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# **Career Guidance and Career Learning Interventions in Education and Educational Transitions: A Scoping Review of Empirical Research**

(January 2014 – April 2025)

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## Preface

This report presents the results of a scoping review of empirical research on career guidance and career learning interventions in educational settings and at key transition points. The review was commissioned on 11 April 2024 by the Norwegian Ministry of Education and Research and the Norwegian Directorate for Higher Education and Skills (HK-dir) as part of a broader strategy to strengthen the knowledge base for lifelong guidance and to support more equitable educational and labour-market outcomes.

Over the past decade, Norway has invested in career guidance and career learning, both through national reforms such as the 2020 curriculum reform and the new Education Act, and through the development of career centres, digital services, and cross-sectoral collaboration. At the same time, international organisations such as the Organisation for Economic Co-operation and Development (OECD), the European Union (EU) and the European Centre for the Development of Vocational Training (Cedefop) have highlighted career guidance as a key instrument for reducing early school leaving, improving educational and labour-market transitions, and addressing social inequality. Given this situation, the Norwegian Ministry of Education and Research and HK-dir requested a systematic overview of which outcomes have been examined in research on career guidance and career learning interventions, which target groups and settings have been examined, and where important knowledge gaps remain.

The purpose of this scoping review is therefore to map the volume, range and nature of empirical outcome studies on career guidance and career learning in educational settings and at key transition points. Rather than estimating effect sizes or ranking interventions, this scoping review maps and characterises the empirical literature published since 2014, and highlights areas with a substantial volume of studies as well as where evidence remains limited, uneven, or too fragmented to support a focused effectiveness review.

The review was conducted by the Knowledge Centre for Education (*Kunnskapssenter for utdanning*) in collaboration with Ida H. Mathiesen at the Norwegian Centre for Learning Environment and Behavioural Research in Education (*Nasjonalt senter for læringsmiljø og atferdsforskning*), and in close dialogue with HK-dir. The research team retained full responsibility for methodological decisions, data analysis, and interpretation of the findings. The work follows established methodological guidance for scoping reviews, including the framework proposed by Arksey and O'Malley (2005) and subsequent refinements, and is reported in line with the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) checklist.

The report is intended for policymakers, HK-dir, county authorities, school owners, career guidance practitioners and researchers who are interested in how career guidance and career learning interventions are studied in Norway and in other countries. We hope that the mapping provided here will strengthen the knowledge base on career guidance and career learning interventions in Norway and help to identify priorities for future research and evaluation where evidence is limited or fragmented.

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## List of Abbreviations

**AI:** Artificial Intelligence

**Cedefop:** European Centre for the Development of Vocational Training

**DiVA:** Digitala Vetenskapliga Arkivet

**EGM:** Evidence gap map

**ELGPN:** European Lifelong Guidance Policy Network

**EPPI:** Evidence for Policy and Practice Information

**ERIC:** Education Resources Information Center

**HK-dir:** Norwegian Directorate for Higher Education and Skills

**NAV:** Norwegian Labour and Welfare Administration / **PES:** Public Employment Services

**NEET:** Not in Education, Employment, or Training

**NOU:** Norwegian Official Report

**OECD:** Organisation for Economic Co-operation and Development

**PCC:** Population, Concept, Context

**PISA:** Programme for International Student Assessment

**PRISMA-ScR:** Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews

**RCT:** Randomized controlled trial

**SES:** Socio-economic status

**UK:** United Kingdom

**US:** United States

## Sammendrag

Norske myndigheter har investert i karriereveiledning og karrierelæring som virkemidler for å fremme likhet, redusere frafall og støtte smidigere overganger mellom utdanning, opplæring og arbeid. Samtidig etterspør både beslutningstakere og praktikere kunnskap om hvilke typer karriereveilednings- og karrierelæringstiltak som er undersøkt i forskningen, i hvilke kontekster og for hvilke målgrupper, samt hvordan utbytter og likhetsdimensjoner er utforsket i disse studiene. Denne rapporten svarer på disse spørsmålene gjennom en kartlegging og analyse av nyere internasjonal og nordisk forskning.

Rapporten bygger på en systematisk kunnskapsoppsummering av typen scoping review av empiriske studier av karriereveilednings- og karrierelæringstiltak i utdanningskontekster og i overganger i utdanningsløpet, publisert i perioden 2014 til april 2025. Kunnskapsoppsummeringen ble bestilt 11. april 2024 av Kunnskapsdepartementet og HK-dir, og er gjennomført av Kunnskapscenter for utdanning i samarbeid med Ida H. Mathiesen fra Nasjonalt senter for læringsmiljø og atferdsforskning.

**Formål og avgrensning.** Det overordnede formålet er å gi en strukturert oversikt over empirisk kunnskap om hvilke utbytter som har blitt undersøkt i studier av karriereveilednings- og karrierelæringstiltak med relevans for norsk utdanningspolitikk. Vi har hatt særlig fokus på tiltak i formell utdanning og i sentrale overgangsfaser: mellom utdanningsnivåer, samt mellom utdanning, opplæring og arbeid.

Studier der utvikling av karrierelæring eller karrierekompetanse var et hovedformål eller et eksplisitt mål, ble inkludert. Fokuset var på både individuelle og samfunnsmessige utbytter, som kunne innbefatte læring, atferd og utdanningsforløp til deltakelse i arbeidsmarkedet, samt aspekter ved helse og trivsel. Analysen omfattet også dimensjoner rundt likhet og like muligheter, for eksempel knyttet til sosial bakgrunn, kjønn og funksjonsnedsettelse.

**Metode i korte trekk.** Scoping reviewen følger anerkjent metodisk rammeverk for scoping reviews. Litteratursøk ble gjennomført i sentrale internasjonale databaser som Scopus, ERIC (Education Resource Information Center) og Web of Science, supplert med relevante nasjonale og nordiske kilder slik som Oria og DiVA.

For å bli inkludert måtte studiene oppfylle forhåndsdefinerte inklusjonskriterier. De måtte omhandle elever, studenter eller personer i utdanning eller i overgang mellom utdanning, opplæring og arbeid, og undersøke karriereveilednings- eller karrierelæringstiltak i utdannings- eller overgangskontekster. Videre måtte studiene rapportere empiriske resultater basert på kvantitative, kvalitative eller mixed methods-design, være gjennomført i Europa, Nord-Amerika, Australia, New Zealand eller et begrenset antall sammenlignbare kontekster, og være publisert mellom 2014 og april 2025 på engelsk eller et skandinavisk språk.

Totalt oppfylte 212 studier inklusjonskriteriene. Data ble kodet ved hjelp av et detaljert data-uttrekkskjema. Manuell koding ble kombinert med en KI-assistert sekundærkoder som bidro til å identifisere inkonsistenser og mangler, som deretter ble gjennomgått av en forsker. Resultatene presenteres gjennom deskriptiv statistikk og narrative oppsummeringer.

**Kjennetegn ved kunnskapsgrunnlaget.** Kunnskapsgrunnlaget er omfattende, men variert. De 212 studiene dekker perioden fra 2014 til april 2025 og viser en jevn økning over tid, med et gjennomsnitt på om lag 18 studier per år. Nesten all forskning er publisert som vitenskapelige artikler, med kun et lite mindretall som rapporter. Litteraturen er i hovedsak engelskspråklig; bare et begrenset antall studier er publisert på norsk, svensk eller dansk.

Geografisk er forskningen sterkt konsentrert i engelskspråklige land, og omtrent fire av ti studier stammer fra USA alene. Denne fordelingen reflekterer delvis inklusjonskriteriene, som vektlegger engelskspråklig litteratur og i stor grad fanger opp forskning fra vestlige høyere utdanningskontekster. Storbritannia, Canada og Australia utgjør samlet en betydelig andel, mens Italia og Tyskland er de mest fremtredende ikke-engelskspråklige europeiske landene. Kun et fåtall studier er gjennomført i Norden, hvorav bare sju i Norge. Denne skjevheten har betydning for overførbarhet og understreker behovet for et sterkere nordisk kunnskapsgrunnlag.

Utdanningsmessig er litteraturen tydelig konsentrert om de senere fasene i utdanningsløpet. Høyere utdanning er den klart vanligste konteksten, og mange studier fokuserer på sentrale beslutninger knyttet til overgang til høyere utdanning. Videregående opplæring er også hyppig undersøkt, ofte i forbindelse med programvalg og overganger, mens ungdomstrinnet forekommer i et mindre, men fortsatt betydelig antall studier. Derimot er grunnskolens barnetrinn, voksenopplæring og arbeidsplassbasert læring sjelden gjenstand for forskning, til tross for deres potensielle relevans for en helhetlig livsløpsbasert karriereveiledningspolitikk. En merkbar andel studier har eksplisitt fokus på overgangsfaser (for eksempel fra skole til høyere utdanning eller fra utdanning til arbeid), men disse er fortsatt færre enn studier som tar utgangspunkt i ett enkelt utdanningsnivå.

Kvantitative forskningsdesign dominerer kunnskapsgrunnlaget. Over halvparten av studiene er utelukkende kvantitative, mens øvrige benytter mixed methods eller kvalitative tilnæringer. Eksperimentelle og kvasi-eksperimentelle design forekommer, men ikke-eksperimentelle design (for eksempel tverrsnittsstudier) er fortsatt mest utbredt. Kvalitative og mixed methods-studier bidrar med viktige innsikter om implementering, brukeropplevelser og kontekst som ikke fanges opp av utfallsmål alene.

**Typer tiltak og kjennetegn.** De mest undersøkte tiltakene i litteraturen omfatter kurs, moduler eller programmer i karrierelæring (ofte integrert i læreplanen som karriereundervisning eller gitt som egne karrierkurs), individuell veiledning og rådgivning i én-til-én-samtaler med rådgivere eller karriereveiledere, klasseromsbasert karriereundervisning (for eksempel om arbeidsmarkedsinformasjon, karriereplanlegging og beslutningskompetanse), samt gruppebasert veiledning og workshops, ofte knyttet til konkrete overgangsbeslutninger som programvalg eller søknadsprosesser.

De fleste tiltakene gjennomføres ansikt til ansikt. Rundt to tredjedeler av studiene omhandler primært fysiske tilbud. Samtidig er det en økende andel hybride og heldigitale tiltak, inkludert nettbaserte karriereplanleggingsverktøy og selvstyrte informasjonsressurser, digitale veiledningstjenester som chat, e-post eller videoveiledning, samt spillbasert karrierelæring og andre interaktive nettbaserte formater. Varighet og intensitet varierer betydelig, fra enkeltstående workshops eller korte tiltaksrekker til programmer som strekker seg over et semester eller et helt studieår. Rapporteringen av tiltakets faktiske omfang i form av antall timer eller hele dager og deltakernes eksponering er imidlertid ofte begrenset, noe som gjør det vanskelig å sammenligne intensitet på tvers av studier eller i kodingen.

Utbytteanalysene domineres av individuelle, selvrapporterte læringsutbytter. Omtrent 85 prosent av studiene rapporterer minst ett læringsutfall, oftest holdninger og bevissthet knyttet til karriere og karrierelæring, selvrapporterte ferdigheter i karrierehåndtering, mestringstro og selvtillit i karrierevalg og -planlegging, samt selvrapporterte utdanningsintensjoner eller opplevd samsvar mellom interesser og valg. Et mindre antall studier benytter objektive eller eksternt målte utbytter, som akademiske prestasjoner målt gjennom karakterer eller tester.

Atferdsutbytter (det deltakerne faktisk gjør etter et tiltak) undersøkes derimot sjeldnere. Omtrent en fjerdedel av studiene rapporterer minst ett atferds- eller overføringsutbytte, som konkrete utdanningsvalg (for eksempel programvalg eller søknadsatferd), deltakelse i arbeidsplassbasert læring eller andre erfaringsbaserte aktiviteter, jobbsøking og søknadsatferd, bruk av karriereveiledningstjenester, eller indikatorer på frafall og gjennomføring.

Studier av mer langsiktige resultatutbytter er enda mindre utbredt. Rundt én av fem studier rapporterer mer langsiktige utbytter, som utdanningsnivå og fullføring, sysselsettingsstatus og jobbkarakteristika, økonomiske utfall, helse og livskvalitet, eller bredere samfunnsmessige indikatorer som sosial inkludering. Nesten alle utbytter måles på individnivå; svært få studier inkluderer samfunnsnivåindikatorer som sysselsettingsrater.

Oppfølgingsperiodene er ofte korte. Omtrent en tredjedel av studiene rapporterer kun kortsiktige utbytter (tre måneder eller kortere), rundt en fjerdedel rapporterer langsiktige utbytter (mer enn 12 måneder), og i ytterligere en fjerdedel er oppfølgingsperioden ikke tydelig spesifisert. Samlet sett omhandler det tilgjengelige kunnskapsgrunnlaget i hovedsak nære, selvrapporterte læringsutbytter, mens kunnskap om langsiktige effekter på utdanning og arbeidsmarked er mer begrenset.

Når det gjelder likhet og målgrupper, har de fleste studiene ikke et eksplisitt fokus på bestemte grupper. I om lag tre fjerdedeler av studiene er ingen spesifikk demografisk undergruppe definert som hovedmålgruppe. Der likhetsdimensjoner inngår, er de vanligste lav sosioøkonomisk status (SES) eller levekårsutfordringer, migrant- eller minoritetsbakgrunn, kjønn og funksjonsnedsettelse. Et mindre antall studier omhandler ungdom i rurale eller avsidesliggende områder, og kun enkeltstudier retter seg eksplisitt mot elever som har droppet ut av skolen eller tilsvarende grupper. Noen studier kombinerer flere likhetsdimensjoner, men slike analyser er sjeldne i materialet. Samlet sett gir litteraturen begrenset kunnskap om hvordan karriereveiledning og karrierelæring bør utformes og implementeres for å redusere ulikhet, eller hvilke tilnærminger som er mest virksomme for ulike grupper over tid.

**Hovedbudskap for norsk politikk.** Tre hovedpoenger er særlig relevante for et norsk politisk publikum:

1. *Internasjonal forskning gir en omfattende oversikt over hvilke utbytter som er knyttet til karriereveilednings- og karrierelæringstiltak.* Internasjonal forskning har undersøkt sammenhenger mellom strukturerte former for karrierelæring og veiledning og en rekke utbytter, særlig karriererelaterte utfall som kunnskap, bevissthet og ferdigheter i karrierehåndtering. Et mindre omfang av studier ser på utdanningsutbytter som progresjon, frafall og overganger. Kartleggingen viser tydelige berøringspunkter med nyere norske reformer som vektlegger karrierelæring

i læreplaner og styrkede karriereveiledningstjenester, men uten å vurdere effekten av konkrete tiltak.

2. *Imidlertid har det internasjonale kunnskapsgrunnlaget klare begrensninger når det gjelder overførbarhet og dekning.* Konsentrasjonen av studier i engelskspråklige land, særlig USA, innebærer at forskjeller i utdanningssystemer, velferdsordninger og arbeidsmarkedsinstitusjoner må vurderes nøye før modeller eller verktøy tas i bruk i Norge. Antallet evalueringer fra Norge og Norden er svært begrenset. Dette bør ikke tolkes som et fravær av norsk forskningsaktivitet, men reflekterer snarere kunnskapsoppsummeringens avgrensning til fagfellevurderte studier som rapporterer utbytter, innenfor de valgte publikasjonsformatene. Dersom norske myndigheter ønsker sterkere kunnskap om "hva som virker her, for hvem og under hvilke betingelser", er det behov for å investere i evalueringer av norske og nordiske tiltak, også i lite utforskede kontekster som grunnskolens barnetrinn, voksenopp-læring og arbeidsplassbasert læring.
3. *Likhet og langsiktige utfall krever mer systematisk oppmerksomhet.* Dersom karriereveiledning og karrierelæring skal være sentrale virkemidler i norsk likhetspolitikk, må tiltak utformes og evalueres med tydelige likhetsmål og langsiktige utfall for øye. Dette omfatter blant annet frafall, fullføring, NEET-status (unge som verken er i arbeid, utdanning eller opplæring) og integrering i arbeidsmarkedet, med særlig vekt på elever og studenter med lav sosioøkonomisk status, migrantbakgrunn, funksjonsnedsettelse og bosetting i rurale eller avsidesliggende områder. Det er også behov for mer forskning som følger deltakere over tid og identifiserer hvilke kombinasjoner av veiledning, undervisning og støtte som gir varige forskjeller for ulike grupper.

Denne scoping reviewen må tolkes i lys av noen begrensninger. Kunnskapsoppsummeringen er avgrenset av valg knyttet til tidsperiode, inklusjon av studier som er publisert på engelsk eller skandinavisk språk fra Europa, Nord Amerika og Australia, og bygger på kunnskap som er rapportert i primærstudiene. Videre gir en scoping review en beskrivelse av omfanget og kjennetegnene ved kunnskapsgrunnlaget, men inkluderer ikke en systematisk kvalitetsvurdering eller vurdering av risiko for systematiske skjevheter. Rapporten gir derfor ikke grunnlag for konklusjoner om effekten av spesifikke former for karriereveiledning eller karrierelæring.

## Executive Summary

Norwegian authorities have invested in career guidance and career learning as tools for promoting equity, reducing dropout, and supporting smoother transitions between education, training and work. At the same time, policymakers and practitioners are asking what kinds of career guidance and career learning interventions have been studied, in which settings and for whom, and how outcomes and equity are examined in these studies. This report responds to those questions by mapping and analysing recent international and Nordic research.

The report is based on a systematic scoping review of empirical studies on career guidance and career learning interventions in educational settings and during educational transitions, published between 2014 and April 2025. The review was commissioned on 11 April 2024 by the Norwegian Ministry of Education and Research and HK-dir, and was conducted by the Knowledge Centre for Education in collaboration with Ida H. Mathiesen from the Norwegian Centre for Learning Environment and Behavioural Research in Education.

**Aim and scope.** The overall aim is to provide a structured overview of empirical evidence on the outcomes examined in studies of career guidance and career learning interventions that are relevant to Norwegian education policy. We focused on interventions in formal education and key transitions: between education levels, as well as between education, training and work.

We included studies where the development of career learning or career competence was a primary or explicit objective, and examined both individual and societal outcomes. These range from learning, behaviour and educational trajectories to labour-market participation and aspects of health and wellbeing. Our analysis also considered equity dimensions such as social background, gender, and disability.

**Method in brief.** The review follows recognised methodological guidance for scoping reviews. Searches were carried out in major international databases such as Scopus, ERIC (Education Resource Information Center), and Web of Science, supplemented with relevant national and Nordic sources such as Oria and DiVA.

To be included, studies had to meet a set of predefined eligibility criteria. They needed to focus on learners or people in education or in transition between education, training and work, and to examine career guidance or career learning interventions set in educational or transition contexts. We only included studies that reported empirical outcomes using quantitative, qualitative or mixed-methods designs, were conducted in Europe, North America, Australia, New Zealand or a small number of comparable contexts, and were published between 2014 and April 2025 in English or a Scandinavian language.

In total, 212 studies met the inclusion criteria. Data were coded using a detailed data extraction form. Human coding was combined with an AI-assisted second coder that helped identify inconsistencies and gaps, which were reviewed by a human. The results are presented through descriptive statistics and narrative summaries.

**What the evidence base looks like.** The evidence base is substantial but uneven. The 212 studies span the period from 2014 to April 2025, with a steady growth over time and an average of about 18 studies per year. Almost all of the work has been published as journal articles, with only a small minority appearing as reports, and the literature is predominantly in English; only a small number of studies are published in Norwegian, Swedish, or Danish.

Geographically, there is a strong concentration in English-speaking contexts, with roughly four in ten studies originating from the United States (US) alone. This distribution partly reflects the review's inclusion criteria, which focused on studies published in English and primarily captured research from Western higher education contexts. The United Kingdom (UK), Canada and Australia together account for a further substantial share, while Italy and Germany are the most prominent non-English-speaking European countries. Only a handful of studies have been conducted in the Nordic region, of which just seven are from Norway. This imbalance has implications for transferability and underlines the importance of building a stronger Nordic evidence base.

The educational focus of the literature is clearly skewed towards the later stages of education. Tertiary education is the single most common setting, and many studies concentrate on key decision points such as entry into higher education. Upper secondary education is also frequently examined, often in relation to programme choice and transitions, while lower secondary education appears in a smaller but still substantial number of studies. By contrast, primary education, adult education and workplace-based learning are only rarely researched, despite their potential relevance to lifelong guidance policy. A notable share of studies explicitly focus on transition phases (for example, from school to higher education or from education to work) although these are still fewer than studies centred on single educational levels.

Quantitative designs dominate the evidence base. More than half of the studies are purely quantitative, while others use mixed methods or qualitative approaches. Experimental and quasi-experimental designs are present, but a wide range of non-experimental designs (for example, cross-sectional surveys) remain dominant. Qualitative and mixed-methods studies contribute important insights into implementation, user experience and context that are not captured by outcome measures alone.

**Types and characteristics of interventions.** Across the literature, the most frequently studied interventions include courses, modules or programmes on career learning (often integrated as career education in the curriculum or delivered as dedicated career courses), individual guidance and counselling in one-to-one sessions with counsellors or career advisors, classroom-based career instruction such as lessons on labour-market information, career planning or decision-making skills, and group guidance and workshops, often linked to specific transition decisions such as programme choice or application processes.

Most interventions are delivered face-to-face. Around two thirds of the studies involve primarily in-person provision. At the same time, there is a growing number of hybrid and fully digital interventions, including online career-planning tools and self-guided information resources, digital guidance services such as chat, e-mail or video-based guidance, and game-based career learning and other interactive online formats. Intervention duration and intensity vary considerably. Some programmes consist of a single workshop or a brief series of sessions, while others run over a

semester or a full academic year. However, the reporting of actual contact hours and participant exposure is often limited, which means that differences in intensity are not consistently captured in the underlying studies or in our coding.

The dominant focus in the outcome measures is on individual, self-reported *learning*-level outcomes. About 85% of the studies report at least one learning-level outcome, most commonly attitudes and awareness related to careers and career learning, self-reported career management skills, self-efficacy and confidence in career decision-making and planning, and self-reported educational intentions or perceived fit between interests and choices. A smaller number of studies use objective or externally measured outcomes, such as academic performance assessed through grades or tests.

By contrast, *behavioural*-level outcomes (what learners actually do after an intervention) are less frequently examined. Around a quarter of the studies report at least one behavioural- or transfer-level outcome, such as concrete educational choices (for example, programme choice or application behaviour), engagement in work-based learning or other experiential activities, job search and application behaviour, help-seeking and utilisation of guidance services, or indicators of dropout and persistence.

Studies of *results*-level outcomes are even less common. Around one in five studies report more distal outcomes such as educational attainment (level of education completed) and completion, employment status and job characteristics, economic outcomes, health and wellbeing, or broader societal indicators such as social inclusion. Almost all outcomes are measured at the *individual* level, whereas only a very small number of studies include *societal*-level indicators such as employment rates.

