-specific bachelor's degree and one with a LAE degree for a specialist job. The undergraduate programme would be the only differing factor between the two applicants, both of whom would also have an identical specialized master's degree. Five recruiters said they would prefer the subject-specific bachelor's degree holder, while three had no clear preference. However, they all pointed out that in a real-life situation, they would never base their decision solely on the undergraduate degree. Other factors, such as the candidate's personality and overall impression, would play a decisive role.

5.6 Discussion and Conclusion

Four key findings emerged from the interview analysis. Firstly, employers seem to value many of the skills LAE is expected to develop. This primarily concerns broader capacities, such as the ability to navigate unstructured environments and flexibly respond to changing circumstances, effectively communicate and present ideas, think analytically, and initiate actions independently. Another important aspect is trainability, as a candidate's eagerness and capacity to learn are highly regarded in the selection process. On the other hand, interdisciplinarity does not appear to figure highly on the employers' priority lists, although it holds greater significance in cross-sectional roles.

Secondly, while LAE-related skills are appreciated, recruiters rarely rely on the study programme to infer these qualities. In that regard, relevant work experience and extracurricular activities listed on a CV can distinguish a candidate more than their university credentials. Furthermore, the hiring decision appears to be predominantly influenced by the job interviews. These conversations can uncover many essential factors that are not apparent from the résumé, such as motivation, character, and overall demeanour. Additionally, candidates need to pass various tests and assessments to prove their abilities. Thus, in the context of broader graduate positions in the Dutch labour market, the overall signalling power of university credentials appears to be relatively weak. This finding aligns with prior studies of graduate employment, underscoring how the proliferation of graduates with similar educational backgrounds has diminished the influence of academic credentials on hiring outcomes (Tomlinson, 2008). Moreover, country-specific factors may also play a pivotal role, particularly the balanced quality of Dutch research universities, which are perceived to be of equal calibre, with no specific programme or degree standing out. It is therefore not surprising that issues such as selectivity and institutional prestige were hardly mentioned by the interviewees.

Thirdly, if university credentials provide only modest signals, the significance employers attribute to a bachelor's degree decreases further when it is accompanied by a relevant master's degree. Still, the employers' perception of the bachelor's degree may vary depending on the job type. In specialized positions that require a solid foundation of hard skills, employers tend to place greater importance on having a discipline-focused bachelor's degree in a related field. In such jobs, undergraduate credentials can send a more convincing signal about the candidates' occupation-specific skills. In more general graduate jobs, on the other hand, the skill-signalling role of the bachelor's degree is far less pronounced. These positions tend to treat all bachelor's degrees as equal, with little scrutiny placed on the study field during the selection process.

Finally, bringing together all the research insights, the main finding of this study is that the signalling effect of a university college degree is largely absent or neutral. It is absent in the sense that recruiters are often not familiar with university college programmes and generally tend to attach less importance to the bachelor's degree when evaluating job applications of master's degree holders. It is also neutral in the sense that even those who are acquainted with university colleges do not view a LAE degree as a distinguishing factor.

Given the prevailing lack of awareness about university college programmes among employers and the way academic credentials are evaluated in the Dutch labour market, it is evident that there are no pronounced positive signals associated with LAE bachelor's degrees. Employers do not recognize the selectivity of university college programmes as an indicator of exceptional student abilities or teaching quality. Likewise, there is no evidence that a university college degree signals social status or cultural background, nor do these factors affect job selection outcomes. University colleges are not viewed as elite or prestigious programmes, and there is no halo effect that makes their graduates more appealing to employers.

If there is a significant signal that may arise from a university college degree, it is most likely to be on the negative side, as the broad scope of LAE could hint at a relative lack of occupation-specific skills. Employers in specialized fields lean towards candidates with a subject-specific undergraduate background, and this preference becomes stronger as the job specialization increases. Yet, the signalling effect of the LAE degree may also be conditional on other factors, such as the depth of specialization in the master's programme, and the job candidates' ability to effectively present themselves and demonstrate the required skills.

When it comes to self-presentation and specialized job applications, the term 'liberal arts' can sometimes create confusion, potentially leading recruiters to dismiss a LAE graduate's CV. To avoid this, LAE alumni should always include their major on the résumé,

along with relevant coursework that highlights their acquisition of required skills. They should also indicate that they graduated from an excellence programme at a research university. Furthermore, since recruiters often base their decisions on conversations with candidates, the way LAE graduates build and present their professional narratives becomes a crucial factor. As noted by Nicholas (2018), the broad nature of LAE can pose challenges for graduates in maintaining coherence across diverse interests, fields, and skills, which could hinder their job prospects. Therefore, in addition to skill development, LAE programmes should provide comprehensive career guidance, assisting students in managing their early career paths and enabling them to construct a convincing narrative that underscores the skills and college experiences that are most relevant for their desired employment sectors.

While recruiters may be indifferent to a university college degree in one's CV, this study has also shown that many of the skills LAE is supposed to foster are in fact recognized as valuable assets in the labour market. In light of this finding, the absence of strong signals associated with LAE appears less troubling. Nonetheless, university colleges should put in more effort to familiarize Dutch employers with the liberal arts educational model, as a greater awareness of LAE would benefit their students. At the very least, it is reassuring to know that there are no strong biases against LAE among employers. This is important for LAE students, as it means they can freely use their undergraduate studies to delve into diverse interests and discover their passions without fearing that this period of exploration will undermine their future employment prospects.

In this study, semi-structured interviews were employed to gain a deeper understanding of the factors behind recruiters' decisions. However, this approach also comes with limitations that are important to acknowledge. Like many other qualitative studies, this research is limited by its small sample. While efforts have been made to create a representative résumé and select employers and jobs one might expect a LAE graduate to pursue, the inherent diversity within LAE makes it challenging to account for all possible scenarios. Another limitation concerns the presence of social desirability bias. Despite the diligent measures to minimize it, socially desirable responses may still persist to some extent.

Beyond its specific findings, this study also carries several wider implications. Firstly, in a labour market where a vast majority of graduates have master's degrees, the relatively low priority of bachelor's degrees in recruiters' assessments provokes thought on whether undergraduate studies hold any significance for employment. On the one hand, it can be argued that while one's bachelor's programme matters less to employers, what was learned during these studies very much remains in the focus of their attention. This is even more so considering the current trend of using a variety of capability assessments in hiring,

with the CV serving only as a rough initial filter to remove candidates who do not meet the basic job requirements. Over the course of their three-year undergraduate education, students are expected to acquire many valuable skills. If the programme successfully teaches these skills, they will inevitably show during the job selection process. From this perspective, therefore, the bachelor's degree remains pertinent for attaining employment and influences labour market outcomes. However, its impact comes less from signalling and more from directly demonstrating relevant skills.

On the other hand, it became evident from the interviews that recruiters do not necessarily view one's educational achievements as indicative of their abilities. While a skill-based selection process may appear meritocratic, the observed trend of recruiters not seeing a clear link between being good at university and achieving success in the workplace raises concerns. Although this may extend beyond the paper's intended scope, one has to wonder why companies tend to believe their own one-time assessments are more reliable indicators of one's capabilities than years of higher education. Additionally, it is striking how grades are almost completely overlooked in the selection process, receiving even less attention than extracurricular activities. The tendency among employers to undervalue academic achievements is a topic that certainly requires further discussion and research.

Lastly, returning to the 'plain without peaks' analogy from the beginning of this paper, it can be concluded that the Dutch research university landscape still appears rather flat from the employers' perspective. Over two decades have passed since the introduction of university colleges, but the labour market has remained oblivious to this educational innovation. Yet, this situation may tell more about the Dutch higher education system and its interaction with the labour market than it does about university colleges themselves. Unlike countries with hierarchical systems of higher education, such as the UK and USA, the notion of prestigious institutions is unheard of in the Netherlands. Viewing all research university programmes as even appears to be a deeply ingrained norm among Dutch employers. Still, considering the high and levelled quality within the research university segment of Dutch higher education, describing it as a plateau appears like a more suitable analogy. And when a plateau reaches great heights, the peaks are less noticeable.

5.7 References

Allen, J., & Belfi, B. (2020). Educational expansion in the Netherlands: Better chances for all? *Oxford Review of Education*, *46*(1), 44–62. https://doi.org/10.1080/03054985.2019.1687435

Becker, G. S. (1964). *Human capital: A theoretical and empirical analysis, with special reference to education*. NBER.

Bills, D. B. (2003). Credentials, signals, and screens: Explaining the relationship between schooling and job assignment. *Review of Educational Research*, *73*(4), 441–469. https://doi.org/10.3102/00346543073004441

Bourdieu, P. (1986). The forms of capital. In J. Richardson (Ed.), *Handbook of theory and research for the sociology of education* (pp. 241–258). Greenwood Press.

Byrne, C. (2020). What determines perceived graduate employability? Exploring the effects of personal characteristics, academic achievements and graduate skills in a survey experiment. *Studies in Higher Education*, *47*(1), 159–176. https://doi.org/10.1080/03075079.2020.1735329

Claus, J., Meckel, T., & Pätz, F. (2018). The new spirit of capitalism in European liberal arts programs. *Educational Philosophy and Theory*, *50*(11), 1011–1019. https://doi.org/10.1080/00131857.2017.1341298

Commissie Ruim baan voor talent. (2007). *Wegen voor talent: Final report by Commissie Ruim baan voor talent*. Ministerie van Onderwijs, Cultuur en Wetenschap.

Cooper, N. (2018). Evaluating the liberal arts model in the context of the Dutch university college. *Educational Philosophy and Theory*, *50*(11), 1060–1067. https://doi.org/10.1080/00131857.2017.1341299

Dekker, T. (2017). Liberal arts in Europe. In M. A. Peters (Ed.), *Encyclopedia of educational philosophy and theory* (pp. 1–6). Springer Singapore. https://doi.org/10.1007/978-981-287-532-7_569-1

Dekker, T. (2020). Teaching critical thinking through engagement with multiplicity. *Thinking Skills and Creativity*, *37*. https://doi.org/10.1016/j.tsc.2020.100701

DeNicola, D. R. (2012). *Learning to flourish: A philosophical exploration of liberal education*. Continuum International Publishing Group.

Di Stasio, V., & van de Werfhorst, H. G. (2016). Why does education matter to employers in different institutional contexts? A vignette study in England and the Netherlands. *Social Forces*, *95*(1), 77–106. https://doi.org/10.1093/sf/sow027

García-Aracil, A., & Albert, C. (2017). Signalling and credentialism, higher education. In P. N. Teixeira & J. C. Shin (Eds.), *Encyclopedia of international higher education systems and institutions* (pp. 2534–2540). Springer. https://doi.org/10.1007/978-94-017-9553-1_108-1

Glebbeek, A., & van der Velden, R. (in press). Why education matters? On the interplay of three different mechanisms. In E. Saar & P. Róbert (Eds.), *Handbook on Education and the Labour Market.* Edward Elgar Publishing.

Godwin, K. A. (2015). The counter narrative: Critical analysis of liberal education in global context. *New Global Studies*, *9*(3), 223–243. https://doi.org/10.1515/ngs-2015-0033

Gombrich, C. (2016). Polymathy, new generalism, and the future of work: A little theory and some practice from UCL's arts and sciences degree. In W. C. Kirby & M. C. van der Wende (Eds.), *Experiences in liberal arts and science education from America, Europe, and Asia* (pp. 75–89). Palgrave Macmillan US. https://doi.org/10.1057/978-1-349-94892-5_6

Hawkins, J. M. (2017). Thematic Analysis. In M. Allen (Ed.), *The SAGE Encyclopedia of Communication Research Methods* (pp. 1756–1760). SAGE Publications.

Humburg, M., & van der Velden, R. (2015). Skills and the graduate recruitment process: Evidence from two discrete choice experiments. *Economics of Education Review*, *49*, 24–41. https://doi.org/10.1016/j.econedurev.2015.07.001

Jessup-Anger, J. E. (2012). Examining how residential college environments inspire the life of the mind. *The Review of Higher Education*, *35*(3), 431–462. https://doi.org/10.1353/rhe.2012.0022

Kaiser, F., & Vossensteyn, H. (2009). Excellence in Dutch higher education: Handle with care. In D. Palfreyman & T. Tapper (Eds.), *Structuring mass higher education: The role of elite institutions* (pp. 169–181). Routledge.

Klein, M. (2011). Higher education and non-pecuniary returns in Germany: Tracing the mechanisms behind field of study effects at the start of the career. *Irish Educational Studies*, *30*(2), 253–270. https://doi.org/10.1080/03323315.2011.569144

Kovačević, M. (2022). The effect of a general versus narrow undergraduate curriculum on graduate specialization: The case of a Dutch liberal arts college. *The Curriculum Journal*, *33*(4), 618–635. https://doi.org/10.1002/curj.158

Kovačević, M., Dekker, T. J., & van der Velden, R. (2023). Employability development in undergraduate programmes: How different is liberal arts education? *Teaching in Higher Education*, 1–21. https://doi.org/10.1080/13562517.2023.2212602

Lewis, P. (2018). Globalizing the liberal arts: Twenty-first-century education. In N. W. Gleason (Ed.), *Higher education in the era of the Fourth Industrial Revolution* (pp. 15–38). Springer Singapore. https://doi.org/10.1007/978-981-13-0194-0_2

Ming, X., MacLeod, M., & van der Veen, J. (2023). Construction and enactment of interdisciplinarity: A grounded theory case study in Liberal Arts and Sciences education. *Learning, Culture and Social Interaction*, *40*, 100716. https://doi.org/10.1016/j.lcsi.2023.100716

Nicholas, J. M. (2018). Marketable selves: Making sense of employability as a liberal arts undergraduate. *Journal of Vocational Behavior*, *109*, 1–13. https://doi.org/10.1016/j.jvb.2018.09.001

Plasterk, R. (2004, June 18). Creche voor rijkeluiskinderen. *De Volkskrant*.

Research Centre for Education and the Labour Market. (2018). *Liberal arts and sciences programmes alumni survey factsheet 2017*. Maastricht University.

Reumer, C., & van der Wende, M. C. (2010). Excellence and diversity: Selective admission policies in Dutch higher education - A case study on Amsterdam University College. *UC Berkeley: Center for Studies in Higher Education*. https://escholarship.org/uc/item/4502w5pj

Rivera, L. A. (2011). Ivies, extracurriculars, and exclusion: Elite employers' use of educational credentials. *Research in Social Stratification and Mobility*, *29*(1), 71–90. https://doi.org/10.1016/j.rssm.2010.12.001

Rivera, L. A. (2012). Hiring as cultural matching: The case of elite professional service firms. *American Sociological Review*, *77*(6), 999–1022. https://doi.org/10.1177/0003122412463213

Seifert, T. A., Goodman, K. M., Lindsay, N., Jorgensen, J. D., Wolniak, G. C., Pascarella, E. T., & Blaich, C. (2008). The effects of liberal arts experiences on liberal arts outcomes. *Research in Higher Education*, *49*, 107–125. https://doi.org/10.1007/s11162-007-9070-7

Smith, A. J. (2018). Economic precarity, modern liberal arts and creating a resilient graduate. *Educational Philosophy and Theory*, *50*(11), 1037–1044. https://doi.org/10.1080/00131857.2017.1341826

Spence, M. (1973). Job market signaling. *The Quarterly Journal of Economics*, *87*(3), 355–374. https://doi.org/10.2307/1882010

Tholen, G. (2023). The meaning of higher education credentials in graduate occupations: The view of recruitment consultants. *Journal of Education and Work*, *36*(1), 9–21. https://doi.org/10.1080/13639080.2022.2162019

Thurow, L. C. (1975). *Generating inequality: Mechanisms of distribution in the U.S. economy*. Basic Books.

Tomlinson, M. (2008). 'The degree is not enough': students' perceptions of the role of higher education credentials for graduate work and employability. *British Journal of Sociology of Education*, *29*(1), 49–61. https://doi.org/10.1080/01425690701737457

Tomlinson, M., & Anderson, V. (2020). Employers and graduates: The mediating role of signals and capitals. *Journal of Higher Education Policy and Management*, *43*(4), 384–399. https://doi.org/10.1080/1360080X.2020.1833126

Tomlinson, M., & Holmes, L. (Eds.). (2017). *Graduate employability in context: Theory, research and debate*. Palgrave Macmillan UK. https://doi.org/10.1057/978-1-137-57168-7

University College Deans Network. (2017). *Statement on the role, characteristics, and cooperation of liberal arts and sciences colleges in the Netherlands*. https://www.universitycolleges.info/

van Belle, E., Caers, R., Cuypers, L., Couck, M. de, Neyt, B., van Borm, H., & Baert, S. (2020). What do student jobs on graduate CVs signal to employers? *Economics of Education Review*, *75*, 101979. https://doi.org/10.1016/j.econedurev.2020.101979

van Damme, D. (2016). Transcending boundaries: Educational trajectories, subject domains, and skills demands. In W. C. Kirby & M. C. van der Wende (Eds.), *Experiences in liberal arts and science education from America, Europe, and Asia* (pp. 127–142). Palgrave Macmillan US. https://doi.org/10.1057/978-1-349-94892-5_9

van de Werfhorst, H. G. (2011). Skills, positional good or social closure? The role of education across structural–institutional labour market settings. *Journal of Education and Work*, *24*(5), 521–548. https://doi.org/10.1080/13639080.2011.586994

van der Velden, R., & Wolbers, M. (2007). How much does education matter and why? The effects of education on socio-economic outcomes among school-leavers in the Netherlands. *European Sociological Review*, *23*(1), 65–80. https://doi.org/10.1093/esr/jcl020

van der Wende, M. C. (2011). The emergence of liberal arts and sciences education in Europe: A comparative perspective. *Higher Education Policy*, *24*(2), 233–253. https://doi.org/10.1057/hep.2011.3

van der Wende, M. C. (2013). Trends towards global excellence in undergraduate education: Taking the liberal arts experience into the 21st century. *International Journal of Chinese Education*, *2*(2), 289–307. https://doi.org/10.1163/22125868-12340025

Verhaest, D., Bogaert, E., Dereymaeker, J., Mestdagh, L., & Baert, S. (2018). Do employers prefer overqualified graduates? A field experiment. *Industrial Relations*, *57*(3), 361–388. https://doi.org/10.1111/irel.12212

Zakaria, F. (2015). *In defense of a liberal education*. W. W. Norton & Company.

