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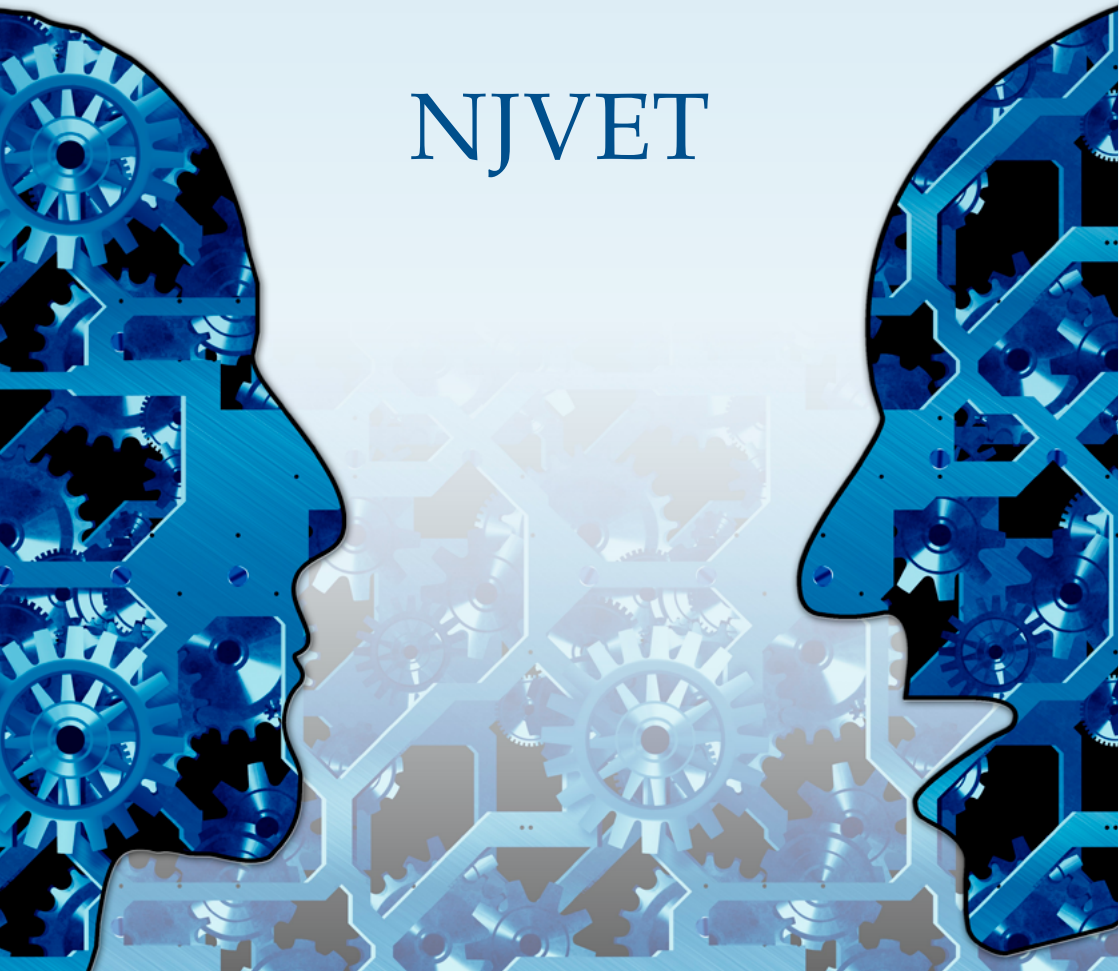

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Editorial: Autumn 2023

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Welcome to a new issue of the *Nordic Journal of Vocational Education and Training* (NJVET), which completes volume 13 of our journal. We want to create an active forum for critical research on vocational and professional education and training, and we are proud that so many researchers in this area choose to submit and publish their work in this journal. We are also thankful for the work completed by all our anonymous reviewers, whose efforts are invaluable for the quality of the research articles that are published.

This issue includes five research articles from four Nordic countries: two articles from Norway, one from Finland, one from Sweden, and one written in cooperation between Finland and Denmark – an example of the broad interest in disseminating research findings through NJVET.

The five articles

In the first article, *Opplevelse av sammenheng i fag- og yrkesopplæring: Et longitudinelt perspektiv* (Sense of coherence in vocational education and training: A longitudinal perspective), **Grete Hanssen** from Norway utilises the framework of Antonovsky of salutogenic theory in a longitudinal study of how vocational students simultaneously balance stress and develop vocational competence while learning in school and at work. Core concepts are a sense of coherence (SOC) and general resistance resources (GRR). The data consist of interviews with

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vocational students at two stages: The end of school-based learning and at the finish of their apprenticeship, and the data are analysed comparatively from the two groups to see the development of the participant's GRR. The study results show that the integration of theory and practice dimensions in vocational education improves the student's comprehensibility during apprenticeship. Meaningfulness in the GRR appears unchanged over time and seems important for the development of vocational competence in the study participants.

The second article from Norway is written by **Jan Viggo Iversen** and **Wenche Hammer Johannessen**. In *Utvikling av profesjonskompetanse: Estetiske læreprosesser i yrkesfaglærerutdanning* (Developing professional competence: Aesthetic learning processes in vocational teacher education), they put focus on how aesthetic learning processes can contribute to exploratory and critical thinking, and holistic and emotional learning. The data was generated in focus groups with vocational teacher students, and three main categories emerged in the analysis: 'Encounter and courage', 'Creativity and images', and 'Digital competence and multimodality'. The aesthetic learning process is described as an encounter between the student's inner and outer worlds, an encounter in which they need to mobilise their courage. The creative process develops, and inner images could emerge here, on the way to a final multimodal product, which requires digital competence.

The next article is a cooperation between Finland and Denmark. **Timo Halttunen, Christian Dragin-Jensen, Céline Kylänpää,** and **Anders Karkov** write about C*ollaborative problem solving: A pedagogy for workplace relevance*. This article is based on a multi-case qualitative study carried out in hotel service sector locations in Finland and Denmark. It seeks to investigate involvement of a business professional as a source for scaffolding on site collaborative problem solving (CPS) in a hotel business environment and examine the contextual characteristics that shape students' and teachers' experiences in situated learning. Among other things, the study shows that use of multiple business professionals as experts and interactions between students, teachers, and business professionals lead to increased audience awareness in students. Furthermore, it shows that contextual characteristics increased problem awareness and complexity in each case setting. Thus, the article adds to existing knowledge about use of CPS as a pedagogical approach in real-world contexts.

The fourth article is the outcome of a cooperation between researchers from three departments in Finland. **Jonna Hurskainen, Sanna Wenström,** and **Satu Uusiautti** have written about *A PRIDE-theory-based analysis of a positive learning environment in a Finnish vocational education and training (VET) institution*. Drawn upon PRIDE theory, the article approaches the positive learning environment from a number of different aspects: positive practices, relationship, enhancement, individual attributes, dynamic leadership, and emotional well-being. Empirical material was collected by semi-structured interviews with 12 VET students. The result shows how the different elements contribute to the positive learning

environment from the students' perspectives. Especially, the result stresses that the importance of relationships with their teachers and peers is evident in different elements of PRIDE and that the different elements are interrelated for the students' perception of a positive learning environment.

The fifth article, and also the last one in the volume of 2023, shines light on an important aspect in VET and contributes to a hopefully growing research field concerning VET students with special education needs. In *The vocational teacher, an inventor in special needs education: A study on Swedish vocational programmes,* **Robert Holmgren** and **Gerd Pettersson** from Sweden highlight the role of teachers in vocational subjects in upper secondary school teaching students aged 16–19. In their study they have interviewed 15 teachers from eight different VET programmes to gain knowledge about VET teachers' conditions for, and work with, special needs education. Their study reveals a dichotomy in the VET teachers' conditions for, and work with, special needs education. Their article describes how a bureaucratic approach is applied in the schools, where overriding goals are attributed high value, while the VET teachers strive for an adhocratic approach where the teaching is based on their students' specific needs. Holmgren's and Pettersson's analysis shows that the VET teachers take an interactive learning environment-related approach, which means that, based on their understanding of their students' difficulties, they develop adaptations to stimulate their students' learning and development.