Follow-up periods are often short. About one third of the studies report only short-term outcomes (three months or less), roughly a quarter report long-term outcomes (more than 12 months), and in another quarter the follow-up period is not clearly specified. Overall, most of the available evidence concerns proximal, self-reported learning outcomes, while evidence on long-term educational and labour-market effects is more limited.

When it comes to dimensions of equity and specific target groups, most studies do not focus explicitly on particular groups. In around three quarters of the studies, no specific demographic subgroup is identified as a main focus. Where equity dimensions are considered, the most common are low socio-economic status (SES) or disadvantaged, migrant or ethnic minority background, gender and disability. A smaller number of studies address rural or remote youth, and only isolated studies explicitly target early school leavers or similar groups. Some studies combine several equity dimensions, but explicit intersectional analyses (that is, analyses that systematically consider combinations of disadvantages) are rare. Overall, the literature says relatively little about how career guidance and career learning should be designed and implemented specifically to reduce inequalities, or which approaches are most effective for which groups over time.

**Key messages for Norwegian policy.** For a Norwegian policy audience, three messages stand out:

1. *International research provides an extensive map of outcomes associated with career guidance and career learning interventions.* International research has examined associations between structured career learning and guidance and a range of outcomes. The literature primarily focuses on career-related outcomes, such as knowledge, awareness, and career management skills, while a smaller body of studies addresses educational outcomes including progression, dropout, and transitions. This mapping highlights areas of alignment with recent Norwegian reforms that emphasize career learning in the curriculum and strengthened guidance services, without assessing the effectiveness of specific interventions.
2. *However, the international evidence has clear limits in terms of transferability and coverage.* The concentration of studies in English-speaking contexts, particularly the US, means that differences in education systems, welfare arrangements and labour-market institutions must be considered carefully before importing models or tools. At the same time, the number of evaluations from Norway and the wider Nordic region is very small. This should not be interpreted as an absence of Norwegian research activity, but rather reflects the review's focus on peer-reviewed outcome studies within the included publication formats (reports and journal articles). If Norwegian authorities want stronger evidence about "what works here, for whom and under which conditions", there is a need to invest in research evaluating Norwegian and Nordic interventions, including in under-researched settings such as primary education, adult education and workplace-based learning.
3. *Equity and long-term outcomes require more systematic attention.* If career guidance and career learning are to be important tools in the Norwegian equity agenda, interventions need to be designed and evaluated with equity goals and long-term outcomes in mind. This includes dropout, completion, NEET (not in employment, education, or training) status and labour-market integration, with particular attention to students with low socio-economic status, migrant backgrounds, disabilities and those in rural and remote areas. It also calls for more research that follows learners over time and identifies which combinations of guidance, teaching and support make a lasting difference for different groups.

This scoping review should be interpreted in light of some limitations. The report is shaped by the review's scope choices, including the time period covered and the inclusion of studies published in English or Scandinavian languages from Europe, North America and Oceania, and it relies on what is reported in the primary studies. In addition, as a scoping review, the report describes the volume and characteristics of the evidence base but does not include a formal critical appraisal or quality/risk-of-bias assessment and therefore does not support conclusions about the effectiveness of specific career guidance practices or career learning interventions.

## How to Read This Report

This report is a systematic scoping review intended to support multiple audiences, including policymakers, practitioners, and researchers. Readers may therefore approach it in different ways: some may read the report in full, while others may focus on specific sections of relevance to their interests or needs.

To support selective reading and to ensure that individual sections can stand on their own, some degree of repetition is unavoidable. Key concepts, definitions, and contextual information are therefore reiterated where necessary to provide sufficient background for each section. In long reports of this kind, such repetition is intentional and designed to improve readability rather than to introduce new information.

The report is accompanied by a complementary *evidence gap map* (EGM), which provides an overview of the included studies and allows them to be explored in relation to the variables coded in this review. The EGM can be accessed through the website of the Knowledge Centre for Education and is intended to be used alongside the report to provide a more in-depth overview of what the included studies examine. We encourage readers to engage directly with the interactive map to explore the evidence base as they read the report. By filtering for variables such as intervention type, setting, target group, or study design, readers can identify broader patterns and research gaps that go beyond the illustrative examples provided in this text, as well as locate all studies matching specific criteria (for example, studies focusing on learning outcomes evaluated using a quasi-experimental design).

Throughout the report, examples from the included studies are used to illustrate key points, methodological approaches, or types of evidence. These examples are selected solely for illustrative purposes. They are not intended to signal study quality, methodological rigor, impact, or policy importance. Where possible, examples are selected to reflect the breadth of the evidence base, so that illustrations are not disproportionately drawn from any single country, year, or study context. Rather, they serve to make abstract concepts more concrete and to help readers develop a clearer understanding of what is meant by a “study” in the context of the corresponding section. Where readers would like additional examples, we refer them to the accompanying EGM, which allows users to identify and explore all included studies matching selected criteria.

Readers are encouraged to use this report flexibly, moving between sections and making use of the accompanying EGM as appropriate to their interests and purposes.

# 1. Background and Purpose

## 1.1. Norwegian Policy Context on Career Guidance

Career guidance has been part of the Norwegian school system for at least three decades and forms the background for the emergence of career education as a policy and practice field (Røise & Mathiesen, 2024). Traditionally, however, the concept of “career” has carried rather narrow and sometimes negative connotations. In public debate it has often been associated with “climbing the career ladder”, individual ambition and competition. As Bakke (2024) notes, the word has been used to describe a perceived trend towards more competition and harsher conditions in working life, and “career” has therefore not always sat comfortably within an egalitarian education system.

In contrast, contemporary career guidance is grounded in a much broader understanding. Today, career guidance is commonly defined as activities that help people handle transitions and make meaningful choices related to education, learning and work throughout their lives (Bakke et al., 2020). Andrews and Hooley (2025) similarly describe careers as the way people build a pathway through life, learning and work, combining the need to “pay the rent” with the search for meaning and connection. Even so, as Bakke (2021) argues, the concept of “career” remains sensitive in education, and there is still no fully shared understanding of what “career” should mean in the Norwegian school context. At the same time, the term is clearly gaining prominence in recent policy documents and reforms (Røise & Mathiesen, 2024).

Drawing on content and thematic analyses of political documents, research, curricula and evaluation reports, Røise and Mathiesen (2024) identify five discourses that have shaped the development of career education and career guidance in Norwegian schools since 1990: completion, gender equality, resources, professionalisation and quality, and the whole school’s responsibility. Together, these discourses reflect societal needs and political priorities and help explain why career guidance is increasingly justified through a knowledge-economic rationale, where guidance is expected to contribute to completion, equity and labour-market integration (Røise & Mathiesen, 2024; Kjærgård, 2012). These discourses are primarily articulated in relation to research and policy documents related to compulsory and upper secondary education; how they translate to higher education and adult learning is less clearly described in the research literature.

Within this development, the idea of a “whole-school approach” to career guidance has been a recurring vision in Norwegian policy, research and practice. The ambition is that career learning and guidance should be a shared responsibility, integrated into teaching and school development rather than confined to a single counsellor. Although this idea has received considerable rhetorical support, there is still little evidence that it has become a standard part of everyday practice (Holm-Nordhagen, 2025). Holm-Nordhagen (2025) points to the need for more research on interdisciplinary collaboration around career guidance in schools and on the conditions that enable a whole-school approach to move from vision to reality. Note that this debate is school-focused, and that equivalent “whole-institution” approaches in higher education/adult learning are underexplored.

These evolving understandings of “career” and the longstanding ambition of a whole-school approach have unfolded within a broader policy development. In 2011, Norway established a national unit in charge of developing lifelong guidance policies and evidence, support for the

public career services and cross sectoral coordination, today based in HK-dir. The country has developed comprehensive lifelong guidance policies that positions high-quality career guidance and career learning as key instruments for improving completion in upper secondary education, reducing social inequalities and supporting lifelong learning. This policy direction was clearly articulated in the expert committee report “NOU 2016:7 – Career Guidance for Individuals and Society” (*Norge i omstilling – karriereveiledning for individ og samfunn*, English summary only), which proposed a lifelong guidance system with strong equity ambitions, including a national digital service (*karriereveiledning.no*, established in 2020), strengthened guidance in schools, a national cross sectoral quality framework (*Nasjonalt kvalitetsrammeverk for karriereveiledning*) and an expanded offer for adults anchored at the county level (Norges offentlige utredninger, 2016). However, the report “Quality in career guidance in school” (Mordal et al., 2022) concludes that quality development and quality assurance are not of high priority in Norwegian schools, that the practices are developed under relatively limited resources and that the career guidance practitioners in schools have relatively few collaboration partners within the schools they work. Mathiesen (2022) concludes that developing clearer frameworks and networks around school counselling that facilitate balancing relational, contextual, and political expectations is essential for advancing school counselling to better serve students, schools, and society, as well as fostering a shared interpretive community. These evaluations and discussions primarily concern career guidance in primary and secondary education; comparable, system-level evidence on quality development and quality assurance in higher education and adult learning is more limited and less consistently documented.

The Education Act (*Opplæringslova*), adopted on 9 June 2023 and effective from 1 August 2024, repeals pupils’ individual right to necessary counselling on educational and vocational choices, gathered in a separate chapter on guidance (Chapter 16). Instead, school owners have a duty to ensure that students in primary, lower secondary and upper secondary education receive necessary counselling on educational programmes, occupational options and transitions. With the introduction of the new Education Act, access to career guidance has been extended to apprentices and adult learners in preparatory and upper secondary education, as county authorities are now legally obliged to provide career guidance services to these groups, representing a significant expansion compared to the previous legislation. In addition, § 28-9 on “Career counselling” establishes that every county authority must offer free career guidance to all persons registered as residents in the county, in cooperation with the Norwegian Labour and Welfare Administration (NAV) / Public Employment Services (PES). This provision imposes a general duty on counties but does not create an individual legal right, allowing counties to prioritise within their financial framework. These legal changes primarily concern primary or secondary education and county responsibilities; higher education career guidance remains governed differently.

The Integration Act (*Integreringsloven*) complements these provisions by establishing a statutory link between integration policy and career guidance. Under § 11, newly arrived immigrants and refugees who are to participate in the introduction programme have a right and a duty to complete career guidance, ensuring early assessment of their skills and qualifications. Counties are responsible for providing this guidance, typically through the county career centres.

There is no general regulation of career guidance in higher education in Norway. Provision is largely shaped by institutional autonomy and local arrangements, resulting in substantial variation in how services are organised, who they are aimed at, and how accessible they are across

institutions and locations. A mapping commissioned by HK-dir (Proba Samfunnsanalyse, 2022) indicated that many students at that time formally had access to career guidance through their higher education institution and/or through student welfare organisations (*studentsamskipnader*), but that services differed considerably across the sector and were not always equally visible or easy to use. The same mapping suggested that early-stage researchers were often not fully covered by services established for students, and that support for this group tended to be uneven. It should be noted that the regulatory obligation for higher education institutions to secure career guidance for doctoral candidates (*stipendiater*) and postdoctoral researchers was introduced in 2024 through the Regulations to the Universities and University Colleges Act (§ 3-18 and § 3-19), that is after the Proba mapping was conducted. The Proba findings therefore describe the situation prior to this regulatory change, and many institutions are now engaged in development work to establish or strengthen career guidance provision for these target groups.

Beyond the education system, counties play a central role in ensuring access to low-threshold career guidance for adults. By 2025, all 15 counties operate career centres, which together with the national digital career guidance service (*karriereveiledning.no*) constitute the main low-threshold service for adults outside the education system. Some of the centres also contribute to the “Youth Guarantee” (*Ungdomsgarantien*), a national initiative administered by PES since 2023 that offers close follow-up and access to measures for young people aged 16–30 who are outside education and employment.

At the national level, HK-dir manages the “National Quality Framework for Career Guidance” (*Nasjonalt kvalitetsrammeverk for karriereveiledning*), and the digital portals *utdanning.no* and *karriereveiledning.no* (including e-guidance). As noted, the Educational Act in Norway was changed as of August 1, 2024, with particular implications for guidance provision in primary and secondary education. In higher education, guidance provision remains less regulated and is more strongly shaped by institutional autonomy, while adult guidance is primarily organised through county services and the national digital offer. One considerable change for the field of career guidance was that, from having a regulation to a law that somewhat specified what career guidance in schools should consider, there is now only a statement of the school owners’ duty to ensure that students receive guidance, with limited detail on what that guidance should encompass. This development makes the quality framework (Bakke et al., 2020) a crucial reference document for quality development in the field, particularly in school-based guidance where legal requirements are now less detailed. A specific goal of the national quality framework is that it serves as a tool for developing quality in career guidance. The framework will be useful both for the development of quality in the field of practice and for governance and management.

Curriculum reform has reinforced these structural developments in primary, lower secondary, and upper secondary schools. The “2020 Curriculum Reform” (*Fagfornyelsen - LK20*) introduced cross-curricular topics such as “Health and Life Skills” (*Folkehelse og livsmestring*), and strengthened expectations that pupils should reflect on their interests, competences and future education and work across subjects (Utdanningsdirektoratet, n.d.-a). In lower secondary education, the subject “Educational Choices” (*Utdanningsvalg*) explicitly defines career learning as part of its purpose and aims to help pupils gain knowledge about opportunities and requirements in the education system and in working life, and to reflect on their own interests and competences (Utdanningsdirektoratet, n.d.-b). Røise (2022) finds that to achieve this, there is a need to strengthen pedagogical professionalism in the subject.

These developments are embedded in a broader political ambition to promote social mobility and equal opportunities. The “Completion Reform” (*Fullføringsreformen*) emphasises the importance of supporting learners to complete upper secondary education rather than drop out, highlighting the role of systematic career guidance across educational pathways (Kunnskapsdepartementet, 2021). In addition, the “Youth Report” (*Ungdomstidsmeldingen*) underscores the need for strengthened guidance services and transitions for young people, situating career guidance as a key strategy within broader national policy efforts to improve engagement and progression in education (Kunnskapsdepartementet, 2024). The white paper “Meld. St. 28 (2024–2025) *Tro på framtida - uansett bakgrunn*” argues that improved and more targeted career guidance, including strengthened use of Educational Choice (*Utdanningsvalg*), is one of several measures that can reduce inequality in educational trajectories and recruitment to higher education, especially among young people from low socio-economic backgrounds and immigrant families (Barne- og familiedepartementet, 2025). While these policy initiatives primarily address transitions in compulsory and upper secondary education, they also interact with broader lifelong guidance ambitions, including access to low-threshold services for adults and more varied institutional arrangements in higher education. Against this backdrop, the present systematic scoping review was commissioned by HK-dir to map the empirical evidence base that can inform the further development, targeting and quality assurance of Norwegian initiatives in career guidance and career learning in educational settings.

## 1.2. International Context on Career Guidance

The Norwegian emphasis on career guidance as a tool for equity, completion and skills development is closely aligned with a broader international policy and research agenda that has evolved over the past two decades. Since the early 2000s, major international organisations have consistently identified high-quality, universally accessible career guidance as a key mechanism for reducing early school leaving, improving transitions from education to work, and addressing social inequalities in educational and labour-market outcomes (OECD, 2004).

The OECD played a central role in putting career guidance on the policy agenda through its 2004 cross-national review “Career Guidance and Public Policy: Bridging the Gap.” The OECD review highlighted gaps in the Norwegian guidance system, particularly limited access to career guidance for adults, weak and uneven quality due to the absence of national guidelines, quality criteria, and training provisions, as well as insufficient coordination across sectors (OECD, 2004). Since then, the OECD has repeatedly returned to the topic, most recently through its “Career Readiness Project”. This report uses longitudinal data from PISA (Programme for International Student Assessment) and other surveys to identify a set of empirically derived “career readiness indicators”, career-related experiences and attitudes in adolescence that are associated with better adult employment outcomes and a lower risk of being NEET (Not in Education, Employment, or Training) (Covacevich et al., 2021; OECD, 2021). These indicators include participation in career conversations, workplace visits, part-time work, and exploration of different education and training options. The OECD further conceptualised career guidance as encompassing three complementary dimensions, exploring the future, experiencing the future, and thinking about the future, a framework that has proven useful for analysing both the scope and quality of guidance provision (OECD, 2004). Analyses show that people who engage more intensively and earlier in such activities tend to display greater career certainty, better alignment between aspirations and labour-market realities, and improved employment outcomes in adulthood.

Importantly for the Norwegian equity agenda, recent OECD work brings together evidence on how guidance can challenge social inequality. The 2024 publication “Challenging Social Inequality Through Career Guidance” and associated publications show that well-designed guidance, particularly when it includes experiential elements such as workplace visits and employer engagement, can weaken the link between socio-economic background and post-school destinations (OECD, 2024). Studies summarised in this work and in other international reviews document that students from low socio-economic backgrounds are more likely to hold misaligned or under-informed aspirations (for example, underestimating the level of education required for desired occupations) and that targeted guidance can reduce such informational gaps (OECD, 2024).

Parallel developments within the EU have reinforced these messages. The Council of the European Union’s resolutions on lifelong guidance (2004, 2008) and the work of the European Centre for the Development of Vocational Training (Cedefop) and the European Lifelong Guidance Policy Network (ELGPN) promote a vision of lifelong guidance that is accessible to all and integrated into education, training and employment policies (Council of the European Union, 2004; 2024; Counsel of the European Union & Representatives of the Governments of the Member States, 2008). Cedefop et al. (2020)’s comparative work, including the joint international survey on guidance during the pandemic, further illustrates how guidance systems contribute to crisis response, labour-market adjustment and support for vulnerable groups. More recent initiatives in the EU, such as the 2024 Council Recommendation “Europe on the Move – learning mobility opportunities for everyone”, explicitly highlight guidance to support equitable participation in learning mobility and transitions across education levels (Council of the European Union, 2024).

Norway participates actively in this international policy community. It is a contributor to the OECD Career Readiness Project, Euroguidance and Europass, and to Nordic-European guidance networks such as those coordinated by the Nordic Network for Adult Learning. In 2019 Norway hosted the International Centre for Career Development and Public Policy (ICCDPP) international symposium on public policy in the career field. Norwegian policy development on career guidance is therefore both informed by, and contributes to, these shared European and international knowledge bases. The equity perspective in Meld. St. 28 (2024–2025) explicitly draws on OECD and other international evidence when arguing that strengthening career guidance can promote social mobility.

At the same time, despite a relatively strong national provision, Norway still lacks a comprehensive and up-to-date overview of empirical outcome studies on career guidance and career learning interventions. Key questions remain about which forms of guidance are most suitable for which groups, in which institutional settings, and over what time horizon. Mapping the international research evidence is therefore essential for situating Norwegian initiatives within the global knowledge base, identifying potentially transferable practices, and highlighting where domestic research is still needed to support the ambitions set out in the 2020 curriculum reform and the 2025 equity white paper.

### **1.3. Rationale for a Scoping Review**

The preceding sections have shown that Norwegian authorities and international organisations place strong expectations on career guidance and career learning interventions as tools for increasing completion, promoting social mobility, and supporting transitions from education

to work. This creates a clear need for an overview of the empirical evidence investigating the outcomes of such career guidance and career learning interventions.

However, as noted, the existing evidence on “what works, for whom, and over what time horizon” is fragmented, unevenly distributed across countries and educational levels, and difficult to translate into concrete policy recommendations. While Norway has relatively good documentation of provision (for example, regional career centres and curriculum integration), there is no comprehensive and up-to-date mapping of empirical outcome studies, particularly those published after the major policy reforms implemented around 2020.

Under these conditions, a traditional systematic review narrowly focused on effectiveness (for example, “Which interventions produce the largest reductions in dropout?”) would be premature. The field of career guidance and career learning is broad and conceptually heterogeneous, spanning individual guidance, career learning/career education, and work-exposure activities, and often focusing on the development of various career management skills. Study designs range from small-scale qualitative explorations to large registry-based longitudinal analyses, outcome measures vary considerably, and important equity dimensions (such as socio-economic background, immigrant status, gender and rural/urban location) are not consistently reported. Together, these features limit the potential for meta-analysis and robust claims at this stage.

A scoping review is therefore an appropriate design (Arksey & O'Malley, 2005; Peters et al., 2020). Rather than estimating effect sizes, it aims to map the volume, range and nature of empirical research conducted over a given period. The review will systematically describe which individual- and societal outcomes have been studied and reported, how the duration and sustainability of effects are characterised, and the extent to which equity-relevant subgroups are considered. It will also identify clear knowledge gaps, particularly in relation to vulnerable groups that are central to current Norwegian equity policy and clarify where the existing evidence is too thin or methodologically diverse to justify a full systematic review.

By providing this structured overview, the scoping review offers HK-dir and the Norwegian Ministry of Education and Research a basis for deciding whether, and in which areas, more narrowly focused systematic reviews on effectiveness or specific equity effects should be commissioned.

#### **1.4. Commission from HK-dir**

In April 2024, HK-dir formally commissioned the Knowledge Centre for Education (*Kunnskaps-senter for utdanning*) at the University of Stavanger, in collaboration with Ida H. Mathiesen from the Norwegian Centre for Learning Environment and Behavioural Research in Education (*Nasjonalt senter for læringsmiljø og atferdsforskning*), to conduct a scoping review of empirical research on career guidance and career learning interventions in education and educational transitions. The commission, issued on 11 April 2024, is part of a broader strategy to strengthen the evidence base for lifelong guidance.

A project document developed jointly by the Knowledge Centre for Education and HK-dir functions as the protocol for the review. It specifies the overarching purpose, research questions, inclusion criteria and planned methods, and defines the review scope as empirical outcome studies published from 2014 onwards on career guidance and career learning interventions in educational

settings and transitions. In line with the rationale, the protocol emphasises individual- and societal-level outcomes, the duration and sustainability of effects, and equity-relevant subgroups such as pupils from low socio-economic backgrounds.

In dialogue with HK-dir, it was decided to conduct a scoping review rather than a full systematic review with a quantitative or qualitative synthesis, in recognition of the conceptual and methodological heterogeneity of the field and the need for an initial mapping of the evidence landscape before commissioning narrower syntheses. The review was conducted by the Knowledge Centre for Education in collaboration with Ida H. Mathiesen, in close dialogue with HK-dir, while the research team retained responsibility for methodological decisions and assessment of studies. This report constitutes the final deliverable under this commission.

## 1.5. Key Concepts and Definitions

This review builds on a broad understanding of career guidance and career learning in line with HK-dir and with international policy and research frameworks. In this section, we clarify how we use these concepts and related terms such as career competence.

**Career guidance.** Career guidance can be understood in both a broad and a narrow sense. In line with HK-dir, we adopt a broad understanding.

Career guidance aims to enable individuals to handle transitions and make meaningful choices related to education, learning and work throughout life. It offers opportunities to explore one's situation, aspirations and options, and provides support for action, decision-making and participation in society. Guidance can be delivered individually or in groups, face-to-face or digitally, and within different sectors and organisations. It is provided by competent practitioners and should be carried out with a high degree of ethical awareness (Bakke et al., 2020).