6 LABOUR MARKET OUTCOMES

Liberal Arts Graduates in the Labour Market: A Comparative Study of Dutch University Colleges and Conventional Bachelor's Programmes

Abstract

This paper compares the employment outcomes of liberal arts graduates from Dutch university colleges with those of their peers who pursued conventional, subject-specific bachelor's degrees. Using data from the Dutch National Alumni Survey, the analysis includes 14,933 respondents who completed a master's programme at a research university, with 210 of them holding a university college degree. Logistic, multinomial, and OLS regression analyses were performed on eight labour market outcomes: employment status, time to first paid job, career development opportunities, job satisfaction, vertical and horizontal matches, and hourly wage from regular work. Propensity score matching was used as a robustness check. The results show that holding a university college degree is not associated with any distinct advantages or disadvantages in the job market. While a liberal arts bachelor's degree has a negative effect on obtaining employment in STEM professions, no statistically significant differences, neither negative nor positive, were found in other outcomes. This suggests that university colleges do not lack the capacity to prepare students for the labour market.

Keywords

liberal arts education, employment, labour market outcomes, university colleges, bachelor's degrees

6.1 Introduction

In recent years, Europe has witnessed a revival of liberal arts education (LAE), a model commonly seen in general undergraduate studies in the United States. Prompted by the Bologna initiative and the desire to differentiate the massified and prematurely specialized European higher education systems, a great variety of LAE programmes and institutions have emerged across the continent (Abrahám, 2023; van der Wende, 2011). The country that went the furthest in integrating LAE into its higher education system is the Netherlands, where ten university colleges have been established since the late 1990s. Embedded within reputable research universities, Dutch LAE colleges developed as internationally oriented, publicly funded programmes offering three-year liberal arts and science bachelor's degrees (Cooper, 2018; Dekker, 2017; University College Deans Network [UCDN], 2017).

Dutch university colleges are characterized by several unique features that distinguish them from conventional bachelor's programmes. Firstly, university colleges are broad, general academic programmes that are not professionally oriented. Their radically open, interdisciplinary curricula allow students to combine courses from a wide range of fields, resulting in a self-tailored academic profile. Furthermore, LAE programmes are distinguished by their student-centred learning environment involving small-scale teaching, extensive student-faculty interactions, diverse assessment methods, and a strong academic community. Lastly, university colleges are also different in terms of access. Admission to a LAE programme involves a selection procedure, limiting the enrolment to around 250 students a year per college. In contrast to this, conventional bachelor's programmes in the Netherlands are typically more professionally focused and monodisciplinary, with a fixed curriculum structure, large-scale teaching, and non-selective admission (Cooper, 2018; Dekker, 2017; UCDN, 2017; van der Wende, 2011).

As a novel educational development and an exception to the norm of specialized undergraduate curricula, the emergence of European LAE bachelor's programmes raises a number of important questions. One particular area of debate is the labour market value of LAE. For a long time, liberal arts degrees have been disputed and even ridiculed on the grounds of their alleged professional irrelevance. Critics often portray LAE as 'learning for learning's sake' that does not prepare for a specific career, producing unemployable graduates who lack practical skills. Particularly in the US, colloquial remarks criticizing the liberal arts as 'worthless courses that offer no chances of getting people jobs' (Kingkade, 2013) can often be heard.

In responding to these critiques, LAE supporters point out that this educational model equips students with a range of 21st-century skills, allowing them to develop into 'creative,

critical thinkers and problem solvers who can cooperate in teams and communicate across the boundaries of languages, cultures and disciplines' (van der Wende, 2013, pp. 296–297). In today's volatile and rapidly evolving world of work, these skills and abilities are highly valuable assets that can help graduates to cope with change and complexity (van Damme, 2016). In the view of LAE proponents, therefore, liberal and professional education are not mutually exclusive (Gombrich, 2016).

Unlike the US, where academics, policy-makers, and the general public are continuously engaged in discussions about the value of the liberal arts, a wider debate on European LAE—including its labour market repercussions—is largely missing, and research on this topic is still scarce. Although there is a growing body of literature advocating the relevance of the LAE model in preparing students for work and life in the 21st century, evidence in support of this notion remains mostly rhetorical. The only empirical investigation of European LAE conducted so far is the 2017 survey of Dutch university college alumni. This research showed that only 7% of LAE graduates who entered the labour market were unemployed, while 93% held a job. Among the latter, 68% were working with an employer, 4% were freelancing, 3% ran their own company, while the remaining 25% were engaged in other forms of employment. Furthermore, around three-quarters of employed graduates expressed that they are '(very) satisfied with their job' and have '(very) many career opportunities' (Research Centre for Education and the Labour Market [ROA], 2018).

In spite of its favourable findings, the ROA study did not investigate how LAE graduates compare to their peers with conventional, discipline-focused bachelor's degrees, providing insufficient evidence to strongly support the economic case for LAE. The lack of empirical evidence in the discourse on the economic value of European LAE constitutes a major research gap that needs to be filled in order to better understand the link between this educational model and labour market preparedness.

The present article aims to fill this gap by examining whether the employment outcomes of Dutch LAE graduates are comparable to those of their peers with a subject-specific undergraduate background. The research question it seeks to answer is: *How do university college graduates fare in the labour market compared to their peers with a conventional bachelor's degree from a Dutch research university*? Through this comparison, the paper shows that holding a university college degree is not associated with any distinct advantages or disadvantages in the job market.

This study makes three main contributions. Firstly, a reliable account of the capacity of LAE programmes to prepare students for the labour market is an important aspect of their evaluation that is still missing. Although university colleges have been highly praised for their teaching quality and commitment to academic excellence, many students and their

parents still worry that a LAE degree might expose them to unemployment risks (Godwin, 2015). In light of the atypical nature of LAE and its relative newness in the European context, there is a strong need for emphasizing the connection between LAE degrees and professional life.

Furthermore, as a marked exception to mainstream higher education, Dutch LAE programmes serve as a great case to examine the relative weight of the bachelor's degree in determining the employment outcomes of master's degree holders. Although the proportion of graduates with a master's degree is continuously increasing (OECD, 2021), existing studies mainly focus on examining the effect of having a bachelor's versus master's degree as the highest attained level of education. By comparing the labour market outcomes of master's graduates from Dutch universities who hold different types of bachelor's degrees, the present research also addresses this wider issue, which has not been sufficiently studied before.

Finally, as a case study of educational innovation, this research also adds to the growing debate on what kind of education is needed to optimally prepare graduates for the challenges of working in the 21st century.

The paper proceeds as follows. Section 2 discusses the theoretical mechanisms that may explain the relative labour market advantages and disadvantages associated with a LAE degree. Section 3 presents the empirical methods, data, and variables used in the study. The results of the statistical analyses are presented in section 4. Section 5 discusses the findings and concludes the paper.

6.2 Theoretical Background and Assumptions

Examining the relationship between a university college degree and occupational attainment is complicated by the fact that the vast majority of LAE graduates do not enter the labour market directly after graduation. In fact, as many as 89% of them pursue further studies, usually by enrolling in a master's programme (ROA, 2018). This trend is not unique to LAE graduates but holds true for all research university bachelor's programmes in the Netherlands, although with slightly lower percentages (Allen & Belfi, 2020). Consequently, the effect of LAE on employment outcomes may be indirect rather than straightforward, and therefore difficult to assess.

What is more, because of their curricular breadth, university colleges produce graduates whose disciplinary profiles can vary significantly, ranging from natural sciences to the

humanities.[12] It is widely acknowledged in the literature that the field of study is a strong determinant of labour market performance. Especially when it comes to earnings and employment rates, graduates majoring in science and technical fields generally tend to perform better than their peers with degrees in social sciences and humanities (see, for instance, Reimer et al., 2008). Therefore, the career outcomes of LAE graduates are also likely to be heterogeneous, reflecting the different disciplinary choices that students make with regard to their major and master's degree programme.

To address these issues, the paper focuses on graduates who completed a master's programme at a Dutch research university, accounting for the effect of different academic fields. This should ensure the comparability of their labour market outcomes, allowing to assess the indirect effect of having a different type of bachelor's degree. This approach is guided by the implicit assumption that the differences between LAE bachelor's programmes and conventional undergraduate degrees would translate into different labour market outcomes of their students. This general assumption can be further divided into three sub-hypotheses.

Theoretically speaking, there are three main reasons why LAE graduates might have different employment outcomes than their non-LAE peers with equivalent master's degrees. First of all, the relative labour market performance of LAE graduates can be understood as a result of the distinctive human capital they acquired through studying liberal arts. This explanation is in line with the human capital theory (Becker, 1964), according to which labour market outcomes are essentially determined by one's stock of knowledge, skills, and abilities. Accordingly, the fact that the skills and knowledge offered by university college degrees differ from those of conventional undergraduate programmes should have consequences for the employment outcomes of their graduates.

Secondly, a potentially significant contributing factor concerns the selectiveness of LAE programmes, which may be associated with a marked difference in their students' inherent general abilities, leading to favourable employment outcomes regardless of the bachelor's degree. Selectivity may also produce labour market benefits by sending a signal of prestige and high value to employers. This expectation follows from the signalling approach (Spence, 1973), which stresses that employers can only infer the human capital of potential employees, rather than being able to directly observe it.

Thirdly, labour market signalling might also be driven by employers' unfamiliarity with LAE. Due to the novel, atypical, and small-scale nature of university college programmes,

12 While LAE is most commonly associated with the humanities, university college programmes also include social science subjects, as well as courses in scientific and technical disciplines. Students can usually choose a concentration in one of these three major areas (UCDN, 2017).

their degrees might be faced with a lack of visibility and recognition in the Dutch labour market, resulting in distrust and negative expectations among employers.

Hence, the theoretical mechanisms explaining the relative labour market success of LAE graduates relate to three main factors—university-acquired human capital, selectivity, and employers' unfamiliarity with LAE. The following subsections provide a more detailed discussion of their possible implications.

6.2.1 The Skills Hypothesis

One may assume that the labour market outcomes of LAE graduates would differ because their bachelor's degree equipped them with a distinctive set of skills and knowledge. Unlike conventional bachelor's programmes, university college degrees are not designed to prepare students for a specific profession. Rather, their main purpose is to lay down a broad foundation of academic knowledge and skills, supplementing it with in-depth expertise that students acquire in their chosen area of concentration. This should enable LAE students to develop into well-rounded intellectuals who are also sufficiently prepared for further specialized studies. By postponing specialization, therefore, a LAE degree focuses on the development of general academic knowledge and skills. The liberal arts skillset could be both an advantage and a disadvantage in the labour market.

The economic argumentation in support of the liberal arts typically stresses the increasing demand for generic skills. Theoretical and empirical studies have linked LAE with the acquisition of skills and abilities such as lifelong learning (Jessup-Anger, 2012; Seifert et al., 2008), critical thinking (Dekker, 2020), interdisciplinary awareness, creativity and innovation (Dekker, 2017; Lewis, 2018; Ming et al., 2023; van Damme, 2016), and self-directedness (Claus et al., 2018). It is often argued that these kinds of generic or 21st-century skills are crucial for success in the contemporary workplace, enabling graduates to readily respond to changing economic conditions and be prepared for work in a wide variety of jobs and careers (Gombrich, 2016; Telling, 2018; van Damme, 2016; van der Wende, 2013). Overall, the dominant premise in the LAE literature is that a high(er) level of generic skills should positively affect the labour market performance of LAE graduates, providing them with an advantage over pure specialists.

There are, however, several important caveats to this assumption. Firstly, it is important to keep in mind that generic skills are also developed in specialized higher education programmes. As explained by Perkins and Salomon (1989), generic skills are always learned within a specific context and function in contextualized ways. For this reason, it would be wrong to contend that these skills can only be learned in general programmes. Consequently, one would have to assume that due to their learning environment, university colleges do a better job in teaching generic skills compared to traditional programmes.

Furthermore, it may be argued that there are certain types of (generic) skills vital for labour market success that are exclusively provided by LAE. This may be the case with interdisciplinary skills—the ability to combine knowledge from various disciplines and approach problems from multiple perspectives (Dekker, 2017; van Damme, 2016), creativity and personal initiative (Kovačević et al., 2023), as well as (lifelong) learning skills, or the capacity to acquire new knowledge and master new skills quickly (Kovačević, 2022).

Secondly, the assumed importance of generic skills in the labour market is a subject of ongoing debate, with multiple studies providing evidence that occupation-specific skills still have the primacy (Humburg & van der Velden, 2015; Rajecki & Borden, 2010, 2011). In this regard, a major shortcoming of LAE is that students acquire relatively less specialized skills. Since a broad undergraduate curriculum comes at the expense of subject-specific education, it is expected that in the master's phase LAE graduates can make up for their relative lack of field-specific knowledge and skills (Kovačević, 2022). That way, university college graduates are supposed to strike a balance between the general liberal arts foundation, which provides the flexibility necessary to navigate labour market changes in the long run, and the specific knowledge necessary to develop their professional expertise and make a smoother transition to their first job (Golsteyn & Stenberg, 2017; Humburg & van der Velden, 2017; Rözer & Bol, 2019). In the Netherlands, however, where the linkage between the higher education system and particular occupations is traditionally tight, a generalist bachelor's degree may still be disfavoured by employers (Di Stasio & van de Werfhorst, 2016). Thus, the relative lack of occupation-specific skills could negatively impact the labour market outcomes of university college graduates.

6.2.2 The Selectivity Hypothesis

The differences in labour market outcomes of LAE and non-LAE graduates could also stem from the selectiveness of university colleges. Introduced as a way of promoting excellence, their selection procedure usually involves the assessment of prior academic performance, letters of recommendation from former teachers, a motivation letter and personal essay, as well as an admission interview (Reumer & van der Wende, 2010). Selectivity can positively affect graduates' labour market prospects through two main channels.

Firstly, the success of graduates from selective programmes can be influenced by pre-existing abilities and characteristics that students bring with them. Selective programmes tend to attract highly motivated, high-achieving students who already possess qualities such as intelligence, ambition, and perseverance, which can independently contribute to better job prospects and performance (Dale & Krueger, 2002, 2014). Since university colleges are among the very few bachelor's programmes in the Netherlands that have a selective admission policy, it is possible that their student body is composed of above-

average individuals. If university colleges are indeed able to recruit students with superior academic capabilities and motivation, it is expected that these individuals would also experience success in the labour market. In that case, however, the employment outcomes of LAE graduates might have more to do with their pre-existing abilities than with the human capital acquired through higher education.

Secondly, attending a selective programme can give graduates an advantage in the job market by signalling a high level of competence to employers. Since the productivity of a potential employee cannot be directly observed, employers rely on educational credentials to guide their hiring decisions. Employers may value the rigorous admission process associated with selective programmes, viewing it as an indicator of high ability. Additionally, the belief that selective programmes provide education of superior quality can signal to employers that their graduates are well-prepared and possess valuable skills. This can positively influence employers' perceptions of candidates from selective programmes and increase their likelihood of being considered for job opportunities (Drydakis, 2016; Mullen et al., 2021).

For this effect to manifest in the context of Dutch university colleges, employers would need to be aware of the difference in selectivity between LAE and regular programmes, perceiving it as an indicator of students' abilities and/or teaching quality. In that case, they might prefer to hire from more selective programmes, thereby improving the relative labour market prospects of LAE graduates. In the Netherlands, however, the higher education hierarchy is known to be rather flat, with minimal differentiation in resources and quality between universities (Allen & Belfi, 2020). Given the highly standardized education system in the country, it is questionable whether the selectivity of LAE programmes could act as a strong labour market signal.

6.2.3 The Unfamiliarity Hypothesis

Contrary to the positive signals associated with selectivity, the newness and unconventionality of LAE in the Dutch context might convey a negative signal to prospective employers. Although LAE is relatively well established in the Netherlands compared to the rest of Europe, it still represents a major exception to the norm of specialized, monodisciplinary curricula, enrolling a tiny fraction of the overall student population (Dekker, 2017). As employers may not be familiar with the LAE model, it is possible that they distrust university college degrees when making hiring decisions. The lack of information on the programme's curriculum and resulting skillset could make a LAE graduate appear as a riskier choice for employers than a candidate from a recognized study programme.

Employers are risk-averse and typically want to minimize uncertainty in their hiring decisions. The biggest risk they face arises from the non-linear relationship between individual skill levels and productivity (Glebbeek & van der Velden, in press). Productivity experiences a sharp decline when skills drop below a certain minimum level. Accordingly, the negative impact of below-average skills on productivity is greater than the positive impact of above-average skills. As underperformance is more detrimental than overperformance is beneficial, over-skilled workers cannot compensate for the under-skilled. Due to this inability to pool risks, avoiding individuals below the minimum skill level becomes the foremost concern for employers during the hiring process (Glebbeek & van der Velden, in press).

This could explain why employers may be reluctant to hire from LAE programmes. The limited information on LAE fuels their risk aversion, adding to the uncertainty regarding the fulfilment of skill requirements. To minimize the risk, employers may favour candidates from familiar programmes, where they can be sure that all students have attained the minimum skill level, even if these programmes have a lower average quality compared to LAE.