Looking forward

We are now looking forward to 2024 with expectations both for the journal and for activities in the NordYrk network. In June 2024, the NordYrk conference will for the first time take place in Iceland, where the University of Iceland is hosting us in Reykjavik. During 2024, there will also of course be new issues of this journal, both open and special issues. We are currently working together with guest editors to prepare two different special issues where the review process is in progress – one on vocational classroom research with a focus on teaching and learning in vocational education subjects, and one on the cooperation between research, teaching and learning in VET. And there is more to come!

Nordic Journal of Vocational Education and Training, 2023

Opplevelse av sammenheng i fag- og yrkesopplæring: Et longitudinelt perspektiv

Sense of coherence in vocational education and training: A longitudinal perspective

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Abstract

This longitudinal study explores the resources vocational students need to balance stress and develop vocational competence in school- and work-based learning. As a theoretical framework, the concepts of sense of coherence (SOC) and general resistance resources (GRR) are used, as proposed by Antonovsky in his salutogenic theory. SOC consists of three components: comprehensibility, manageability, and meaningfulness. GRR is about how a person, group or community use internal and external resources to promote SOC. Participants are interviewed at the end of their school part of the education and again at the end of the apprenticeship. The two interviews are compared using comparative analysis methods to explore how participants' GRRs develop. The study shows that comprehensibility increases when practice and theory are integrated into work tasks during the apprenticeship. The manageability component, developed throughout the educational process, helps them master stress and to face unpredictable situations. The GRRs promoting meaningfulness are almost similar in the two interviews and appear to be stable over time and central for participants to engage in learning situations and develop vocational competence.

Keywords: salutogenic theory, sense of coherence (SOC), general resistance resources (GRR), stress management, vocational competence

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Innledning

I utdanning og dagliglivet ellers møter vi livshendelser som gir oss livserfaring. Enten løser vi utfordringer, eller så gjør vi det ikke. Overbelastning kan føre til stress og kan dertil påvirke helse og livskvalitet (Antonovsky, 1987). Også skolerelatert stress kan få negative konsekvenser. Når elever opplever en ubalanse mellom krav og forventninger og det de faktisk klarer å prestere, kan det få følge for læring og tilfredshet i livet (Lillejord et al., 2017). Studien utforsker fag- og yrkesopplæring i Norge der hovedmodellen er to år opplæring i skole (Vg1 + Vg2), etterfulgt med to år i bedriftsopplæring som lærling. I bedrifts-opplæringen blir et å regne som opplæring (Vg3) og et år som verdiskapning. Verdiskapning betyr at lærlingen skal bidra i bedriftens produksjon av varer eller tjenester. Deretter avsluttes opplæringen med en fag- eller svenneprøve. Bestått prøve kvalifiserer lærlingen til fagarbeider. I skoleopplæringen skal elevene forholde seg til fellesfag (norsk, engelsk, matematikk, naturfag, samfunnsfag og kroppsøving), programfag for valgte fagfelt og tidvis opplæring i bedrift gjennom faget yrkesfaglig fordypning (YFF). I bedriftsopplæringen utvikler lærlingene yrkeskompetanse gjennom å engasjere seg i autentiske arbeids-oppgaver og samhandling i den naturlige settingen som en arbeidsplass utgjør (Billett, 2010). I tillegg skal lærlingene vise forståelse for teoretisk kunnskap i utførelse og dokumentasjon av arbeidsoppgaver, samt skriftliggjøring av arbeidsoppgaver tilknyttet kompetansemål på Vg3-nivå. Selv om konteksten for studien er Norge, kan tematikk og problemstilling antas å være relevant for andre land med kombinerte yrkesfaglige utdanningsmodeller.

Å møte arbeidslivets faglige krav og spilleregler i ung alder kan utløse et spenningsfelt mellom stress og kaos, og motivasjon og læring. Fag- og yrkes-opplæring presenterer elever og lærlinger, for to ulike læringsverdener. Disse komplementære verdenene, skole og bedrift, som har forskjellige sosiokulturelle komponenter, kan gi ulike læringsmuligheter, utfylle hverandre og gi et godt grunnlag for å utvikle yrkeskompetanse (Eames & Coll, 2010; Sweet, 2014). En bred helhetlig yrkeskompetanse er en forutsetning for at arbeidstakerne kan holde seg oppdaterte og møte endringer i kompetansebehovene som følger av kontinuerlige endringer. Av den grunn er det viktig at yrkesutøveren har teoretisk kompetanse som stikker dypere enn det som er synlig i den praktiske yrkesutøvelsen (Billett, 2001). For at elever og lærlinger skal rette oppmerksom-heten mot en oppgave, er de avhengige av å ha tro på at de kan mestre den. Det gir bedre læring om man tror at mestring er avhengig av innsats og arbeid, ikke bare av medfødte evner og egenskaper (Dweck, 2017).

Begrep som *transfer* og *boundary crossing* har blitt brukt for å forstå hvordan kunnskapselementer og fag kan bringes sammen og overføres mellom kontekster i fag- og yrkesopplæring (Akkerman & Bakker, 2012; Eraut, 2004; Gessler et al., 2021; Johannesen et al., 2022; Louw & Katznelson, 2019; Wahlgren & Aarkrog,

2012). I denne artikkelen vil jeg benytte to av Antonovskys (1987) sentrale begrep som teoretisk forståelsesramme. Det første begrepet "Opplevelse av sammenheng" (OAS) består av en gjensidig dynamisk relasjon mellom det å begripe, håndtere og finne mening, i dette tilfellet i læringssituasjoner i fag- og yrkesopplæring. En forutsetning for å oppleve sammenheng i en læringssituasjon vil være at den som skal lære har nok ressurser til å håndtere kravene som skole og arbeidsliv utsetter dem for. Disse ressursene utgjør det andre begrepet, "Generelle motstandsressurser" (GMR). GMR påvirker OAS som igjen styrkes og fremmer identifisering og bruken av nye GMR som en positiv forsterkende loop (Lindstöm & Eriksson, 2010). Elever og lærlinger med en sterk OAS vil ikke bare kunne identifisere tilgjengelige GMR, men også bruke de på en måte som fremmer læring (Lindström & Eriksson, 2011). Skolen blir ansett som den mest helsefremmende konteksten blant ungdom. Forskning bør derfor undersøke nøkkelfaktorene i utviklingen av en sterk OAS i en opplæringskontekst. Identifisering av disse ressursene (GMR) er avgjørende for å utforme utdanningskontekster som øker ungdommens ressurser, og som igjen forbedrer deres evne til å lære og leve et sunt liv (García-Moya et al., 2013).

Forskningsspørsmål

OAS og GMR ble designet for å vurdere en grunnleggende mestringsdisposisjon der mennesker orienterer seg mot stressfaktorer og utfordringer på en effektiv og proaktiv måte, ikke med utgangspunkt i å utforske hva som fremmer læring. Begrunnelsen for at jeg velger å bruke Antonovsky (1979) sitt begrepspar OAS og GMR er å understøtte og gi innhold til komponentene begripelighet, håndterbarhet og meningsfullhet i en yrkesfaglig læringskontekst. Tidligere forskning har over tid pekt på manglende sammenheng mellom skole og bedriftsopplæring i kombinerte yrkesfaglige utdanningsmodeller (Eiríksdóttir, 2020; Hiim, 2023; Onstenk et al., 2007; Aakernes, 2018). Kunnskap om hvordan elever og lærlinger opparbeider tillit til at de kan løse arbeidsoppgaver og hva de anser som viktige ressurser (GMR) for å utvikle OAS og nødvendig yrkeskompetanse, med eller uten støtte fra mennesker og miljø, kan bringe et nytt perspektiv inn i det yrkesdidaktiske feltet. For å hjelpe lærere og bedriftsveiledere med å tilby en yrkesutdanning som gir elever og lærlinger en læringsopplevelse som er begripelig, håndterlig og meningsfull, utforsker denne studien følgende problemstilling: *Hvordan utvikles og endres behovet for GMR som balanserer stress og fremmer OAS fra Vg2 og frem mot fag-svenneprøve?*

Teoretisk rammeverk

En salutogen tilnærming fokuserer på forhold mellom helse, stress og livsmestring, og benyttes fremst i helsefremmende forskning, men har i den senere

tid også med fordel blitt brukt i andre forskningsfelt (Bauer et al., 2020; Idan et al., 2022; Lindström & Eriksson, 2010), blant annet til å utvikle helsefremmende skoler (Jensen et al., 2017; Haugan & Eriksson, 2021) og helsefremmende arbeidsplasser (Idan et al., 2013). Videre vil jeg presentere relasjonen mellom Antonovskys salutogene begrep OAS og GMR og vise til forskning der begrepene har blitt benyttet i en læringskontekst i skole og arbeidsliv.