In the context of this review, we focus on career guidance as it is organised in, or closely linked to, education systems and key educational transitions. This includes, for example, school-based guidance, career centre services targeting pupils or students, digital career guidance services, and guidance for people in transition from school and higher education to, training or work.

**Career competence and career learning.** In the National quality framework for career guidance (*Nasjonalt kvalitetsrammeverk for karriereveiledning*), career competence (*karrierekompetanse*) is defined as the competence that enables people to manage their careers, including in situations of change and transition; it involves understanding oneself and one's context, being able to act and make choices, and handling dilemmas and tensions related to life, learning and work, as well as recognising how living conditions and actions shape individuals while they can also influence and shape their own and the community's future (Bakke et al., 2020, p. 52). Internationally, the concept of career management skills is widely used to describe the competencies individuals need to navigate learning and work transitions, while in Norway this is commonly referred to as career competence.

Career learning and the development of career competence are closely connected. Career learning is the process through which individuals develop career competence, through both everyday

experiences and structured activities. This learning can be informal, arising from daily life and participation in education, work and community, and formal, through planned activities such as teaching, guidance, job-search courses or digital tools explicitly designed to support career development.

Structured career learning in the Norwegian context typically occurs in schools, for example through the subject *Utdanningsvalg* and through integration of career-related learning in other subjects by exploring occupations and the labour market. It can also be a component of job-seeker courses, PES programmes and introduction programmes for newly arrived immigrants and refugees, where learning about career opportunities and pathways is an explicit aim. In higher education, structured career learning exists but is uneven and not systematically embedded across study programmes (Proba Samfunnsanalyse, 2022).

For the purposes of this review, we consider an activity to constitute career learning when its explicit goal is to develop participants' career competence. For instance, by fostering reflection on one's own competences and values, raising awareness of educational and occupational options, or strengthening the ability to navigate the labour market. Such activities may involve tailored tasks, reflection exercises, and practical work that helps participants become more conscious of their own resources and opportunities.

In the empirical literature, related terms such as career management skills, career competence, career readiness and similar constructs are often used to operationalise aspects of career learning. We treat these as part of the broader field of career learning and code them as learning-level outcomes where they are empirically assessed.

**Educational settings and educational transitions.** The review focuses on career guidance and career learning in educational settings and at key educational transition points. Educational settings include primary, lower secondary, upper secondary, tertiary and adult education, as well as learning contexts that are tightly linked to these institutions (for example, work-based learning components in vocational education and training). Educational transitions are understood as structured moves between levels or types of education (for example, from lower to upper secondary, from school to vocational training, from upper secondary to higher education) and from education into further learning or work. We also include interventions delivered in other arenas (for example, career centres, PES) when they are explicitly connected to these settings or transitions.

**Interventions.** Throughout the report, we use the term career guidance and career learning interventions to refer to structured activities, programmes or services that have an explicit aim of supporting individuals' career development and/or career learning. This includes, for example, one-to-one guidance sessions, group guidance, curriculum-based career education, career development courses and workshops, employer engagement activities (such as workplace visits or talks by employers), and organised digital or e-guidance services. We do not include studies that focus solely on narrow intra-professional specialisation decisions (e.g. choice of medical subspecialty) where the emphasis is on internal career paths within a single profession rather than on broader educational and occupational decision-making.

These definitions guide the formulation of the research questions below, the “Concept” and “Context” elements of our eligibility criteria, and our coding of intervention characteristics and outcomes in the methods and results chapters.

## 1.6. Research Questions

The research questions were developed in close dialogue between the Knowledge Centre for Education and HK-dir during spring 2024 and are reproduced here as formulated in the project document. The main research question guiding this systematic scoping review is: *What characterizes empirical research on career guidance and career learning interventions in the education sector and during educational transitions?*

To address this main question, the systematic scoping review was guided by three core sub-questions and their associated specific inquiries. These sub-questions aim to map the current state of empirical research regarding career guidance and career learning interventions:

1. What is the scope, range, and nature of the empirical literature on the outcomes of career guidance and career learning interventions in education?
  - a. What types of studies were commonly used in this field?
  - b. What populations and contexts (for example, countries, education levels) were represented in the existing literature?
2. What types of career-, educational-, and labour market outcomes are examined in empirical studies of career guidance and career learning interventions in education?
  - a. What individual-level outcomes (for example, career learning, academic performance, dropout rates) were reported?
  - b. What societal-level outcomes (for example, employment rates, economic impact) were reported?
3. How is the duration of career guidance impacts described (for example, short, medium, or long term)?

## 2. Methods

### 2.1. Type of Review and Framework

We conducted a systematic scoping review to map the existing empirical research on career guidance and career learning interventions in the education sector and during educational transitions. The review followed the methodological framework for scoping studies proposed by Arksey and O'Malley (2005) and further refined by subsequent guidance. The approach was chosen to accommodate the breadth and heterogeneity of the literature. Where applicable, the reporting of this review was guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) (Tricco et al., 2018).

### 2.2. Protocol and Registration

A review protocol was developed *a priori* to guide all stages of the review process, including eligibility criteria, search strategy, study selection and data extraction procedures. The protocol specified general project information, the research questions, the inclusion-exclusion criteria and the planned approach for search.

The protocol was not formally registered but was agreed upon by the team and HK-dir before the start of the search and study selection. Any deviations from the protocol were reported at the end of this section.

### 2.3. Inclusion and Exclusion Criteria

Eligibility criteria were defined using the “Population, Concept, Context” (PCC) framework, commonly used for scoping reviews, to ensure alignment with the review objectives. The criteria below are summarised in [Table 1](#).

#### 2.3.1. Population

We included studies in which the main participants were individuals who are the primary recipients of career guidance or career learning interventions. This population includes, but is not limited to, school and vocational students, early school leavers and people who are NEET.

Our focus on recipients rather than practitioners reflects the aim of the review: to describe evidence on how career guidance and career learning interventions are experienced and with what outcomes for individuals. Studies were therefore excluded if their primary focus was on those delivering interventions (for example teachers, counsellors, advisors or other practitioners), rather than on the individuals receiving these services.

#### 2.3.2. Concept

We included studies that directly investigated career guidance or career learning interventions. This encompassed structured activities, programmes or services designed to support individuals' career development, career decision-making or career-related learning. For example, information provision, counselling, guidance sessions, group programmes or curriculum-based career

**Table 1. Inclusion and Exclusion Criteria for the Scoping Review**

Category	Included	Excluded
Population	Studies focusing on individuals who receive career guidance or career learning (for example, students, early school leavers, NEET).	Studies focusing on providers of career guidance (for example, teachers, counsellors, advisors).
Concept	Studies that directly examine career guidance or career learning interventions.	Studies not focused on career guidance or career learning; studies focusing mainly on specialization decisions within specific professions (for example, nursing, medicine, dentistry).
Context	Studies conducted in primary, secondary, or tertiary education settings, or focusing on transitions between these stages.	Studies focusing exclusively on career guidance within the labour market outside educational settings.
Study design	Empirical studies using quantitative, qualitative, or mixed methods data, including document studies, registry data, or secondary data from previous studies.	Studies without empirical data (for example, contextual or theoretical studies) and literature reviews or other secondary syntheses.
Language	Publications in English, Norwegian, Swedish, or Danish.	Publications in languages other than English, Norwegian, Swedish, or Danish.
Country	Studies conducted in Europe, North America, or Oceania, as well as Russia and Cyprus.	Studies conducted in South America, Africa, or Asia (including countries commonly classified as partly Asian, such as Israel and Turkey).
Period	Studies published between January 2014 and April 2025.	Studies published before January 2014.
Type	Peer-reviewed journal articles and grey literature in the form of formal reports.	Master's theses, PhD dissertations, conference proceedings, books, and book chapters.

education. Our aim was to collect evidence on type of interventions that argued to support broad career development and career learning, rather than narrow or highly specialised career choices.

We therefore excluded studies that: (1) did not examine any form of career guidance or career learning intervention, or (2) focused primarily on highly specialised or intra-professional career choices within specific fields (for example, specialisation decisions in nursing, medicine, dentistry or similar professions), where the emphasis was on professional specialisation rather than general career guidance or learning.

### 2.3.3. Context

We included studies conducted in educational settings, specifically primary, secondary or tertiary education, as well as studies focusing on transitions between these stages (for example, from lower to upper secondary education, from school to higher education, or from higher education into the labour market).

We focused on educational and school-related contexts because the aim of the review is to understand how career guidance and career learning interventions are organised and experienced within education systems and at key educational transition points. Educational and school-related contexts, both within and across levels, were therefore central to the review.

Studies were excluded if they focused exclusively on career guidance within the labour market (for example, services provided only to jobseekers or employees outside an educational setting), as these fall outside the educational scope of the review.

### 2.3.4 Additional Eligibility Criteria

**Study design.** We included empirical studies that used primary or secondary data, employing quantitative, qualitative or mixed methods approaches. This also encompassed studies using documents as data, registry data or systematically collected data from previous studies. We focused on empirical designs to ensure that the review describes observed outcomes, experiences or processes, rather than theoretical propositions alone. Studies without empirical data (for example, purely conceptual or theoretical papers), as well as literature reviews, overviews or other secondary syntheses, were excluded.

**Language.** We included studies published in English, Norwegian, Swedish or Danish. These languages reflect the linguistic competence of the review team and the contexts of primary interest. Publications in other languages were excluded to ensure feasibility, accessibility and consistency in the analysis.

**Country.** We included studies conducted in Europe, North America and Oceania. This geographical focus was chosen to ensure a certain degree of comparability in education systems and career guidance structures across the included studies. Studies conducted in South America, Africa or Asia (including countries commonly classified as partly Asian, such as Israel and Turkey) were excluded.

**Publication year.** We included studies published between January 2014 and April 2025. This time frame was intended to maintain a focus on recent developments and contemporary practices in career guidance and career learning. Studies published before January 2014 were excluded.

**Publication type.** We included peer-reviewed journal articles and grey literature in the form of formal reports (for example, institutional, governmental or organisational reports). This allowed us to combine rigorously reviewed research with relevant practice- and policy-oriented evidence. We excluded master's theses, doctoral dissertations, conference proceedings, books and book chapters to maintain a manageable scope and to prioritise sources with clearer and more consistently reported information and quality assurance processes.

## 2.4. Information Sources and Search

### 2.4.1. Information Sources

A comprehensive search strategy was developed in collaboration with an expert in career counselling literature, a librarian, systematic review specialists on the project team and representatives from HK-dir.

We systematically searched the following international electronic databases:

- Scopus,
- Web of Science, and
- ERIC (Education Resources Information Center).

In addition to international databases, we searched national databases in Norway, Sweden and Denmark, using search terms in the relevant national languages:

- Norwegian literature via Oria;
- Swedish literature via DiVA (*Digitala Vetenskapliga Arkivet*); and
- Danish literature via *forskningsportal.dk*.

The international databases were searched on 30 April 2025, and the national databases on 5 May 2025. All searches were conducted by at least two members of the review team working together to reduce the risk of errors, improve consistency in the application of the search strategy and ensure that potentially relevant literature was not overlooked.

We did not undertake additional systematic hand-searching of specific journals, nor did we conduct separate citation chasing.

#### **2.4.2. Search**

Our goal was to identify studies on career guidance and career learning interventions. We therefore used a broad set of search terms to cover this topic ([Table 2](#)). In the search strings, an asterisk (\*) was used as a truncation symbol to capture different word beginnings and endings (for example, *counsel\** retrieving *counselling*, *counsellor* and other related terms). When multiple words appeared together (for example, "career development education"), they were enclosed in double quotation marks so that the database treated them as a single phrase.

The terms in [Table 2](#) were combined so that records containing any of them were retrieved (using the Boolean operator "OR"), thereby maximising the sensitivity of the search. Although terms such as "career learning" and "career management skills" often refer to outcomes rather than services, we included them because they can also be used to label relevant interventions and occur relatively infrequently, which meant they did not substantially reduce the precision of the search.

To focus the search on relevant population groups, we added a separate population block of search terms ([Table 2](#)). Terms within this block were also combined using "OR", so that records containing any of the population terms were retrieved. We then combined the intervention block and the population block using the Boolean operator "AND", meaning that records had to contain at least one term from each block to be included in the search results.

After running each search, we applied limits consistent with the additional eligibility criteria described previously. Specifically, we restricted records to publications from January 2014 onwards, excluded items not indexed as journal articles or reports and retained only materials written in English, Norwegian, Swedish or Danish. The full search strategy for Scopus, including all search terms and applied limits, is provided as an example in Appendix A.

**Table 2. Search Terms**

Intervention Terms	Population Terms	Norwegian Terms	Swedish Terms	Danish Terms
career* development education	student*	karriere*	livslång vägledning	karriere*
career* development intervention*	youth*	yrkesorientering	livslång vägledare	erhvervsorienter*
career* development course*	child*	yrkeorientering	utbildningsvägledning	*rådgiver
career* development activit*	learner*	yrkeorientert	utbildningsvägledare	*rådgivning
career* development class*	dropout*	*rådgiver	yrkesvägledning	*vejleder*
career* development workshop*	graduat*	*rådgivning	yrkesvägledare	*vejledning
career* development program*	adult learner*	*veileder*	yrkevägledning	beskæftigelsesorient*
career* development initiative*	NEET*	*veiledning	yrkevägledare	
career* development lecture*	not in employment	arbeidsorientering	yrkesorientering	
career* development practice*	jobseeker*	arbeidsorientert	yrkesorienterad	
career* development curri*	refugee*		yrkeorientering	
career* management skill*	on benefit*		yrkeorienterad	
career* development training	disab*		anställningsvägledning	
career* education*	pupil*		anställningsvägledare	
career* orient*	teen*		anställningsorientering	
career* advis*	adolescen*		anställningsorienterad	
career* learning	school leaver*		karriä*	
career* guid*	pushout*		*rådgiv*	
career* counsel*	young adult*			
career* service*	gap year			
employment guid*	not in education			
employment counsel*	unemployed			
employment orient*	job seeker*			
education* guid*	immigrant*			
vocation* guid*	sick leave			
vocation* orient*	inactive population			
vocation* counsel*				
guidance counsel*				
lifelong guid*				

## 2.5. Selection of Sources of Evidence

We used a two-stage screening process (title and abstract, followed by full text).

First, pairs of reviewers independently piloted the eligibility criteria on a random 5% sample of titles and abstracts (385 records). After this pilot, discrepancies and borderline cases were discussed in a team meeting, and minor clarifications were made to the operationalisation of the inclusion and exclusion criteria to improve consistency. The same procedure (independent double screening in pairs) was then applied to all remaining titles and abstracts.

For each study, a screening decision was made and, where excluded, a single primary reason for exclusion was assigned from a predefined set of categories covering relevance of topic, study type, nature of evidence, country, target group, language and duplicate status. Studies judged as potentially relevant by at least one reviewer, or where there was uncertainty, were conservatively retained for full-text assessment.

In the second stage, full texts of all potentially eligible studies were retrieved and assessed independently by pairs of reviewers from the review team using the same eligibility criteria. As in the title and abstract stage, one primary reason for exclusion was recorded for each study that did not meet the criteria at full text, using the same predefined categories. Discrepancies between reviewers at both screening stages were resolved through discussion within the pair and, where necessary, in consultation with additional team members.

The overall selection process, including the number of studies identified, screened, assessed for eligibility and included in the review, as well as the main reasons for full-text exclusion, is presented in a PRISMA flow diagram ([Figure 1](#)) (Haddaway et al., 2022).

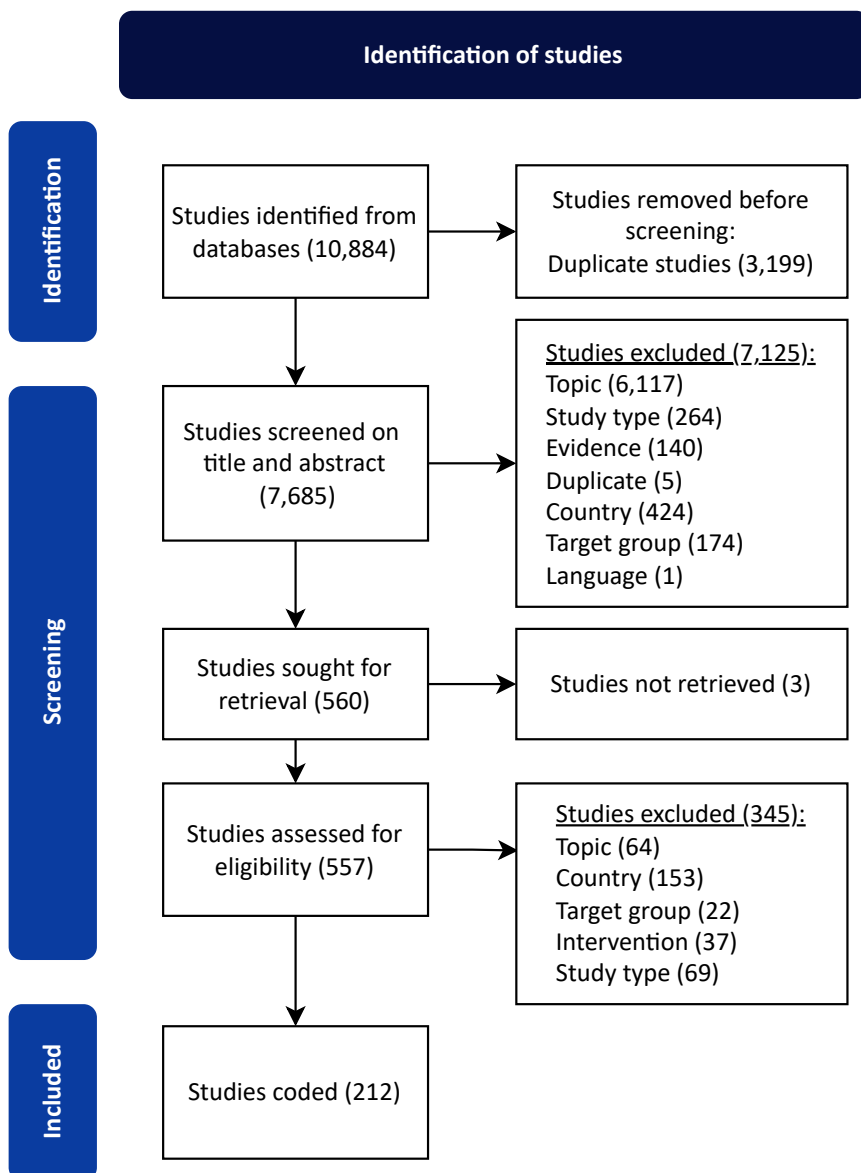
## 2.6. Data Extraction and Coding

We developed a structured data extraction form in collaboration with HK-dir to ensure consistent coding of study characteristics and outcomes across all included sources of evidence. The form was piloted by all five reviewers on a small sample of 12 included studies to check the clarity and applicability of the categories. Following this pilot, minor refinements were made to the wording and structure of the form; these refinements did not alter the underlying variables to be coded.

Each included study was initially coded by a single human reviewer using the established data extraction form. Upon completion of the human coding, the study was coded by an AI (Artificial Intelligence) agent, which generated a separate, independent classification for every field based on its ruleset. The human and AI code sets were then compared. All discrepancies were systematically flagged, reviewed and resolved by a human coder.

In this way, the AI agent functioned as a second coder, validating the application of the coding manual and ensuring that all final coding decisions were made by human judgement. This extra layer of control was particularly valuable for complex coding variables, such as identifying transfer outcomes, where accurate classification required nuanced judgement that cannot be fully articulated in a detailed codebook.

**Figure 1. PRISMA Flow Chart**



The AI agent was tested on a set of studies that had already been coded by the review team before being used for the full set of included studies. This testing phase was used to check that the AI produced codes that were sufficiently accurate and interpretable to be useful in supporting the coding process. We used GPT-5.1 for more complex coding tasks (for example, categorising intervention types and outcomes) and GPT-4.1-mini for simpler, more routine tasks (for example, extracting publication year or country). Further technical details on the set-up, prompting and use of the AI agent are provided in Appendix B.

The final data extraction form was organised into five main domains: (A) administrative data; (B) study characteristics; (C) target group characteristics; (D) intervention characteristics; and (E) outcomes, including time horizon. The form is provided in Appendix C.

### 2.6.1. Administrative Data

For each study, we recorded the publication year using predefined categories from 2014 to 2025, and the publication type, distinguishing between journal article and report. We also coded the language of publication as English, Norwegian, Danish or Swedish.

### 2.6.2. Study Characteristics

We first noted whether the study presented a clear research question, aim or hypothesis, coded as yes (with the relevant passage highlighted) or no. We then coded the purpose of the study, allowing multiple codes per study, as: exploration of relationships; assessment of efficacy (“what works”); or description. Third, the overall research method was coded as qualitative, quantitative or mixed methods, with multiple coding allowed. Fourth, we coded study design using the following categories: experimental, quasi-experimental, non-experimental, case study, ethnography, view study, document study or other (with specification where designs did not fit these categories). Lastly, for data collection methods, we used a list covering: observation, focus group interview, individual interview, survey/questionnaire, curriculum-based assessment, practical test, physiological test, psychological test, document analysis, register data and other (specified as needed). Multiple methods could be coded for studies using mixed or multi-method data collection.

### 2.6.3. Target Group Characteristics

We coded the setting of participants, allowing multiple codes, as: primary education, lower secondary education, upper secondary education, tertiary education, adult education (*voksenopplæring*), workplace, transitions or other/unclear (specified as needed). We then coded who the investigated subjects under study were as: receivers only, receivers and providers, persons in transitions or other/unclear (specified as needed). Third, to capture equity-relevant aspects, we recorded whether the study focused on a specific demographic group: yes (with subgroup specified, for example immigrant youth, students from low socio-economic backgrounds, learners with disabilities), no or other/unclear (specified as needed). Finally, we coded sample size using predefined ranges, with only one category selected per study: 1–5; 6–20; 21–50; 51–100; 101–300; 301–500; 501–1,000; more than 1,000; or unclear (when not specified).

### 2.6.4. Intervention Characteristics

For the context of the intervention (delivery mode), we coded whether the intervention was delivered as: face-to-face, digital/online, hybrid (blended), other (specified as needed) or unclear (when not specified). We then coded the type of intervention (format/approach) as: workshop, course/module/programme, one-to-one guidance, group guidance, classroom instruction, other (specified as needed) or unclear (when not specified). Lastly, we coded the duration of the intervention using mutually exclusive categories: single session; short-term (several weeks/hours); long-term (semester/year/ongoing); or unclear (when not specified).

### 2.6.5. Outcome Framework and Levels

Our outcome coding drew on Kirkpatrick’s four-level model of training evaluation (reaction, learning, behaviour/transfer and results) as adapted by Praslova (2010). In this adaptation, reaction criteria capture participants’ immediate responses to the intervention (for example, satisfaction); learning criteria capture changes in knowledge, skills and attitudes; behaviour/transfer criteria capture the extent to which learning is applied in practice; and results criteria capture more distal individual and societal outcomes (for example educational attainment, labour-market outcomes, societal contributions).