6.2.4 Summary and Research Objectives

Overall, the examined theoretical arguments do not clearly suggest that LAE graduates would outperform their peers or be outperformed by them in the labour market. While both positive and negative effects are possible, the lack of empirical research on LAE in the Dutch context makes it difficult to hypothesize which of the effects would prevail. The actual rigour of selectivity at university colleges, Dutch employers' awareness of LAE, as well as their demand for generic, liberal arts skills, are factors that have not been thoroughly studied before. Furthermore, it is questionable to what extent the bachelor's degree influences the employers' hiring decision when the job candidate is a master's degree holder. For these reasons, there is not enough ground to assume that LAE graduates would experience a clear labour market advantage or disadvantage over their peers with subject-specific bachelor's degrees.

With this in mind, the following sections set out to empirically examine how LAE graduates and conventional bachelor's degree holders compare with regard to a diverse set of labour market outcomes. The main goal of the empirical analysis is to establish whether there are any differences between the two groups in terms of these outcomes. While subsequent discussions may delve into the possible role of the mechanisms presented in this section, the objective is not to empirically distinguish between these effects. Rather, the empirical investigation focuses on determining whether LAE graduates experience better or worse employment outcomes compared to their peers, while the underlying causes of these potential (dis)advantages will remain within the realm of theory.

6.3 Methods

6.3.1 Data and Sample

This study uses data from the Dutch National Alumni Survey (*De Nationale Alumni Enquête*, NAE, formerly also known as *WO Monitor*). The NAE is a biennial survey that collects job market performance data from alumni of master's programmes at Dutch universities approximately one and a half years after their graduation. Data from four rounds of the NAE, conducted in 2011, 2013, 2017, and 2019, were included in the analysis. The 2015 and 2021 rounds had to be left out because they lacked data on the respondents' bachelor's degrees, making it impossible to identify LAE graduates.

To ensure comparability in terms of undergraduate studies, the initial sample was restricted to respondents who held a WO bachelor's degree from a Dutch research university[13] and were admitted to the master's programme on this basis. Furthermore, only respondents who completed their master's programme as full-time students and were under the age of 30 at the time of the survey were included in the sample. Finally, respondents who did not meet the criteria to be considered part of the labour force were excluded from the analyses.

The final sample comprised 14,933 respondents, of whom 210 were LAE graduates. Individuals who reported working less than 12 hours per week or not having a job but being available for work (992 in total, 21 LAE graduates) were only analysed for employment status. The remaining analyses were restricted to respondents who reported working at least 12 hours per week (13,941 in total, 189 LAE graduates).

6.3.2 Variables

The following employment outcomes served as *dependent variables* in the study:

- Employment status (0 = currently without a paid job but actively looking for work; 1 = has a paid job, regardless of weekly working hours);
- Quick career start: time between graduation and first paid job (0 = more than 3 months; 1 = 3 months or less);
- The level of perceived career development opportunities provided by current job, rated on a five-point scale ranging from 1 (none) to 5 (very large extent), subsequently recoded as a binary variable (0 = scores 1, 2, 3; 1 = scores 4 and 5);
- Satisfaction with current job, rated on a five-point scale ranging from 1 (very dissatisfied) to 5 (very satisfied), subsequently recoded as a binary variable (0 = scores 1, 2, 3; 1 = scores 4 and 5);

13 The Netherlands has a binary higher education system consisting of higher vocational education (hoger beroepsonderwijs, HBO), offered by universities of applied sciences and scientific education (wetenschappelijk onderwijs, WO), provided by research universities.

- Vertical match, operationalized as working in a job that requires a WO master's degree or higher (0 = vertical mismatch; 1 = vertical match);
- Horizontal match, defined as the alignment between the respondent's field of study and the field required for their work (0 = horizontal mismatch, i.e. entirely different study field or no particular field required; 1 = horizontal match, i.e. own field only or own and related fields required);
- Combination of vertical and horizontal match, consisting of three categories (1 = full match; 2 = only vertical but no horizontal match; 3 = rest);
- Hourly wage from regular work, adjusted for international price differences and inflation (2015 USD). OECD's PPP and CPI indicators (OECD, 2023a, 2023b) were used to make wages comparable across countries and years. To mitigate the influence of implausible extreme values, the top and bottom 1% of earners were removed from the analysis. A natural logarithm transformation was then applied.[14]

The main *independent variable* in this study was the type of bachelor's degree (0 = conventional programme; 1 = university college). Additionally, to account for factors concerning the graduates' personal background, work, and study characteristics that could potentially influence labour market outcomes and/or participation in LAE programmes, the following *control variables* were included:

- Survey round cohort (2011, 2013, 2017, and 2019. These were treated as separate dummies, with 2011 as the reference category);
- Gender (0 = female; 1 = male);
- Age;
- Field of master's studies (1 = Agriculture and natural environment; 2 = Nature and technology; 3 = Healthcare; 4 = Economics; 5 = Law; 6 = Behaviour and society; 7 = Language, culture and education. These were treated as separate dummy variables, with 'Agriculture and natural environment' as the reference category)[15];
- STEM vs. Social: a binary variable indicating the categorization of master's study fields into two groups (0 = STEM: study fields 1-3; 1 = Social: study fields 4-7);
- Self-reported master's GPA (grading scale: 0-10, minimum passing grade: 5.5);
- Graduates' activities during their master's studies: internship in the Netherlands, internship abroad, work experience in a relevant field, attending courses abroad, participation in an honours programme, experience in management or administration, starting a company (all dummies: 0 = no; 1 = yes);

14 To minimize comparability issues, all hourly wage analyses were restricted to respondents working in OECD countries.

15 Due to limitations in the available data, it was not possible to include the same type of variable for bachelor's studies. As a result, the effect of different combinations of bachelor's and master's degree fields could not be examined.

- Prior education: the type of education obtained before joining the master's programme and the bachelor's leading to it (1 = HBO: university of applied science; 2 = VWO: pre-university education; 3 = HAVO: senior general secondary education; 4 = other. These were treated as separate dummies, with 'other' as the reference category);
- Further education: following other academic programme(s) after master's degree (0 = no; 1 = yes);
- Migration status, indicated by the country of residence at age 16 versus the country of work/job search (1 = native in the Netherlands; 2 = foreigner in the Netherlands; 3 = native in another country; 4 = foreigner in another country. These were treated as separate dummies, with 'native in the Netherlands' as the reference category);
- Country of work (0 = OECD; 1 = non-OECD).[16]

Table 6.1 provides a descriptive overview of the main variables under investigation, as well as two additional variables, employment sector and company size, which were not included in the statistical models. This table reveals some noteworthy differences between LAE and non-LAE graduates. Firstly, the number of LAE graduates has been increasing over time as a result of the establishment of more university colleges in recent years. Furthermore, university colleges have a higher proportion of foreign students, reflecting the international orientation of these programmes. Finally, a striking difference is that twice as many LAE graduates are employed at universities, working towards a PhD. This discrepancy might lead to an underestimation of their relative labour market position, as salaries in academia tend to be lower than those in industry. However, a higher proportion of academic jobs can also be seen as a positive factor, indicating highly-skilled work that provides greater career possibilities in the future.

Table 6.1 Descriptive statistics per type of bachelor's degree

	Conventional degree (N = 14723)	LAE (N = 210)	Total (N = 14933)
Survey round cohort			
2011	3634 (24.7%)	14 (6.7%)	3648 (24.4%)
2013	4187 (28.4%)	41 (19.5%)	4228 (28.3%)
2017	3591 (24.4%)	72 (34.3%)	3663 (24.5%)
2019	3311 (22.5%)	83 (39.5%)	3394 (22.7%)
Gender			
Female	8752 (59.4%)	142 (67.6%)	8894 (59.6%)
Male	5971 (40.6%)	68 (32.4%)	6039 (40.4%)
Age			
Mean (SD)	26.15 (1.54)	26.11 (1.61)	26.15 (1.54)
Min, Max	21.0, 29.0	21.0, 29.0	21.0, 29.0
Field of master's studies			
Agriculture & natural environment	658 (4.5%)	16 (7.6%)	674 (4.5%)
Nature & technology	3198 (21.7%)	29 (13.8%)	3227 (21.6%)

16 For unemployed respondents, this indicates the country where they are searching for work.

Healthcare	1818 (12.3%)	20 (9.5%)	1838 (12.3%)
Economics	2173 (14.8%)	21 (10.0%)	2194 (14.7%)
Law	1403 (9.5%)	19 (9.0%)	1422 (9.5%)
Behaviour & society	3593 (24.4%)	63 (30.0%)	3656 (24.5%)
Language, culture & education	1880 (12.8%)	42 (20.0%)	1922 (12.9%)
Master's GPA			
Mean (SD)	7.54 (0.56)	7.81 (0.57)	7.54 (0.56)
Min, Max	6.0, 10.0	6.0, 9.0	6.0, 10.0
Internship in NL			
No	5859 (39.8%)	101 (48.1%)	5960 (39.9%)
Yes	8864 (60.2%)	109 (51.9%)	8973 (60.1%)
Internship abroad			
No	11836 (80.4%)	151 (71.9%)	11987 (80.3%)
Yes	2887 (19.6%)	59 (28.1%)	2946 (19.7%)
Work experience in a relevant field			
No	9474 (64.3%)	136 (64.8%)	9610 (64.4%)
Yes	5249 (35.7%)	74 (35.2%)	5323 (35.6%)
Study abroad			
No	13358 (90.7%)	187 (89.0%)	13545 (90.7%)
Yes	1365 (9.3%)	23 (11.0%)	1388 (9.3%)
Honours programme			
No	14188 (96.4%)	189 (90.0%)	14377 (96.3%)
Yes	535 (3.6%)	21 (10.0%)	556 (3.7%)
Administration/management experience			
No	11083 (75.3%)	149 (71.0%)	11232 (75.2%)
Yes	3640 (24.7%)	61 (29.0%)	3701 (24.8%)
Started a company			
No	14251 (96.8%)	204 (97.1%)	14455 (96.8%)
Yes	472 (3.2%)	6 (2.9%)	478 (3.2%)
Prior education			
HBO (university of applied science)	598 (4.1%)	3 (1.4%)	601 (4.0%)
VWO (pre-university education)	12892 (87.6%)	167 (79.5%)	13059 (87.5%)
HAVO (senior general secondary education)	588 (4.0%)	14 (6.7%)	602 (4.0%)
Other	645 (4.4%)	26 (12.4%)	671 (4.5%)
Further education			
No	10048 (68.2%)	125 (59.5%)	10173 (68.1%)
Yes	4675 (31.8%)	85 (40.5%)	4760 (31.9%)
Migration status			
Native in NL	13133 (89.2%)	142 (67.6%)	13275 (88.9%)
Foreigner in NL	413 (2.8%)	29 (13.8%)	442 (3.0%)
Native in another country	334 (2.3%)	4 (1.9%)	338 (2.3%)
Foreigner in another country	843 (5.7%)	35 (16.7%)	878 (5.9%)
Country of work/job search			
Non-OECD	150 (1.0%)	5 (2.4%)	155 (1.0%)
OECD	14573 (99.0%)	205 (97.6%)	14778 (99.0%)
Sector/industry			
Industry, trade, transport	1567 (11.4%)	11 (5.8%)	1578 (11.3%)
Information, communication, press	903 (6.6%)	17 (9.0%)	920 (6.6%)
Financial services	1196 (8.7%)	18 (9.5%)	1214 (8.7%)
Legal services	609 (4.4%)	2 (1.1%)	611 (4.4%)
Other business services	947 (6.9%)	11 (5.8%)	958 (6.9%)
Government	1122 (8.2%)	21 (11.1%)	1143 (8.2%)
Universities (excluding university hospitals)	1685 (12.3%)	50 (26.5%)	1735 (12.4%)
Other education & research	1256 (9.1%)	19 (10.1%)	1275 (9.1%)
Health & welfare	2700 (19.6%)	15 (7.9%)	2715 (19.5%)
Other	1767 (12.8%)	25 (13.2%)	1792 (12.9%)

Company size			
1-9 employees	920 (6.7%)	8 (4.2%)	928 (6.7%)
10-49 employees	1954 (14.2%)	28 (14.8%)	1982 (14.2%)
50-249 employees	2273 (16.5%)	29 (15.3%)	2302 (16.5%)
250-999 employees	2099 (15.3%)	19 (10.1%)	2118 (15.2%)
1000 employees or more	6506 (47.3%)	105 (55.6%)	6611 (47.4%)
Employed			
No	888 (6.0%)	20 (9.5%)	908 (6.1%)
Yes	13835 (94.0%)	190 (90.5%)	14025 (93.9%)
Quick career start: time to first job [a]			
No (more than 3 months)	3766 (28.3%)	53 (29.1%)	3819 (28.3%)
Yes (3 months or less)	9533 (71.7%)	129 (70.9%)	9662 (71.7%)
Career development opportunities [a]			
None – to some extent	4537 (33.0%)	62 (32.8%)	4599 (33.0%)
To a (very) large extent	9214 (67.0%)	127 (67.2%)	9341 (67.0%)
Job satisfaction [a]			
Very dissatisfied – neutral	2875 (20.9%)	37 (19.6%)	2912 (20.9%)
(Very) satisfied	10874 (79.1%)	152 (80.4%)	11026 (79.1%)
Vertical match [a]			
No (job requires less than WO master's degree)	4136 (31.8%)	48 (26.1%)	4184 (31.8%)
Yes (job requires WO master's degree or higher)	8853 (68.2%)	136 (73.9%)	8989 (68.2%)
Horizontal match [a]			
No (job requires different/no particular field)	3344 (27.2%)	62 (33.3%)	3406 (27.2%)
Yes (job requires own/related field)	8971 (72.8%)	124 (66.7%)	9095 (72.8%)
Match combination [a]			
Full match	6661 (57.0%)	104 (57.5%)	6765 (57.0%)
Vertical match, horizontal mismatch	1267 (10.8%)	30 (16.6%)	1297 (10.9%)
Rest	3764 (32.2%)	47 (26.0%)	3811 (32.1%)
Hourly wage from regular work (2015 USD) [a,b]			
Mean (SD)	19.98 (4.68)	19.57 (4.97)	19.98 (4.69)
Min, Max	6.0, 38.4	6.8, 37.2	6.0, 38.4

[a] Limited to respondents working ≥12 hours per week.
[b] Limited to respondents working in OECD countries, with the top and bottom 1% excluded.

6.3.3 Analyses

Regression analyses were performed in Stata 17 to examine how holding a LAE bachelor's degree relates to various labour market outcomes. Hourly wage was analysed using OLS regression (*regress* command), while multinomial regression (*mlogit* command) was used to assess the combination of vertical and horizontal match. Logistic regression (*logit* command) was used for all other outcome variables. The analyses employed robust standard errors. Listwise deletion was used to handle missing values.

Two regression models were estimated for each outcome. The only difference between the models was that the second one used the binary study field categorization, incorporating it into an interaction term with the LAE degree variable. This made it possible to compare the performance of LAE graduates and their non-LAE peers within two broader areas: natural sciences and engineering ('STEM'), and social sciences and humanities ('Social'). To accomplish this, the *margins* command with the *dydx* option was utilized.

To ensure the robustness of the main findings, additional analyses were conducted using propensity score matching (PSM). PSM is a statistical technique that can help reduce selection bias by matching individuals based on their probability of receiving treatment, quantified as a propensity score. Using this score, LAE graduates (treatment group) were matched with comparable graduates from regular bachelor's programmes (control group), excluding non-matched individuals from the analysis. The average treatment effect on the treated (ATT), indicating the average difference in outcomes between the two groups, was then estimated. Hence, PSM enables to balance the two groups on observed characteristics that may impact the graduates' career outcomes, although it does not account for unobserved factors.

One-to-one, nearest-neighbour matching without replacement was performed via the *psmatch2* command in Stata 17. To ensure sufficient overlap between the treatment and control groups, the *common* option was included, resulting in the exclusion of treatment observations with propensity scores above the maximum or below the minimum propensity scores of the controls. The *ties* option, which matches treatment observations with multiple nearest neighbours in case they have identical (tied) propensity scores, was also utilized. Bootstrapping with 1,000 replications was used to obtain the standard errors and confidence intervals for the estimated ATT. The balance of covariates between the treatment and control groups was evaluated using the *pstest* command. PSM was conducted for all outcomes except the vertical and horizontal match combination, as *psmatch2* does not support multinomial dependent variables. Since PSM does not rely on functional form assumptions, the hourly wage outcome variable was not log-transformed. The covariates included in the propensity score estimation model align with those used in the initial regression model.

6.4 Results

6.4.1 Regression Analysis

Logistic regression results are presented in Tables 6.2 and 6.3. Table 6.4 shows the multinomial regression results for match combination, while OLS regression results for log hourly wage are displayed in Table 6.5. The findings from Model 1 reveal that the type of bachelor's degree has a significant effect only on one labour market outcome: employment status. Holding all other variables constant, the odds of being employed for a LAE graduate are $(1 - e^{-0.667}) \times 100 = 48.7\%$ lower compared to a graduate from a regular bachelor's programme. Although this may come across as quite substantial, the absolute difference is not very big (90.5% versus 94.0%, see Table 1). No statistically significant effects were observed in other outcomes. In other words, there are no differences between LAE graduates and their non-LAE peers in terms of making a quick entry into the labour

market, career development opportunities, job satisfaction, vertical match, horizontal match, match combination, and hourly wage.[17]

In addition to the main findings, the control variables also yielded noteworthy results. Master's GPA exhibited a strong positive impact on all employment outcomes. For example, a one-point increase in GPA raises the odds of being employed by 44.3% ($e^{0.366} = 1.443$) and the odds of a vertical match by 112.8% ($e^{0.755} = 2.128$). Likewise, doing an internship in the Netherlands and acquiring relevant work experience during studies seem to be highly important factors for a successful entry into the labour market. Unsurprisingly, natural science and technology graduates outperformed their peers with degrees in social sciences and humanities, with the exception of economics graduates, who particularly stood out in terms of earning potential. Men have an advantage over women when it comes to career development opportunities, job satisfaction, and earnings, while other outcomes are not significantly affected by gender. In line with a widely recognized pattern, being male is associated with a 3.4% higher hourly wage. Both in the Netherlands and other analysed OECD countries, graduates of foreign descent earn less than their native-born counterparts. Graduates with a foreign background working in the Netherlands also have lower odds of being satisfied with their jobs (OR = 0.736) and perceive having fewer career development opportunities (OR = 0.768) compared to graduates of Dutch origin.