Relasjonene mellom OAS og GMR

OAS handler om hvordan en person opplever og verdsetter stressorer i forhold til sin kapasitet når det gjelder forståelse (begripelighet), evne til å bruke ressurser (håndterbarhet) og personlig engasjement (meningsfullhet). En person med sterk OAS indikerer at den har en god evne til å håndtere stressfaktorer og at stressfaktorene oppleves hovedsakelig som positive utfordringer i motsetning til negative trusler. Stressfaktorer er en naturlig og sentral del i menneskers utvikling og læring og de har et formål ut over at de skal beseires (Antonovsky, 1987). OAS får hjernen til å sende meldinger for å aktivere passende kroppsressurser og gjør en også i stand til å mestre både instrumentelt og emosjonelt (Antonovsky, 1990). Overført til en opplæringskontekst i fag- og yrkesopplæring vil det si at elever og lærlinger som har tiltro til at de forstår, tillitt til at de kan mestre de utfordringene de møter, samt opplever en motivasjon og et engasjement til å ta fatt på arbeidsoppgaven, vil ha et godt grunnlag for å forhindre unødig stress, oppleve sammenheng mellom fag- og emner på tvers av opplæringsarenaer og dertil utvikle yrkeskompetanse.

Begrepet GMR viser til ressurser til en person, en gruppe eller et fellesskap som tilrettelegger individets evner til å mestre stressfaktorer effektivt og bidra til utvikling av individets nivå av OAS (Antonovsky, 1979, 1987). Ressursene deles inn i tre sentrale grupper: (1) tilpasningsevne på det fysiologiske, biokjemiske, psykologiske, kulturelle og sosiale nivået; (2) dype bånd til konkrete, umiddelbare andre; og (3) engasjement av og institusjonaliserte bånd mellom individet og det totale samfunnet (Antonovsky, 1972). Å ha ressurser, være bevisst på dem samt ha evne til å bruke dem for å motvirke stressfaktorer er en viktig faktor for å unngå ubehag eller sammenbrudd. GMR utvikles forskjellig fra menneske til menneske. OAS leder til at mennesker identifiserer sitt repertoar av GMR-er som er passende for situasjonen eller konteksten. Dette inkluderer ressursene i en selv og ressursene som er tilgjengelige gjennom ens nettverk. Ressursene anses av den grunn som en fleksibel ressursbank snarere enn et rigid responsmønster (Antonovsky, 1990).

Spesifikke motstandsressurser (SMR) er en del av den salutogene teori, men er lite nevnt og differensiert i litteraturen (Mittelmark et al., 2017). Mens GMR har en bred anvendelse, er SMR situasjonsbestemte og påkalt for å håndtere spesifikke spenninger og situasjoner. Eksempel på en SMR kan være å møte et

forståelsesfullt blikk til en person i salen som kan være av stor betydning og hjelp til å mestre spesielle stressfaktorer under en presentasjon eller en opptreden. En sterk OAS bidrar til identifisering og påkalling av hensiktsmessige SMR, da en person med sterk OAS innehar et bredt spekter med GMR. SMR er ofte et resultat av flaks og tilfeldigheter, og GMR avgjør tilgjengeligheten (Antonovsky, 1979). Å ha sterk egoidentitet, være kunnskapsrik og ha et godt støtteapparat er sentrale GMR i skolen og kan stimulere til anvendelse av flere SMR. Dersom SMR i større grad er tilgjengelig for dem med mange GMR, kan SMR bidra til økt sosial ulikhet. SMR blir tilgjengelig gjennom samfunnsmessige tiltak og viser dermed at helsefremmende arbeid i skolen har en sentral rolle for å motvirke sosial ulikhet (Mittelmark et al., 2017).

Tidligere forskning på OAS og GMR i skole og arbeidsliv

Det finnes lite forskning på OAS og GMR når det gjelder læring i konteksten fag- og yrkesopplæring. Forskning som presenteres i fortsettelsen utgjør av den grunn skoleforskning, fortrinnsvis blant ungdommer og forskning i arbeidslivet generelt.

Lav OAS i barndommen har sammenheng med frafall i yrkesforberedende utdanning (Winding, et al, 2013). En sterk OAS fungerer som skolestress-forebygging og skolestressmoderering (García-Moya et al., 2012; Torsheim et al., 2001). Elever som opplever høye krav på skolen kombinert med lav grad av kontroll uttrykker mer uhelse enn de som kan balansere krav og kontroll (Haraldsson et al., 2011; Modin et al., 2011). Å ha innsikt og mulighet til å påvirke ansvarsoppgaver motvirker følelsen av stress, mens det å bli påtvunget ansvar kan utløse følelsesmessige stressreaksjoner som forvirring, frustrasjon, ambivalens og misnøye (Haraldsson et al., 2011). Høy OAS korrelerer signifikant og positivt med skolekarakterer og skoleprestasjoner (Kristensson & Öhlund, 2005; Torsheim et al., 2001). I stressende situasjoner, som antas å forekomme regelmessig i ungdomsårene, vil kognitive vurderinger og mestringsprosesser spille en medierende rolle i personlig psykologisk og fysiologisk tilstand, og de utfordringene ens omgivelser tilbyr, både på kort og lang sikt (Eriksson, 2015). Forskning viser at støttende skolemiljø i form av lærer- og medelevstøtte både faglig og sosialt har positiv innvirkning på å utvikle en sterk OAS som igjen bidrar til å redusere skolerelatert stress og legger et bedre grunnlag for læring (Carter et al., 2007; Danielsen et al., 2009; García-Moya et al., 2013).

Forskning på OAS og GMR i arbeidslivet har likhetstrekk med skoleforskning. Studier har vist at sterk OAS reduserer ansattes opplevelse stress på arbeidsplassen (Bildt et al., 2006; Kinman, 2008; Olsson et al., 2009). Sentrale GMR som fremmer OAS er følelsen av jobbkontroll, sosiale relasjoner og betydingsfylle arbeidsoppgaver (Feldt et al., 2000; Graeser, 2011; Nilsson et al., 2012; Wilson et al., 2004). Studier har også vist at OAS, medarbeiderinvolvering og jobb-

engasjement er tett forbundet (Bezuidenhout & Cilliers, 2010; Vaandrager & Koelen, 2013; Van der Colff & Rothmann, 2009; Vinje et al., 2007).

Metodisk tilnærming

Epistemologisk kan salutogenese bli oppfattet som en konstant læringsprosess som fornyer seg kontinuerlig. Det å forholde seg til andre gir læring, og kunnskapen fra praksis utvider kunnskapsområdet (Eriksson, 2022). Den komparative metoden anvendes ofte når man er ute etter mønster av likheter og ulikheter, som kan forklare kontinuitet og endring. Imidlertid kan det være gode grunner til at det finnes forskjeller i fag- og yrkesopplæring, og at disse kan være relatert til særtrekk ved de enkelte programområdene, kunnskapsbase og arbeidsoppgaver. Med bakgrunn i kvalitativ forskningstilnærming har jeg ikke som hensikt å måle eller rangere GMR som fremmer OAS som er vanlig i kvantitative komparative metoder, men å synliggjøre hva deltakerne vektlegger som viktige GMR for at de skal balansere stress, begripe, håndtere og finne mening i opplæringen både mens de er elever i skolen og når de er i ferd med å avslutte læretiden, med vekt på deltakernes utvikling.