Because our focus was on empirically reported outcomes of career guidance and career learning interventions, and because traditional reaction outcomes (for example, satisfaction with a single session) were not central to our research questions, we operationalised and coded only three levels of the adapted framework: learning, behaviour/transfer and results. In addition, we captured the level (individual or societal) at which each outcome operated and the time horizon of the reported effects.

We first coded the level of outcome as individual or societal, allowing multiple coding when studies reported outcomes at both levels. At the learning outcome level, we distinguished between self-reported and objectively/externally measured outcomes of career management skills; educational choices; self-efficacy/confidence; attitudes and values towards career learning/planning/knowledge/awareness; and academic performance. An “other (please specify)” category was available where studies reported learning-related outcomes not captured by these predefined codes.

At the behaviour/transfer outcome level, we coded manifested behaviour related to the application of career guidance and career learning, including career decision-making; educational choices; dropout; work-based learning engagement; entrepreneurial activities; identifying and applying for jobs; help-seeking or guidance utilisation; and other (specified as needed).

At the results outcome level, we coded more distal outcomes as: educational (for example attainment, completion, progression); employment; economic; societal (for example, social inclusion, civic participation); health and wellbeing; and other (specified as needed).

Finally, we coded the duration of reported impact (time horizon) as: short-term (3 months or less); medium-term (between 3 and 12 months); long-term (more than 12 months); and unclear (when not specified).

## **2.7. Data Analysis and Presentation of Results**

We analysed and categorized the collected data descriptively. We began by producing numerical summaries of key study characteristics, including publication year, country, educational level, target groups, intervention types and study designs. We then mapped reported outcomes using the adapted Kirkpatrick framework, distinguishing between learning, behaviour/transfer and results outcomes, and noting whether these operated at the individual or societal level and over which time horizons. Building on this, we grouped studies by intervention type, educational level and equity-relevant subgroups to identify patterns in the evidence base and areas where studies are concentrated or largely absent. The findings are presented in tables and figures and are interpreted through accompanying narrative summaries.

## **2.8. Limitations of the Coding Framework**

Despite our efforts to design a clear and transparent coding framework, coding complex interventions inevitably involves interpretation and simplification. The results presented in this report should therefore be read with several limitations in mind.

First, some coding categories are inherently open to interpretation. For example, the distinction between a behaviour/transfer outcome and a results outcome is not always straightforward. In

theory, behaviour outcomes capture what participants do (for example, applying for a programme, seeking guidance, engaging in work-based learning), while results outcomes capture more distal consequences (for example, completed qualifications, employment, earnings or sustained changes in wellbeing). In practice, however, primary studies often describe outcomes in ways that blur these boundaries, and the same indicator could plausibly be coded at more than one level.

Second, coding the importance of specific components within multi-component interventions is challenging. Many programmes combine, for example, classroom-based activities with one-to-one guidance, group sessions and online tools. The published description rarely specifies how central each component is, how much time is spent on it or how many participants receive it. This raises practical questions such as: how prominent does one-to-one guidance need to be before we also assign the “one-to-one guidance” label? We applied explicit decision rules (for example, requiring that a component is clearly described as a core part of the intervention rather than a marginal addition), but some borderline cases remain.

Third, our coding of duration and intensity captures only part of the picture. We distinguish between single-session, short-term and long-term interventions based mainly on the time frame. However, the intensity of interventions can vary substantially within the same category. A programme that runs over a full school year but involves only one or two sessions may be coded as long-term, while a highly intensive programme delivered daily over three months is coded as short-term. These differences in intensity are rarely reported in sufficient detail to allow systematic coding, and our categories cannot fully reflect them.

Fourth, many of the challenges stem from limited and ambiguous reporting in the primary studies, particularly around intervention characteristics and measurement tools. Common examples include:

- statements such as “students received advising throughout the year” without information on frequency, contact hours or modality;
- descriptions of “online” or “blended” provision that do not specify whether contact is synchronous or asynchronous, individual or group-based; and
- incomplete reporting of which students participated in optional components.

Similar ambiguities arise when coding outcomes and instruments. In some studies, the same measurement scale can plausibly be interpreted as tapping both skills and knowledge. For instance, items that ask whether students “know how to” explore options or “feel able to” plan next steps may sit at the intersection of knowledge (awareness of strategies, information) and skill (ability to use those strategies). In such cases, drawing a sharp line between “knowledge” and “skills” outcomes is not always possible based on the text alone.

A related difficulty concerns the way validated scales and survey instruments are reported. Some studies measure psychological constructs (such as career decision self-efficacy or career adaptability) using validated scales that would normally be classed as psychological tests but present these within a broader questionnaire or survey that also includes background variables and *ad hoc* items. Not all authors clearly distinguish which parts of the instrument are validated scales and which are general survey questions. As a result, while we coded data collection

methods using categories such as “survey/questionnaire” and “psychological test”, such distinctions within larger survey instruments may not always be fully or consistently identified.

Under these conditions, aiming for more fine-grained distinctions (for example, between different forms of online delivery, between different levels of intervention intensity, or between subtly different outcome constructs) would require coders to make strong assumptions that are not supported by the text.

Taken together, these issues mean that some degree of classification error is unavoidable. However, three considerations mitigate these concerns:

1. *Conservative coding rules.* We used conservative, documented decision rules and explicit “unclear” categories rather than inferring details that were not reported in the studies or could not be inferred with reasonable confidence. This reduces the risk of systematic bias, even if some misclassification at the margins remains.
2. *AI-assisted second coding.* The use of an AI agent as a second coder helped identify inconsistencies and potential misclassifications for human review. Disagreements between the human and AI codes were systematically flagged and resolved by a human reviewer, which reduced random errors and increased internal consistency.
3. *Main patterns.* The main conclusions of the review rest on broad patterns across many studies (for example, the dominance of self-reported learning outcomes, the concentration of research in certain countries and sectors, and the relative scarcity of long-term and equity-focused evaluations). These patterns are unlikely to be altered by a limited number of borderline coding decisions or by small inconsistencies in how specific instruments were categorised.

Finally, this review is linked to an EGM, which can be updated over time. If misclassifications are identified in future use of the map, they can be corrected by changing the underlying dataset. In this sense, the coding framework should be seen as a transparent and revisable “best effort” to summarise a heterogeneous and often sparsely described body of literature, rather than as a definitive classification of every detail of each study.

## 2.9. Critical Appraisal of Included Studies

In line with current guidance for scoping reviews, we did not conduct a formal critical appraisal or risk-of-bias assessment of individual studies. The purpose of this review was to map the breadth and nature of the existing evidence base, rather than to produce pooled estimates of effect or to rank interventions by effectiveness.

## 2.10. Deviations from Protocol

The review was conducted in accordance with the project document, which served as the protocol for this scoping review. As noted above, minor clarifications were made to the operationalisation of the eligibility criteria after piloting the screening on a sample of records; these refinements were anticipated and did not alter the underlying inclusion or exclusion criteria.

In addition, there is a minor discrepancy between the wording of sub-question 2 in the final project document and the wording used in this report. Following input received on 13 May, the formulation in the report was adjusted to explicitly include career learning interventions in education. The wording was also adjusted from present tense to past tense to better reflect that the review maps an existing body of published research. These changes reflect clarifications of scope and framing rather than changes in the underlying inclusion criteria, and the remainder of the protocol was applied as specified in the project document.

The only substantive deviation from the protocol was the use of an AI-based second coder to support and improve the consistency of classifications in the data extraction phase. No other deviations from the predefined methods and procedures were identified.

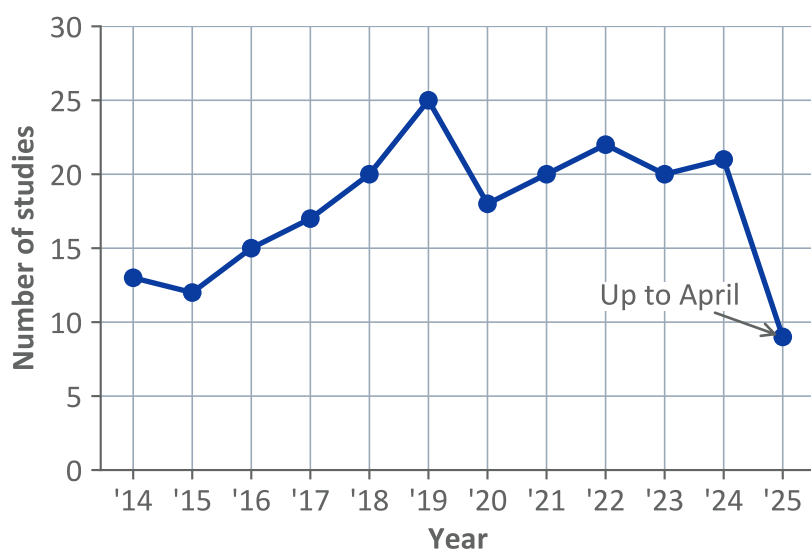
### 3. Results

**Note on interpretation.** Examples of studies are included throughout this section solely to illustrate how particular types of interventions, settings, target groups or outcomes are represented in the literature. These examples have not been selected to signal study quality, relevance or strength of evidence, and they should not be interpreted as such. Where possible, examples are selected to reflect the breadth of the evidence base, including a balance across countries, educational settings/levels, and publication years, so that no single country, setting, or period disproportionately shapes the illustrations. A full overview of studies linked to each coded variable is available in the accompanying EGM. For each result discussed in the text, we provide the corresponding code reference(s) so that readers can easily search for and explore the relevant studies in the EGM. Lastly, because some codes are not mutually exclusive (for example, “intervention format”), we sometimes report two numbers: (1) the total number of instances in which a given code occurs (including alongside other codes), and (2) the number of instances in which it occurs exclusively (without other codes for that variable). The full list of included studies is provided in Appendix D.

#### 3.1. Overview of Included Studies

The review includes 212 studies that meet the inclusion criteria. Over the period from January 2014 to April 2025, the number of publications per year increases modestly, averaging around 18 studies per year (Figure 2; EGM code “Publication year”). This points to a steady growth in empirical work on career guidance and career learning, but still a relatively small field compared with other areas of educational research.

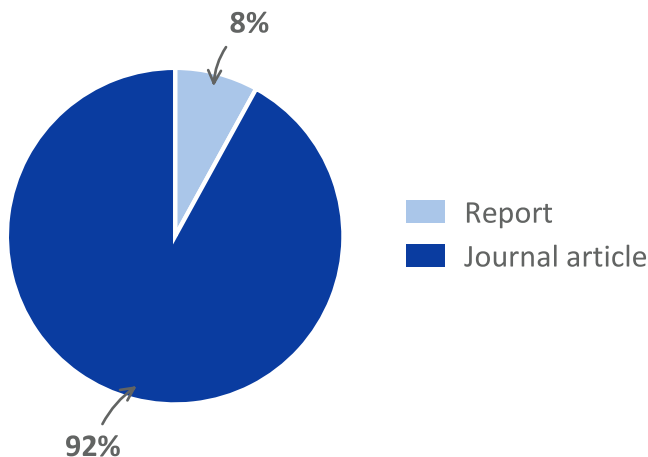
**Figure 2. Number of Publications per Year**



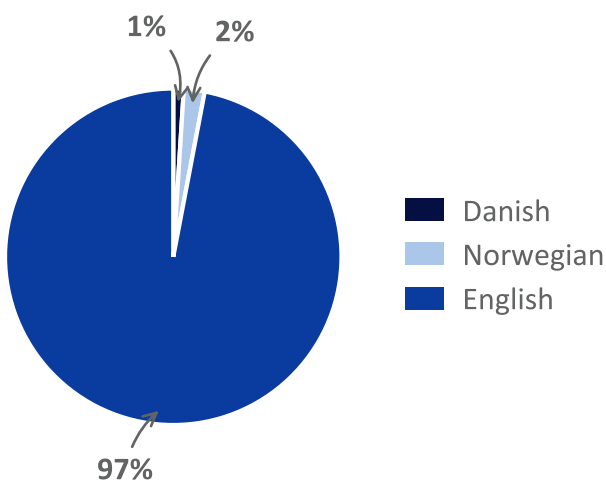
Almost all identified studies are journal articles (196 of 212), with only 16 reports (Figure 3; EGM code “Publication type”), and the dominant language is English (206 studies). Only four studies are published in Norwegian and two in Danish. Notably, none of the included studies were in Swedish (Figure 4; EGM code “Language”). While this scoping review predominantly draws on international,

English-language research due to its selection criteria, it should be noted that career guidance and career guidance policy in Norway are informed by a substantial body of national and Nordic research, including doctoral studies, commissioned research, and collaborative academic initiatives that fall outside the scope of the present review.

**Figure 3. Percentage Share of Publication Types**

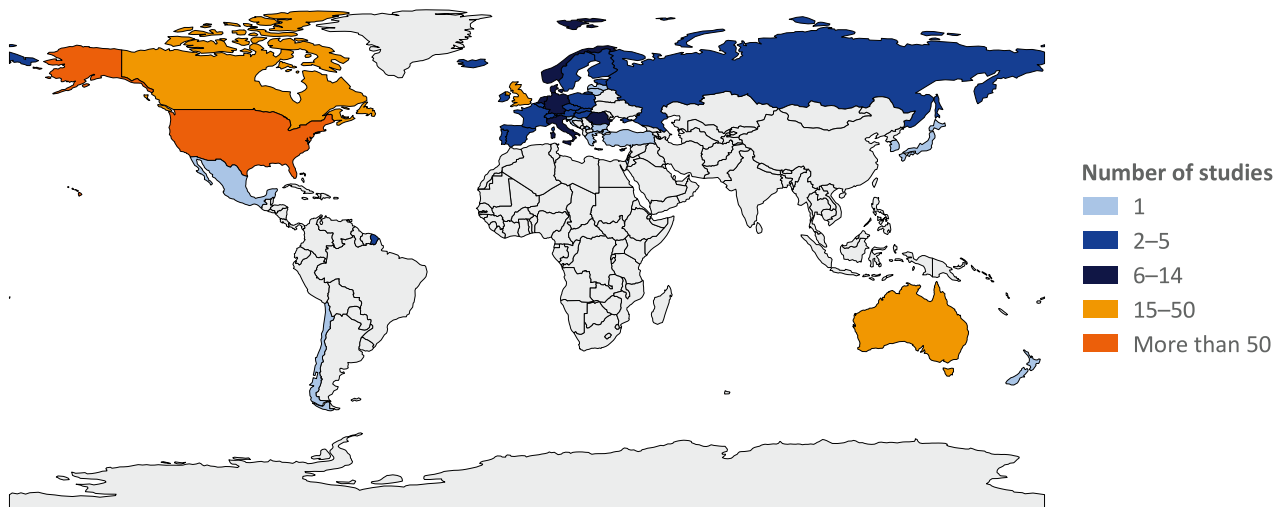


**Figure 4. Percentage Share of Publication Language**



The geographical distribution is strongly skewed ([Figure 5](#); EGM "Country"). 92 studies are set in the US, followed by the UK (17), Canada (15), Australia (15), Italy (13) and Germany (13). The Nordic region is represented by only 18 studies in total: seven from Norway, six from Denmark, four from Finland and one from Sweden. Norwegian examples include, for instance, a register-based evaluation of PES advisers in secondary schools and their impact on completion and inactivity (Salvanes et al, 2019), and a qualitative study of students' career learning experiences across school and out-of-school contexts, focusing on continuity, discontinuity, and reflection in placement activities (Røise, 2022).

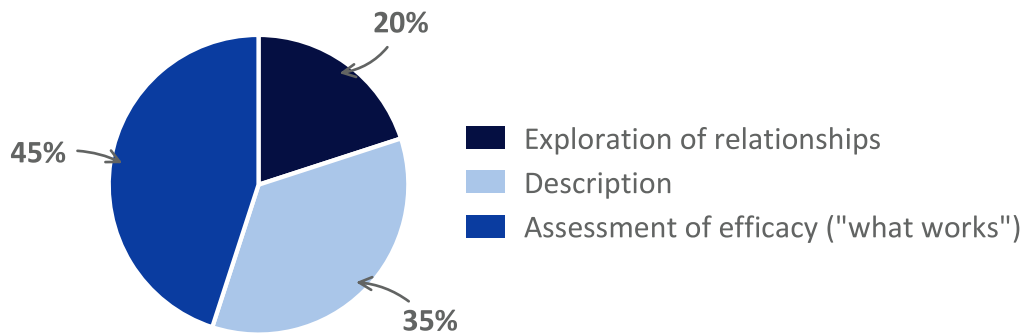
**Figure 5. Geographical Distribution of Included Studies**



The stated purposes of the studies clustered in three main groups (Figure 6; EGM code: “Study purpose”):

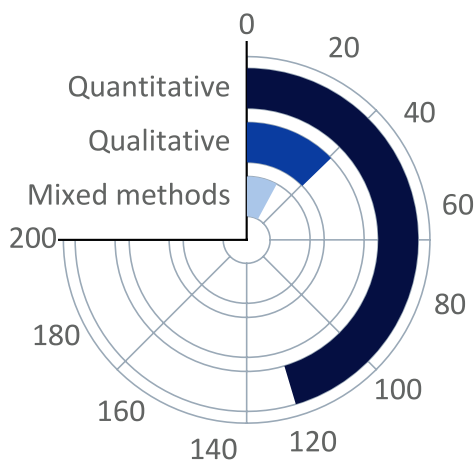
- *Assessment of efficacy (“what works”)* (96 studies). Evaluations of specific courses, guidance models, coaching programmes or digital tools. Examples include:
  - a quasi-experimental evaluation of a short-term school-based career awareness intervention for elementary school students (Carvalho et al., 2018), and
  - an RCT of a career counselling intervention for high school students, assessing effects on intended study choices and gender-atypical program considerations (Piepenburg & Fervers, 2022).
- *Descriptive studies* (74 studies). Mapping how guidance and career learning are organised or experienced in settings such as university career services, vocational programmes or regional guidance systems. The Finnish study “Artificial Intelligence for Career Guidance - Current Requirements and Prospects for the Future” (Westman et al., 2021) is one such example, describing how practitioners and institutions perceive the possibilities and risks of AI-based guidance.
- *Exploration of relationships* (42 studies). Analysing associations between participation in guidance or career learning and outcomes such as aspirations, engagement or attainment, often using large-scale survey data. For instance, Kashefpakdel and Percy (2016) investigated the link between career talks by external speakers and employment outcomes, using longitudinal data from the British Cohort Study and Dietrich et al. (2017) explored whether participation in high school career and technical education can predict community college outcomes.

**Figure 6. Percentage Share of Study Purpose**



Methodologically, the field is dominated by quantitative designs: 157 studies include a quantitative component, with 121 being exclusively quantitative. Seventy studies include a qualitative component, with 34 being exclusively qualitative. The remaining 21 studies are mixed method (Figure 7; EGM code: "Research method").<sup>1</sup>

**Figure 7. Frequency of Research Methods**



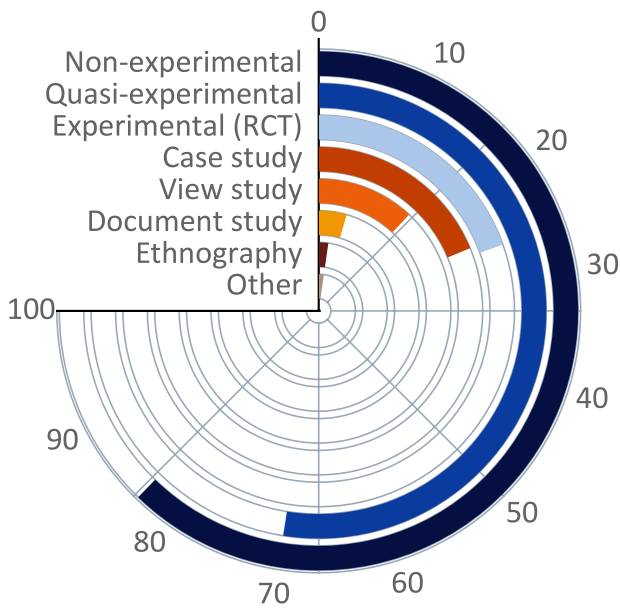
Looking at specific study designs (Figure 8; EGM code: "Study design"):

- Non-experimental (83) and quasi-experimental (70) designs are the most common. These include cohort comparisons, regression-based analyses, and pre-post designs without randomisation.
- RCTs are present but still a minority (26). Examples include:
  - Cerrito et al. (2018), comparing the effect of a web-based career guidance intervention with a traditional one on the career development progression of 4th- and 5th graders;
  - "Work and Surroundings", investigated in a longitudinal RCT the effects of qualitative career counselling activities on adolescents' career-related resources (Zammitti et al., 2020); and
  - several school-based trials of career courses and advising interventions.

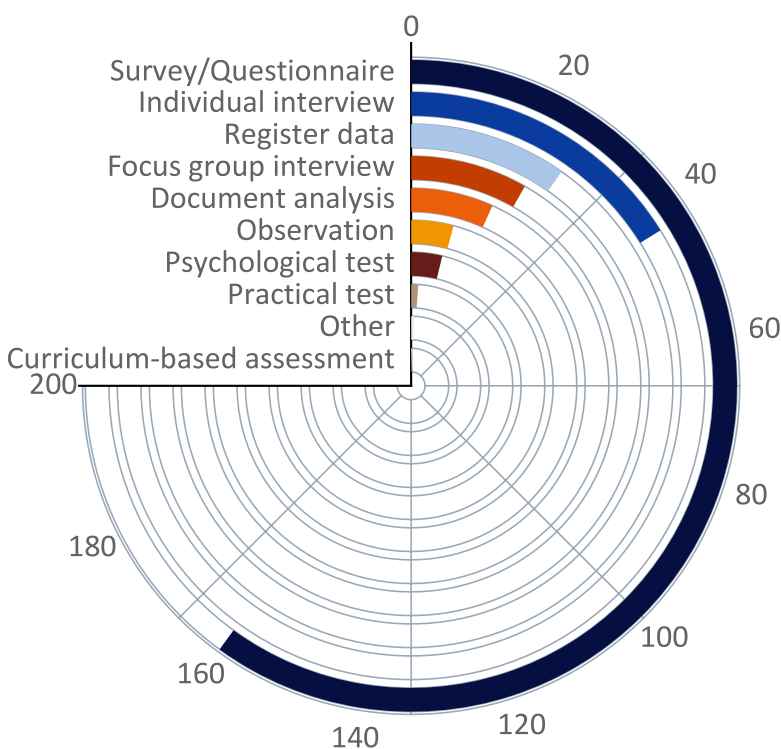
<sup>1</sup> A study may include both qualitative and quantitative elements without being a formal mixed-methods design. In this review, we code studies as mixed methods only when authors explicitly describe the design as mixed methods (or clearly articulate an integrated qualitative-quantitative approach). Studies that use qualitative and quantitative components in parallel or in separate parts of the work, without describing integration, are coded as having both components but not as mixed methods.