Through Model 2, it was possible to conduct separate analyses of labour market outcomes for graduates in two master's study areas: STEM and Social. Similarly to Model 1, the only statistically significant differences were found with regard to employment status. This is illustrated by Figure 6.1, which shows the average marginal effects of bachelor's degree type on employment status within the two fields. Compared to their peers from a conventional bachelor's programme, LAE graduates with a master's degree in STEM have a probability of being employed that is 0.133 or 13.3 percentage points lower. In Social fields, the difference in the probability of being employed between LAE and non-LAE graduates is much smaller (-2.9 percentage points) and statistically insignificant. For all other outcomes, additional analyses on the interaction term did not show any statistically significant differences between the two groups in STEM and Social master's field subsets.

6.4.2 Robustness Check: Propensity Score Matching

To scrutinize the findings, PSM was also applied. As a first step, it is necessary to check whether an adequate balance of covariates has been achieved. Tables 6.6-6.12 in the Appendix

17 Additional regressions were estimated using a less strict criterion for vertical match, which defines it as holding a job that requires a university degree or higher. In this definition, a WO bachelor's degree, as well as HBO bachelor's and master's degrees, were considered as a vertical match. Career development and job satisfaction were also analysed using the full five-point scale. The results of these supplementary analyses align with the presented findings.

show that the matching process resulted in a considerable reduction in bias, as evidenced by a mean decrease of approximately three to four times. In the vast majority of cases, the standardized bias is below or slightly above 10%. Most importantly, as indicated by the last two columns in these tables, there are no statistically significant differences in the mean values of covariates between the treatment and control groups after matching. This demonstrates that the matching process was effective in creating a well-balanced control group.

ATT estimation results are presented in Table 6.13 in the Appendix. These findings are largely consistent with those from the regression analyses. The only difference pertains to employment status, where the ATT for attending a university college versus a regular undergraduate programme is statistically insignificant, with a p-value that is close to the 5% threshold. However, when the ATT is estimated separately for graduates in STEM and Social master's study fields, there is a statistically significant negative difference of 10 percentage points in the former. In the matched sample, 87.7% of LAE graduates with STEM master's degrees are employed, compared to 97.9% of their non-LAE counterparts. For graduates with Social master's degrees, on the other hand, the difference in employment status is negligible (only 1 percentage point) and statistically insignificant. This confirms the results reached by the regression analyses. For all the remaining outcomes, the differences between LAE graduates and their peers from conventional bachelor's programmes are not statistically significant. Overall, the results remain consistent across methods.

Figure 6.1 Average marginal effects of a LAE vs. conventional bachelor's degree on employment status by master's study field (STEM/Social), with 95% CIs

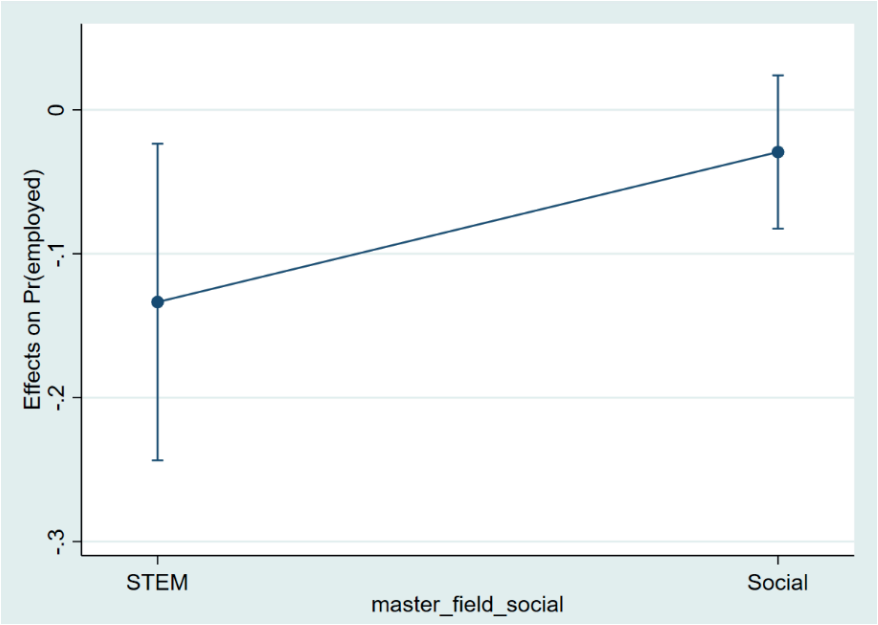


Table 6.2 Logistic regression results for Model 1

	Employment Status		Quick Career Start		Career Development		Job Satisfaction		Vertical Match		Horizontal Match	
LAE	-0.667**	(0.258)	-0.048	(0.168)	0.062	(0.164)	0.002	(0.192)	0.163	(0.190)	-0.271	(0.166)
male	-0.068	(0.082)	-0.035	(0.044)	0.248***	(0.042)	0.101*	(0.048)	0.024	(0.046)	-0.027	(0.048)
age	-0.000	(0.025)	0.008	(0.014)	-0.013	(0.014)	-0.044**	(0.015)	0.072***	(0.015)	-0.074***	(0.016)
master_field												
Nature & technology	0.538**	(0.205)	0.368***	(0.099)	0.249*	(0.097)	0.208	(0.114)	0.207*	(0.104)	0.139	(0.115)
Healthcare	0.308	(0.216)	0.854***	(0.110)	0.344***	(0.104)	0.349**	(0.123)	1.030***	(0.119)	0.232	(0.127)
Economics	0.616**	(0.215)	0.273**	(0.105)	0.817***	(0.106)	0.195	(0.120)	0.313**	(0.111)	-0.347**	(0.119)
Law	-0.563**	(0.203)	-0.248*	(0.110)	0.204	(0.109)	-0.106	(0.125)	0.531***	(0.120)	-0.398**	(0.128)
Behaviour & society	-0.163	(0.189)	-0.001	(0.098)	-0.213*	(0.096)	-0.202	(0.111)	0.010	(0.104)	-0.656***	(0.113)
Lang., culture & educ.	-0.646***	(0.193)	0.048	(0.106)	-0.615***	(0.103)	-0.450***	(0.117)	-0.801***	(0.111)	-1.319***	(0.118)
GPA	0.366***	(0.070)	0.153***	(0.037)	0.247***	(0.036)	0.314***	(0.041)	0.755***	(0.041)	0.236***	(0.041)
internship_NL	0.330***	(0.075)	0.127**	(0.042)	0.206***	(0.041)	0.185***	(0.046)	0.411***	(0.045)	0.440***	(0.046)
internship_abroad	0.238*	(0.114)	0.033	(0.057)	0.287***	(0.055)	0.083	(0.063)	0.545***	(0.063)	0.168**	(0.065)
work_relevant_field	0.487***	(0.083)	0.359***	(0.043)	0.201***	(0.040)	0.209***	(0.047)	0.282***	(0.045)	0.395***	(0.047)
study_abroad	0.035	(0.127)	-0.216**	(0.066)	0.150*	(0.069)	-0.151*	(0.075)	0.120	(0.075)	-0.015	(0.076)
honours_prog	0.177	(0.236)	0.183	(0.112)	0.147	(0.109)	0.055	(0.126)	0.458***	(0.134)	0.021	(0.116)
admin_exp	0.246**	(0.093)	0.070	(0.047)	0.247***	(0.047)	0.193***	(0.053)	0.287***	(0.050)	-0.222***	(0.051)
started_company	0.381	(0.260)	0.189	(0.117)	0.216	(0.114)	0.154	(0.128)	-0.242*	(0.119)	-0.281*	(0.117)
prior_education												
HBO	0.305	(0.213)	-0.058	(0.141)	-0.088	(0.129)	-0.048	(0.138)	-0.039	(0.142)	0.143	(0.146)
VWO	0.172	(0.163)	-0.179	(0.103)	0.086	(0.094)	0.144	(0.104)	0.099	(0.104)	0.107	(0.104)
HAVO	-0.008	(0.222)	-0.169	(0.137)	0.174	(0.129)	0.086	(0.143)	0.373*	(0.146)	0.173	(0.143)
further_education	0.356***	(0.083)	0.497***	(0.045)	0.441***	(0.043)	0.463***	(0.050)	1.129***	(0.050)	0.933***	(0.053)
migration_status												
Foreigner in NL	-0.302	(0.207)	-0.099	(0.122)	-0.263*	(0.117)	-0.307*	(0.128)	0.134	(0.135)	-0.135	(0.129)
Native, other land	-0.338	(0.222)	0.164	(0.149)	-0.314*	(0.140)	-0.190	(0.143)	0.019	(0.161)	0.491**	(0.167)
Foreigner, other land	-0.133	(0.164)	-0.288**	(0.088)	0.222*	(0.093)	0.189	(0.107)	0.257*	(0.107)	0.278**	(0.104)
land_work_oecd	0.042	(0.324)	0.091	(0.199)	0.136	(0.208)	0.249	(0.210)	-0.330	(0.249)	0.157	(0.225)
Constant	-0.833	(0.919)	-0.885	(0.536)	-1.612**	(0.521)	-0.743	(0.585)	-7.500***	(0.593)	0.717	(0.593)
Survey Round Dummies	Yes		Yes		Yes		Yes		Yes		Yes	
Observations	14933		13481		13940		13938		13173		12501	
Pseudo R^2	0.076		0.035		0.062		0.041		0.137		0.092	

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 6.3 Logistic regression results for Model 2

	Employment Status		Quick Career Start		Career Development		Job Satisfaction		Vertical Match		Horizontal Match	
LAE=1	-1.684***	(0.419)	0.485	(0.390)	0.021	(0.331)	0.122	(0.416)	-0.215	(0.388)	-0.270	(0.354)
Social	-0.638***	(0.093)	-0.409***	(0.046)	-0.273***	(0.044)	-0.376***	(0.051)	-0.430***	(0.047)	-0.829***	(0.053)
LAE=1×Social	1.294*	(0.519)	-0.738	(0.434)	-0.139	(0.377)	-0.239	(0.468)	0.358	(0.440)	-0.109	(0.399)
male	0.117	(0.077)	-0.022	(0.041)	0.424***	(0.040)	0.180***	(0.045)	0.068	(0.043)	0.079	(0.045)
age	-0.031	(0.025)	0.001	(0.014)	-0.040**	(0.013)	-0.058***	(0.015)	0.045**	(0.015)	-0.094***	(0.015)
GPA	0.353***	(0.069)	0.143***	(0.037)	0.206***	(0.035)	0.292***	(0.040)	0.652***	(0.039)	0.195***	(0.040)
internship_NL	0.310***	(0.074)	0.132**	(0.042)	0.159***	(0.040)	0.179***	(0.045)	0.454***	(0.043)	0.458***	(0.044)
internship_abroad	0.198	(0.112)	0.039	(0.056)	0.254***	(0.054)	0.072	(0.062)	0.537***	(0.061)	0.160*	(0.064)
work_relevant_field	0.457***	(0.081)	0.341***	(0.042)	0.206***	(0.040)	0.212***	(0.046)	0.321***	(0.044)	0.412***	(0.046)
study_abroad	0.008	(0.127)	-0.221***	(0.066)	0.160*	(0.068)	-0.149*	(0.075)	0.094	(0.074)	-0.018	(0.076)
honours_prog	0.150	(0.233)	0.199	(0.111)	0.195	(0.107)	0.078	(0.125)	0.510***	(0.129)	0.048	(0.114)
admin_exp	0.252**	(0.093)	0.043	(0.047)	0.278***	(0.046)	0.199***	(0.053)	0.263***	(0.050)	-0.206***	(0.050)
started_company	0.464	(0.257)	0.209	(0.117)	0.245*	(0.112)	0.169	(0.127)	-0.259*	(0.118)	-0.271*	(0.115)
prior_education												
HBO	0.318	(0.211)	-0.046	(0.141)	-0.075	(0.126)	-0.043	(0.138)	-0.031	(0.141)	0.148	(0.145)
VWO	0.230	(0.160)	-0.138	(0.103)	0.124	(0.093)	0.165	(0.104)	0.099	(0.103)	0.121	(0.104)
HAVO	0.027	(0.218)	-0.137	(0.137)	0.215	(0.127)	0.105	(0.142)	0.381**	(0.143)	0.176	(0.142)
further_education	0.309***	(0.083)	0.501***	(0.045)	0.438***	(0.042)	0.465***	(0.050)	1.134***	(0.048)	0.915***	(0.051)
migration_status												
Foreigner in NL	-0.151	(0.205)	-0.043	(0.123)	-0.086	(0.115)	-0.226	(0.127)	0.212	(0.134)	-0.034	(0.128)
Native, other land	-0.051	(0.221)	0.237	(0.148)	-0.108	(0.134)	-0.078	(0.143)	0.184	(0.157)	0.633***	(0.166)
Foreigner, other land	-0.038	(0.164)	-0.289**	(0.089)	0.252**	(0.093)	0.205	(0.108)	0.231*	(0.107)	0.282**	(0.104)
land_work_oecd	0.187	(0.316)	0.121	(0.198)	0.185	(0.203)	0.284	(0.210)	-0.254	(0.244)	0.186	(0.220)
Constant	0.215	(0.926)	-0.267	(0.526)	-0.511	(0.509)	-0.100	(0.578)	-5.768***	(0.575)	1.572**	(0.581)
Survey Round Dummies	Yes		Yes		Yes		Yes		Yes		Yes	
Observations	14933		13481		13940		13938		13173		12501	
Pseudo R^2	0.061		0.028		0.038		0.036		0.112		0.078	

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 6.4 Multinomial regression results for vertical and horizontal match combination

	Model 1				Model 2			
	Vertical Match, Horiz. Mismatch		**Rest**		**Vertical Match, Horiz. Mismatch**		**Rest**	
LAE	0.316	(0.218)	-0.083	(0.197)				
male	0.092	(0.071)	0.004	(0.049)	0.127	(0.066)	-0.042	(0.047)
age	0.085***	(0.023)	-0.063***	(0.017)	0.090***	(0.022)	-0.036*	(0.016)
master_field								
Nature & technology	0.140	(0.175)	-0.157	(0.109)				
Healthcare	-0.107	(0.190)	-0.927***	(0.123)				
Economics	0.839***	(0.179)	-0.154	(0.117)				
Law	0.563**	(0.191)	-0.435***	(0.127)				
Behaviour & society	0.701***	(0.175)	0.124	(0.109)				
Lang., cult. & educ.	1.197***	(0.187)	1.043***	(0.118)				
GPA	0.019	(0.059)	-0.730***	(0.044)	0.061	(0.058)	-0.630***	(0.043)
internship_NL	-0.384***	(0.068)	-0.488***	(0.049)	-0.437***	(0.066)	-0.544***	(0.047)
internship_abroad	0.001	(0.088)	-0.515***	(0.068)	-0.022	(0.087)	-0.519***	(0.066)
work_relevant_field	-0.225***	(0.066)	-0.329***	(0.049)	-0.250***	(0.066)	-0.374***	(0.048)
study_abroad	0.047	(0.102)	-0.117	(0.081)	0.065	(0.102)	-0.096	(0.080)
honours_prog	0.130	(0.140)	-0.442**	(0.140)	0.114	(0.140)	-0.491***	(0.135)
admin_exp	0.414***	(0.069)	-0.209***	(0.055)	0.431***	(0.069)	-0.189***	(0.055)
started_company	0.208	(0.164)	0.214	(0.135)	0.229	(0.163)	0.220	(0.134)
prior_education								
HBO	-0.063	(0.221)	0.066	(0.158)	-0.074	(0.222)	0.051	(0.156)
VWO	-0.059	(0.151)	-0.071	(0.112)	-0.049	(0.152)	-0.074	(0.111)
HAVO	-0.133	(0.203)	-0.359*	(0.157)	-0.133	(0.203)	-0.370*	(0.154)
further_education	-1.023***	(0.074)	-1.307***	(0.054)	-1.030***	(0.074)	-1.299***	(0.052)
migration_status								
Foreigner in NL	0.261	(0.170)	-0.047	(0.144)	0.267	(0.171)	-0.126	(0.143)
Native, other land	-0.463*	(0.233)	-0.121	(0.174)	-0.493*	(0.232)	-0.279	(0.170)
Foreigner, other land	-0.198	(0.141)	-0.302**	(0.116)	-0.152	(0.141)	-0.266*	(0.115)
land_work_oecd	-0.216	(0.312)	0.393	(0.284)	-0.198	(0.310)	0.336	(0.278)
LAE=1					-0.101	(0.537)	0.237	(0.380)
Social					0.757***	(0.077)	0.515***	(0.051)
LAE=1×Social					0.521	(0.587)	-0.271	(0.440)
Constant	-3.843***	(0.870)	7.169***	(0.653)	-4.249***	(0.854)	5.514***	(0.633)
Survey Round Dummies	Yes		Yes		Yes		Yes	
Observations	11873				11873			
Pseudo R^2	0.115				0.098			

Standard errors in parentheses. Base category: full match. * p < 0.05, ** p < 0.01, *** p < 0.001

Table 6.5 OLS regression results for log hourly wage

	Model 1		Model 2	
LAE	-0.007	(0.018)		
male	0.034***	(0.004)	0.049***	(0.004)
age	0.022***	(0.002)	0.018***	(0.002)
master_field				
Nature & technology	0.059***	(0.009)		
Healthcare	0.154***	(0.010)		
Economics	0.152***	(0.010)		
Law	0.069***	(0.011)		
Behaviour & society	0.047***	(0.009)		
Lang., culture & educ.	-0.037***	(0.011)		
GPA	0.022***	(0.004)	0.014***	(0.004)
internship_NL	0.031***	(0.004)	0.036***	(0.004)
internship_abroad	0.029***	(0.005)	0.031***	(0.006)
work_relevant_field	0.033***	(0.004)	0.035***	(0.004)
study_abroad	0.022**	(0.007)	0.020**	(0.007)
honours_prog	0.016	(0.010)	0.027**	(0.010)
admin_exp	0.027***	(0.005)	0.025***	(0.005)
started_company	0.003	(0.014)	0.005	(0.014)
prior_education				
HBO	-0.002	(0.017)	0.001	(0.018)
VWO	0.006	(0.012)	0.014	(0.013)
HAVO	0.004	(0.017)	0.007	(0.018)
further_education	-0.043***	(0.004)	-0.038***	(0.004)
migration_status				
Foreigner in NL	-0.049***	(0.014)	-0.028*	(0.014)
Native, other land	0.075**	(0.025)	0.106***	(0.025)
Foreigner, other land	-0.092***	(0.015)	-0.097***	(0.016)
LAE=1			0.004	(0.030)
Social			-0.022***	(0.005)
LAE=1×Social			-0.043	(0.038)
Constant	2.090***	(0.052)	2.309***	(0.054)
Survey Round Dummies	Yes		Yes	
Observations	12902		12902	
R^2	0.154		0.096	

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

6.5 Discussion and Conclusion

The results of the statistical analyses suggest that the labour market performance of LAE graduates is on par with their peers who pursued a regular undergraduate programme. The only negative result was found among graduates with a master's degree in the STEM domain. In their case, holding a LAE bachelor's degree proved to have a detrimental effect on obtaining employment. For all other labour market outcomes, no statistically significant differences were found, neither positive nor negative. These findings add valuable insights to the preceding theoretical discussion.