Datagrunnlag og datagenerering

Hovedkarakteristikken ved longitudinelle studier er at datagenerering gjennomføres over et tidsrom. Denne studien har generert datamateriale fra samme deltakere ved to tidspunkt: under Vg2 og under siste halvår av læretid. Empirien fra Vg2 har tidligere blitt analysert og presentert i en studie som undersøkte elevers OAS i skoledelen av opplæringen (Hanssen et al., 2022). Da med fokus på sammenhengen mellom fagene, og teori og praksis. Funnene ble drøftet i lys av den salutogene teorien og dybdelæring som har blitt et gjennomgående begrep i det norske læreplanverket. Empirien fra læretiden har tidligere blitt analysert med mål om å identifisere indre og ytre GMR som fremmer OAS bedriftsopplæringen (Hanssen & Utvær, 2022). Funn viste at indre og ytre GMR gjensidig påvirker hverandre og er av den grunn både individuelt og sosialt betinget. Denne studien undersøker hvordan behovet for GMR endrer og utvikler seg fra deltakerne er elever i skolen og gjennom bedriftsopplæringen som lærlinger. Det longitudinelle designet gjør det mulig å få kunnskap om hvordan opplæringskontekst og kompetanseutvikling endrer deltakernes behov for ulike GMR i utdanningsløpet. Selv om denne studien i likhet med Hanssen og Utvær (2022) drøfter funnene i lys av den salutogene teorien vil den i større grad undersøke betydningen av å håndtere stress for å fremme OAS i fag- og yrkesopplæring. Første datagenerering fant sted i tidsrommet mai–juni 2020, andre datagenerering ble gjennomført i tidsrommet januar–august 2022. Tolv elever, ni menn og tre kvinner, deltok i førstegangsintervju. Det ble foretatt et strategisk

utvalg. Elevene skulle representere bredden av programområdene, da det var interessant og se om det finnes noen fellestrekk mellom programområder. Det var også et kriterium at elevene skulle ha fått tilbud om læreplass, slik at det skulle være mulighet til å intervjue dem på nytt. Elevene ble rekruttert av sine lærere på fire ulike skoler. Kravet var at de hadde lyst til å delta ikke at læreren opplevde dem som skolemotiverte eller høyt presterende. Elevene representerer seks programområder og ti ulike lærefag (Tabell 1). Selv om alle tolv hadde gitt skriftlig samtykke til nytt intervju var det utfordrende for fire av deltakerne å finne tid til andregangs intervju. Åtte av lærlingene stilte til intervju, tre ønsket å besvare skriftlig og en takket nei til andregangsintervju på grunn av tidsmangel.

Tabell 1. Utvalg og datagenerering ved to tidspunkt, 2020 (n=12) og 2022 (n=11).

Skole	Deltaker-kode	Kjønn/Alder	Progresjon i utdannings-løp	Programområde Vg2	Lærefag	1.gangs-intervju/ sted/tid Vår 2020	2.gangs-intervju/ sted/tid Vår 2022
1	D-1	Kvinne 18–20	Normert progresjon	Helse-arbeiderfag	Helse-arbeiderfaget	Fysisk	Digitalt
1	D-2	Mann 23–25	Utdanning utenfor Norge	Helse-arbeiderfag	Helse-arbeiderfaget	Fysisk	Trakk seg på grunn av tid
1	D-3	Mann 18–20	Normert progresjon	Elenergi	Elektrikerfaget	Fysisk	Skriftlig
1	D-4	Mann 18–20	Normert progresjon	Elenergi	Elektrikerfaget	Fysisk	Digitalt
1	D-5	Mann 18–20	Normert progresjon	Elenergi	Energi-montørfaget	Fysisk	Fysisk
2	D-6	Mann 18–20	Normert progresjon	Kokk- og servitørfag	Kokkefaget	Fysisk	Digitalt
2	D-7	Mann 18–20	Normert progresjon	Kokk- og servitørfag	Kokkefaget	Fysisk	Digitalt
2	D-8	Kvinne 18–20	Normert progresjon	Salg, servise og sikkerhet	Kontor- og administrasjons-faget	Fysisk	Digitalt
2	D-9	Mann 18–20	Normert progresjon	Salg, servise og sikkerhet	Salgsfaget	Fysisk	Skriftlig
3	D-10	Kvinne 19–21	Omvalg samme program-område	Kjøretøy	Bilfaget, lette kjøretøy	Fysisk	Fysisk
3	D-11	Mann 20–22	Omvalg fra Vg2 studie-forberedene	Kjøretøy	Bilfaget, tunge kjøretøy	Fysisk	Fysisk
4	D-12	Mann 18–20	Normert progresjon	Byggteknikk	Tømrerfaget	Fysisk	Skriftlig

Første intervju ble gjennomført ved elevenes skoler i trygge omgivelser. Tre andregangsintervju ble gjennomført på lærlingenes arbeidsplass eller tidligere

skole, mens fem ble gjennomført digitalt på Teams. Intervjuene hadde en varighet på 28–55 minutter og det ble benyttet diktafon. De skriftlige intervjuene ble tilsendt på epost, inneholdt elleve sentrale spørsmål som ble spisset opp mot problemstillingen. De skriftlige intervjuene minnet mer om fokusintervju da det ikke ble rom for å stille utdypende oppfølgingsspørsmål. Ifølge Tjora (2021) kan man lykkes med å generere tekstlig kvalitativt materiale gjennom intervju på epost dersom deltakerne er engasjert i tema og gir utfoldende svar på åpne spørsmål. Jeg opplevde svarere noe korte og av den grunn er det fare for at de skriftlige intervjuene i mindre grad støtter opp om funnene og kan av den grunn skape noe skjevfordeling mellom grupperingene Vg2 og læretid.

Ved å gjøre en longitudinell studie er det mulig å undersøke endringer som skjer over tid hos samme utvalg. Det er mulig å se endringer direkte knyttet til individ eller gruppe (Arnau & Bono, 2008). I denne studien ser jeg i hovedsak på gruppenivå, Vg2 og lærling, og valgte av den grunn å beholde datamarialet fra deltakeren som kun deltok i førstegangsintervju. Tabell 1 viser oversikt over utvalg og datagenerering. Tabell 2 viser tema i intervjuguiden fordelt på første- (Vg2) og andregangsintervju (læretid).

Tabell 2. Tema i semistrukturert intervjuguide Vg2 og læretid.

Spørsmål som omhandler	Vg2	Læretid
Bakgrunn for skolevalg		
Forhold til de ulike fagene i skolen		
Betydningen av faget yrkesfaglig fordypning i bedrift		
Sammenheng mellom teoretiske og praktiske fag		
Gode læringssituasjoner		
Egne kvaliteter i læresituasjon		
Hva motiverer for læring		
Når blir opplæringen meningsfull		
Hvordan påvirkes de av stress		
Suksessfaktorer for faglig utvikling		
Støttepersoner av betydning for læring		
Andre faktorer som har betydning for læring		
Forskjeller mellom skole og bedriftsopplæring		
Overføring av kunnskap fra skole til læretid		
Fremtidsplaner		

Grå markering viser tema som inngikk, mens hvit markering viser tema som ikke inngikk i intervjuguiden som la grunnlag for intervjuene som ble gjennomført ved to tidspunkt: under Vg2 og under siste halvdel av læretid.