A smaller group of studies use case studies, ethnographies and other qualitative designs, providing rich accounts of how interventions are implemented and experienced. For example, an ethnographic study from Italy offers an analysis of educational guidance practices in an Italian lower secondary school and how they shape students' desires and ambitions during the transition to tracked education (Romito, 2017).

**Figure 8. Frequency of Research Designs**



**Figure 9. Frequency of Data Collection Methods**

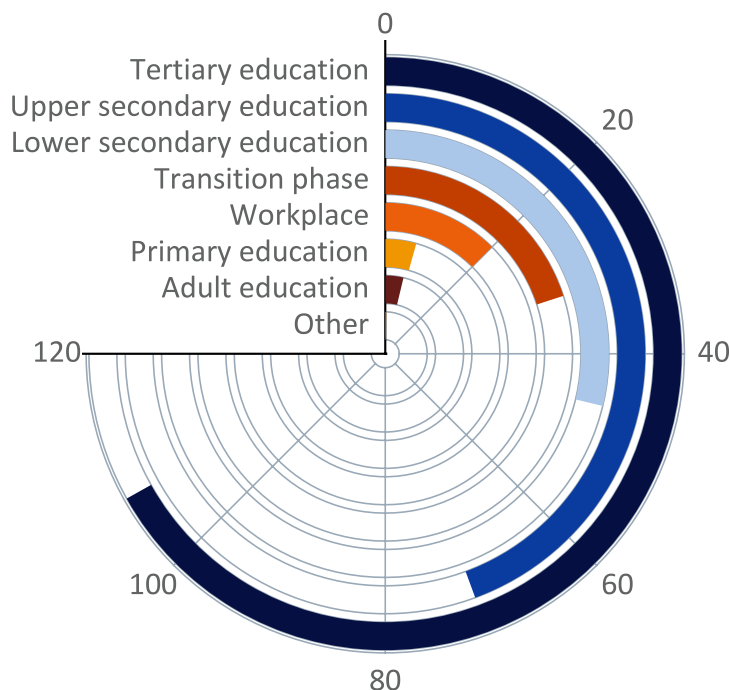


In terms of data collection methods (Figure 9; EGM code: "Data collection method"), most studies rely on self-report survey data: 160 of the 212 studies use questionnaires or surveys as a source of evidence. Qualitative approaches are also common, with 43 studies using individual interviews, 22 using focus group interviews and 18 drawing on document analysis. A smaller number of studies incorporate observation (11) or psychological tests (10), while practical tests, curriculum-based assessments and "other" methods are used only in a handful of cases. Register data feature in 26 studies, providing an important, though still relatively modest, strand of evidence based on administrative records rather than self-reports.

The studies cover a range of educational levels (Figure 10; EGM code: "Setting"), but not all levels receive equal attention. Based on the coded data:

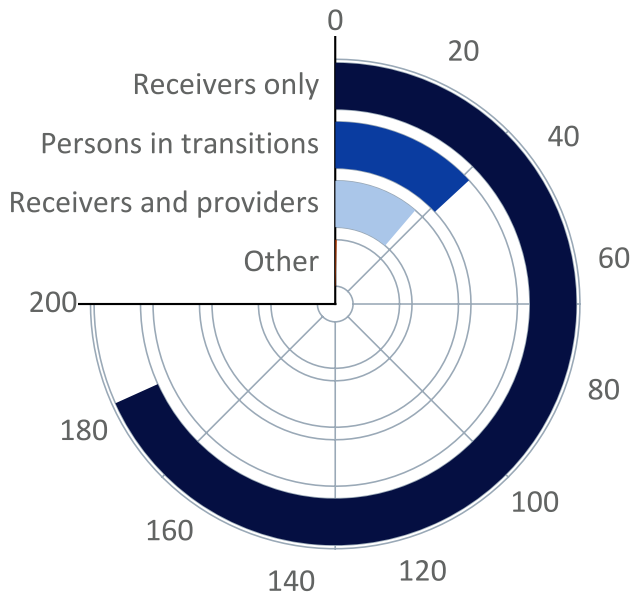
- Tertiary education (for example, universities or community colleges) is the most common setting (107 studies).
- Upper secondary education appears in 71 studies and often in combination with transition phases.
- Lower secondary education is present in 46 studies, with some studies spanning both lower and upper secondary.
- Primary education features in only seven studies.
- Adult education (6) and workplace-based learning (20) appear as settings in a smaller minority, despite their importance in lifelong learning strategies.

**Figure 10. Frequency of Setting**



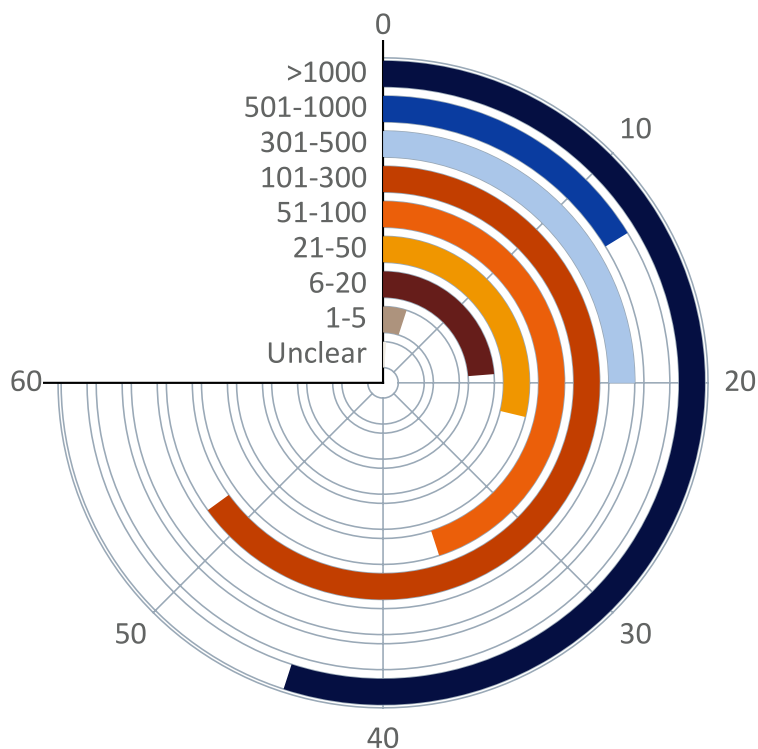
Most studies centre on learners as recipients of guidance or career learning (Figure 11; EGM code: "Participant type"). A smaller number also include teachers, counsellors or career centre staff as part of the analysis, and a handful follow people in the transition between education and work.

**Figure 11. Frequency of Participant Type**



Sample sizes vary widely across the included studies (Figure 12; EGM code: "Sample size"). Very few studies involve small samples of 1–5 participants (4 studies), typically in-depth qualitative or case study designs, while a further group draw on small to medium samples up to 100 participants (around 78 studies in the 6–100 range). At the other end of the spectrum, 44 studies use samples of more than 1,000 participants, often based on large surveys or administrative data, and another 85 studies fall in the 101–1,000 range. Only one study does not report sample size clearly. Taken together, this indicates a mixture of intensive, small-scale work and extensive, large-scale analyses, with a slight skew towards studies using medium to large samples.

**Figure 12. Frequency of Sample Sizes**



## 3.2. Findings by Research Question

### 3.2.1. Scope, Range, and Nature of the Literature

The literature is broad in scope, but coverage is uneven across educational levels, settings and populations.

In terms of educational level, the strongest concentration is in upper secondary and tertiary education, especially at points where students must make high-stakes decisions about programmes, subjects or educational pathways. Many tertiary studies evaluate elective career courses, coaching programmes, mentoring schemes or research-focused early career programmes.<sup>2</sup> For example, “Make your future job matter: A career calling intervention for college students” (Beloborodova & Leontiev, 2024) examines the effects of a nine-week career development course for university students on their sense of calling, meaning, and authenticity. By contrast, primary education is rarely the focus. One of the few examples is a non-experimental descriptive study by Welde et al. (2016) which used content analysis of project reports and student surveys related to 25 career education projects and their corresponding 56 types of career education interventions to examine how intern teachers implemented and evaluated career education projects and interventions.

Similarly, adult education and workplace-based learning are under-represented. Where they appear, they tend to focus on specific groups or sectors. For example, transition-age youth with disabilities in pre-employment interventions (Fleming et al., 2020) or formerly incarcerated graduates engaged in a university support programme (Fox et al., 2023). Systematic evaluations of guidance in adult basic education, continuing education or workplace training are rare.

The aims of the studies reflect both practice-oriented and research-oriented interests:

- A large group seeks to evaluate specific interventions, such as:
  - school-based career education courses with pre-post or trial designs (for example “Improving Career Decision Self-Efficacy and STEM Self-Efficacy in High School Girls: Evaluation of an Intervention” (Falco et al., 2019),
  - dropout-prevention initiatives combining guidance, mentoring and follow-up (*Elevskap mot frafall i videregående skole*) (Thunberg & Andreassen, 2017), or
  - cross-sector collaborations placing PES advisers in secondary schools to support young people at risk of non-completion (Salvanes et al., 2019).
- Another group describes how guidance is organised or experienced, for example:
  - how digital tools and AI might reshape guidance practices (Westman et al., 2021), or
  - how particular universities or career centres structure support for first-generation or minority students.
- A third group uses large-scale data to explore associations between guidance-related experiences and outcomes, without isolating a particular programme. For example, Cho & Ham (2022) and Agasisti et al. (2025) both use PISA 2018 data to examine whether certain forms of

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<sup>2</sup> Across these studies, it is not always clear whether the guidance focuses on educational decision-making, preparation for entry into the labour market, or both, nor whether the themes addressed in guidance interactions are comparable across different types of interventions.

school-based career guidance are associated with reduced social inequalities in aspirations and educational outcomes.

Methodologically, non-experimental designs remain dominant. They can show that outcomes improve after an intervention, or that certain patterns are associated with guidance, but they cannot rule out alternative explanations (such as selection effects or broader reforms).<sup>3</sup> Quasi-experimental and experimental studies provide stronger foundations for causal claims but are still limited to specific interventions and contexts, such as, near-peer advising in US high schools or structured group programmes for subgroups.

### 3.2.2. Outcomes Examined

Our coding of outcomes shows a clear emphasis on individual-level learning outcomes. Out of 212 studies:

- 180 report *at least one* learning outcome ([Table 3](#); EGM code: “Learning outcome”);
- 58 report *at least one* behavioural/transfer outcome ([Table 3](#); EGM code: “Behaviour/transfer outcome”); and
- 48 report *at least one* results-level outcome ([Table 3](#); EGM code: “Results outcome”).

For each of these outcome levels, [Table 3](#) reports the number of studies in each subcategory, while [Table E1–E3](#) in [Appendix E](#) lists the specific studies (author[s] and year) coded under each subcategory.

Almost no studies examine outcomes at the societal level. Two that come close are Salvanes et al. (2019), who approximate societal impacts by aggregating individual-level register outcomes (for example, shares in education, employment, or inactivity), and Taylor and Hooley (2014), who similarly infer broader impacts by aggregating graduate destination data into group-level rates (for example, the proportion unemployed and the proportion in graduate-level jobs six months after graduation). Accordingly, the outcomes discussed below are all measured at the individual level.

**Learning outcomes.** Most studies examine outcomes related to learners’ knowledge, attitudes, and self-perceptions. Common measures include:

- knowledge about educational pathways and occupations;
- awareness of options and processes (for example, how to apply, where to find information);
- career management skills (information search, decision-making, planning);
- self-efficacy and confidence in dealing with career-related decisions; and
- attitudes and values related to careers, education and future aspirations.

These outcomes are typically self-reported, often via validated scales embedded in broader questionnaires. For example:

- Lindstrom et al. (2020)’s “Paths 2 the Future” uses validated measures of career-related self-determination, self-efficacy and knowledge to show that a structured group curriculum can improve young women’s sense of agency around education and work.

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<sup>3</sup> *That an outcome improves after a program does not mean that the outcome improved because of the program.*

- “Paths 2 the Future” and similar interventions also illustrate a broader measurement challenge: individual items can sit at the intersection of knowledge (“I know how to...”) and skill (“I can do...”), making neat distinctions between the two difficult in practice.
- Gülşen et al. (2021)’s study from Cyprus uses a pretest–posttest control group design to evaluate a psychoeducational career construction counselling course for ninth-grade students in upper secondary schools.

**Behavioural (transfer) outcomes.** Far fewer studies track what learners do after interventions. Among the 58 studies that do so, typical behavioural outcomes include:

- Concrete educational choices (programme choice, subject selection, application behaviour);
- engagement in work-based learning, internships or apprenticeships;
- job search and application behaviour;
- help-seeking and use of guidance services; and
- indicators of persistence or dropout.

For example:

- The UK study by Milosheva et al. (2024) analyses secondary data from career guidance conversations to identify patterns of career information-seeking and decision-making outcomes.
- The Danish report “*Sammenhængende vejledningsforløb til uddannelse og job - Evaluering af projekt Unge i praksis*” (Skovhus, 2022) evaluates a project on coherent/connected career guidance pathways for 7th-grade pupils, combining preparation and follow-up guidance activities with visits to a vocational education programme and work-experience placements in companies, aiming to broaden pupils’ horizons and increase their awareness of education, jobs and working life (with a particular focus on strengthening perceptions of vocational education).
- Pacurar & Marcuta (2023)’s study investigates in a descriptive quantitative case study from Bucharest, Romania, the importance of participation in extracurricular activities organized by centre for career counselling and guidance and behavioural level outcomes related to work-based learning engagement, help-seeking and guidance utilization and identifying and applying for jobs.
- Fox et al. (2023)’s “Career Building Among Formerly Incarcerated College Graduates” shows how a support programme shapes alumni’s job search strategies, employment trajectories and use of networks, highlighting the role of guidance in enabling sustained engagement with work rather than one-off decisions.

**Results-level outcomes.** Only a minority of studies examine results-level outcomes such as educational attainment, employment, earnings or health and wellbeing. When they do, they often rely on administrative or longitudinal data:

- Carson & Reed (2015)’s “Pre-College Career Guidance on Student Persistence and Performance at a Small Private University” finds that the type and quality of pre-college career guidance is significantly related to grade point average, but not clearly to one-year retention, suggesting that guidance may influence academic performance before it translates into persistence.

**Table 3. Outcome Levels, Categories and Number of Studies**

Outcome	N
<b>Panel A: Learning Outcomes (N = 180)</b>	
<i>Self-reported:</i>	
Career management skills	97
Educational choice	44
Self-efficacy / Confidence	80
Attitudes and values towards career learning/planning/knowledge/awareness	128
Academic performance	7
<i>Objectively/externally measured:</i>	
Career management skills	3
Educational choice	1
Career self-efficacy/confidence	0
Attitudes and values toward career learning/planning/knowledge/awareness	0
Academic performance	19
Other	5
<b>Panel B: Behaviour/transfer Outcomes (N = 58)</b>	
Career decision-making	17
Educational choice	19
Dropout	9
Work-based learning engagement	11
Entrepreneurial activities	3
Identifying and applying for jobs	15
Help-seeking or guidance utilization	20
Other	0
<b>Panel C: Results Outcomes (N = 48)</b>	
Educational	34
Employment	15
Economic	7
Society	3
Health and wellbeing	9
Other	0

*Note:* N refers to the number of cases rather than the number of studies, since each study can be assigned multiple outcome labels and therefore contribute more than one case.

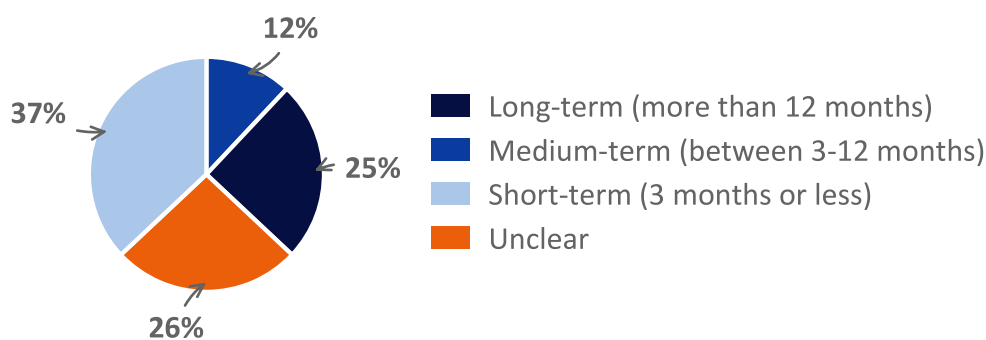
- Salvanes et al. (2019)'s evaluation of PES advisers in secondary schools uses Norwegian register data to study effects on participation in secondary education and inactivity, providing unusually strong evidence on system-level outcomes; outcomes measured at the level of the education/labour-market system (administrative "register status" outcomes), such as whether young people are registered in upper secondary education, work, or as jobseekers with PES (and conversely whether they are inactive/NEET), rather than only individual self-reports (for example, satisfaction, perceptions, intentions).
- Barnes et al. (2022)'s study of a high school career coaching programme in Louisiana, US, uses linked student-level administrative education and crime conviction data to examine results-level outcomes related to educational attainment and youth crime during and after high school.
- Taylor & Hooley (2014)'s study describes a curriculum-based career management intervention in the UK for business school graduates and uses graduate destination survey data to examine employability outcomes, including employment status and access to graduate-level jobs after graduation.

A small number of studies explicitly consider results-level health and wellbeing outcomes, often alongside education and employment. These remain the exception rather than the rule. An example is a study exploring the relationship between young people's experiences of school-based career education, information, advice and guidance at age 14-16 and wider adult outcomes like life satisfaction, employment, education and income at age 21-22 (Moote et al., 2025).

**Time horizon.** The time horizon of outcome measurement is often short (Figure 13; EGM code: "Duration impact"):

- 79 studies report only short-term outcomes (3 months or less);
- 26 report medium-term outcomes (between 3 and 12 months);
- 53 report long-term outcomes (more than 12 months); and
- in 54 studies, the time horizon was unclear.

**Figure 13. Percentage Share of Duration Impacts**



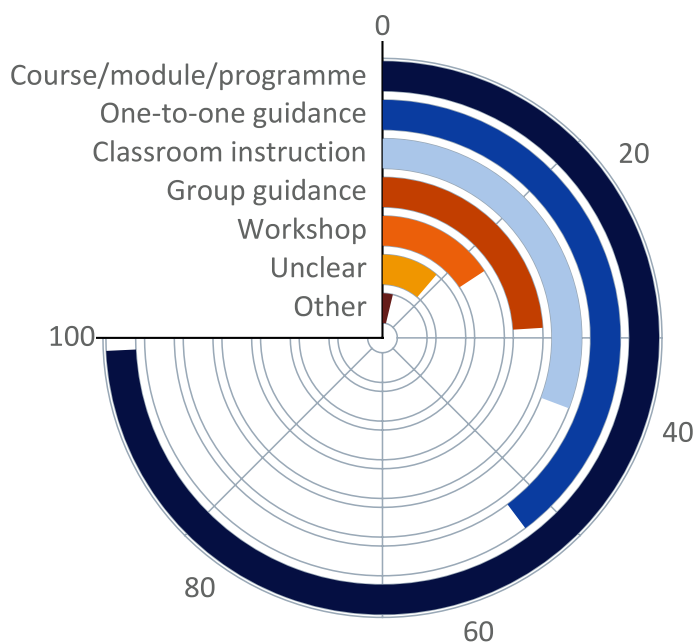
In practice, this means that most of the available evidence concerns short-term, self-reported changes in knowledge, skills and confidence, while evidence on longer-term educational and labour-market trajectories is more limited. For policy questions about dropout, completion, NEET status and stable employment, the available evidence can be promising but still limited.

### 3.2.3. Types of Intervention Programmes

Across the 212 studies, interventions fall into several broad types ([Figure 14](#); EGM code “Intervention format”). The most common formats are:

- Courses, modules or programmes (99 studies): These are often curriculum-embedded or delivered as stand-alone career education units. They may combine information about education and work with reflection exercises, small projects and sometimes guidance elements.
  - A Swiss mixed-methods study examines a school-based career guidance curriculum delivered in lower secondary education and bridge-year courses, focusing on how learners perceive and engage with curriculum-embedded guidance activities (Kamm et al., 2020).
  - A recent study of the Career Start Programme in Bulgaria examines a structured youth employment and career development programme designed to build young people’s work and learning capabilities through integrated guidance, skills development and labour market activation activities (Yakova et al., 2025).
- One-to-one guidance (appears in 53 studies overall, but in only 24 cases does it occur exclusively): These studies examine counselling sessions with school counsellors, career advisors or specialist staff, and are mostly from a tertiary education setting. Examples include:
  - A qualitative French study of job transition counselling interviews analyses one-to-one interactions between clients and counsellors, focusing on how emotions are expressed and managed within counselling interviews (Olry-Louis, 2018).
  - A study of individual career counselling examining one-to-one sessions with university students, analysing how specific counselling components and the working alliance relate to changes in career decision-making difficulties (Milot-Lapoint et al., 2018).
- Workshops (appear in 20 studies overall, but occur exclusively in 13 cases) and group guidance (appears in 32 studies overall, but occurs exclusively in 13 cases): These interventions include group sessions on educational options, labour-market information, skills for career planning, curriculum vitae writing or interview preparation.
  - A German study describes school-based career guidance workshop examines a group intervention designed to prompt reflection on social approval and career choice among secondary school students (Mutlu et al., 2023).
  - A Canadian study evaluates whether after-school career guidance workshops from grades 10 to 12 affect college enrolment, graduation rates, and income in adulthood (Laetitia, 2025).
- Classroom-based career instruction (appear in 41 studies overall, but occur exclusively in 12 cases): Here, career-related content is delivered as part of regular lessons, sometimes as a distinct subject. A 2019 study by Murrah-Hanson et al. investigated a classroom-based career curriculum developed by Georgia 4-H delivering career exploration lessons as part of regular elementary school instruction, integrating career-related content into standard classroom teaching. Outcomes related to knowledge about different professions were investigated using survey data (Murrah-Hanson et al., 2019).