Firstly, the findings indicate the absence of a selectivity effect, as LAE graduates did not surpass their peers in any of the outcomes. On the one hand, this implies that students' abilities may not be the primary determinant in the selection process for university colleges. Drawing on prior research, it can be argued that other factors, such as the students' specific academic interests and undecidedness regarding career choices (Dekker, 2021; Kovačević et al., 2023), take precedence when it comes to (self-)selection into LAE. On the other hand, the evidence supports the notion that the selectiveness of university colleges does not generate strong positive signals in the labour market. Overall, selectivity-related labour market advantages appear highly unlikely in the context of Dutch LAE.

Secondly, the data indicates that holding a LAE degree adversely impacts one's chances of attaining employment in the STEM sector. The preference of STEM sector employers for graduates with a subject-specific bachelor's degree raises questions about the underlying contributing factors. Building on the research of Di Stasio and van de Werfhorst (2016), it can be inferred that employers in STEM occupations disfavour LAE graduates because they associate a generalist undergraduate degree with a lack of job-specific skills. Their unfamiliarity with LAE is likely to add distrust, resulting in a negative signal.

While STEM employers may view LAE graduates as lacking specialized skills, this does not necessarily reflect their true skill level. The fact that LAE graduates who secure employment in the field perform equally well as their non-LAE peers suggests that the problem lies at the entry point, where employers' perceptions and biases might play a crucial role. Hence, although the degree to which LAE graduates lack specialized skills remains uncertain, negative signalling appears to be the main factor hindering their entry into STEM jobs. The findings from the study on Dutch employers' views of LAE degrees support this conclusion, indicating that employers in specialized jobs often associate conventional bachelor's programmes with a stronger foundation of occupation-specific knowledge and skills. Either way, the fairly large negative difference in employment

suggests that LAE graduates may be faced with obstacles when looking for jobs in STEM professions. University colleges should address this issue in order to enhance the employment prospects of their students.

Thirdly, the study's findings contribute to the discussion on the labour market significance of generic skills. In this regard, the results show that the LAE skillset produced a neutral effect, without notable positive or negative consequences. Even if LAE students have better-developed generic skills than their non-LAE peers, or possess certain unique skills such as interdisciplinarity, these did not result in additional advantages in the labour market. Alternatively, it is possible that the provision of generic skills is not exclusive to LAE, as other programmes may be equally good at teaching these skills. However, it is important to note that these conclusions only pertain to the short-term impact of generic skills, as the study looked at early career outcomes, one and a half years after graduation. The literature frequently stresses the value of generic skills in effectively responding to long-term shifts in the labour market (Golsteyn & Stenberg, 2017; Rözer & Bol, 2019). In that sense, LAE proponents like to point out that a liberal arts education gives people the skills 'that will help them get ready for their sixth job, not their first job' (Zakaria, 2015, p. 76), and prepare themselves for professions that are 'not yet invented' (Tilghman, 2010, as cited in van der Wende, 2013, p. 300). Nevertheless, the dataset used in this study only included short-term labour market outcomes, which is one of its limitations. To fully examine the impact of generic skills, future research should explore how LAE graduates fare over the longer term.

A major limitation of this study is the small number of respondents from university colleges in the NAE surveys, which might not be representative of the overall LAE student population. The study's focus on alumni of Dutch master's programmes is another limiting factor, as a sizeable portion of LAE graduates pursue their master's studies abroad. One may argue that the brightest students are more likely to undertake graduate studies in a foreign country, and that overlooking them compromises the validity of the analysis. However, the high international ranking and quality of Dutch higher education challenge this claim. In addition, focusing on master's graduates from Dutch universities facilitated the comparability of their outcomes, which would not have been possible otherwise. Lastly, the study is also limited by the absence of information on socio-economic background in the NAE survey. Socio-economic circumstances have been found to affect labour market outcomes (Burke, 2016; Flap & Völker, 2008), and could also influence entry into university colleges, which have higher tuition fees than regular bachelor's programmes (NUFFIC, 2022).

Despite these limitations, the study's findings strongly support the overall conclusion that LAE does not lack the capacity to prepare students for the labour market. This counters

common criticisms and undermines the belief that LAE graduates are faced with limited career prospects. Considering the lack of prior empirical inquiry, these findings are particularly valuable to LAE stakeholders, highlighting that the unconventional nature of LAE should not be a source of concern. As a distinctive and recent addition to the Dutch higher education system, LAE programmes have proven to be a successful innovation, catering to a specific subset of students who seek greater flexibility to explore diverse fields of study and pursue a self-tailored academic pathway.

While recognizing the absence of negative associations between a university college degree and early employment outcomes, it is also important not to overstate the merits of the LAE model. In that sense, LAE supporters should exercise caution, especially when promoting the notion of increasing need for generic skills in the workplace, as there is not enough evidence to support such claims. In the ongoing debate on optimal educational paradigms for the 21st century, LAE should not be perceived as the sole and definitive solution, but rather as an alternative pathway leading to the same destination.

Finally, examining university colleges as an exception among Dutch undergraduate programmes has provided preliminary insights into the impact of the bachelor's degree on the employment outcomes of master's degree holders. The discovery of a neutral effect of undergraduate studies calls for further research on the role of different combinations of bachelor's and master's degrees, along with their associated skillsets, in determining labour market success. To complement the results of this study, future research should explore this issue in other countries, particularly within the context of post-Bologna degree structure in European higher education. This could provide valuable insights into how the division of university studies into two cycles influences the transition of graduates from university to work and their further career paths.

6.6 References

Abrahám, S. (2023). The European Consortium of Liberal Arts and Sciences' manifesto for the reform of undergraduate education in Europe. In I. Jung & K. H. Mok (Eds.), *The reinvention of liberal learning around the globe* (pp. 179–193). Springer Nature Singapore. https://doi.org/10.1007/978-981-19-8265-1_11

Allen, J., & Belfi, B. (2020). Educational expansion in the Netherlands: Better chances for all? *Oxford Review of Education*, *46*(1), 44–62. https://doi.org/10.1080/03054985.2019.1687435

Becker, G. S. (1964). *Human capital: A theoretical and empirical analysis, with special reference to education*. NBER.

Burke, C. (2016). *Culture, capitals and graduate futures: Degrees of class*. Routledge.

Claus, J., Meckel, T., & Pätz, F. (2018). The new spirit of capitalism in European liberal arts programs. *Educational Philosophy and Theory*, *50*(11), 1011–1019. https://doi.org/10.1080/00131857.2017.1341298

Cooper, N. (2018). Evaluating the liberal arts model in the context of the Dutch university college. *Educational Philosophy and Theory*, *50*(11), 1060–1067. https://doi.org/10.1080/00131857.2017.1341299

Dale, S., & Krueger, A. (2002). Estimating the payoff to attending a more selective college: An application of selection on observables and unobservables. *The Quarterly Journal of Economics*, *117*(4), 1491–1527. https://doi.org/10.1162/003355302320935089

Dale, S., & Krueger, A. (2014). Estimating the effects of college characteristics over the career using administrative earnings data. *Journal of Human Resources*, *49*(2), 323–358. https://doi.org/10.3368/jhr.49.2.323

Dekker, T. (2017). Liberal arts in Europe. In M. A. Peters (Ed.), *Encyclopedia of educational philosophy and theory* (pp. 1–6). Springer Singapore. https://doi.org/10.1007/978-981-287-532-7_569-1

Dekker, T. (2020). Teaching critical thinking through engagement with multiplicity. *Thinking Skills and Creativity*, *37*. https://doi.org/10.1016/j.tsc.2020.100701

Dekker, T. (2021). The value of curricular choice through student eyes. *The Curriculum Journal*, *32*(2), 198–214. https://doi.org/10.1002/curj.71

Di Stasio, V., & van de Werfhorst, H. G. (2016). Why does education matter to employers in different institutional contexts? A vignette study in England and the Netherlands. *Social Forces*, *95*(1), 77–106. https://doi.org/10.1093/sf/sow027

Drydakis, N. (2016). The effect of university attended on graduates' labour market prospects: A field study of Great Britain. *Economics of Education Review*, *52*, 192–208. https://doi.org/10.1016/j.econedurev.2016.03.001

Flap, H., & Völker, B. (2008). Social, cultural, and economic capital and job attainment: The position generator as a measure of cultural and economic resources. In N. Lin & B. Erickson (Eds.), *Social capital: An international research program* (pp. 65–80). Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199234387.003.0030

Glebbeek, A., & van der Velden, R. (in press). Why education matters? On the interplay of three different mechanisms. In E. Saar & P. Róbert (Eds.), *Handbook on Education and the Labour Market*. Edward Elgar Publishing.

Godwin, K. A. (2015). The counter narrative: Critical analysis of liberal education in global context. *New Global Studies*, *9*(3), 223–243. https://doi.org/10.1515/ngs-2015-0033

Golsteyn, B. H. H., & Stenberg, A. (2017). Earnings over the life course: General versus vocational education. *Journal of Human Capital*, *11*(2), 167–212. https://doi.org/10.1086/691798

Gombrich, C. (2016). Polymathy, new generalism, and the future of work: A little theory and some practice from UCL's arts and sciences degree. In W. C. Kirby & M. C. van der Wende (Eds.), *Experiences in liberal arts and science education from America, Europe, and Asia* (pp. 75–89). Palgrave Macmillan US. https://doi.org/10.1057/978-1-349-94892-5_6

Humburg, M., & van der Velden, R. (2015). Skills and the graduate recruitment process: Evidence from two discrete choice experiments. *Economics of Education Review*, *49*, 24–41. https://doi.org/10.1016/j.econedurev.2015.07.001

Humburg, M., & van der Velden, R. (2017). What is expected of higher education graduates in the twenty-first century? In J. Buchanan, D. Finegold, K. Mayhew, & C. Warhurst (Eds.), *The Oxford handbook of skills and training* (pp. 201–220). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199655366.013.10

Jessup-Anger, J. E. (2012). Examining how residential college environments inspire the life of the mind. *The Review of Higher Education*, *35*(3), 431–462. https://doi.org/10.1353/rhe.2012.0022

Kingkade, T. (2013). Pat McCrory lashes out against 'educational elite' and liberal arts college courses. *HuffPost*. https://www.huffpost.com/entry/pat-mccrory-college_n_2600579?guccounter=1

Kovačević, M. (2022). The effect of a general versus narrow undergraduate curriculum on graduate specialization: The case of a Dutch liberal arts college. *The Curriculum Journal*, *33*(4), 618–635. https://doi.org/10.1002/curj.158

Kovačević, M., Dekker, T. J., & van der Velden, R. (2023). Employability development in undergraduate programmes: How different is liberal arts education? *Teaching in Higher Education*, 1–21. https://doi.org/10.1080/13562517.2023.2212602

Lewis, P. (2018). Globalizing the liberal arts: Twenty-first-century education. In N. W. Gleason (Ed.), *Higher education in the era of the Fourth Industrial Revolution* (pp. 15–38). Springer Singapore. https://doi.org/10.1007/978-981-13-0194-0_2

Ming, X., MacLeod, M., & van der Veen, J. (2023). Construction and enactment of interdisciplinarity: A grounded theory case study in Liberal Arts and Sciences education. *Learning, Culture and Social Interaction*, *40*, 100716. https://doi.org/10.1016/j.lcsi.2023.100716

Mullen, A. L., Baker, J., Menard, G., & Walker, B. (2021). Does alma mater matter? An audit study of labour market outcomes of Canadian Bachelor's Degree recipients. *Canadian Review of Sociology*, *58*(4), 456–475. https://doi.org/10.1111/cars.12363

NUFFIC. (2022). *University Colleges in the Netherlands*. Netherlands Universities Foundation For International Cooperation (NUFFIC). https://www.studyinnl.org/sites/default/files/2022-09/University%20Colleges%20in%20the%20Netherlands%202022.pdf

OECD. (2021). *Education at a glance 2021: OECD indicators*. OECD Publishing. https://doi.org/10.1787/b35a14e5-en

OECD. (2023a). *Inflation (CPI) (indicator)*. https://doi.org/10.1787/eee82e6e-en

OECD. (2023b). *Purchasing power parities (PPP) (indicator)*. https://doi.org/10.1787/1290ee5a-en

Perkins, D. N., & Salomon, G. (1989). Are cognitive skills context-bound? *Educational Researcher*, *18*(1), 16–25. https://doi.org/10.3102/0013189X018001016

Rajecki, D. W., & Borden, V. M. H. (2010). Liberal arts skills, psychology baccalaureates, and first-year employment: Notes on a meritocracy hypothesis. *Teaching of Psychology*, *37*(3), 157–164. https://doi.org/10.1080/00986283.2010.488550

Rajecki, D. W., & Borden, V. M. H. (2011). Psychology degrees: Employment, wage, and career trajectory consequences. *Perspectives on Psychological Science*, *6*(4), 321–335. https://doi.org/10.1177/1745691611412385

Reimer, D., Noelke, C., & Kucel, A. (2008). Labor market effects of field of study in comparative perspective. *International Journal of Comparative Sociology*, *49*(4-5), 233–256. https://doi.org/10.1177/0020715208093076

Research Centre for Education and the Labour Market. (2018). *Liberal arts and sciences programmes alumni survey factsheet 2017*. Maastricht University.

Reumer, C., & van der Wende, M. C. (2010). Excellence and diversity: Selective admission policies in Dutch higher education - A case study on Amsterdam University College. *UC Berkeley: Center for Studies in Higher Education*. https://escholarship.org/uc/item/4502w5pj

Rözer, J. J., & Bol, T. (2019). Labour market effects of general and vocational education over the life-cycle and across time: Accounting for age, period, and cohort effects. *European Sociological*

Review, *35*(5), 701–717. https://doi.org/10.1093/esr/jcz031

Seifert, T. A., Goodman, K. M., Lindsay, N., Jorgensen, J. D., Wolniak, G. C., Pascarella, E. T., & Blaich, C. (2008). The effects of liberal arts experiences on liberal arts outcomes. *Research in Higher Education*, *49*, 107–125. https://doi.org/10.1007/s11162-007-9070-7

Spence, M. (1973). Job market signaling. *The Quarterly Journal of Economics*, *87*(3), 355–374. https://doi.org/10.2307/1882010

Telling, K. (2018). Selling the liberal arts degree in England: Unique students, generic skills and mass higher education. *Sociology*, *52*(6), 1290–1306. https://doi.org/10.1177/0038038517750548

University College Deans Network. (2017). *Statement on the role, characteristics, and cooperation of liberal arts and sciences colleges in the Netherlands*. https://www.universitycolleges.info/

van Damme, D. (2016). Transcending boundaries: Educational trajectories, subject domains, and skills demands. In W. C. Kirby & M. C. van der Wende (Eds.), *Experiences in liberal arts and science education from America, Europe, and Asia* (pp. 127–142). Palgrave Macmillan US. https://doi.org/10.1057/978-1-349-94892-5_9

van der Wende, M. C. (2011). The emergence of liberal arts and sciences education in Europe: A comparative perspective. *Higher Education Policy*, *24*(2), 233–253. https://doi.org/10.1057/hep.2011.3

van der Wende, M. C. (2013). Trends towards global excellence in undergraduate education: Taking the liberal arts experience into the 21st century. *International Journal of Chinese Education*, *2*(2), 289–307. https://doi.org/10.1163/22125868-12340025

Zakaria, F. (2015). *In defense of a liberal education*. W. W. Norton & Company.