Etiske overveielser og metodisk kvalitet- og begrensning

Godkjenning for behandling av personopplysninger er innhentet fra Norsk senter for forskningsdata (NSD) (refnr. 715305) i forkant av datagenerering (NSD, 2020). Deltakerne gav sitt samtykke etter å ha mottatt skriftlig informasjon om studiens formål, anonymisering og tidsrom for oppbevaring av det transkriberte materialet. Det er lagt vekt på å opptre med respekt i møte med deltakerne. Det var utfordrende for lærlingene og finne tid til andregangsintervju selv om jeg opptrådde fleksibel og lot deltakerne bestemme tid og sted for gjennomføring. Lærlingene som kun deltok på førstegangsintervju, ble kontaktet via SMS inntil tre ganger. Videre ble initiativet om deltakelse overlagt til deltakerne for å opprettholde opplevelsen av frivillighet i henhold til samtykkeskjema. Jeg har prøvd å være transparent i fremstilling av utvalg av deltakere og analyse av data for å ivareta studiens *pålitelighet* (Tjora, 2021). For å underbygge *gyldighet* så har jeg gjort et forsøk på å begrunne hvorfor jeg velger å benytte begrepene OAS og GMR i forskning i fag- og yrkesopplæring.

Analyse og presentasjon av funn

Koding og kategorisering ble brukt som analysestrategi for å få oversikt over datamaterialet og til å utforske likheter og variasjon i deltakernes uttalelser fra Vg2 og læretid. Analysen tok utgangspunkt i konstant komparativ metode som benytter tre kodingsfaser: åpen, aksial og selektiv koding (Charmaz, 2014; Corbin & Strauss, 2008). Gjennom åpen koding ble det satt merkelapper i margen, såkalt innledende koder (Charmaz, 2014). De innledende kodene var både ord og setninger som fanget opp tanker, følelser og beskrivelser av opplærings-situasjoner. Kodene var nært knyttet til empirien og var i stor grad deskriptive. Eksempler på koder fra andregangsintervju var: *presset på tid, høyt arbeidstrykk* og *få pauser*. Deretter startet den aksiale kodingen der de innledende kodene ble tolket og sammenlignet for å se om meningsinnholdet kunne samles i færre koder, såkalte fokuserte koder (Charmaz, 2014). Eksempelvis ble de innledende kodene nevnt over samlet under den fokuserte koden: *Høy arbeidskapasitet*. De fokuserte kodene ble mer analytisk enn de deskriptive innledende kodene. Det var på dette tidspunktet jeg gjorde en komparativ analyse mellom de fokuserte kodene fra Vg2 og læretid gjennom å se på likheter og ulikheter. Ved å knytte sammenhenger mellom de fokuserte kodene fra alle intervjuene, ble det mer synlig at kodene kunne samles i kategorier relatert til begrepene GMR og OAS. Analysen gikk over til å bli mer deduktiv i tråd med abduktiv tilnærming (Tjora, 2021). Nok en gang så jeg på om kodene hadde fellestrekk. I noen av de indentifiserte GMR-ene inngår flere av komponentene i OAS. For å være *løsningsorientert*, beskrev deltakerne at de brukte både kognitiv forståelse og praktiske ferdigheter for å løse en ny og kompleks arbeidsoppgave.

Tabell 3. GMR som fremmer OAS i Vg2 og læretid.

Sentrale GMR fra analyse		Vg2	Læretid
Begripelighet	Å lære gjennom praksis		
	Autentiske læringsmiljø		
	Mottakelig for veiledning		
	Samarbeidende læringsmiljø		
	Å se ting i sammenheng		
	Bygge på erfaring		
	Tolke interne normer		
	Marielle hjelpemidler		
	Digitale hjelpemidler		
Håndterbarhet	Kjenne kontroll		
	Omstillingsevne		
	Tilpassingsdyktighet		
	Viljestyrke		
	Støttende læringsmiljø		
	Skole og bedriftskultur		
	Stressmestring		
	Selvstendighet		
	Refleksivitet		
	Løsningsorientert		
	Høy arbeidskapasitet		
	Fleksibel		
	Kommunikasjonsferdigheter		
	Sosiale ferdigheter		
	Jobbe i team		
	Planleggingsferdigheter		
	Nettverk og oppvekstmiljø		
Meningsfullhet	Oppleve nytteverdi		
	Faglig interesse		
	Anerkjent av andre		
	Anerkjent for yrkesvalg		
	Yrkesstolthet		
	Føle seg myndiggjort		
	Å innta en aktørrolle		
	Å bistå andre		
	Anerkjenne seg selv		
	Faglige rollemodeller		
	Arbeidsfellesskap		

Stor betydning *Mindre betydning* *Ikke identifisert*

Jeg har likevel valgt å synliggjøre hver GMR til den komponenten som anses som mest fremtredende i analysen for å kunne gi innhold til hver og en av komponentene i OAS. Etter at det ble gjort en komparativ analyse av de fokuserte kodene ble de plassert under hovedkategoriene: *Begripelighet, Håndterbarhet* og *Meningsfullhet*. Tabell 3 synliggjør betydningen av sentrale GMR i Vg2 og læretid.

Subkategoriene som utgjør GMR ble plassert under hver hovedkategori samtidig som de ble sortert etter GMR *som har betydning for hele utdanningsløpet* (16), *GMR som utvikles gjennom læretid* (20) og *GMR som er mest fremtredende i skolen* (1). Dette for å kunne se hvilke GMR som utvikles gjennom utdanningen. Tredje steg og analysens endelige mål er å finne kjernekategorien gjennom selektiv koding (Corbin & Strauss, 2008). Kjernekategorien er det begrepet som har best potensial til å kunne relateres til flest mulig beskrivelser og som gjenspeiler studiens problemstilling. Denne fikk navnet: *Utvikling av GMR som fremmer OAS i Vg2 og frem mot fag-svenneprøve*. Oversikt over subkategorier, hovedkategoriene og kjernekategorien kan sees i tabell 4.

Tabell 4. Utvikling av GMR som fremmer OAS i Vg2 og frem mot fag-svenneprøve.

	Begripelighet	**Håndterbarhet**	**Meningsfullhet**
GMR som har betydning for hele utdanningsløpet	Å lære gjennom praksis Mottakelig for veiledning Autentiske læringsmiljø Samarbeidende læringsmiljø	Viljestyrke Nettverk og oppvekstmiljø Støttende læringsmiljø Skole og bedriftskultur	Oppleve nytteverdi Faglig interesse Anerkjent for yrkesvalg Anerkjent av andre Yrkesstolthet Føle seg myndiggjort Å innta en aktørrolle Å bistå andre
GMR som utvikles gjennom læretid	Å se ting i sammenheng Bygge på erfaring Tolke interne normer Materielle hjelpemidler Digitale hjelpemidler	Jobbe i team Selvstendighet Stressmestring Løsningsorientert Refleksivitet Høy arbeidskapasitet Fleksibel Omstillingsevne Tilpassingsdyktighet Planleggingsferdigheter Sosiale ferdigheter Kommunikasjonsferdigheter	Anerkjenne seg selv Faglige rollemodeller Arbeidsfellesskap
GMR som er mest fremtredende i skolen		Kjenne kontroll	

Diskusjon og presentasjon av sentrale funn

Innledningsvis stilte jeg spørsmålet: *Hvordan utvikles og endres behovet for GMR som balanserer stress og fremmer OAS fra Vg2 og frem mot fag-svenneprøve*? Først presenteres tabell 4: Utvikling av GMR som fremmer OAS i Vg2 og frem mot fag-svenneprøve som viser en oversikt GMR som (1) har betydning i hele

utdanningsløpet, (2) utvikles gjennom læretiden og (3) som er mest fremtredende i skolen fordelt under de tre komponentene i OAS. Videre diskuteres GMR som har utviklet seg fra Vg2 til læretid underskriftene begripelighet, håndterbarhet og meningsfullhet.