**Figure 14. Frequency of Intervention Format**

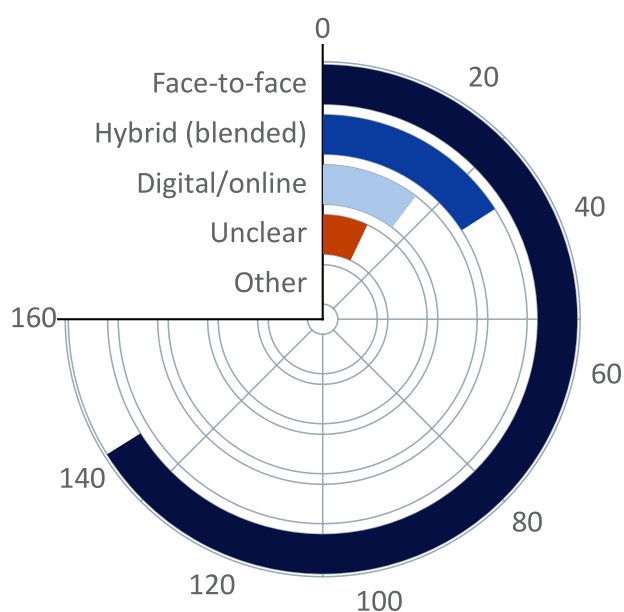


Many programmes are multi-component, combining classroom instruction, individual guidance, group sessions, workplace visits, and sometimes parental involvement. For example, Nordic and UK studies of school-based career education often blend lessons with work experience, mentoring and personal planning.

Delivery mode is still predominantly face-to-face (Figure 15; EGM code: "Delivery mode"):

- 141 studies involve primarily face-to-face delivery;
- 34 describe hybrid/blended formats; and
- 22 focus on digital/online interventions.

**Figure 15. Frequency of Delivery Mode**



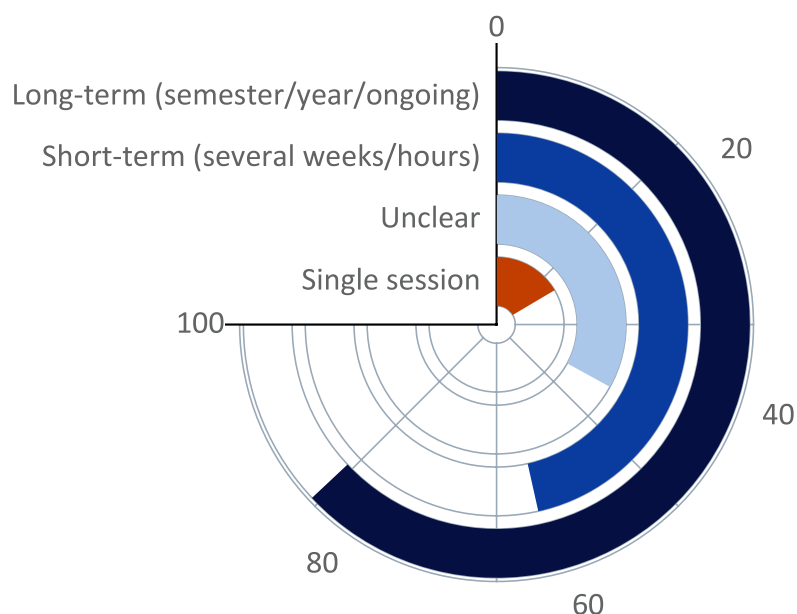
Digital and hybrid interventions were diverse. They include:

- Serious games and interactive tools, such as game-based environments where young people explore occupations and pathways (for example, the “Like 2 be” serious game study (Keller et al., 2023)).
- Online information resources and portals, which may be used with or without guided support. Pallin’s (2024) study explores whether rural youths’ use of online information about education and work widens horizons or reproduces inequalities.
- Emerging use of AI to support guidance processes, as discussed in Westman et al. (2021)’s “Artificial Intelligence for Career Guidance”, which is mainly descriptive but illustrates how quickly practice expectations are moving.

Intervention duration varied widely (Figure 16; EGM code: “Intervention duration”):

- Long-term programmes (semester, year or ongoing) are coded in 84 studies.
- Short-term interventions (several weeks or hours) appear in 62 studies.
- Single-session interventions are less common but still present (22 studies).
- For 44 studies, duration was unclear.

**Figure 16. Frequency of Intervention Duration**



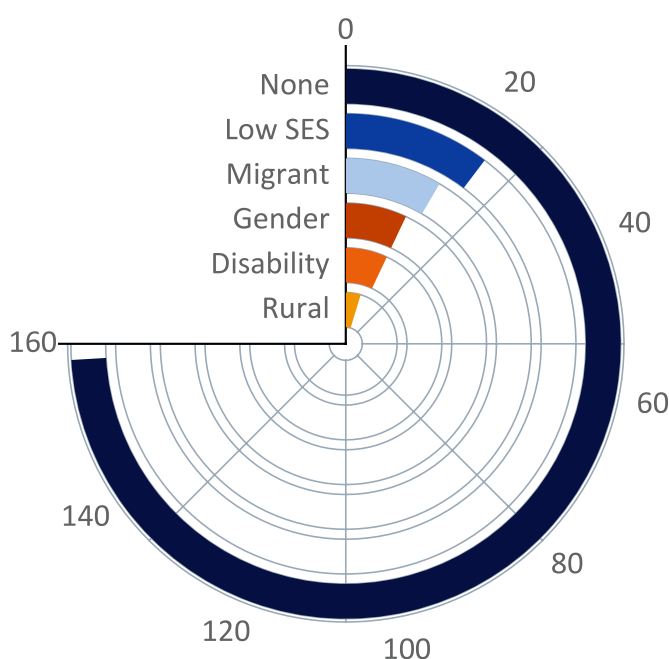
Some patterns in the literature suggest that multi-component and more sustained interventions are more commonly studied in relation to outcomes than isolated, one-off activities. For example, “The Career-related Programme (CP)” (Mack et al., 2019) and “JOBS - Job Orientation. Training in business and schools” (David et al., 2022) both report benefits (higher education enrolment and enhancing students’ knowledge and skills useful in career decisions) from structured, multi-session programmes. But because designs and contexts differ, and because detailed information on intensity is often missing, direct comparisons between “light-touch” and intensive models remain limited.

### 3.2.4. Equity Dimensions and Target Groups

The review also examined the extent to which studies explicitly address equity and target specific groups. Here, the evidence base is notably thin.

In 158 of the 212 studies (around three quarters), there is no indication of a specific demographic focus (Figure 17; EGM code: “Demographic focus”): interventions are designed and analysed as if they apply equally to all learners, and outcomes are rarely broken down systematically by socio-economic background, migrant status, gender, disability or geography. The remaining studies include at least one equity-relevant focus, and because some studies address more than one group, the equity codes sum to more than 212. Across the dataset, low socio-economic status is coded in 22 studies, migrant or ethnic minority background in 18, disability in 15, gender in 15, and rural or remote youth in 10.

**Figure 17. Frequency of Demographic Focus**



Where equity dimensions are foregrounded, low SES or disadvantage is a recurring concern. Studies such as Cho & Ham (2022) show that the relationship between family SES and occupational aspirations is strong, and that different school-based career guidance approaches (for example, “addition” versus “infusion”) relate differently to the aspiration gap. Another study uses longitudinal data from Australia to examine how socio-economic background shapes students’ likelihood of university enrolment, with particular attention to how school factors and career guidance influence participation among students from low socio-economic backgrounds (Tomaszewski et al., 2017). Furthermore, Bettinger and Evan (2019)’s “College Guidance for All” specifically targets low-income and underrepresented students in US high schools and finds that a near-peer advising model has positive impacts for low-income and Hispanic students, even when average effects are modest. Taken together, these studies suggest that guidance can contribute to reducing SES-related gaps, but they also underline how dependent such effects are on design and context.

A smaller group of studies focuses on ethnicity, migrant background or Indigenous status. Italian work on immigrant children's educational careers (for example, "Goals and Gaps Educational Careers of Immigrant Children", Carlana et al., 2022) examines how counselling and support relate to goal setting and trajectories, highlighting how guidance can help navigate complex pathways for students who may lack country-specific knowledge or networks. Ivanich et al. (2022) focus on Native American early-career researchers, designing an early career development programme to increase research leadership and examining its impact on employment, research productivity and leadership roles. These studies show how guidance and career development can be tailored to address the specific barriers faced by minority and Indigenous groups, but they are relatively few.

Disability is another important but under-represented focus. Fifteen studies in the dataset explicitly address learners or young adults with disabilities. "Paths 2 the Future" is described in two US studies (Lindstrom et al., 2018; 2020). This intervention targets young women with disabilities, explicitly combining gender and disability, and demonstrates significant improvements in career-related self-determination, knowledge and self-efficacy following a structured group-based curriculum. Another study from the US uses a longitudinal, randomised design to examine how a mentoring intervention affects career-related outcomes and employment transitions among college students with visual impairments as they move from higher education into the labour market (O'Malley & Antonelli, 2016). These examples illustrate that tailored interventions have been studied in relation to agency and preparedness for transition among young people with disabilities, but the small number of studies and their diversity limit the ability to draw general conclusions.

Gender is foregrounded in 15 studies, often in relation to occupational segregation or participation in STEM fields. Some interventions aim to broaden girls' and young women's perceptions of STEM careers or to counter gendered expectations in programme choice. A quasi-experimental study for the UK evaluates a short, classroom-based STEM careers intervention for 13-14-year-old girls, examining how the programme influences career-related understanding and aspirations in the context of gendered participation in STEM (Archer et al., 2014), while other studies embed gender analysis within broader evaluations of school-based guidance activities. Overall, however, gender is more often treated as a control variable than as a central lens for design and analysis.

The dataset also includes 10 studies on rural or remote youth. Pallin's (2024) study of rural youths' use of online information resources about education and work shows that while digital tools can broaden horizons, they may also reinforce social inequalities when access to support in interpreting and using information differs between young people. This highlights how geography can intersect with digitalisation and social capital to shape who benefits from guidance and information.

Finally, a small set of studies focuses on other vulnerable groups, such as early school leavers, young people at high risk of dropout or NEET status, or those with experience of imprisonment. The Norwegian *Elevskap mot frafall i videregående skole* blends school-based activities with guidance and close follow-up to support persistence in secondary education (Thunberg & Andreassen, 2017). Fox et al. (2023)'s study of formerly incarcerated college graduates examines a group facing multiple barriers to stable employment and progression and shows how integrated academic and career support can contribute to better outcomes and more sustainable trajectories.

It is important to note how rare intersectional approaches remain. Only a handful of studies are explicitly designed around intersecting dimensions. For example, young women with disabilities

in “Paths 2 the Future,” or interventions that simultaneously consider gender, SES and migrant background. Most evaluations do not analyse whether interventions work differently for subgroups, even when such analyses would be possible in principle. Subgroup analyses are often limited, exploratory or absent altogether.

### 3.3. Identified Knowledge Gaps

The mapping above highlights several systematic gaps in the evidence base, which are particularly important for system-level decisions.

1. *Geographic and linguistic gaps.* The literature is dominated by English-speaking countries, especially the US, and by English-language publications. Only 18 studies are set in Nordic countries, and just seven in Norway. While Norwegian and Nordic studies such as *Tverrsektorielt samarbeid i skolen*, *Elevskap mot frafall* and Pallin (2024)'s work on rural youth provide valuable insights, they are too few to draw firm conclusions about “what works” in a Nordic context. This calls for: (1) more research evaluating Norwegian initiatives and (2) Nordic collaboration that can produce comparative evidence aligned with shared welfare and education models.
2. *Setting gaps: primary, adult and workplace-based learning.* Evidence on early career learning in primary school is limited to a handful of studies like Emembolu et al. (2020). There is also relatively little systematic research on guidance in adult basic education, continuing education and workplace training, even though these are crucial for reskilling, upskilling and inclusion.
3. *Methodological gaps and causal evidence.* Although the number of quasi-experimental and experimental studies is growing, non-experimental designs still predominate. As a result:
  - strong causal claims about “what works” can only be made for a limited set of interventions, often in specific countries and sectors;
  - studies like “College Guidance for All,” “Paths 2 the Future” and the PES adviser evaluation show what is possible when stronger designs and administrative data are used, but they are still the exception.

In countries like Norway, where high-quality register data are available, there is potential to link participation in guidance to long-term educational and labour-market outcomes, yet such studies are currently rare.

4. *Outcome gaps in behaviour, long-term results, and wellbeing.* The focus on self-reported learning outcomes leaves behavioural changes and results-level outcomes under-examined. For a policy agenda centred on dropout prevention, completion, NEET reduction and labour-market integration, more studies need to:
  - track outcomes over several years;
  - use register and administrative data where possible; and
  - include employment, income and wellbeing alongside educational outcomes.

The few studies that do this, such as those linking pre-college guidance to grade point average and enrolment, or PES advisers to participation and inactivity, illustrate the kind of evidence that would be particularly valuable to expand.

5. *Digital and hybrid guidance.* Digital tools and hybrid models are now central to practice, ranging from online information resources to AI-assisted systems, yet the evaluation evidence lags. We have:

- some studies on serious games and online tools,
- Pallin (2024)'s work on rural youths' use of online information, and descriptive analyses of practitioners' views on AI in guidance (Westman et al., 2021).

But systematic, comparative evaluations of which combinations of digital and face-to-face components work best, for whom, and under which conditions remain rare. Questions of accessibility, digital divides and cost-effectiveness are only beginning to be addressed.

6. *Equity and intersectionality.* While many policy documents position guidance as a tool to tackle inequality, most empirical studies are not designed primarily to answer equity questions. There is a need for studies of:

- interventions that are explicitly targeted at particular groups and
- evaluations that test differential effects by SES, migrant background, gender, disability and geography.

Intersectional approaches, for example focusing on rural, low-SES migrant youth, or young women with disabilities, are especially scarce beyond a few examples like "Paths 2 the Future."

7. *Implementation, system conditions and scalability.* Finally, many studies report relatively little about how interventions are implemented in practice, including staffing, resources, training, collaboration between actors, and integration into broader school or institutional strategies. Because this scoping review maps the outcomes examined in the literature rather than evaluating effectiveness, the findings do not support conclusions about which interventions "work best". Nevertheless, limited reporting on implementation constrains what can be learned even from the outcomes that are reported, and it makes it difficult for policymakers and practitioners to assess:

- which models are scalable and sustainable, and
- what kinds of system conditions (funding, governance, professional development) are needed to achieve similar outcomes elsewhere.

Future effectiveness-focused reviews and primary evaluations would therefore benefit from more systematic reporting and analysis of implementation features and resource use, ideally linking implementation quality and costs to outcomes (for example, through process evaluations and cost-effectiveness analyses). This would be particularly valuable in a Norwegian context where authorities must balance ambition with finite resources.

## 4 Discussion

This systematic scoping review has mapped the volume, nature and characteristics of empirical research on career guidance and career learning interventions from 2014 to April 2025. The picture that emerges is of a vibrant but uneven field: there is now growing body of research that describes that school- and education-linked career guidance and career learning can make a difference, but the evidence is concentrated in particular countries, sectors and types of outcomes. For a Norwegian policy audience, these gaps are not just academic, they shape how far existing evidence can be used for system-level decisions, and where new knowledge needs to be generated under Norwegian conditions.

### 4.1. Geography and Transferability

Internationally, the message from the literature is clear: research on career guidance has become an increasingly prominent topic in the literature. Yet the evidence base is heavily dominated by English-speaking countries, particularly the US, with almost all publications in English. Norwegian and Nordic studies make up only a small fraction of the total.

This creates additional transferability challenges within the included literature. Much of the US and UK literature reflects systems with:

- high tuition fees and strong stratification in higher education;
- more market-oriented provision; and
- weaker welfare safety nets and less comprehensive vocation, education and training systems.

By contrast, Norway operates within a Nordic welfare and education model: tuition-free education, a strong vocation, education and training sector, extensive social protection, and a formal duty to provide guidance in school. Key Norwegian challenges may include:

- retaining students in vocational education and training;
- ensuring parity of esteem between academic and vocational pathways;
- supporting young people with migrant backgrounds and other vulnerable groups;
- coordinating guidance across education, welfare and labour-market institutions; and
- ensuring that people develop the competencies needed for working life and active participation in society (including smoother transitions from higher education to work).

Studies like “College Guidance for All” and other US RCTs provide useful lessons about design, implementation and evaluation, but they do so in a system where the stakes, incentives and constraints are very different. Norwegian register-based work on PES advisers in secondary schools, and practice-oriented interventions such as *Elevskap mot frafall*, show that strong evaluations are possible in a Nordic context, but they are still rare.

The implication is that Norway can learn from international models but cannot simply import them directly. A stronger Norwegian and Nordic evidence base is needed, as existing research provides limited insight into how career guidance is addressed across different groups and settings in contexts comparable to our own.

## 4.2. Settings: Where Guidance is Studied and Where It is Not

The literature speaks most loudly about upper secondary and tertiary education, often at key decision points such as programme choice or entry into higher education. This is understandable as these transitions are highly visible and relatively easy to study. However, Norwegian policy frames guidance as lifelong and life wide. From that perspective, the evidence is much thinner in three arenas that matter greatly:

- *Primary education.* Only a handful of studies examine early career learning in primary school. They suggest that sustained, age-appropriate activities may broaden children's horizons and challenge stereotypes, but such work is exceptional rather than routine.
- *Adult education.* There is limited systematic research on guidance in adult basic education, continuing education and reskilling programmes, despite their centrality to lifelong learning, integration and labour-market inclusion.
- *Workplace-based learning.* Apprenticeships, work-based learning and workplace training feature in some interventions, but not as often as the primary focus of research.

For Norway, this is a significant blind spot. Policy documents emphasise early intervention, reskilling and support for adults and workers in transition, but the evaluation literature lags these ambitions (see, for example, NOU 2019:12 *Lærekraftig utvikling: Livslang læring for omstilling og konkurranseevne* and Meld. St. 21 (2020–2021) *Fullføringsreformen - med åpne dører til verden og fremtiden*). The risk is that important parts of the guidance system remain weakly evidenced, even as resources and expectations increase.

## 4.3. Methods and Strengths of Causal Evidence

Another recurring theme is methodological. The field has moved beyond purely descriptive work: there are now quasi-experimental and experimental studies, including RCTs of school-based programmes and evaluations that use administrative data. These provide more solid grounds for causal inference. However, non-experimental designs still predominate. Cross-sectional surveys, qualitative case studies and simple pre-post evaluations are valuable for mapping practice and generating hypotheses, but they provide limited grounds for strong claims about "what works", especially when:

- interventions are relatively low intensity;
- outcomes are influenced by multiple factors in education, labour markets and welfare systems; and
- participants self-select into programmes.

In a data-rich country like Norway, this represents a missed opportunity. High-quality registers make it possible to link participation in guidance and career learning to:

- completion and time-to-degree;
- NEET status and inactivity; or
- employment trajectories and earnings.

Yet such studies are still rare. This means that Norwegian policy debates often lean heavily on plausible theories of change and positive feedback from participants, rather than on robust evidence of long-term impact.

Even in a data-rich country like Norway, it can be difficult to pin down the independent effect of career guidance. Guidance is rarely a stand-alone service: it is typically delivered alongside follow-up by schools, counselling, welfare measures, mentoring, and employer contact. At the same time, young people's outcomes are affected by changes in education policy, local labour-market conditions, and other support they receive. A further complication is that take-up is not random. Those who seek out guidance (or are referred to it) often differ from other young people in motivation, prior attainment, wellbeing, or the barriers they face. Without careful design, register studies can therefore confuse the effects of guidance with the effects of the wider package of support and the characteristics of the young people who receive it.

There are, however, practical ways to strengthen the evidence base. RCTs and well-designed quasi-experiments are most feasible when the intervention is clearly defined, delivered in a consistent way, and implemented with rules that create fair comparison groups. In trials, the most policy-relevant estimate is often the effect of being offered guidance (for example, a structured programme in school), because in real-world settings guidance cannot be forced and some eligible young people will not participate. This means that trial results may understate the benefit for those who actually engage; but they provide a realistic picture of what happens when provision is expanded. Stronger studies are therefore most likely for structured components such as class-based career learning modules, scheduled guidance linked to key transition points, or standardised digital tools rolled out by cohort, school or municipality.

A related limitation concerns our own coding of intervention characteristics. Because primary studies often report delivery mode, format and duration only sparsely and ambiguously, we adopted a deliberately parsimonious coding framework. This improves feasibility and reliability, but it also means that:

- some multi-component interventions are inevitably simplified;
- differences in intensity within the same "duration" category (short-term vs long-term) are not fully captured; and
- borderline distinctions (for example between knowledge and skill outcomes) are hard to make consistently.

The typologies in this review should therefore be read as capturing broad patterns, not fine-grained distinctions. More detailed synthesis will only be possible if primary studies adopt clearer and more standardised reporting on intervention content, intensity and implementation.

#### **4.4. Outcomes: From Confidence to Consequences**

Most of the literature focuses on self-reported learning outcomes: knowledge, awareness, attitudes, self-efficacy and perceived career readiness. These are important. People need to:

- understand their options;
- feel capable of making choices; and
- see a connection between education, work and their own lives.

But a strong reliance on self-reported confidence gives rise to what we might call a "confidence trap". Many interventions show increases in confidence or perceived readiness, yet:

- behavioural outcomes (such as actual educational choices, persistence, use of guidance services or engagement in work-based learning) are less often measured; and
- results-level outcomes (such as completion, NEET status, employment, earnings or health and wellbeing) are rarer still, and usually tracked over short periods.

A further reason to be cautious about the “confidence trap” is that many of these outcomes are measured through self-reports, which come with well-known limitations (Duckworth & Yeager, 2015). People may interpret scale items differently, answer in ways they believe are expected (social desirability and demand effects), or shift their internal standards over time as they learn more; so an apparent gain in “readiness” can sometimes reflect changing frames of reference rather than a real change in capability. Self-reports can also be weakly aligned with observed behaviour and longer-term administrative outcomes, particularly when interventions are short and follow-up windows are limited. For these reasons, self-reported confidence and readiness are useful but should be triangulated with behavioural indicators and “hard” outcomes (for example, course choices, persistence, service use, completion, and employment registers) wherever possible.

From a policy perspective, this is a serious limitation. Norwegian authorities are not investing in guidance for its own sake, but because they expect it to contribute to:

- reduced dropout and exclusion;
- higher completion and progression;
- more successful and sustainable transitions into work and further learning; and
- better health and wellbeing, particularly for vulnerable groups.

Without more longitudinal data linking interventions to “hard” outcomes, it remains difficult to judge the return on investment of large-scale public funding for guidance and career learning, or to compare the impact of different models.

#### **4.5. Digital and Hybrid Guidance: Promise Ahead of Proof**

In practice, digital and hybrid modes of guidance are now integral to many systems, including Norway’s. Online information resources, e-guidance, chat and video counselling, serious games and early uses of AI-supported tools are increasingly common.

The research literature has begun to respond, but practice is ahead of evidence. Existing studies suggest that digital tools may:

- increase access to information;
- support self-exploration and reflection; and
- make guidance more flexible and scalable.

However, we know much less about:

- which combinations of digital and face-to-face components are most effective;
- how digital guidance works for different groups, including those with low digital competence;
- whether digitalisation reduces or reinforces existing inequalities; and
- the cost-effectiveness of different digital models.

In a Norwegian context with generally strong digital infrastructure, it is easy to assume that digitalisation is automatically an equity gain. The literature so far suggests that this is not guaranteed: without careful design and monitoring, digital tools can just as easily mirror or magnify existing social divides.