7 CONCLUSION

This dissertation set out to explore the relationship between liberal arts education bachelor's programmes in the Netherlands and the world of work. Its main goal was to understand how the distinctive features of Dutch university colleges influence the career preparedness and labour market prospects of their graduates. To assess the labour market significance of LAE degrees, the thesis followed university college graduates as they moved across the borders of employability from higher education to employment.

The four stages of the graduates' path towards the labour market correspond to the four individual studies comprising the dissertation. These studies examined the LAE graduates' career preparedness in terms of acquiring relevant skills during the bachelor's programme, obtaining specialized master's degrees, securing their first jobs, and achieving further professional success. The studies sought to answer the following research questions:

1. How does employability develop in university college students during the course of their studies compared to their peers from a conventional programme?
2. How successful are university college graduates in pursuing specialized master's studies compared to their counterparts with a matching discipline-focused bachelor's degree?
3. What kind of signals does a university college bachelor's degree send to employers?
4. How do university college graduates fare in the labour market compared to their peers with a conventional bachelor's degree from a Dutch research university?

This chapter brings together the results and contributions from the four individual studies. It reviews the main research findings, draws connections between them, discusses the wider implications of the research and proposes directions for future work in the field, providing a comprehensive conclusion to the research conducted in this dissertation.

7.1 Main Findings of the Dissertation

Study 1 aimed to assess the employability gains of university college students by comparing them to their counterparts in a conventional bachelor's programme in law at the same university. Using an adapted version of the graduate capital model, an established employability framework, the study focused on six skills that enhance employability: creativity, lifelong learning, career decidedness, self-efficacy, resilience, and personal initiative. Employability gains were assessed by using a Difference-in-Difference approach, looking at how second- and third-year cohorts compare to first-year students within the two programmes.

The results of this study revealed significant gains in five out of the six examined skills among university college students. Lifelong learning scores across first-, second-, and third-year LAE cohorts did not show any statistically significant differences. When it comes to career decidedness, self-efficacy, and resilience, second- and third-year LAE students achieved higher scores compared to freshmen, with statistically significant differences observed for second-year students. The most substantial gains were identified in creativity and personal initiative, with both second- and third-year LAE students scoring significantly higher than freshmen.

Law students did not experience similar progress, underscoring the crucial role of programme-specific features in skill development. The higher creativity growth of university college students can be explained by the profoundly interdisciplinary character of liberal arts education. LAE students are taught to think in an interdisciplinary way, approaching problems from a plurality of perspectives and combining insights from various fields, which likely fosters creativity development. As for personal initiative, the gains of university college students can be attributed to the open curriculum model of LAE. Unlike conventional programmes, which are tightly structured, university colleges have self-tailored curricula, requiring the students to organize their own educational path. This pushes LAE students to be proactive and develop a strong sense of initiative. Hence, the main finding of Study 1 highlights that the differences in creativity and personal initiative gains between LAE and law students reflect the distinctions between interdisciplinary and monodisciplinary learning, as well as self-tailored and fixed curriculum structures.

Study 2 sought to investigate whether the relative lack of disciplinary knowledge in the bachelor's stage hinders the ability of university college students to specialize at the master's level. To explore this, the study focused on three specialized master's programmes at Maastricht University: International Business (IB) at the School of Business and Economics (SBE), Psychology at the Faculty of Psychology and Neuroscience (FPN), and the Research Master in Cognitive and Clinical Neuroscience at FPN. The study compared the academic performance of two groups of students in these programmes: graduates from University College Maastricht (UCM) and their peers who had discipline-focused bachelor's degrees in a matching field from SBE or FPN. Academic performance was assessed based on dropout rates, overall GPA, and master's thesis grades.

The results showed no major differences in the academic achievements of LAE graduates and their peers with a more focused disciplinary background. The effect of being a UCM graduate on dropout rates was statistically insignificant across all three master's programmes. With regard to GPA, no significant differences were found between UCM and IB-SBE graduates. In the two master's programmes at FPN, however, holding a LAE bachelor's degree was associated with a small but statistically significant positive effect of

approximately 0.15 grade points. Further analyses did not reveal any disproportionalities in the performance of below-average and above-average UCM students, as well as students enrolled in narrower and broader specialization tracks. Lastly, the comparison of master's thesis grades yielded statistically insignificant results in all three cases.

These findings indicate that attending a liberal arts undergraduate programme does not hinder disciplinary specialization at the master's level. Despite having less subject-specific knowledge, university college graduates proved to be prepared equally well for further specialized study as their counterparts with a matching disciplinary background. This suggests that the broad foundation of knowledge and generic skills provided by LAE can compensate for the relative lack of disciplinary depth. LAE graduates were able to transfer their abilities across courses and disciplines, effectively adapting to a more specialized academic environment.

Study 3 examined Dutch employers' perceptions of LAE and the different kinds of signals that a university college degree might send in the labour market. Adopting a qualitative approach, the study aimed to provide an in-depth understanding of the graduate job selection process. Semi-structured interviews were conducted with 20 recruiters working at 19 different companies in the Netherlands. These interviews focused on concrete graduate job openings, offering insights into the factors that guide recruiters' decision-making and their views on candidates with LAE degrees. Particular attention was paid to exploring the relevance of human capital, trainability, and cultural capital signals in the selection process.

The findings from this study revealed that employers value many of the skills LAE is expected to develop, including flexibility, communication, and analytical thinking. Trainability is also a highly regarded quality in the selection process, while cultural capital considerations are not seen as relevant. Recruiters rarely rely on the study programme to infer skills, prioritizing work experience and extracurricular activities as 'extras' that can distinguish a candidate. Their hiring decisions are mainly influenced by job interviews, along with various tests and assessments that candidates must pass to prove their abilities. When evaluating job applicants with a master's degree in a relevant field, recruiters generally place less emphasis on their bachelor's degree. However, the bachelor's degree carries greater weight in specialized jobs compared to general positions, where it may suggest a stronger foundation of occupation-specific knowledge and skills.

When it comes to employers' perceptions of LAE, the results of this study revealed a notable lack of awareness, as only 7 out of 20 respondents indicated familiarity with university college programmes. Recruiters do not perceive the selectivity of university colleges as indicative of exceptional student abilities or teaching quality, nor do they view

these programmes as elite or prestigious. LAE graduates are seen as well-versed in soft and generic skills, making them excellent candidates for broader and multifaceted roles. When selecting for specialized jobs, recruiters may have reservations about the specific skills of LAE graduates, although a specialized master's degree is mostly sufficient to offset these concerns. Overall, the findings of Study 3 lead to the conclusion that the signalling effect associated with university college degrees is largely neutral. Possessing a university college degree does not make one stand out in the eyes of employers, as they neither favour nor disfavour LAE graduates over other educational backgrounds.

Study 4 compared the employment outcomes of liberal arts graduates from Dutch university colleges with those of their peers who pursued conventional, subject-specific bachelor's degrees. To ensure comparability, the analysis focused on graduates who completed a master's programme at a Dutch research university, accounting for different academic fields. The study used data from four rounds of the Dutch National Alumni Survey, conducted in 2011, 2013, 2017, and 2019. The final sample included 14,933 respondents, of whom 210 were university college graduates. Eight employment outcomes were analysed: (1) employment status; (2) time between graduation and first paid job; (3) perceived career development opportunities; (4) job satisfaction; (5) vertical match; (6) horizontal match; (7) combination of vertical and horizontal match; (8) hourly wage from regular work.

The only statistically significant result was observed in terms of employment status, where holding a LAE bachelor's degree proved to have a negative effect on obtaining employment in STEM professions. Compared to their peers from conventional bachelor's programmes, LAE graduates with a master's degree in STEM had a 13.3 percentage point lower probability of being employed. In the social science and humanities domain, the difference in the probability of being employed between the two groups was much smaller (-2.9 percentage points) and statistically insignificant. For all other labour market outcomes, no statistically significant differences, neither positive nor negative, were found between LAE and non-LAE graduates. Additionally, further analyses did not show any statistically significant differences between the two groups in STEM and social science and humanities master's field subsets.

These results suggest that the labour market performance of LAE graduates is on par with their peers who pursued a conventional undergraduate programme. In light of these findings, it is evident that the selectiveness of Dutch LAE programmes did not translate into any specific labour market advantages. Furthermore, the results indicate that the generic LAE skillset produced a neutral effect, without notable positive or negative consequences. Lastly, the fairly large negative difference in employment for LAE graduates in STEM professions suggests they may be faced with challenges when looking for jobs in this

field. Despite this, the study's findings support the conclusion that LAE does not lack the capacity to prepare students for the labour market.

Altogether, the findings from the four studies offer a comprehensive perspective on the career preparedness of LAE graduates. The overarching conclusion that can be drawn from them is that students from university colleges are well-prepared for the challenges of the labour market. These programmes foster skill development and adequately equip their graduates for specialized master's studies. Moreover, they do not hinder their entry into the labour market and allow them to achieve career success comparable to their peers with conventional bachelor's degrees. As an innovative development in the Dutch higher education system, university colleges established themselves as undergraduate programmes that provide a particular group of students the alternative, self-tailored academic path they need, without compromising their future labour market prospects.

7.2 Reflection: Synergies and Differences Between the Four Individual Study Findings

In addition to the main conclusions presented above, the four individual studies revealed both synergies and contradictory results that need to be discussed and reflected upon. These can grouped into four crucial themes, encompassing the labour market value of the LAE skillset, the significance of bachelor's degrees, academic success, and work experience during studies for employment, the specialization of LAE graduates, and the effects of selectivity. This section explores the areas where the studies' research findings reinforce each other, and where they lead to synergies or opposing results.

7.2.1 The Impact of Liberal Arts Skills

Comparing the findings of Study 1 with Studies 3 and 4, some contrasts can be noted. Although Study 1 suggested that university college students may have a comparative advantage in terms of creativity and personal initiative over their peers with conventional bachelor's degrees, Study 4 revealed no significant differences in the labour market outcomes of these two groups. Hence, the results of Study 1 were not confirmed in the labour market, as LAE graduates did not experience any advantages from possessing these skills.

One possible explanation for this inconsistency could lie in the short term-perspective of the data analysed in Study 4, which only included outcomes one and a half years after graduation. It could be that creativity and personal initiative require a longer period to translate into visible gains in the labour market. Since Study 1 intentionally focused on skills expected to be developed by LAE, another possible explanation is that conventional

programmes might be better at teaching other skills that were not assessed. The strengths and weaknesses of various programmes in providing different skills would then cancel each other out, resulting in similar labour market performance for both groups.

Another explanation is offered by Study 3. This study revealed a limited appreciation of creativity and personal initiative among employers. In the study, personal initiative received a mid-level ranking, and only one recruiter mentioned creativity as a highly valued skill in the job selection process. This suggests a possible discrepancy between the skills possessed by LAE graduates and the ones prioritized by employers.

Taking both Study 3 and Study 4 into account, the findings provide mixed evidence regarding the labour market significance of generic skills. Challenging the common theoretical arguments in the LAE literature, Study 4 revealed that the impact of the LAE skillset in the labour market was largely neutral, with no significant advantages or disadvantages. Conversely, Study 3 showed that many of the skills LAE is expected to develop are appreciated by employers, including flexibility and adaptability, communication and presentation skills, as well as analytical skills and openness to learn. Yet, unlike creativity and personal initiative, there is no evidence that university colleges are more successful in cultivating these skills than other programmes. In fact, given the results of Study 4, it appears more probable that conventional, discipline-specific programmes are equally good at teaching these skills. What is more, interdisciplinarity, a major LAE feature, was found to be outside the employers' scope of interest. Therefore, while it showed that the LAE learning environment may benefit the development of certain skills, this dissertation did not yield evidence that supports the notion of the uniqueness of the LAE skillset or career-related comparative advantages arising from these skills.

7.2.2 The Employment Relevance of Bachelor's Degrees and Other Factors

A common finding in Study 3 and Study 4 is that bachelor's degrees do not play a significant role in determining employment outcomes of master's degree holders. Study 4 was unable to identify statistically significant differences between university college graduates and conventional bachelor's degree holders in seven out of the eight examined labour market outcomes. Furthermore, the results of Study 4 also showed almost no differences between various types of pre-university education, whose effect on labour market outcomes proved to be largely insignificant. These results were further corroborated by Study 3, which revealed that employers tend to assign less significance to the bachelor's degree when the job candidate has a master's degree in a relevant field. The finding that bachelor's degrees receive less scrutiny in the selection process provides a convincing explanation for their minimal effect on short-term employment outcomes. The neutral effect of undergraduate studies may also reflect the egalitarian character and even quality of Dutch research universities. In the absence of a defined hierarchy and

differences in standards among research university programmes, bachelor's degrees do not covey a sense of distinction to employers, nor do they produce graduates with varying levels of knowledge and skills.

Another important connection between the findings of Study 3 and Study 4 pertains to the influence of additional factors, such as academic success, internships, and related work experience, on employment and subsequent career achievements. Study 4 revealed a strong positive impact of master's GPA, relevant work experience during studies, and internships on all examined employment outcomes. Most of these findings were consistent with Study 3, which highlighted that recruiters pay close attention to relevant work experience, internships, and extracurricular activities when screening CVs. These experiences serve as reliable signals of general abilities and desired attitudes. On the other hand, Study 3 showed that recruiters attach minimal importance to grades when assessing job candidates. Despite this disregard for grades, the results of Study 4 demonstrated a strong link between academic performance and career success, suggesting that the skills and knowledge associated with a higher GPA do make a difference, both in the job selection process and later in the labour market.

7.2.3 Specialization of LAE Graduates

The LAE graduates' ability to specialize, a topic introduced in Study 2, remained a recurring theme in both Study 3 and Study 4. Study 2 indicated that graduates with a LAE background have the capacity to specialize. It concluded that their demonstrated academic specialization could be a good indicator of their ability to perform well in specialized jobs. However, the findings of Studies 3 and 4 challenged this expectation, suggesting that the graduates' preparedness for professional specialization might not have been complete. In Study 3, recruiters in more specialized positions had doubts whether a LAE degree provides graduates with a sufficient foundation of specific skills, indicating a slight preference for candidates with a subject-specific undergraduate background. Looking at the effect of LAE on obtaining employment in STEM fields, Study 4 found that holding a university college degree is associated with a 13.3 percentage point lower probability of being employed. Hence, the results of Study 3 and Study 4 align with each other, while conflicting with the conclusions of Study 2.

While the findings of Studies 3 and 4 indicate that LAE graduates may encounter obstacles when seeking employment in STEM professions, it remains uncertain whether these difficulties arise from an actual or perceived lack of job-specific skills. The results of Study 4 in all other employment outcomes point to the latter, as LAE graduates who made their way into STEM jobs performed equally well as their peers from conventional bachelor's programmes. The absence of statistically significant differences between the two groups in job satisfaction, perceived career opportunities, horizontal and vertical match, and

hourly wage seem particularly relevant in this context, as a skill deficiency would likely also affect these outcomes. When paired with the interview findings from Study 3, this suggests that the employers' lack of trust in the specific skills of LAE graduates is the likely source of the problem. Although a relevant master's degree is often enough to qualify for a specialized job, employers tend to associate conventional bachelor's programmes with a stronger foundation of occupation-specific knowledge and skills. Nonetheless, without a long-term analysis that involves a bigger sample, it is not possible to draw a definitive conclusion about the main reason behind the negative impact of university college degrees on employment in STEM.

7.2.4 Selectivity

Lastly, an issue that remained prominent throughout the thesis is the impact of selective admission policies at university colleges. Selectivity was postulated as a factor that could be closely tied to the outcomes of university college students. On the one hand, this could have been the case if the selective admission criteria had resulted in an above-average student body in terms of pre-existing abilities and characteristics. While the comparative analyses in this dissertation could not empirically isolate this effect, the results of Study 4 and Study 1 offer valuable evidence contributing to its better understanding in the context of Dutch LAE programmes. Based on the findings of Study 4, it is possible to rule out selectivity-related advantages stemming from pre-existing abilities, as LAE graduates did not outperform their peers in the labour market. If the opposite were true, and LAE graduates were indeed exceptionally capable individuals, one would expect them to surpass their counterparts from non-selective programmes.

Drawing on the findings of Study 1, it may be argued that (self-)selection into university colleges is driven less by students' abilities and more by other factors. In this context, it appears that being undecided about one's intended career path is a more likely determinant for enrolling in a university college. The remarkable difference in career decidedness scores between first-year university college students and their counterparts from a conventional programme found in Study 1 strongly supports this conclusion. While there may be other relevant factors, it is evident that selection into university colleges is primarily based on the students' choices and interests rather than their abilities.

The selectiveness of university college programmes could have also benefited students by sending a positive signal to employers. Nevertheless, Study 3 disproved the existence of such signals in the Dutch labour market, revealing that employers are largely unaware of the differences in selectivity between LAE and regular bachelor's programmes. In their view, university colleges do not stand out as high-quality programmes with exceptional students and superior teaching. Hence, the selectiveness of university colleges does not affect employers' perceptions of these degrees. Overall, the research conducted in this

dissertation offers sufficient evidence to dismiss any labour market advantages arising from the selective admission requirements of university colleges.

7.3 Limitations and Future Research

While this dissertation has greatly contributed to an enhanced understanding of how Dutch LAE programmes prepare students for the labour market, it is important to acknowledge the inherent limitations within the scope of its research. Additionally, several avenues for future research have emerged from this work, which have the potential to further advance the field. This section discusses the main limitations of the thesis and outlines possible directions for future research.

One significant limitation of this thesis relates to the relatively small number of university college graduates included in the analyses. The modest sample size came as a logical consequence of the small-scale nature of Dutch LAE programmes. This already small number was further reduced by the diverse academic profiles of university college students, which span from natural sciences to social sciences and humanities. Unlike their peers from conventional programmes, LAE graduates tend to pursue a wide range of master's degrees, not only across different disciplines but also in various countries. These circumstances made it difficult to secure a larger sample size while also maintaining sufficient comparability in terms of master's programmes, which was necessary for isolating the effect of bachelor's studies.