Begripelighet

Studien viser at deltakerne være i stand til å se sammenhenger mellom teori og praksis og fag- og arbeidsoppgaver jo lenger ut i utdanningsløpet de kommer. Jo mer deltakerne lærer ser de behovet for teoretisk kunnskap. En av kokkelærlingene sa; ”Teorien er jo viktig selv om jeg ikke liker den like mye, men den er viktig. Jeg ser jo det i etterkant” (D-6). Årsaken til dette ser ut til å være at den teoretiske kunnskapen implementeres mer i praktiske gjøremål i læretiden og oppleves av den grunn mer integrert. Studien viser at det å bygge ny kunnskap med bakgrunn i erfaring er en sentral GMR for å øke forståelse av faget i læretiden. Erfaringslæring koblet til refleksjon har lenge vært et kjent fenomen for å utvikle kompetanse i en yrkesfaglig kontekst (eksempelvis Dewey, 2005; Kolb, 2012). Å lære av erfaring handler om å oppleve sammenhenger mellom det vi har gjort og det vi skal gjøre. Hvis handlingen ikke stemmer med det man forutså kommer tenkningen inn (Dewey, 2005). Vurderings- og refleksjonsevnen ser ut til å få større betydning i læretiden enn i Vg2. Deltakerne forteller at de blir utfordret og må løse oppgaver på egen hånd i større grad som lærlinger enn da de gikk i skolen. Energimontørlærlingen forteller: ”Du må finne løsninger på ting hele tiden. Det er alltid noe du må pønske på” (D-5). I førtegangsintervju var deltakerne fra helse- og servicefagene opptatt av å forstå før de skulle handle i praksis. En av helsefagarbeider elevene fortalte: ”Det var fint å lære om diagnoser og kommunikasjon som kroppsspråk før vi skulle ut i praksis for å være godt forberedt” (D-2). Å lære i praksis handler ifølge deltakerne om å møte det uforutsigbare. Helsearbeideren fortalte videre:

> I praksis var det litt annerledes. Det å jobbe med realistiske mennesker og ikke bare det vi trener på her på skolen. Vi måtte være mer fleksible. Her er et menneske, en eldre mann som veier 95 kg han trenger hjelp. (D-2)

Når det gjelder de teknologiske fagene var det ikke så synlig at de måtte begripe før de handlet i praksis. En av elektrikerelevene sa før han skulle ut i bedriftsopplæring i YFF: ”Det jeg ikke har lært på skolen lærer jeg av montøren” (D-3). De teknologiske fagene jobber i stor grad etter formelle krav og retningslinjer og har muligheter for å kvalitetssikre arbeidet før det presenteres til kunder. Samtidig snakker også lærlingene fra teknologiske fag om at en stor del av arbeidshverdagen handler om å tenke ut de beste løsningene i tråd med energimontørens sitat over. Personer med en sterk OAS vil ha tro på at utforingen er forstått (begripelighet) (Antonovsky, 1987).

Deltakerne utrykte at tid får en annen dimensjon i læretiden. En av kokkelærlingene uttrykte: "På skolen kunne vi bruke en halv time på å finne frem ting. Her må vi planlegge ganske langt frem i tid for å se hva du må ta ut av kjølen, fryseren og slike ting" (D-6). Det å kunne planlegge blir ansett som en viktig GMR for å kunne gjennomføre arbeidsoppgaver som innehar tidsfrister på kort og lang sikt, eksempelvis servering av et måltid som beskrevet over, eller å ferdigstille et prosjekt innen byggfaget.

Håndterbarhet

Analysen viser at håndterbarhetskomponenten i OAS utvikler seg mest fra Vg2 og frem mot fag-svenneprøve. Å omstille seg til å bli en arbeidstaker og tilpasse seg et arbeidsmiljø og en arbeidskultur ser ut til å være sentrale GMR for å håndtere stress og utvikle yrkeskompetanse blant lærlingene. Omstillingsevne og tilpassingsdyktighet var ikke synlig under førstegangsintervju, men svært fremtredende i andregangsintervju. Studien viser at det å knekke koder i språk og fremtoning ble viktig for å føle tilhørighet og bli en del av bedriftskulturen. De fleste arbeidsplasser benytter et spesifikt språk som sjargong og akronymer, og den gradvise læringen av dette språket lar elevene og lærlingene øke deres deltakelse i og forståelse av bedriftens kultur (Eames & Coll, 2010). Å kunne håndtere et kodespråk styrker yrkesidentiteten som igjen fremmer menings-komponenten og viser dermed at komponentene i OAS er tett forbundet (Antonovsky, 1979, 1987). Skoleklasser er som hovedregel organisert etter alder som resulterer i at elevene jobber side om side med jevnaldrende. Lærlinger skal samhandle med voksne erfarne kollegaer som skal bistå deres læreprosess på veien mot å utvikle en helhetlig yrkeskompetanse. Lastebillærlingen fortalte:

> Jeg hadde jo hatt en del sommerjobber så jeg trodde jeg hadde forstått litt om voksenlivet. Og jeg følte meg ganske moden i og med at jeg var den eldste i klassen på skolen, men når jeg kom hit. Nei, oh my lord… Hvor mye jeg lærte om voksenlivet og hvordan det egentlig fungerer. (D-11)

Å sosialiseres inn i et voksenliv ser ut til å komme overaskende på, men deltakerne i studien ser ut til å håndtere dette på en god måte så fremt dette foregår i trygge omgivelser. I skoledelen var elevene mer opptatt av relasjonell og instrumentell støtte for å mestre arbeidsoppgaver i skolehverdagen enn lærlingene er i sitt daglige arbeid. En av kokkelærlingene opplevde praksis i bedrift i Vg1 stressende. Han fortalte:

> Først så stresset jeg og gjorde en del feil. Folk som kjenner meg, vet at jeg hater å gjøre feil. Da blir jeg veldig sur på meg selv. Så jeg måtte bare få hjelp fra de jeg jobbet med. De sa jeg måtte ta det rolig. Så jeg lærte og bare puste og komme meg igjennom det. (D-6)

Dette trenger ikke å tyde på at støtte ikke er viktig i læretiden, men at skoleopplæringen har lagt grunnlaget for å identifisere nye GMR som gjør lærlinger mer selvstendige. Tidligere forskning peker på at støttende skolemiljø har positiv innvirkning på å utvikle en sterk OAS og bidrar til å redusere skolerelatert stress (Carter et al., 2007; Danielsen et al., 2009; García-Moya et al., 2013). Det at deltakerne blir mer selvstendig ser ut til å gjøre de mer bevisst ytre GMR jo lenger ut i utdanningen de kommer. Å benytte seg av digitale og materielle hjelpemidler som apper, internett og oppslagsverk for å løse arbeidsoppgaver på egent initiativ er mer vanlig i læretiden enn det var i skolen. Bruk av hjelpemidler er med på å styrke begripeligheten og deretter håndterbarheten og viser at identifisering av en GMR legger grunnlag for å identifisere nye GMR jamfør den salutogene teorien som anser GMR og OAS som en positiv forsterkende loop (Lindström & Eriksson, 2010).