#### **4.6. Equity and Intersectionality: An Underdeveloped Evidence Base**

Policy documents in Norway and internationally often present guidance as a key tool for promoting equity and social mobility. In principle, this is plausible: targeted, high-quality guidance could help people with fewer resources to navigate complex systems and make informed choices. In practice, however, most empirical studies are not designed primarily to answer equity questions. Many:

- treat participants as a homogeneous group;
- report average effects and do not disaggregate by SES, migrant background, gender, disability or geography; and
- lack intersectional analyses that consider overlapping disadvantages.

The relatively small number of equity-focused studies (for example, on low-SES students' aspirations, on young women with disabilities, on Indigenous researchers, or on rural youth's use of online resources) often suggest that targeted and intensive support may be especially beneficial.

#### **4.7. Overall Assessment**

Taken together, the evidence base for career guidance and career learning interventions is substantial but uneven. The literature mapped in this systematic scoping review has described that:

- structured, curriculum-embedded programmes;
- accessible guidance services; and
- and well-designed interventions;

may improve students' confidence, awareness and self-reported career competence, and can support educational transitions. We know less about:

- long-term behavioural changes and societal outcomes;
- distributional effects on marginalised groups; and
- and implementation conditions in Nordic welfare states.

For Norway, this means that international research offers a strong starting point, but not a complete guide.

#### **4.8. Strengths and Limitations of This Scoping Review**

This report provides a structured mapping of empirical studies on career guidance and career learning interventions in educational settings and at key transition points. As with any scoping review, the findings should be interpreted considering both strengths and limitations.

*Strengths.* A key strength of the review is its systematic and transparent approach: the scope, eligibility criteria and coding framework were specified in advance, and studies were identified through structured searches in major international databases (Scopus, Web of Science and ERIC), complemented by Nordic sources (Oria, DiVA and forskningsportal.dk). The review also covers an 11-year period (2014–April 2025), capturing a substantial body of recent research, including work published after major policy developments in Norway and other countries. In addition, the review applies a consistent coding framework across studies, enabling a comparative overview of intervention types, settings, target groups and outcomes. Finally, the accompanying EGM strengthens usability by allowing readers to explore the included studies directly by coded variables and to identify concentrations and gaps in the literature.

*Limitations.* First, the mapping is shaped by scope choices. We limited inclusion to studies published between January 2014 and April 2025, written in English or Scandinavian languages, and conducted in Europe, North America and Oceania. These criteria support feasibility and comparability across contexts, but they also mean that relevant studies outside these time, language and geographical boundaries are not represented. Second, although the search strategy was systematic, it was not exhaustive. We did not undertake additional systematic hand-searching of specific journals or comprehensive citation chasing, so some relevant studies, particularly those less well indexed, may have been missed. Third, publication-type restrictions may have excluded relevant evidence. We included peer-reviewed journal articles and selected grey literature (formal reports), but excluded theses, conference proceedings, books and book chapters to keep the scope manageable and prioritise more consistently reported sources. This may under-represent emerging work and research traditions where relevant studies are more often published in dissertations or commissioned outputs. Such publication-type restrictions may be consequential in contexts where a substantial share of career guidance research is produced through, for example, doctoral dissertations. Fourth, because this is a scoping review, it does not support strong conclusions about effectiveness. We did not conduct formal critical appraisal or risk-of-bias assessment, and the review therefore describes what has been studied, where, for whom, and which outcomes are examined; not which interventions are most effective. Finally, the mapping relies on what primary studies report. Many studies provide limited detail about intervention content, intensity and implementation, measurement tools and follow-up periods, which constrains how precisely interventions and outcomes can be compared. Some classification uncertainty is therefore unavoidable in a heterogeneous and variably reported literature.

## 5. Implications for Norwegian Policy and Practice

The findings of this review point towards a dual strategy that Norwegian authorities and providers of guidance could consider, on the one hand, drawing on practices that are prominent in the international literature, and on the other hand, building a stronger Norwegian evidence base that speaks directly to the gaps identified. These implications should be understood as reflections on the state of knowledge and gaps in understanding, rather than as evidence-based recommendations for specific measures or effects.

First, the review is consistent with continued investment in curriculum-embedded career learning (see section 3.2.3). Across countries, international studies often highlight that programmes integrated into everyday teaching and learning over time are intended to foster more meaningful and lasting changes in young people's knowledge, skills and confidence than isolated events such as career days or fairs. While this review does not provide a head-to-head effectiveness comparison between embedded and one-off activities, the mapped interventions and examples suggest that more sustained, curriculum-linked approaches are a central strand in the international evidence base. Norway has already taken steps in this direction through curriculum reforms that emphasise career learning in lower and upper secondary education. Against this backdrop, it may be useful to ensure that career learning remains visible in curricula and guidance documents, and that schools have sufficient time, competence, resources and organisational support to develop coherent programmes rather than relying on fragmented, ad hoc activities. Assessment practices and school priorities are also likely to matter; if career learning is perceived as something that comes "on top of" the core business of schooling, it may struggle to secure the space and continuity that the international evidence base suggests it requires.

Second, the limited number of Norwegian studies draws attention to the role of evaluation in policy development. The review shows that most empirical work is conducted outside the Nordic region, and that long-term outcomes are rarely reported. When new models for guidance, digital tools, county career centres or cross-sector collaborations are introduced, it may therefore be advantageous to plan evaluation as part of policy and programme design from the beginning rather than as an optional extra added late in the process. Norway's high-quality administrative data, including education registers, PES data and Statistics Norway databases, offers a notable opportunity to track outcomes such as completion, time-to-degree, NEET status, labour-market integration and earnings over time. Realising this potential would require systematic partnerships between researchers, school owners, PES, county authorities and HK-dir, so that evaluations are both methodologically robust and focused on questions that are meaningful for practice. If used strategically, these data can help move the debate from "we think this helps" towards "we know under which conditions this appears to make a difference."

Third, given the strong equity orientation of Norwegian education policy, the review suggests that there is scope to align equity ambitions more closely with evidence generation. Most existing studies do not systematically analyse distributional effects, and intersectional perspectives are rare. In this light, interventions that are intended to support particular groups (for example, students with low SES, young people with migrant backgrounds, students with disabilities or youth in rural and remote areas) could be designed with explicit equity goals and a clear theory of change and evaluated with subgroup analyses in mind. Evaluations that report outcomes

for relevant subgroups and examine whether interventions have different effects for different groups, including possible unintended consequences, would make it easier to judge whether resources are being used in ways that contribute to reducing inequalities or whether they mostly benefit those who were already relatively advantaged (Matthew effect). In practice, this suggests that universal guidance provision may need to be combined with more intensive support for those who have the least family, social or economic resources to navigate education and work, if equity-oriented goals are to be realised.

This should also be understood in light of Norway's strong tradition of universal services. In many policy areas, there is resistance to narrowly targeted measures because they can be stigmatising, administratively complex and politically contested. In career guidance, the implication is therefore not necessarily to replace universal provision with group-specific programmes, but to strengthen equity within a universal model; for example by ensuring that all pupils receive a baseline offer, while additional time, follow-up and tailored support are provided on the basis of need and at key transition points. Framed this way, equity-sensitive design is compatible with universalism and helps reduce the risk that the main gains accrue to those who already have the strongest family and social resources.

For schools and other providers, the review highlights that many of the evaluated interventions are multi-component rather than stand-alone activities. It is common for programmes to combine classroom-based activities with work-based learning opportunities, individual guidance and, in some cases, collaboration with parents or guardians. Classroom and group-based activities are frequently used to build a basic level of career competence for all students, while one-to-one guidance is often targeted at key decision points or offered to students with more complex needs or an elevated risk of dropout. Although this scoping review does not compare the effectiveness of multi-component programmes with isolated, one-off interventions, the way interventions are designed and described in the literature suggests that practitioners and researchers tend to view more integrated and sustained approaches as better aligned with their aims. In the Norwegian context, this raises practical questions for providers rather than prescribing particular solutions: does every student encounter a coherent sequence of career learning activities over time? Is there sufficient capacity for individual follow-up of those who need more support? And is guidance anchored in the school's overall strategy, or is it dependent on a few enthusiastic individuals?

Digital tools are likely to play an increasingly important role in Norwegian guidance and career learning. The studies included in this review suggest that digital resources may expand access to information, support self-exploration and make guidance more flexible. At the same time, they also indicate that human support remains crucial, especially for students facing complex decisions or limited social and cultural capital. For policy and practice, this points to the option of understanding digital tools as part of broader guidance strategies rather than as substitutes for human interaction. It may be useful to monitor who actually uses digital offers and who does not, whether digitalisation appears to reduce or reproduce existing inequalities, and how digital and face-to-face elements can be combined in ways that are both effective and cost-effective. This, in turn, suggests the value of evaluation designs that look beyond user satisfaction and examine patterns of use, outcomes and distributional effects.

Looking ahead, the review points to several priorities for future Norwegian research. Early career learning in primary and lower secondary education could be developed and examined more systematically, especially when it comes to interventions that broaden horizons and counteract stereotypes without narrowing choices prematurely. Although there are few formalised career guidance interventions or programmes in Norwegian primary education, research indicates that a range of existing school activities may have the potential to contribute to career learning when practitioners adopt a career guidance perspective and actively utilise these opportunities (Mordal et al., 2018; Mordal et al., 2020). Guidance and support for vulnerable groups, including those at risk of dropout, exclusion or NEET status, would benefit from evaluations that follow young people over time and consider outcomes in education, employment and wellbeing. Transitions into vocational education and training, apprenticeships and work remain central in the Norwegian system, yet guidance within these pathways is still under-researched in the international literature and only sparsely researched in Norway. Digital and hybrid models of guidance also warrant closer examination, including issues of accessibility, quality and cost-effectiveness. Across all these areas, research that links implementation quality, staff competence, collaboration between actors and resource allocation to outcomes could provide particularly valuable insights for system development.

Taken together, the findings suggest that Norway can reasonably build on a broadly supportive international evidence base, while recognising its limits. The existing literature offers a strong general rationale for sustained attention to career guidance and career learning and provides concrete pointers about the role of structured, curriculum-embedded programmes and accessible guidance services. At the same time, key questions about long-term impact, equity, digitalisation and system design cannot be answered by international evidence alone. By integrating evaluation more systematically into policy and practice, using existing data sources more strategically and designing interventions with equity and long-term outcomes in mind, Norwegian authorities and providers can develop a more robust foundation for decisions about how to organise and resource career guidance and career learning in the years ahead.

It is also important to underline that career guidance and career learning interventions can be seen as one set of tools within a wider policy mix. Long-term outcomes such as completion, NEET status and labour-market integration are also shaped by financial aid systems, curriculum, teaching quality, apprenticeship opportunities and labour-market and welfare policies. This review does not compare the impact or cost-effectiveness of guidance with these other factors that affect pupils. Rather, it maps what is known about guidance and career learning as policy tools in their own right and identifies how the evidence on these tools can be strengthened and used alongside other measures in a comprehensive strategy to support people's transitions.

## 6. Conclusion

This systematic scoping review has mapped recent empirical research on career guidance and career learning interventions in educational settings and transitions and considered its relevance for the Norwegian education and welfare context. The 212 included studies indicate that career guidance and career learning form a substantial and growing field of research internationally. Across diverse countries, sectors, and target groups, the literature highlights that structured, curriculum-embedded programmes and accessible guidance services are frequently examined in relation to young people's knowledge, career management skills, and confidence in educational and career decision-making. There are also studies indicating that such interventions can support smoother transitions between educational levels and into work and, in some cases, are linked to improved educational outcomes such as attainment and progression.

At the same time, the review makes it clear that the evidence base is uneven and characterised by important blind spots. Empirical work is heavily dominated by English-speaking countries, especially the US, and focuses largely on short-term, self-reported learning outcomes. Long-term behavioural and societal outcomes (such as completion, NEET status, labour-market integration and health and wellbeing) are less frequently examined, and equity dimensions are often treated as secondary rather than central to evaluation design. Primary education, adult education and workplace learning are under-represented, despite their prominence in lifelong learning policy. Research on digital and hybrid models of guidance is growing but still lags practice, and implementation quality, staff competence, organisational conditions and cost-effectiveness are only sporadically documented.

For Norway, the main message is therefore double-edged. On the one hand, the international literature provides a solid general rationale for continued attention to career guidance and career learning. It is consistent with an ongoing emphasis on integration into curricula, the development of multi-component programmes that combine different forms of support, and the provision of accessible services across educational levels. On the other hand, Norwegian authorities cannot rely solely on evidence generated in systems that differ markedly from a Nordic welfare state with comprehensive schooling, a strong vocation and training sector and an extensive welfare safety net.

If career guidance and career learning are to function as key instruments for reducing dropout, preventing exclusion and promoting equitable, sustainable transitions into further education and work, the interventions will need to be designed, implemented and evaluated under Norwegian conditions. This points towards a dual strategy for HK-dir and the Norwegian Ministry of Education and Research. Existing international and national evidence can be used actively to inform policy and practice, but with careful attention to contextual differences and needs for adaptation. At the same time, there is a strong case for investing in a new generation of research that make systematic use of the country's rich register data and research capacity, integrate evaluation into major initiatives from the outset, follow learners over longer periods and place equity questions at the centre of analysis.

By moving in this direction, Norway can go beyond a reliance on satisfaction measures and short-term confidence gains towards more robust evidence of impact on educational trajectories,

labour-market outcomes and social inequalities. In the longer term, a stronger Norwegian evidence base will not only support national decision-making but also position the Norwegian guidance system as a visible contributor to international knowledge on how career guidance and career learning can help build a more inclusive and skilled society.

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## Appendices

## A. Full Electronic Search Strategy for Scopus

Below, we present the full electronic search strategy for Scopus,

```
TITLE-ABS-KEY(("career* service*" OR "lifelong guid*" OR "education* guid*" OR "career* advis*" OR "career* education*" OR "career* guid*" OR "career* counsel*" OR "career* orient*" OR "vocation* counsel*" OR "vocation* guid*" OR "vocation* orient*" OR "guidance counsel*" OR "employment counsel*" OR "employment guid*" OR "employment orient*" OR "career* development education" OR "career* development intervention*" OR "career* development course*" OR "career* development training" OR "career* development activit*" OR "career* development class*" OR "career* development workshop*" OR "career* development program*" OR "career* development initiative*" OR "career* development lecture*" OR "career* development practic*" OR "career* development curricular*" OR "career* development curri*" OR "career* learning" OR "career* management skill*") AND ("student*" OR "pupil*" OR "youth*" OR "teen*" OR "child*" OR "adolescen*" OR "learner*" OR "school leaver*" OR "dropout*" OR "pushout*" OR "graduat*" OR "young adult*" OR "adult learner*" OR "gap year" OR "NEET*" OR "not in education" OR "not in employment" OR "unemployed" OR "jobseeker*" OR "job seeker*" OR "refugee*" OR "immigrant*" OR "on benefits" OR "sick leave" OR "disab*" OR "inactive population"))
```

In addition to the search string, we applied the following limits using the database's filtering functions: (1) we restricted records to publications from 2014 onwards; (2) we limited the results to items indexed as "Article" or "Report"; and (3) we restricted the language of publication to English, Norwegian, Danish, or Swedish.

## B. Technical Details of the AI-Assisted Study Coder

This appendix describes the technical set-up of the AI-assisted study coder used in the data extraction phase of the review. The purpose of using AI as a second coder was to strengthen data quality assurance, support consistent application of the coding manual across a large number of studies, and create a transparent audit trail from each coded variable back to the underlying text. The AI system was used only after studies had already been included by human reviewers. It did not decide which studies were included in the review, nor did it replace human judgement.

### B.1. The Overall Role in the Review

The AI system, referred to here as the AI-assisted study coder, is a Python-based tool designed to read full-text PDF articles and assign codes to specific variables in our data extraction form. For each included study:

1. A human reviewer completed the data extraction form.
2. The AI tool independently read the same article and produced its own set of codes for the same variables, based on the same coding rules.
3. The human and AI codes were compared. Any differences were flagged.
4. A human coder then reviewed all flagged differences, checked the underlying text and decided on the final code.

In this way, the AI tool functioned as a structured quality control mechanism: it systematically challenged the human coding and helped identify possible inconsistencies, oversights or ambiguities. The final dataset used in the analysis is therefore the result of human-AI collaboration, with humans retaining full control over the final decisions.

### B.2. From PDFs to Structured Data: How the Tool Works

At a high level, the AI-assisted study coder performs the following steps for each included PDF article:

1. Text extraction with page markers
  - a. The tool reads the PDF (up to 100 pages per article) and extracts the text using a specialized Python library.
  - b. Each page is marked with a simple label such as "Page 1", "Page 2", and so on. These markers later allow the AI to say *where* in the article the evidence for a code was found.

## 2. Handling short and long articles

- a. If the extracted text is relatively short, the AI sees the full article text at once for each variable it is coding.
- b. If the article is very long, the text is automatically split into overlapping sections of manageable size. The AI then codes each section separately and the tool combines these section-level results into a single judgement per variable.

## 3. Applying the codebook to each article

- a. The tool loads all coding instructions from a set of YAML (Yet Another Markup Language) codebooks (see Section B.3).
- b. For each variable (for example, “educational setting”, “delivery mode”, “outcome level”), the tool builds a tailored instruction for the AI, based strictly on the relevant codebook.

## 4. Producing an auditable output

- a. For each article and each variable, the tool saves a structured JSON file containing:
  - i. The chosen code (label)
  - ii. A confidence score
  - iii. Short excerpts from the article that support the code (“evidence spans”)
  - iv. Any additional details (for example, free-text notes or “other, please specify”)
- b. It also creates a row in a wide Excel file, with columns grouped by variable, and produces a highlighted PDF where the evidence excerpts are visually highlighted on the relevant pages.

This pipeline ensures that every AI-generated judgement is accompanied by a clear trace back to the text it is based on.

### **B.3. Translating the Coding Manual into Machine-Readable Rules**

The core logic of the AI-assisted study coder is not “hidden” in the model itself but written explicitly in a set of 21 YAML codebooks (plain-text configuration files). Each codebook corresponds to one variable in our extraction form.

Each YAML codebook contains:

- A code identifier and a plain-language name (for example, “Intervention delivery mode”).
- A rationale explaining why this variable matters for the review.
- Decision rules: detailed instructions on how to interpret the variable, which parts of the article to prioritise (for example, methods or results sections) and how to handle borderline cases.
- Strictness notes: guidance on when to code “abstain” (that is, when the information is not clearly present) and when to use “Other (specify)”.

- An output contract that tells the AI exactly which fields it must return (for example, label, confidence, justification, evidence spans) and which additional optional fields it can include (for example, the labels under “Other (specify)”).

These codebooks are also the basis for human coding. This means that humans and the AI work from the same coding rules, and any changes to the rules can be tracked by editing the YAML files rather than hidden inside the AI model.

#### **B.4. Models Used and “Hybrid” Strategy**

The AI-assisted study coder uses a hybrid model approach to balance efficiency and quality. Specifically, it uses a lighter model (GPT-4.1 mini) as the primary model for most coding tasks. However, a larger, more capable model (GPT-5.1) is used as a fallback when the primary model is uncertain.

For each article and each variable:

1. The primary model reads the relevant text (full article or chunk) and produces a JSON output with a label and a confidence score between 0 and 1.
2. If the confidence score is high (0.80 or above) and the label is not “abstain”, the primary model’s result is accepted.
3. If the confidence is low or the model returns “abstain”, the fallback model is called and asked to classify the same variable based on the same codebook.
4. If both models produce valid outputs, the tool keeps the result with the higher confidence score.
5. If the primary model fails completely (for example, technical error), the fallback model is used.

This strategy allows the tool to rely on the faster model for routine cases, while still escalating more difficult or ambiguous cases to a more powerful model.

For a small number of variables that describe the study (for example, whether there is a clearly stated research question, or the overall study purpose and research method), the AI always sees the full article text rather than chunks. This avoids errors that could occur if these global features were visible only in one part of the article (for example, only in the introduction).

#### **B.5. Evidence Spans, Highlighted PDFs and Audit Trail**

A central design principle of the AI-assisted study coder is that every judgement should be traceable back to the original article.

For many variables, the codebooks instruct the AI to return not only a label and justification, but also an array of “evidence spans”. Each evidence span contains: A page number (matching the

“Page X” markers added during the text extraction) and a short verbatim excerpt (typically 10-60 words) that supports the chosen code.

These evidence spans are used in two ways:

1. For each variable and article, up to three evidence spans are compressed into an “evidence” column in the Excel file (showing the excerpt and page number). This allows a human coder to quickly see where in the text the AI found support for a particular code.
2. The script searches for each evidence excerpt on the indicated page and highlights it directly in a copy of the PDF.

Together with the per-article JSON files, this creates a full audit trail: for any given code, it is possible to see exactly what was coded, how confident the model was, and which passages of the article were used as evidence.

## **B.6. Calibration, Reliability Safeguards and Error Handling**

Before applying the AI-assisted study coder to all included studies, we carried out a calibration phase. The tool was first tested on a set of studies that had already been fully coded by the human team. The output was compared against the human coding, and the YAML codebooks and prompts were adjusted to improve alignment and clarity (for example, tightening definitions, specifying how to handle borderline or multi-setting cases). Only after this calibration did we run the tool on the full set of included studies.

## **B.7. Relationship Between AI and Human Coding**

Finally, it is important to underline how the AI-assisted study coder fits into the overall review process. First, the AI did *not* decide which studies were included in the review nor which data items were extracted; these decisions were made by human reviewers. Second, for each included study, the AI served as a second, independent coder, working from the same codebooks as the human. Third, disagreements between AI and human codes were always resolved by humans, who consulted the original article and, where necessary, discussed difficult cases within the team. The AI therefore functioned as a decision-support and quality assurance tool, helping to surface possible inconsistencies or oversights, but never replacing human judgement.

For policymakers and practitioners, the key takeaway is that the AI-assisted component of the review was designed to strengthen, not weaken, the rigour and transparency of the evidence synthesis. By combining structured human coding with a rule-based, auditable AI “second opinion”, we aimed to produce a more consistent and well-documented map of the empirical literature on career guidance and career learning than would have been feasible through manual methods alone.

## C. Data Extraction Form

The studies were coded using the following data extraction form

A-Administrative Data

A.1-Publication Year

One response allowed:

- 2014
- 2015
- 2016
- 2017
- 2018
- 2019
- 2020
- 2021
- 2022
- 2023
- 2024
- 2025

A.2-Publication Type:

One response allowed:

- Journal Article
- Report

A.3-Language:

One response allowed:

- English
- Norwegian
- Danish
- Swedish

A.4-Country:

- Afghanistan
- Angola
- ...
- Greece
- ...
- Norway
- ...
- Zimbabwe
- Zambia

B-Study Characteristics

B.1-Are Research question/aim/hypothesis presented?

One response allowed:

- Yes (highlight in text)
- No

B.2-What is the purpose of the study?