In Study 4, the sample of LAE graduates with STEM master's degrees was particularly small, as these fields are usually chosen by a minority of university college students. Due to the limited sample size, the findings regarding the employment prospects of LAE graduates in STEM may lack generalizability. Given this limitation, and considering that the results of Studies 3 and 4 suggest possible employment barriers for LAE graduates in STEM professions, it would be beneficial to validate their conclusions on a larger sample. Further research should therefore prioritize expanding the sample size within this category, allowing for more robust insights into the employment prospects and possible skill gaps among LAE graduates pursuing STEM careers. The same applies to Study 2, which examined three master's programmes at a single university, of which only one was in the STEM category (specifically, the Research Master in Cognitive and Clinical Neuroscience). To gain a deeper perspective on the specialization of LAE graduates, it would be useful to look into their performance in a wider range of STEM master's programmes.

Study 1 achieved a satisfactory sample size, but it faced a different kind of challenge: the use of subjective measures. The reliance on self-reported data presents a significant

limitation, particularly when it comes to non-cognitive skills, whose measurement heavily depends on self-assessment. Considering the importance of these skills, it is imperative that future research focuses on developing more reliable assessment methods. With the availability of such measures, it would be possible to better understand the possibilities for the development of non-cognitive skills in higher education.

While reliable objective measures exist for assessing cognitive skills, limited resources and logistical challenges in obtaining and administrating standardized tests led Study 1 to primarily focus on non-cognitive skills. Nonetheless, monitoring students' progress in cognitive skills such as critical thinking, problem solving, verbal and quantitative reasoning, information literacy, and creativity could be a valuable practice for higher education institutions. Not only would this allow universities to assess their contribution to students' skill development, but also to identify which teaching methods and programme types are best suited for developing different types of skills. Hence, implementing regular assessments of key cognitive (as well as non-cognitive) skills should be a priority for universities and higher education policy.

Despite diligent efforts to introduce comprehensive statistical controls and incorporate a broad spectrum of variables, there may still be factors that were not accounted for, thereby presenting a limitation. One such aspect is the effect of social and cultural capital. In Study 1, gains in social and cultural capital were not included in the analysis due to their unquantifiable nature and survey length constrains. While the contribution of universities to the development of their students' social and cultural capital is an important question, measuring gains in these employability constituents would have been both methodologically and logistically unfeasible.

A related yet separate question concerns the potential influence of social and cultural capital on shaping LAE graduates' labour market success. Because of their higher tuition fees, as well as the undefined career prospects of LAE, university colleges are sometimes seen as programmes that disproportionately attract students from families with a higher socio-economic status—a circumstance that might be reflected in their labour market outcomes. While pertinent to Study 4, this hypothesis was not subject to testing, as the available dataset did not include any variables related to socio-economic background. For the same reason, social and cultural capital theories, although relevant in explaining employment outcomes, were not included in this study's theoretical framework.

Nevertheless, even without these controls, the results suggest that labour market advantages stemming from socio-economic background are unlikely experienced by LAE graduates, as they achieved comparable outcomes to their peers from regular bachelor's programmes. What is more, the results of Study 3 support the notion that cultural capital

factors might not play a crucial role in attaining graduate jobs in the Netherlands. The interviewed recruiters unanimously stated that they do not evaluate a candidate's job suitability based on socio-cultural factors like hobbies, interests, or university programme prestige. These findings may reflect the egalitarian nature of Dutch higher education and society, prompting further inquiry, particularly in comparison to countries such as the UK and USA, where cultural capital signalling in the job market is more pronounced.

Another limitation of this research lies in its inherently constrained theoretical framework. The educational theory connecting higher education to the labour market exists within a complex ecosystem of factors that resist fitting neatly into a single theoretical framework, inevitably resulting in fragmentation. When trying to understand the impact of higher education on career success, it becomes challenging to clearly define and measure the broad range of skills, programme characteristics, and experiences, which reduces the ability to establish clear cause-and-effect relationships. Moreover, individual career outcomes are influenced by numerous factors beyond education, many of which cannot be fully accounted for. Coupled with limited access to comprehensive data, this narrows the scope of available independent and dependent variables, limiting the attribution of findings solely to the bachelor's programme. These challenges are not unique to this dissertation but reflect the general, unavoidable constraints inherent in educational research, as well as social science on the whole, where the absence of a counterfactual and the inability to conduct randomized control experiments present substantial obstacles. However, it is crucial to acknowledge these limitations without undermining the potential for meaningful insights.

Lastly, future research on the labour market significance of liberal arts education could benefit from a longer-term perspective. LAE supporters tend to make expansive arguments about its capacity to prepare students for work in the 21st century and its manifold challenges related to the unpredictable nature of future jobs and rapid technological change. Furthermore, the literature frequently highlights how LAE gives people the skills that will be relevant in the later stages of their careers, even in professions that do not yet exist. A longer-term perspective is essential for testing these claims, making it an important consideration for future research.

7.4 Wider Significance and Policy Recommendations

In addition to answering the research question related to the career preparedness of university college graduates, this dissertation also uncovered broader implications across a range of related themes. These implications speak to the wider discourses of employability skills development, the importance of generic skills for career success, undergraduate curriculum structure, the reception of innovative study programmes in the

labour market, and the impact of bachelor's degrees on employment. They offer valuable considerations for policymakers, universities, and employers, prompting discussions about the future of higher education.

Firstly, the findings of this dissertation shed light on the crucial role of learning environments in fostering skill development within higher education. They underscore how different teaching methods and programme features influence the development of students' skillsets, realizing an important goal of higher education: preparing students for their future careers. With this in mind, it is essential to reframe the concept of graduate employability as career preparedness, emphasizing the possession of relevant skills and knowledge. In this context, the main responsibility of higher education is to provide an optimal learning environment that can effectively contribute to their growth. To genuinely enhance career preparedness, universities should focus their efforts on evaluating the effects of different pedagogies and educational features within study programmes. This would ensure that relevant skills are truly developed in higher education, providing universities with a reliable measure of the quality of education they offer, and a clear understanding of their graduates' work-readiness.

Furthermore, this research has added to the ongoing discussion about the value of generic skills in the labour market by highlighting two key points. On the one hand, it confirmed that employers actively seek candidates with strong generic skills, underscoring their significance. On the other hand, it also indicated that these skills alone are not enough for success in the labour market. While generic skills are a valuable asset in the 21st-century job market, only a well-rounded profile that complements these skills with job-specific expertise can maximize graduates' employability, allowing them to achieve a successful career. Recognizing the importance of combining generic skills with specialized, domain-specific skills and knowledge is essential for both LAE programmes and higher education in general.

A related debate this dissertation contributes to concerns the structure of the undergraduate curriculum and the timing of specialization. The case of Dutch university college programmes has shown that it is possible to achieve balance between general and specialized education. By postponing specialization, the LAE model gives students more time to explore different courses before determining which fields align with their interests and future goals. Importantly, this flexibility does not compromise their ability to specialize at the master's level. The possibility to choose a specialization area at a later time is an important advantage of the LAE model, as early specialization in traditional programmes often leads to wrong study choices that are impossible to remedy without dropping out. Consequently, other university programmes might find it beneficial to adopt this feature and explore ways to make their undergraduate curriculum more flexible.

Dutch university colleges can also serve as an informative case study of educational innovation and its reception in the labour market. Their experience offers valuable lessons for future initiatives in higher education innovation. An important insight gained is that external factors may interfere with the integration of innovative educational concepts into the labour market, preventing them from gaining recognition among employers. In the context of Dutch LAE programmes, their strong embeddedness within existing university structures offset their intended distinctiveness as an educational 'brand'. The firmly established notion of consistent quality across Dutch research universities led recruiters to assume that the educational experiences of students are largely similar, relying on factors other than their study credentials and academic accomplishments to infer skilfulness and distinction. This shows that the relationship between a programme's innovative features and its reception in the labour market is far from straightforward. In other words, creating an innovative programme with unique characteristics does not guarantee that employers will perceive it as such.

Examining employers' perspectives revealed their tendency to value internships and roles within student organizations over coursework as indicators of capabilities. This preference should be a source of concern for universities. If employers are unaware of or uninterested in teaching methods, curriculum structure, and classroom experiences, a question that arises is how universities should respond to this. Should they align more closely with employers' preferences by incorporating more business-related content and experiences into their programmes? Alternatively, should they focus on enhancing employers' awareness by effectively communicating the importance of their educational features? In either case, there is a pressing need to foster a closer dialogue between universities and employers. Encouraging a constructive discussion could help prevent a widening gap between higher education and the job market.

Finally, as a distinctive type of undergraduate programme, the case of Dutch university colleges provided valuable insight into the impact of bachelor's degrees on the employment outcomes of master's degree holders. The discovery of a neutral effect of undergraduate studies in the labour market is particularly relevant in the context of the post-Bologna degree structure in European higher education. It shows that the division of higher education into undergraduate and graduate studies allows for greater flexibility and mobility. The fact that the bachelor's phase has a limited impact on employment outcomes implies that students can shift to a master's degree in a different specialization without negative consequences for their future careers. This underscores the students' flexibility to pursue their bachelor's and master's studies at different institutions and in different countries—a possibility that was not feasible before the Bologna reform. Hence, it appears that the division of university studies into two cycles resulted in establishing the bachelor's degree as a means to an end rather than an end in itself. Although limited

to a single country and a particular type of bachelor's programme, these findings bear great relevance for European higher education policymakers. There is a strong need to further explore this issue in other countries across the continent and analyse the status of bachelor's studies and their interaction with the labour market.

IMPACT PARAGRAPH

This section provides an overview of the scientific and societal impact resulting from the dissertation. In scientific terms, this research advances our understanding of how university colleges prepare students for the demands of the modern job market, with implications reaching into broader educational and labour market studies. From a societal standpoint, the findings offer valuable insights and recommendations, benefiting not only stakeholders in liberal arts education, but also the wider higher education community.

Scientific Impact

This thesis began with the observation that the discourse surrounding liberal arts education in Europe lacked a crucial element—empirical evidence. The identified research gap underscored the need to investigate and substantiate the various theoretical arguments regarding the suitability of the liberal arts model in preparing students for the challenges of the 21st-century job market. The main goal of this dissertation was to address this gap and provide the missing empirical evidence. Through comprehensive data collection and rigorous analysis, the dissertation has successfully fulfilled its ambition. It systematically explored areas lacking prior empirical examination, bringing to light concrete evidence on graduate outcomes and employers' perspectives.

The research revealed that the learning environment of Dutch university college programmes benefits the development of career-relevant skills. Despite having less subject-specific knowledge, LAE graduates also proved to be well-prepared for specialized master's studies. Moreover, employers neither favour nor disfavour university college degrees over other educational backgrounds. Finally, the labour market outcomes of university college graduates are comparable to those of their peers with conventional bachelor's degrees. Through these findings, this thesis significantly advances our understanding of the effectiveness of liberal arts education in preparing students for the challenges of the contemporary job market. Therefore, the major scientific contribution of this dissertation is the creation of new knowledge about the labour market preparedness of Dutch university college graduates.

Beyond its primary goal of advancing the understanding of liberal arts education in Europe, the dissertation has also made significant contributions to broader academic debates. Firstly, the research highlighted the crucial role of pedagogies and programme features in facilitating skill development within higher education. Secondly, it delved into the purpose

and structure of the undergraduate curriculum, exploring the balance between general and specialized education. Thirdly, the dissertation investigated the labour market significance of generic skills, providing valuable perspectives on their influence on employment outcomes. Furthermore, it examined employers' hiring preferences, providing a comprehensive understanding of the graduate job selection process. The thesis also considered the relative weight of a bachelor's degree in determining the employment outcomes of master's degree holders, uncovering a relatively low priority of undergraduate credentials in recruiters' assessments. Lastly, the dissertation examined the intricate process of how a new type of education becomes accepted in the labour market.

By addressing these aspects, the scientific impact of this research extends into the broader realm of education and labour market studies. In doing so, the dissertation not only provided answers to existing questions, but also stimulated further inquiries, opening avenues for continued research in this field.

Impact on Society

The dissertation's findings about the career preparedness of university college graduates not only contribute to the academic knowledge base but also offer perspectives that are of considerable importance to society. Given the focus of this research, its results are particularly valuable to LAE stakeholders, including current and prospective students, career services, educators, and alumni. The questions it deals with are also of interest to the wider higher education community, which may benefit from insights into the dynamic relationship between academic programmes and the demands of the job market.

A key aspect missing from the evaluation of university college programmes was a reliable account of their capacity to prepare students for the labour market. Although university colleges have been widely recognized for their teaching quality and commitment to academic excellence, concerns about the career prospects of their graduates have been raised by both LAE critics and stakeholders. In light of the unconventional nature of university college programmes, many students and their parents expressed worries that a LAE degree might expose them to unemployment risks. By emphasizing the connection between LAE degrees and professional life, the findings of this dissertation contribute to easing these concerns. They provide students with confidence in their educational choices, dispelling the misconception that LAE graduates are faced with limited career opportunities.

Evidence on the labour market preparedness of LAE graduates is particularly valuable when considering the societal role of university colleges, the recognition of which is another

important outcome of this dissertation. Initially envisioned as excellence programmes for gifted students, university colleges also address a major problem in European higher education—the pressure on high school graduates to make a definitive decision about their study field at a young age. As a response to this challenge, the LAE model plays a crucial role in assisting individuals who are uncertain about their preferred field of study. By virtue of their open curriculum model, LAE programmes provide these students the opportunity to explore a broad spectrum of academic disciplines and discover their true interests. In doing so, university colleges fulfil a significant social function, aiding the formation of their professional identity. Moreover, the prevention of wrong study choices eliminates the financial costs, psychological strain, and time loss associated with dropping out. As these costs are borne by both individuals and society, knowing that LAE programmes offer a way to avoid them without compromising the students' future specialization abilities and labour market prospects is a finding of great importance. It shows that university colleges effectively serve their purpose, playing a valuable role in the education system and society.

This dissertation's findings also revealed several areas where LAE programmes need to focus their attention. Firstly, university colleges should address the issue of LAE graduates facing lower chances of obtaining employment in STEM occupations. To enhance the employability of their students seeking a career in this sector, university colleges may consider providing more opportunities for them to acquire additional STEM-related skills, such as coding and data analysis. This can be achieved by integrating more STEM courses into the LAE curriculum, fostering collaborative interdisciplinary projects with other programmes, and establishing partnerships with companies to provide internships. Furthermore, there is a need for university colleges to enhance the visibility of the liberal arts educational model among employers, especially those in STEM fields, as a vast majority of them remains unfamiliar with LAE. In order to achieve this, university colleges must actively connect and engage with employers, demonstrating the value and professional relevance of liberal arts education. This may include participation in industry-specific events, conferences, and career fairs, as well as organizing panels, forums, or information sessions for employers. Additionally, colleges can facilitate collaborative projects between LAE students and industry partners, engage with employers through social media, and leverage alumni networks.

University college students would also benefit from tailored career guidance that recognizes the unique context of being a liberal arts student. This approach would address the specific challenges LAE students face in the labour market, underscoring both the strengths and weaknesses of liberal arts education in transitioning from university to the world of work. Providing counselling that accounts for their academic background, skillset, and desired career path could help university college students to build a compelling professional narrative and convincingly present themselves to employers.

Finally, as an inquiry into the capacity of a non-career-oriented undergraduate programme to prepare students for the professional world, this dissertation also contributes to a long-standing debate about the role of higher education in society. At the heart of this discussion is an assumed trade-off between learning for the sake of learning and learning as a means to career success. The findings of this thesis question this dilemma, as the example of Dutch university colleges has shown that career preparedness can be achieved without sacrificing other valuable roles of higher education. In an era marked by unprecedented complexity and challenges across all domains, it is vital to acknowledge that higher education can—and indeed must—prepare students not only for participating in the workforce, but also for participating in society. These two aspects are not mutually exclusive. A well-rounded education that fosters a holistic understanding of the world can also serve as a stepping-stone to a fulfilling career, equipping students with the skills and knowledge required in the contemporary job market.