Samtlige deltakere utvikler sosiale- og kommunikative ferdigheter når de sosialiseres inn i et arbeidsfellesskap som lærlinger. Alle de seks lærlingene som representerer de teknologiske fagene, snakker om viktigheten av å være sosial og det å kunne kommunisere. Dette ble ikke nevnt i første intervju da de var elever. Det kan se ut som at utvikling av fagkompetanse får høyest prioritet i skoleopplæringen for fag som ikke innehar kommunikasjon i kompetansemålene for fag. Eksempelvis innenfor elektrofagene, beskrives kun faglig kommunikasjon i Læreplanverket av kunnskapsløftet 2020 (LK20). Å kommunisere med kollegaer og kunder nevnes verken under *fagets relevans og sentrale verdier, grunnleggende ferdigheter, kjerneelementene for fag, tverrfaglige tema* eller i *kompetansemålene for programfagene* i Vg2 *Elenergi og elkom*, Vg3 *Elektrikerfaget* eller Vg3 *Energimontørfaget* som deltakerne representerer. Med andre ord må lærere og bedriftsveiledere være bevisst på overordnet del for å kunne legge fokus på viktigheten av å kommunisere med kunder og kollegaer for elever som kommer fra dette fagfeltet. Elektrikerlæringen bruker kommunikasjon for å håndtere stress:

> Måten jeg kommer meg ut av stressende situasjoner er å prøve å snakke litt med kunden som henger over skulderen min. Ved å spørre "hva driver du med du da?", høre hva de jobber med å få de til å prate litt. Jeg har en ganske god evne til å få god kontakt med folk da. Jeg trenger veldig lite å gå på for å få i gang en samtale som de også er interessert i å delta i. Så det er et middel jeg bruker når det er situasjoner der noen står og ser på meg. For da får jeg fokuset bort i fra dem og over til hva jeg holder på med. (D-4)

Ut fra et salutogent perspektiv vil det være sannsynlig at en person som opplever tilværelsen sammenhengende, vil ha stor tiltro til sine egne mestringsmuligheter og deretter mobilisere de ressurser som egner seg for å håndtere den eventuelle situasjonen (Antonovsky, 1987). En slik mestringsfunksjon vil således innebære et forsøk på å distansere sine tanker og følelser bort fra situasjonen som oppleves som truende og stressende. Ved å distansere sine tanker og følelser bort fra den stressende situasjonen, slik elektrikerlærlingen beskriver over, vil den stressende

følelsen med større sannsynlighet kunne avta (Antonovsky, 1990). Det at elever og lærlinger i en tidlig fase føler at de behersker fagspesifikk kunnskap gjør at de får delta aktivt i arbeidsoppgavene. Å være aktør er en viktig GMR både i skole og læretid og ser ut til å bidra til å fremme refleksivitet som deltakerne opplever er sentralt for å mestre og finne mening i læretiden. Å gi lærlinger utfordrende, myndiggjørende og støttende læringsmiljøer styrker lærlingers selvevalueringer da det gi dem mulighet til å forme læringen i henhold til deres behov (Lüthi et al., 2021).

Opplevelse av kontroll var en sentral GMR for å håndtere stress og faglige krav i skoleopplæringen. Det legges et bedre grunnlag for læring om vi tror at mestring er avhengig av innsats og arbeid, ikke bare av medfødte evner og egenskaper (Dweck, 2017). Egen mestringstro, *self-efficacy*, er et bidrag og en motiverende faktor for å lære. Personer som har en lav mestringstro, skyr oppgaver de oppfatter som vanskelig og fokuserer heller ikke på å gjøre oppgaven ordentlig (Antonovsky, 1987; Bandura, 1993). Gjentatte mestrings-opplevelser, spesielt gjennom praktiske arbeidsoppgaver ser ifølge studien ut til å ha stor betydning for å utvikle GMR som forhindrer negativt stress og bidrar til økt motivasjon og dertil mening. Spenninger er en reaksjon på stress som kommer innenfra, og selv om det anses som emosjonelt, er det fortsatt et fysisk fenomen. Når en stressfaktor er definert, oppstår det en rekke følelser. En person med sterk OAS vil da sannsynligvis definere stimulansen som en utfordring og ikke som en belastning eller risiko (Antonovsky, 1990). Forskning viser at elever som opplever høye krav på skolen kombinert med lav grad av kontroll uttrykker mer uhelse enn de som kan balansere krav og kontroll (Haraldsson et al., 2011; Modin et al., 2011). Selv om læringstrykket oppleves størst i læretiden blir ikke deltakerne i denne studien i like stor grad stresset om de møter faglige utfordringer og uforutsigbare situasjoner i læretiden. Dette kan tyde på at del-takerne gjennom å identifisere og bruke GMR blir bedre rustet til å møte kravene utdanningen utsetter dem for og kan i likhet med tidligere forskning bidra til skolestressforebygging og skolestressmoderering (García-Moya et al., 2012; Torsheim et al., 2001) også i yrkesforberedende utdanningen.

Mange av de indre GMR som lærlingene utvikler i læretiden og som knyttets til håndterbarhetskomponenten i OAS er kompetanse som bedriftene etterspør i fremtiden. Rapporten *Future of skills: Employment in 2030* viser trender som vil påvirke arbeidslivet og livet generelt (Bakhshi et al., 2017). Forskningen er hentet fra USA og Storbritannia, men det er ikke usannsynlig at de ferdighetene som nevnes får betydning også i norsk arbeidsliv. Nevnte ferdigheter som samsvarer med GMR som avdekkes i denne studien er aktiv læring, kritisk tenkning, sosial oppfatningsevne og kompleks problemløsning. Ferdigheter som ikke direkte benyttes til å utføre en bestemt aktivitet omtales ofte som "soft skills" (myke ferdigheter). Begrepet blir brukt til å beskrive tverrgående kompetanser som skal

komplementere "hard skills" (harde ferdigheter) som er evne til å utføre en bestemt arbeidsoppgave (Cimatti, 2016). Studien viser at GMR, som kan kategoriseres som myke ferdigheter, har stor innvirkning på utføring av selve arbeidsoppgaven (harde ferdigheter) og vice versa. Spørsmålet blir da om det er hensiktsmessig å skille myke og harde ferdigheter når yrkeskompetanse skal utvikles i fag- og yrkesopplæring.

Meningsfullhet

For å lykkes i fag- og yrkesopplæring er det ifølge studien ikke nok å fokusere på å utvikle yrkeskompetanse for fremtiden. Denne studien viser at det er behov for å sette søkelys på meningsaspektet som antas å være motivasjonskraften i OAS (Antonovsky, 1987). Gjennom å innta et longitudinelt design ble det mulig å avdekke likheter og ulikheter i deltakernes opplevelser og oppfatninger av et bestemt fenomen over tid (Arnau & Bono, 2008). Meningsfullhet ser ut til å være den mest stabile komponenten gjennom utdanningsløpet da deltakerne trekker frem tilnærmet like eksempler når de forteller om hva som motiverer og gjør opplæringen meningsfull både i Vg2 og læretid (fremgår i tabell 4). Dette finner jeg interessant i et kunnskapssamfunn som er opptatt av å koble kompetanse til ulike ferdigheter. GMR som fremmer mening viser seg å være av emosjonell karakter da det handler om stolthet, lyst, interesse, og det å føle seg betydningsfull. Studier fra arbeidslivet har også vist at OAS og jobbengasjement er tett forbundet (Bezuidenhout & Cilliers, 2010; Van der Colff & Rothmann, 2009). Den emosjonelle dimensjonen ser dermed ut til å ha stor innflytelse på læringsprosessen hos deltakerne. Dette gjenspeiles i studien gjennom at opplæringen oppleves meningsfull hvis den har betydning for en selv (oppleve nytteverdi), for andre (bistå andre) og ikke minst for samfunnet (være en bidragsyter). Det er ikke innholdet vi fyller livet med som gir mening, men det faktum at det er en sterk tro på at ens liv har mening (Antonovsky, 1993). Sosial anerkjennelse er essensielt både i Vg2 og læretid, men å anerkjenne seg selv ser ut til å være mer synlig i læretiden: Energimontørlærlingen uttrykte:

> Det betyr noe at de rundt deg har tro på deg, men hvis de ikke har det da så må man bare stå på likevel og gjøre det beste ut av det. Det er viktigst at man selv har tro på det man gjør. (D-5)

Følelsen av å bli en del av et arbeidsfellesskap med faglige rollemodeller gjennom å innlemmes i en bedriftskultur oppleves motiverende og stimulerer deltakernes arbeidsinnsats. Lastebilmekanikeren forteller: "Jeg blir så inspirert av de som kan faget sitt. De som er skikkelig flinke til det de holder på med, han du kan snakke med hvis du lurer på noe liksom. Han vil jeg bli" (D-11).