Multiple responses allowed:

- Exploration of relationships
- Assessment of efficacy ("what works")
- Description

### B.3-Research Method

Multiple responses allowed:

- Qualitative
- Quantitative
- Mixed methods

### B.4-Study Design

Multiple responses allowed:

- Experimental (RCT)
- Quasi-experimental
- Non-experimental
- Case study
- Ethnography
- View study
- Document study
- Other, please specify

### B.5-Data Collection Method

Multiple responses allowed:

- Observation
- Focus group interview
- Individual interview
- Survey/questionnaire
- Curriculum-based assessment
- Practical test
- Physiological test
- Psychological test
- Document analysis
- Register data
- Other, please specify

### C-Target Group Characteristics

#### C.1-Setting of Participants

Multiple responses allowed:

- Primary education
- Lower secondary education
- Upper secondary education
- Tertiary education
- Adult education (voksenoppl ring)
- Workplace
- Transitions
- Other/unclear (please comment)

#### C.2-Who are the investigated subjects?

Multiple responses allowed:

- Receivers only
- Receivers and providers
- Persons in transitions
- Other/unclear (please comment)

#### C.3-Does the study focus on a specific demographic group?

One response allowed:

- Yes, please specify subgroup
- No, none specified
- Unclear (please comment)

#### C.4-Sample size

One response allowed:

- 1-5
- 6-20
- 21-50
- 51-100
- 101-300
- 301-500
- 501-1000
- >1000
- Unclear/not specified

#### D-Intervention

D.1-Context of intervention (delivery mode)

Multiple responses allowed:

- Face-to-face
- Digital/online
- Hybrid (blended)
- Other (specify)
- Unclear (please comment)

D.2-Type of intervention (format/approach)

Multiple responses allowed:

- Workshop
- Course/module/program
- One-to-one guidance
- Group guidance
- Classroom instruction
- Other (specify)
- Unclear (please comment)

D.3-Duration of intervention

One response allowed:

- Single session
- Short-term (several weeks/hours)
- Long-term (semester/year/ongoing)
- Unclear (please comment)
- E-Outcomes

E.1-Level

Multiple responses allowed:

- Individual
- Societal

E.2-Learning outcome

Multiple responses allowed:

- Self-reported: Career management skills
- Self-reported: Educational choice
- Self-reported: Self-efficacy/confidence
- Self-reported: Attitudes and values towards career learning/planning/knowledge/awareness
- Self-reported: Academic performance
- Objectively/externally measured: Career management skills
- Objectively/externally measured: Educational choice
- Objectively/externally measured: Self-efficacy/confidence
- Objectively/externally measured: Attitudes and values towards career learning/planning/knowledge/awareness
- Objectively/externally measured: Academic performance
- Other (please specify)

E.3-Behaviour/Transfer outcome (manifested behaviour)

Multiple responses allowed:

- Career decision-making
- Educational choice
- Dropout
- Work-based learning engagement
- Entrepreneurial activities
- Identifying and applying for jobs
- Help-seeking or guidance utilization
- Other (please specify)

E.4-Results outcome

Multiple responses allowed:

- Educational
- Employment
- Economic
- Society
- Health and wellbeing
- Other (please specify)

E.5-Duration of impact (time horizon)

One response allowed:

- Short-term (3 months or less)
- Medium-term (>3-12 months)
- Long-term (>12 months)
- Unclear (please comment)

## D. List of Included Studies

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## E. Supplementary Tables

**Table E1. Learning Outcomes (N = 180)**

Outcome	Studies
Self-reported: Career management skills (N = 97)	Abkhezzr (2024); Acquah et al. (2017); Ali et al. (2017); Ali et al. (2019); Allsopp & Taggar (2018); Alonso-Domínguez et al. (2024); Antonelli et al. (2018); Archer et al. (2014); Babarović et al. (2019); Babu et al. (2020); Barbour et al. (2016); Barclay & Stoltz (2016); Behrens & Nauta (2014); Beloborodova & Leontiev (2024); Bonaiuto et al. (2022); Bradley et al. (2022); Bratucu et al. (2014); Buland et al. (2022); Bullock-Yowell et al. (2014); Burke et al. (2022); Byrd et al. (2022); Cabell & Gnilka (2021); Cadondon et al. (2023); Camussi et al. (2023); Carlana et al. (2022); Carson & Reed (2015); Carvalho et al. (2018); Castellano et al. (2014); Cerrito et al. (2018); Chatterjee et al. (2019); Chaturvedi & Guerrero (2023); Chen & Kizilcec (2024); Chiesa et al. (2016); Chin et al. (2019); Cho & Ham (2022); Choate et al. (2016); Choate et al. (2019); Chronister et al. (2018); Chun et al. (2024); Cîrțișă-Buzoianu et al. (2021); Cobelli et al. (2019); Dascalu et al. (2024); David et al. (2022); de Carvalho et al. (2025); Di Fabio (2016); Dollinger et al. (2024); Dozier et al. (2014); Drange & Orupabo (2018); Drymiotou et al. (2021); Dunwell et al. (2014); Ebner (2021); Ecton & Dougherty (2022); Edmunds et al. (2024); Emembolu et al. (2020); Erdmann et al. (2023); Falco & Summers (2017); Felgenhauer et al. (2019); Fleming et al. (2020); Fouad et al. (2016); Fowkes (2021); Fox et al. (2023); Garcia et al. (2020); Gardiner et al. (2017); Gashi et al. (2023); Gaylor & Nicol (2016); Grier-Reed & Chahla (2015); Grossman et al. (2024); Gülşen et al. (2021); Hansen et al. (2016); Holly et al. (2024); Holt-White et al. (2022); Hooley et al. (2014); Houston Independent School District, Department of Research and Accountability (2017); Hummel et al. (2017); Hunt et al. (2017); Hutchins et al. (2024); Ivanichs et al. (2022); Jackson & Edgar (2019); Jacobson & Mokher (2014); Jaik & Wolter (2019); Johnson et al. (2023); Jordan et al. (2016); Jordan et al. (2017); Julien et al. (2023); Kamm et al. (2020); Kang et al. (2023); Kashefpakdel & Percy (2017); Kassim et al. (2016); Keller et al. (2023); Keller et al. (2023); Kitchen et al. (2024); Klier et al. (2019); Kurbanova & Yarovikov (2021); Lapan et al. (2016); Leuty et al. (2015); Lindo et al. (2019); Lindstrom et al. (2018); Lindstrom et al. (2020); Lin-Stephens et al. (2019); Louw (2020); Mack et al. (2019); Maerten-Rivera et al. (2020); Mason et al. (2022); Maxwell et al. (2019); McDow & Zabrocky (2015); Meijers & Kuijpers (2014); Milan et al. (2017); Milosheva et al. (2024); Milot-Lapointe et al. (2018); Milot-Lapointe et al. (2019); Milot-Lapointe et al. (2021); Mittendorff et al. (2017); Moote et al. (2025); Motlova & Honsova (2021); Murcia et al. (2020); Murrach-Hanson et al. (2019); Mutlu et al. (2024); Nochajski & Schweitzer (2014); Norris & Herrewynen (2023); Nykänen et al. (2022); O'Mally & Antonelli (2016); Olry-Louis (2018); Osborn et al. (2020); Osborn et al. (2021); Owens et al. (2016); Păcurar & Mărcuță (2023); Pallin (2024); Pálvölgyi (2024); Patillon et al. (2025); Pawloski & Shabram (2019); Perry et al. (2016); Petersen et al. (2022); Phillips et al. (2022); Picton & Kahu (2021); Piepenburg & Fervers (2021); Pietrzyk et al. (2023); Pietrzyk et al. (2025); Plasman (2018); Popescu (2021); Pott (2015); Poulsen (2020); Prescod et al. (2019); Prescod et al. (2023); Puffer (2014); Raalte et al. (2017); Raska & Keller (2021); Reardon et al. (2012); Reardon et al. (2015); Reid (2021); Renée (2025); Røise (2022); Romito (2017); Rowell et al. (2014); Rutledge & Gnilka (2022); Rutten et al. (2016); Salvanes et al. (2019); Santilli et al. (2020); Santilli et al. (2021); Scheef (2019); Serbanescu & Ciuchi (2021); Seward & Gaesser (2018); Sherrer & Prelip (2018); Silipo & Caldon-Ruggles (2021); Skovhus (2022); Spence & Leggett (2024); Stahl et al. (2024); Stebleton et al. (2020); Steeb et al. (2021); Swank & Jahn (2018); Szabó et al. (2020); Taylor et al. (2014); Taylor et al. (2022); te Wierik et al. (2015); Tejedor et al. (2016); Teychenne et al. (2019); Thompson et al. (2022); Thunberg & Andreassen (2017); Tomaszewski et al. (2017); Trivedi et al. (2021); U.S. Department of Education, Office of Career, Technical, and Adult Education (2017); van der Baan et al. (2024); Vespia et al. (2017); Walker et al. (2017); Welde et al. (2015); Welde et al. (2016); Wessels & Sumner (2014); Westman et al. (2021); Womack et al. (2020); Yakova et al. (2025); Yoon et al. (2019); Zammitti et al. (2020); Zammitti et al. (2023); Zammitti et al. (2024).

Outcome	Studies
Self-reported: Educational choice (N = 46)	Acquah et al. (2017); Allsopp & Taggar (2018); Alonso-Domínguez et al. (2024); Archer et al. (2014); Barclay & Stoltz (2016); Bradley et al. (2022); Bratucu et al. (2014); Buland et al. (2022); Burke et al. (2022); Cîrțișă-Buzoianu et al. (2021); Dascalu et al. (2024); Dozier et al. (2014); Drange & Orupabo (2018); Dunwell et al. (2014); Ebner (2021); Erdmann et al. (2023); Garcia et al. (2020); Hutchins et al. (2024); Jaik & Wolter (2019); Jordan et al. (2016); Keller et al. (2023); Louw (2020); Maerten-Rivera et al. (2020); Meijers & Kuijpers (2014); Milan et al. (2017); Milosheva et al. (2024); Mutlu et al. (2024); Osborn et al. (2020); Pálvölgyi (2024); Piepenburg & Fervers (2021); Popescu (2021); Reid (2021); Rutten et al. (2016); Røise (2022); Santilli et al. (2020); Silipo & Caldon-Ruggles (2021); Swank & Jahn (2018); Thunberg & Andreassen (2017); Vespia et al. (2017); Welde et al. (2016); Womack et al. (2020).
Self-reported: Self-efficacy/ Confidence (N = 80)	Ali et al. (2017); Ali et al. (2019); Babarović et al. (2019); Barclay & Stoltz (2016); Behrens & Nauta (2014); Bonaiuto et al. (2022); Bradley et al. (2022); Bratucu et al. (2014); Burke et al. (2022); Cabell & Gnilka (2021); Cadondon et al. (2023); Chen & Kizilcec (2024); Chiesa et al. (2016); Choate et al. (2019); Chun et al. (2024); Dollinger et al. (2024); Drange & Orupabo (2018); Ebner (2021); Falco & Summers (2017); Fleming et al. (2020); Fouad et al. (2016); Fox et al. (2023); Garcia et al. (2020); Gaylor & Nicol (2016); Gülşen et al. (2021); Hansen et al. (2016); Holly et al. (2024); Hummel et al. (2017); Jordan et al. (2016); Jordan et al. (2017); Kassim et al. (2016); Leuty et al. (2015); Lindo et al. (2019); Lindstrom et al. (2018); Lindstrom et al. (2020); Louw (2020); Mason et al. (2022); McDow & Zabrucky (2015); Meijers & Kuijpers (2014); Milan et al. (2017); Milot-Lapointe et al. (2018); Milot-Lapointe et al. (2019); Mittendorff et al. (2017); Motlova & Honsova (2021); Murcia et al. (2020); Mutlu et al. (2024); Nochajski & Schweitzer (2014); Norris & Herrewynen (2023); Nykänen et al. (2022); O'Mally & Antonelli (2016); Osborn et al. (2020); Osborn et al. (2021); Owens et al. (2016); Pálvölgyi (2024); Pawloski & Shabram (2019); Piepenburg & Fervers (2021); Pott (2015); Rutledge & Gnilka (2022); Santilli et al. (2020); Seward & Gaesser (2018); Silipo & Caldon-Ruggles (2021); Spence & Leggett (2024); Stebleton et al. (2020); Swank & Jahn (2018); Taylor et al. (2022); Teychenne et al. (2019); Thompson et al. (2022); Thunberg & Andreassen (2017); Trivedi et al. (2021); Vespia et al. (2017); Welde et al. (2015); Welde et al. (2016); Wessels & Sumner (2014); Westman et al. (2021); Yoon et al. (2019); Zammitti et al. (2020); Zammitti et al. (2023); Zammitti et al. (2024).

Outcome	Studies
Self-reported: Attitudes/ values toward career learning/ planning/ knowledge/ Awareness (N = 129)	Abkheyr (2024); Acquah et al. (2017); Agasisti et al. (2025); Ali et al. (2017); Ali et al. (2019); Archer et al. (2014); Babarović et al. (2019); Babu et al. (2020); Barbour et al. (2016); Beloborodova & Leontiev (2024); Bonaiuto et al. (2022); Bradley et al. (2022); Bratucu et al. (2014); Buland et al. (2022); Bullock-Yowell et al. (2014); Byrd et al. (2022); Camussi et al. (2023); Carvalho et al. (2018); Carlana et al. (2022); Chatterjee et al. (2019); Chaturvedi & Guerrero (2023); Chiesa et al. (2016); Cho & Ham (2022); Choate et al. (2016); Choate et al. (2019); Chronister et al. (2018); Chun et al. (2024); Cîrțișă-Buzoianu et al. (2021); Cobelli et al. (2019); Dascalu et al. (2024); Di Fabio (2016); Dollinger et al. (2024); Dozier et al. (2014); Drange & Orupabo (2018); Drymiotou et al. (2021); Dunwell et al. (2014); Ebner (2021); Emembolu et al. (2020); Fleming et al. (2020); Fouad et al. (2016); Fowkes (2021); Fox et al. (2023); Garcia et al. (2020); Gülşen et al. (2021); Holly et al. (2024); Hutchins et al. (2024); Jackson & Edgar (2019); Jaik & Wolter (2019); Kamm et al. (2020); Kassim et al. (2016); Keller et al. (2023); Lapan et al. (2016); Lindo et al. (2019); Lindstrom et al. (2018); Lindstrom et al. (2020); Lin-Stephens et al. (2019); Louw (2020); Maerten-Rivera et al. (2020); Maxwell et al. (2019); Meijers & Kuijpers (2014); Milan et al. (2017); Milot-Lapointe et al. (2021); Mittendorff et al. (2017); Moote et al. (2025); Motlova & Honsova (2021); Murcia et al. (2020); Murrell-Hanson et al. (2019); Mutlu et al. (2024); Norris & Herrewynen (2023); Nykänen et al. (2022); O'Mally & Antonelli (2016); Osborn et al. (2020); Osborn et al. (2021); Owens et al. (2016); Păcurar & Mărcuță (2023); Pálvölgyi (2024); Pawloski & Shabram (2019); Perry et al. (2016); Petersen et al. (2022); Picton & Kahu (2021); Piepenburg & Fervers (2021); Popescu (2021); Poulsen (2020); Prescod et al. (2019); Raska & Keller (2021); Reid (2021); Renée (2025); Røise (2022); Romito (2017); Rowell et al. (2014); Rutledge & Gnilka (2022); Rutten et al. (2016); Santilli et al. (2020); Santilli et al. (2021); Serbanescu & Ciuchi (2021); Seward & Gaesser (2018); Silipo & Caldon-Ruggles (2021); Skovhus (2022); Spence & Leggett (2024); Stebleton et al. (2020); Steeb et al. (2021); Swank & Jahn (2018); Taylor et al. (2022); Tejedor et al. (2016); Teychenne et al. (2019); Thompson et al. (2022); Thunberg & Andreassen (2017); Trivedi et al. (2021); Vespia et al. (2017); Walker et al. (2017); Welde et al. (2015); Welde et al. (2016); Wessels & Sumner (2014); Westman et al. (2021); Womack et al. (2020); Yoon et al. (2019); Zammitti et al. (2020); Zammitti et al. (2023); Zammitti et al. (2024).
Self-reported: Academic performance (N = 7)	Acquah et al. (2017); Ali et al. (2019); Bonaiuto et al. (2022); Fleming et al. (2020); Pawloski & Shabram (2019); Petersen et al. (2022); Welde et al. (2015).
Objectively / externally measured: Career management skills (N = 3)	Dascalu et al. (2024); Lapan et al. (2016); McDow & Zabucky (2015).
Objectively / externally measured: Educational choice (N = 1)	Mokher et al. (2021).

Outcome	Studies
Objectively / externally measured: Academic performance (N = 20)	Agasisti et al. (2025); Babarović et al. (2019); Carlana et al. (2022); Castellano et al. (2014); Dietrich et al. (2016); Ecton & Dougherty (2022); Gardiner et al. (2017); Grier-Reed & Chahla (2015); Grossman et al. (2024); Hansen et al. (2016); Houston Independent School District, Department of Research and Accountability (2017); Jacobson & Mokher (2014); Jaik & Wolter (2019); Mack et al. (2019); Maxwell et al. (2019); Reardon et al. (2015); Renée (2025); Salvanes et al. (2019); te Wierik et al. (2015); Tomaszewski et al. (2017).
Other (N = 5)	Agasisti et al. (2025); Aguilar (2018); Plasman (2018); Tejedor et al. (2016); Womack et al. (2020).

**Table E2. Behaviour/Transfer Outcomes (N = 58)**

Outcome	Studies
Career decision-making (N = 17)	Buland et al. (2022); de Carvalho et al. (2025); Choate et al. (2016); Dozier et al. (2014); Fleming et al. (2020); Julien et al. (2023); Milosheva et al. (2024); Mutlu et al. (2024); O'Mally & Antonelli (2016); Pallin (2024); Pálvölgyi (2024); Phillips et al. (2022); Popescu (2021); Silipo & Caldon-Ruggles (2021); Taylor et al. (2022); Yoon et al. (2019); Zammiti et al. (2024).
Educational choice (N = 20)	Acquah et al. (2017); Buland et al. (2022); Carlana et al. (2022); Carson & Reed (2015); Ecton & Dougherty (2022); Fleming et al. (2020); Julien et al. (2023); Mack et al. (2019); Maxwell et al. (2019); Pietrzyk et al. (2023); Pietrzyk et al. (2025); Păcurar & Mărcuță (2023); Popescu (2021); Renée (2025); Røise (2022); Silipo & Caldon-Ruggles (2021); Thunberg & Andreassen (2017); Tomaszewski et al. (2017); Walker et al. (2017); Zammiti et al. (2024).
Dropout (N = 9)	Alonso-Domínguez et al. (2024); Clayton et al. (2018); Grossman et al. (2024); Hansen et al. (2016); Houston Independent School District, Department of Research and Accountability (2017); Jacobson & Mokher (2014); Mack et al. (2019); Renée (2025); Thunberg & Andreassen (2017).
Work-based learning engagement (N = 11)	Antonelli et al. (2018); Buland et al. (2022); Chatterjee et al. (2019); Fox et al. (2023); Louw (2020); Păcurar & Mărcuță (2023); Silipo & Caldon-Ruggles (2021); Skovhus (2022); Vespia et al. (2017); Wessels & Sumner (2014); Yoon et al. (2019).
Entrepreneurial activities (N = 3)	Buland et al. (2022); Păcurar & Mărcuță (2023); Thunberg & Andreassen (2017).
Identifying and applying for jobs (N = 15)	Albert & Davia (2023); Antonelli et al. (2018); Bradley et al. (2022); Buland et al. (2022); Felgenhauer et al. (2019); Klier et al. (2019); Louw (2020); Maxwell et al. (2019); Păcurar & Mărcuță (2023); Silipo & Caldon-Ruggles (2021); Stebleton et al. (2020); Taylor et al. (2014); Walker et al. (2017); Wessels & Sumner (2014); Yoon et al. (2019).
Help-seeking or guidance utilization (N = 20)	Behrens & Nauta (2014); Buland et al. (2022); Carson & Reed (2015); Chatterjee et al. (2019); Chin et al. (2019); Choate et al. (2019); Dockery et al. (2021); Fox et al. (2023); Gardiner et al. (2017); Julien et al. (2023); Louw (2020); O'Mally & Antonelli (2016); Owens et al. (2016); Păcurar & Mărcuță (2023); Phillips et al. (2022); Silipo & Caldon-Ruggles (2021); Thunberg & Andreassen (2017); Vespia et al. (2017); Womack et al. (2020); Yoon et al. (2019).
Other (N = 2)	Garcia et al. (2020); Plasman (2018).

**Table E3. Results Outcomes (N = 48)**

Outcome	Studies
Educational (N = 34)	Barnes et al. (2022); Belser et al. (2017); Bettinger & Evans (2019); Carlana et al. (2022); Castellano et al. (2014); Clayton et al. (2018); Dietrich et al. (2016); Ecton & Dougherty (2022); Gardiner et al. (2017); Grier-Reed & Chahla (2015); Grossman et al. (2024); Hansen et al. (2016); Houston Independent School District, Department of Research and Accountability (2017); Jacobson & Mokher (2014); Kashefpakdel & Percy (2017); Klier et al. (2019); Mack et al. (2019); Maxwell et al. (2019); Milot-Lapointe et al. (2019); Moote et al. (2025); Nochajski & Schweitzer (2014); Phillips et al. (2022); Pietrzyk et al. (2023); Pietrzyk et al. (2025); Plasman (2018); Popescu (2021); Reardon et al. (2015); Reid (2021); Renée (2025); Røise (2022); Salvanes et al. (2019); Silipo & Caldon-Ruggles (2021); te Wierik et al. (2015); Tomaszewski et al. (2017).
Employment (N = 15)	Albert & Davia (2023); Ecton & Dougherty (2022); Fox et al. (2023); Gardiner et al. (2017); Grossman et al. (2024); Ivanich et al. (2022); Klier et al. (2019); Nochajski & Schweitzer (2014); Phillips et al. (2022); Silipo & Caldon-Ruggles (2021); Taylor et al. (2014); Thunberg & Andreassen (2017); Tomaszewski et al. (2017); van der Baan et al. (2024); Yoon et al. (2019).
Economic (N = 7)	Ecton & Dougherty (2022); Gardiner et al. (2017); Grossman et al. (2024); Ivanich et al. (2022); Kashefpakdel & Percy (2017); Moote et al. (2025); Renée (2025).
Society (N = 3)	Barnes et al. (2022); Thunberg & Andreassen (2017); Zammitti et al. (2024).
Health and wellbeing (N = 9)	Chun et al. (2024); Gülşen et al. (2021); Maxwell et al. (2019); Milot-Lapointe et al. (2019); Moote et al. (2025); Owens et al. (2016); Taylor et al. (2022); Yoon et al. (2019); Zammitti et al. (2023).





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