APPENDICES

Appendix A. Additional PSM Analyses from Chapter 6

Table 6.6 Covariate balance after matching—employment status

	Mean			t-test	
Variable	**Treated**	**Control**	**%bias**	**t**	**p >| t |**
2013.s_cohort	0.195	0.162	7.8	0.89	0.374
2017.s_cohort	0.343	0.348	-1.1	-0.10	0.918
2019.s_cohort	0.395	0.429	-7.3	-0.69	0.489
male	0.324	0.305	4.0	0.42	0.675
age	26.114	26.276	-10.3	-1.08	0.283
2.master_field	0.138	0.133	1.3	0.14	0.887
3.master_field	0.095	0.124	-9.2	-0.94	0.350
4.master_field	0.100	0.095	1.4	0.16	0.870
5.master_field	0.090	0.076	4.9	0.53	0.597
6.master_field	0.300	0.295	1.1	0.11	0.915
7.master_field	0.200	0.200	0.0	0.00	1.000
GPA	7.812	7.731	14.4	1.51	0.131
internship_NL	0.519	0.524	-1.0	-0.10	0.922
internship_abroad	0.281	0.314	-7.8	-0.75	0.456
work_relevant_field	0.352	0.362	-2.0	-0.20	0.839
study_abroad	0.110	0.100	3.2	0.32	0.751
honours_prog	0.100	0.095	1.9	0.16	0.870
admin_exp	0.290	0.281	2.1	0.22	0.829
started_company	0.029	0.038	-5.5	-0.54	0.588
1.prior_education	0.014	0.010	2.9	0.45	0.654
2.prior_education	0.795	0.776	5.2	0.47	0.635
3.prior_education	0.067	0.057	4.2	0.40	0.686
further_education	0.405	0.414	-2.0	-0.20	0.843
2.foreigner	0.138	0.171	-12.3	-0.94	0.346
3.foreigner	0.019	0.010	6.7	0.82	0.412
4.foreigner	0.167	0.124	13.8	1.25	0.214
land_work_oecd	0.976	0.986	-7.4	-0.71	0.476

Before matching: MeanBias = 17.2; MedBias = 16.8
After matching: MeanBias = 5.2; MedBias = 4.2

Table 6.7 Covariate balance after matching–quick career start

	Mean			t-test	
Variable	**Treated**	**Control**	**%bias**	**t**	**p >| t |**
2013.s_cohort	0.159	0.198	-9.4	-0.96	0.339
2017.s_cohort	0.363	0.379	-3.6	-0.32	0.746
2019.s_cohort	0.418	0.368	10.7	0.96	0.335
male	0.335	0.341	-1.1	-0.11	0.912
age	26.181	26.225	-2.8	-0.27	0.787
2.master_field	0.126	0.126	0.0	0.00	1.000
3.master_field	0.093	0.093	0.0	0.00	1.000
4.master_field	0.110	0.110	0.0	0.00	1.000
5.master_field	0.071	0.088	-6.0	-0.58	0.563
6.master_field	0.313	0.313	0.0	0.00	1.000
7.master_field	0.198	0.181	4.6	0.40	0.689
GPA	7.838	7.797	7.3	0.66	0.511
internship_NL	0.500	0.429	14.4	1.37	0.173
internship_abroad	0.291	0.335	-10.2	-0.90	0.367
work_relevant_field	0.368	0.308	12.5	1.22	0.224
study_abroad	0.099	0.082	5.6	0.55	0.585
honours_prog	0.088	0.082	2.3	0.19	0.852
admin_exp	0.308	0.253	12.2	1.17	0.244
started_company	0.033	0.049	-9.3	-0.79	0.430
1.prior_education	0.011	0.022	-7.2	-0.82	0.412
2.prior_education	0.808	0.780	7.6	0.65	0.518
3.prior_education	0.060	0.038	10.1	0.97	0.335
further_education	0.401	0.374	5.7	0.54	0.592
2.foreigner	0.148	0.170	-7.9	-0.57	0.568
3.foreigner	0.022	0.027	-3.8	-0.34	0.737
4.foreigner	0.170	0.170	0.0	0.00	1.000
land_work_oecd	0.973	0.951	16.3	1.09	0.277

Before matching: MeanBias = 18.1; MedBias = 17.1
After matching: MeanBias = 6.3; MedBias = 6.0

Table 6.8 Covariate balance after matching—career development opportunities

	Mean			t-test	
Variable	**Treated**	**Control**	**%bias**	**t**	**p >| t |**
2013.s_cohort	0.175	0.206	-7.7	-0.78	0.433
2017.s_cohort	0.360	0.418	-12.7	-1.16	0.247
2019.s_cohort	0.407	0.323	18.5	1.71	0.088
male	0.333	0.339	-1.1	-0.11	0.914
age	26.153	26.016	8.8	0.87	0.384
2.master_field	0.127	0.153	-7.0	-0.74	0.460
3.master_field	0.090	0.116	-8.5	-0.84	0.399
4.master_field	0.111	0.106	1.6	0.16	0.869
5.master_field	0.074	0.074	0.0	0.00	1.000
6.master_field	0.307	0.286	4.8	0.45	0.653
7.master_field	0.206	0.222	-4.3	-0.38	0.708
GPA	7.825	7.862	-6.5	-0.61	0.539
internship_NL	0.508	0.471	7.5	0.72	0.473
internship_abroad	0.286	0.254	7.4	0.69	0.488
work_relevant_field	0.355	0.339	3.3	0.32	0.747
study_abroad	0.101	0.074	8.9	0.91	0.364
honours_prog	0.090	0.074	6.5	0.56	0.575
admin_exp	0.307	0.259	10.6	1.03	0.305
started_company	0.032	0.037	-3.0	-0.28	0.778
1.prior_education	0.016	0.005	6.5	1.00	0.316
2.prior_education	0.794	0.820	-7.2	-0.65	0.516
3.prior_education	0.069	0.053	7.0	0.64	0.520
further_education	0.407	0.423	-3.3	-0.31	0.755
2.foreigner	0.143	0.159	-5.8	-0.43	0.667
3.foreigner	0.021	0.011	7.3	0.82	0.412
4.foreigner	0.175	0.196	-6.7	-0.53	0.598
land_work_oecd	0.974	0.979	-4.0	-0.34	0.737

Before matching: MeanBias = 18.0; MedBias = 15.7
After matching: MeanBias = 6.5; MedBias = 6.7

Table 6.9 Covariate balance after matching—job satisfaction

	Mean			t-test	
Variable	**Treated**	**Control**	**%bias**	**t**	**p >| t |**
2013.s_cohort	0.175	0.175	0.0	0.00	1.000
2017.s_cohort	0.360	0.392	-6.9	-0.64	0.525
2019.s_cohort	0.407	0.386	4.6	0.42	0.675
male	0.333	0.360	-5.5	-0.54	0.590
age	26.153	26.037	7.5	0.75	0.454
2.master_field	0.127	0.148	-5.6	-0.60	0.552
3.master_field	0.090	0.090	0.0	0.00	1.000
4.master_field	0.111	0.122	-3.1	-0.32	0.749
5.master_field	0.074	0.095	-7.7	-0.74	0.461
6.master_field	0.307	0.296	2.4	0.22	0.823
7.master_field	0.206	0.180	7.2	0.65	0.516
GPA	7.825	7.815	1.9	0.18	0.860
internship_NL	0.508	0.503	1.1	0.10	0.918
internship_abroad	0.286	0.302	-3.7	-0.34	0.736
work_relevant_field	0.355	0.333	4.4	0.43	0.666
study_abroad	0.101	0.074	8.9	0.91	0.364
honours_prog	0.090	0.111	-8.7	-0.68	0.495
admin_exp	0.307	0.259	10.6	1.03	0.305
started_company	0.032	0.042	-6.0	-0.54	0.587
1.prior_education	0.016	0.000	9.7	1.74	0.082
2.prior_education	0.794	0.815	-5.7	-0.52	0.605
3.prior_education	0.069	0.079	-4.7	-0.39	0.695
further_education	0.407	0.370	7.7	0.74	0.462
2.foreigner	0.143	0.159	-5.8	-0.43	0.667
3.foreigner	0.021	0.016	3.6	0.38	0.704
4.foreigner	0.175	0.169	1.7	0.14	0.892
land_work_oecd	0.974	0.995	-15.9	-1.65	0.100

Before matching: MeanBias = 18.0; MedBias = 15.7
After matching: MeanBias = 5.6; MedBias = 5.6

Table 6.10 Covariate balance after matching—vertical match

	Mean			t-test	
Variable	**Treated**	**Control**	**%bias**	**t**	**p >| t |**
2013.s_cohort	0.168	0.163	1.3	0.14	0.889
2017.s_cohort	0.364	0.391	-5.9	-0.54	0.592
2019.s_cohort	0.408	0.375	7.1	0.64	0.523
male	0.326	0.332	-1.1	-0.11	0.912
age	26.147	26.293	-9.4	-0.92	0.359
2.master_field	0.125	0.141	-4.3	-0.46	0.646
3.master_field	0.092	0.087	1.7	0.18	0.856
4.master_field	0.114	0.136	-6.4	-0.63	0.530
5.master_field	0.076	0.076	0.0	0.00	1.000
6.master_field	0.304	0.272	7.3	0.69	0.491
7.master_field	0.201	0.212	-3.0	-0.26	0.797
GPA	7.826	7.815	1.9	0.18	0.855
internship_NL	0.511	0.527	-3.3	-0.31	0.755
internship_abroad	0.293	0.261	7.6	0.70	0.486
work_relevant_field	0.364	0.375	-2.3	-0.22	0.830
study_abroad	0.103	0.092	3.6	0.35	0.727
honours_prog	0.092	0.092	0.0	0.00	1.000
admin_exp	0.315	0.337	-4.8	-0.44	0.658
started_company	0.033	0.033	0.0	0.00	1.000
1.prior_education	0.016	0.011	3.3	0.45	0.654
2.prior_education	0.793	0.777	4.4	0.38	0.704
3.prior_education	0.065	0.054	4.9	0.44	0.661
further_education	0.413	0.451	-7.9	-0.74	0.463
2.foreigner	0.136	0.163	-10.1	-0.73	0.466
3.foreigner	0.022	0.016	3.7	0.38	0.704
4.foreigner	0.174	0.185	-3.5	-0.27	0.787
land_work_oecd	0.973	0.978	-4.1	-0.34	0.737

Before matching: MeanBias = 18.1; MedBias = 16.6
After matching: MeanBias = 4.2; MedBias = 3.7

Table 6.11 Covariate balance after matching—horizontal match

	Mean			t-test	
Variable	**Treated**	**Control**	**%bias**	**t**	**p >| t |**
2013.s_cohort	0.167	0.177	-2.7	-0.27	0.784
2017.s_cohort	0.366	0.376	-2.3	-0.21	0.831
2019.s_cohort	0.414	0.403	2.3	0.21	0.833
male	0.333	0.371	-7.8	-0.76	0.449
age	26.183	26.151	2.1	0.20	0.841
2.master_field	0.129	0.124	1.4	0.16	0.876
3.master_field	0.086	0.086	0.0	0.00	1.000
4.master_field	0.113	0.145	-9.5	-0.93	0.355
5.master_field	0.070	0.108	-13.7	-1.28	0.203
6.master_field	0.312	0.285	6.0	0.57	0.572
7.master_field	0.204	0.172	8.8	0.79	0.427
GPA	7.828	7.790	6.6	0.63	0.530
internship_NL	0.511	0.430	16.3	1.56	0.120
internship_abroad	0.290	0.274	3.8	0.34	0.731
work_relevant_field	0.355	0.355	0.0	0.00	1.000
study_abroad	0.102	0.059	14.4	1.52	0.128
honours_prog	0.091	0.091	0.0	0.00	1.000
admin_exp	0.306	0.258	10.8	1.04	0.301
started_company	0.032	0.022	6.1	0.64	0.523
1.prior_education	0.011	0.005	3.5	0.58	0.563
2.prior_education	0.796	0.796	0.0	0.00	1.000
3.prior_education	0.070	0.065	2.3	0.21	0.836
further_education	0.409	0.387	4.5	0.42	0.673
2.foreigner	0.140	0.177	-13.8	-0.99	0.322
3.foreigner	0.022	0.027	-3.7	-0.34	0.737
4.foreigner	0.177	0.172	1.7	0.14	0.892
land_work_oecd	0.973	0.995	-16.2	-1.65	0.100

Before matching: MeanBias = 17.6; MedBias = 17.3
After matching: MeanBias = 5.9; MedBias = 3.8

Table 6.12 Covariate balance after matching—hourly wage

	Mean			t-test	
Variable	**Treated**	**Control**	**%bias**	**t**	**p >| t |**
2013.s_cohort	0.174	0.198	-5.6	-0.55	0.581
2017.s_cohort	0.355	0.331	5.1	0.45	0.651
2019.s_cohort	0.407	0.419	-2.5	-0.22	0.827
male	0.326	0.326	0.0	0.00	1.000
age	26.157	26.052	6.7	0.63	0.528
2.master_field	0.134	0.157	-6.1	-0.61	0.542
3.master_field	0.087	0.081	1.9	0.19	0.847
4.master_field	0.105	0.099	1.7	0.18	0.859
5.master_field	0.076	0.087	-4.2	-0.39	0.694
6.master_field	0.314	0.302	2.6	0.23	0.816
7.master_field	0.198	0.186	3.2	0.27	0.785
GPA	7.826	7.811	2.5	0.23	0.819
internship_NL	0.512	0.436	15.3	1.40	0.161
internship_abroad	0.273	0.297	-5.5	-0.48	0.634
work_relevant_field	0.349	0.302	9.7	0.92	0.359
study_abroad	0.087	0.070	6.1	0.60	0.549
honours_prog	0.099	0.081	7.0	0.56	0.573
admin_exp	0.314	0.256	12.9	1.19	0.233
started_company	0.035	0.023	6.5	0.64	0.522
1.prior_education	0.017	0.023	-3.6	-0.38	0.704
2.prior_education	0.802	0.767	9.6	0.79	0.433
3.prior_education	0.070	0.076	-2.6	-0.21	0.836
further_education	0.407	0.419	-2.4	-0.22	0.827
2.foreigner	0.151	0.145	2.1	0.15	0.880
3.foreigner	0.017	0.029	-8.9	-0.71	0.476
4.foreigner	0.145	0.163	-6.0	-0.45	0.655

Before matching: MeanBias = 18.1; MedBias = 16.9
After matching: MeanBias = 5.4; MedBias = 5.3

Table 6.13 ATT estimation results

Outcome	N	Mean per group		Difference between treated and controls			
		Treated (LAE)	Controls (non-LAE)	ATT	S.E.	p-value	95% C.I.
Employment status	14,933	0.905	0.949	-0.044	0.024	0.070	-0.091, 0.004
STEM	5,680	0.877	0.979	-0.103	0.047	0.028	-0.194, -0.011
Social	9,194	0.917	0.927	-0.010	0.030	0.739	-0.069, 0.049
Quick career start	13,481	0.709	0.741	-0.032	0.045	0.474	-0.121, 0.056
Career development	13,940	0.672	0.619	0.053	0.045	0.244	-0.036, 0.142
Job satisfaction	13,938	0.804	0.819	-0.015	0.040	0.712	-0.093, 0.063
Vertical match	13,173	0.739	0.757	-0.018	0.044	0.688	-0.104, 0.068
Horizontal match	12,501	0.667	0.702	-0.035	0.042	0.400	-0.118, 0.047
Hourly wage	12,902	19.573	19.463	0.110	0.492	0.823	-0.854, 1.073

Standard errors and confidence intervals are obtained through bootstrapping using 1,000 replications.

ACKNOWLEDGEMENTS

This PhD has been influenced by the support, knowledge, and encouragement of many people who have crossed paths with me along this challenging and rewarding quest. While thanking everyone individually may not be feasible, I deeply appreciate all the diverse interactions that have collectively contributed to my growth and accomplishments during this period.

First and foremost, I am grateful to my supervisors, Teun Dekker and Rolf van der Velden. I consider myself fortunate to have had such an exceptional team guiding me through this PhD. The way you complemented each other resulted in an amazing synergy. Teun, I am immensely thankful for your constant availability and willingness to help me with all my questions. Your eternal optimism and positive attitude have been a great source of encouragement, lifting my spirits during periods of difficulty and doubt. Rolf, your wealth of expertise has been invaluable to my growth as a researcher. Your no-nonsense, straightforward approach to problem solving has provided me with valuable lessons in clarity.

This dissertation would not have existed if it weren't for the LIMES programme. For that, thanks are due to Sophie Vanhoonacker and Thomas Conzelmann, who envisioned and successfully captained this momentous project. I also wish to thank the European Union for recognizing the value of this programme and providing funding. Investments in research and education are the most important a society can make and should never be taken for granted.

Sincere thanks to all my colleagues at UCM and everyone throughout Maastricht University I've worked with and learned from during these four years. I would particularly like to acknowledge the help of Nico Rasters, Nicole Kornet, Annemarie Künn-Nelen, Ina Engelen, Wolfgang Giernalczyk, and Pui-Hang Wong. A big thank you to Samuel Abrahám for supporting my secondment in Bratislava and giving me the unique opportunity to design and teach a course about the changing landscape of work and employment in the 21st century. Above all, I am grateful to the students who participated in the employability skills survey and to the interviewees who generously contributed to my research.

Finally, I would like to express my gratitude to my family and friends for making the past four years more enjoyable and keeping me sane throughout the whole process. My deepest appreciation goes to my parents, the behind-the-scenes heroes of this PhD journey, for their 24/7 emotional support. The camaraderie within the LIMES crew, with special

mentions to Aida and Timo, has added great joy to this experience. Credit is also due to Shima Trisna for her willingness to engage in endless discussions on statistics with me, and for having the patience to listen to all my questions and dilemmas. Last but certainly not least, I want to give special recognition to my grandma Danica, a retired elementary school teacher, who has stood by me as my most devoted supporter, not just during this PhD, but throughout the entire 23 years (!) of my formal education. When I was a first-grader struggling to keep up with the rest of the class, you taught me how to study, and those early lessons have remained my lasting companions. I will carry your wisdom and love with me forever. May the learning never cease!

CURRICULUM VITAE

Milan Kovačević (1987) received his bachelor's and master's degrees in economics from the University of Novi Sad, his hometown. He worked in diverse jobs, including administration and copywriting, and published two novels and a short story collection. In 2017, he received an Erasmus Mundus scholarship, allowing him to pursue studies at the University of Glasgow, University of Barcelona, and Erasmus University Rotterdam. There, he earned a *cum laude* master's degree in interdisciplinary social science (Global Markets, Local Creativities).

He joined University College Maastricht in 2020 as a PhD Candidate, appointed under the Marie Skłodowska-Curie project LIMES. During his PhD, Milan spent a semester at the Bratislava International School of Liberal Arts (BISLA), where he designed and delivered the course 'Work in the 21st Century'. He also taught the course 'Introduction to Academic Skills' at University College Maastricht. He presented his research at several conferences, including the European Conference of Educational Research (ECER). He created an employability workshop for liberal arts students, and co-organized the 'Hardening and Softening of Borders in Europe' conference in Maastricht.