Lærlingene forteller historier som kan tyde på at selvfølelsen øker gjennom opplæringen. Over halvparten av deltakerne forteller eksplisitt de har et helt

annet syn på læring og egen motivasjon enn de hadde i ungdomskolen og at videregående opplæring ble en opptur. Energimontørlærlingen fortalte:

> Når jeg startet på videregående og fikk gjøre det jeg hadde lyst til å drive med. Mer praksis. Da blomstret jeg på en måte. Jeg fikk vist meg frem på en annen måte. Ikke bare teori. Jeg gikk fra å være helt på bunn på ungdomsskolen til å komme på videregående å være en av dem som var flinkest liksom. (D-5)

En sterk OAS med et stort repertoar av GMR bidrar til identifisering og påkalling av hensiktsmessige SMR (Antonovsky, 1979). Forskning viser at å ha sterk egoidentitet, være kunnskapsrik og ha et godt støtteapparat er sentrale GMR som kan stimulere til anvendelse av flere SMR (Mittelmark et al., 2017). Studien hadde ikke som mål og identifisere SMR og det er muligens ikke så lett å utforske empirisk gjennom intervju, da SMR oppstår her og nå i spesifikke situasjoner og kan være vanskelig å forklare. Fra et yrkesfaglig ståsted kan det minne om taus kunnskap eller viten-i handling (Schön, 2001). En spontan strategi som får deg til å løse en oppgave uten videre overveielser. Å reagere impulsivt i stressende situasjoner uten at det er tid å koble handling til erfaring, kan muligens være med å eksemplifisere bruken av SMR i en yrkesfaglig kontekst. Å ha tilgang til et spekter av SMR blir dermed viktig for å håndtere uforutsigbare situasjoner i fremtidig arbeidsliv og kan være interessant og utforske videre.

Avsluttende kommentarer

Å utforske relasjonen mellom GMR og OAS i et longitudinelt perspektiv gjør det mulig å gi innhold til komponentene begripelighet, håndterbarhet og meningsfullhet i både skole og bedriftsopplæring. Begripelighetskomponenten øker når praksis og teori integreres arbeidsoppgaver i læretiden. Deltakere som er i stand til å koble ny kunnskap på erfaring ser ut til å mestre nye og mer avanserte arbeidsoppgaver. Håndterbarhetskomponenten ser ut til å utvikles mest gjennom utdanningsløpet og er sentral for å mestre stress og uforutsigbare utfordringer. De identifiserte GMR som styrker håndterbarhetskomponenten i læretiden har fellestrekk med kompetanser som arbeidslivet etterspør og ser dermed ut til å være relevant for fremtiden. Meningsfullhetskomponenten er motivasjon og drivkraften og blir ansett som den viktigste komponenten for å fremme begripeligheten og håndterbarheten. Studien viser at GMR som fremmer meningsfullhet er bortimot identiske i skole og læretid og ser dermed ut til å være stabil over tid. Det blir derfor essensielt at utdanningen oppleves meningsfull allerede i skolen.

Implikasjoner for praksis

Funn presentert i denne studien kan tjene som innledende eksempler i diskusjoner om skole- og arbeidsrelaterte læringsfremmende GMR som bidrar til å redusere stress og fremme OAS i en yrkesfaglig kontekst. Det longitudinelle designet og den komparative analysemetoden gjorde det mulig å få kunnskap om hvordan GMR utvikles over tid avhengig av de faglige- og sosiale kravene, og læringsmiljøet elever og lærlinger møter gjennom utdanningen. Funnene i denne studien kan i så måte være gjeldene hos andre elever og lærlinger, samt innenfor andre fagfelt og land med kombinerte yrkesfaglige utdannings-modeller. Gjennom å gi innhold til komponentene i OAS kan den salutogene teorien hjelpe lærere og bedriftsveiledere å forstå og fremme læringsressurser som tilrettelegger for en opplæring som oppleves begripelig, håndterbar og meningsfull.

Studiens begrensninger

Teoretisk begrensning: Å bringe et salutogent perspektiv inn i fag- og yrkes-opplæring har ikke som hensikt å ukritisk adoptere nye begrep inn i en ny kontekst. Det handler om å bidra i diskusjonen om OAS i en læringskontekst med et nytt perspektiv da forskning over tid har hatt en tendens til å problematisere læring i kombinerte opplæringsløp.

Metodisk begrensning: Det er få deltakere i studien og ikke alle programområder er representert. Det at flest menn deltok i studien kan ha påvirket resultatet, men på grunn av at kjønn varierer mellom programområder og ikke alle var representert, ble ikke kjønnsbalanse ivaretatt og diskutert i denne studien. Jeg opplevde at de skriftlige besvarelsene var korte og at jeg skulle hatt mulighet til oppfølgingsspørsmål som kunne gitt rikere besvarelse. En konsekvens av dette ble at de åtte deltakerne som deltok i intervju to ganger fikk en større innflytelse på studien enn de tre som besvarte skriftlig andre gang. Denne studien kan ikke måle om deltakerne har sterk eller svak OAS, da opprinnelsen til Antonovskys måleinstrumentet bestående av 29 og 13 spørsmål (SOC-29, SOC-13) er av kvantitativ art og knyttes til helse og livskvalitet. Intervjuguiden ble utformet i tråd med min forståelse av den salutogene teorien beskrevet i Antonovskys to hovedverk: *Health, stress and coping* (1979) og *Unraveling the mystery of health: How people manage stress and stay well* (1987).

Resultatmessig begrensing: Det er ikke mulig eller ønskelig å lage en komplett liste over læringsfremmende GMR da både elever, lærlinger, skoler og arbeids-plasser har særegne kvaliteter og behov for lokale tilpasninger. Deltakerne vil kunne fortsette og utvikle sine GMR som fremmer OAS i arbeidslivet.

Om forfatteren

Grete Hanssen er stipendiat ved Norges teknisk-naturvitenskapelige universitet (NTNU), Fakultet for samfunns- og utdanningsvitenskap, Institutt for lærer-utdanning, Trondheim. Hun underviser på Fleksibelpedagogisk utdanning (FPPUY) og Master i yrkesdidaktikk (MDID) ved NTNU. Forskningsinteresser er yrkesfag, skole-bedriftssamarbeid, overgang skole-bedrift, formidling til læreplass, helhetlig- og tilpasset opplæringsløp, livsmestring og karriere- og sosialpedagogisk rådgivning.

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Utvikling av profesjonskompetanse: Estetiske læreprosesser i yrkesfaglærerutdanning

Developing professional competence: Aesthetic learning processes in vocational teacher education

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Abstract

The purpose of this study was to explore how experiences with aesthetic learning processes in vocational teacher education contribute to developing professional competence. This is grounded in theories of holistic experience, creative processes, and the development of professional digital competence. Qualitative data for this exploratory case study was generated in two focus group interviews among 10 teacher students in vocational teacher education, 2nd year of study. Using a thematic content analysis three categories emerged: 'Encounter and courage', 'Creativity and images', and 'Digital competence and multimodality'. The results show that the students' encounter with the aesthetic learning process leads to exploratory and critical thinking with an aesthetic quality. Taking part in this aesthetic learning process has led to experiences with holistic learning and in particular the emotional aspect of learning related to frustration, vulnerability, creativity, and spiritual development.

Keywords: vocational teacher education, creativity, multimodality, digital competence, aesthetic learning processes

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Innledning

Estetiske tilnærminger til læring og undervisning, ofte i kombinasjon med multimodalitet, har fått økt oppmerksom i de Nordiske utdanningssystemene, selv om de respektive landenes læreplaner ikke gjenspeiler dette (Österlind et al., 2016). Ved innføring ny læreplan i Norge i 2020, LK20, er den estetiske tilnærmingen tydeligere til stede i prinsippene for skolens pedagogiske praksis. Der utfordres alle lærere i grunnskolen og videregående opplæring til å legge til rette for elevenes skaperglede, utforskertrang og engasjement, så vel som å utvikle elevenes digitale kompetanse (By et al., 2020; Kunnskapsdepartementet, 2019b; NOU 2015:8). Bakgrunnen for dette er blant annet å finne i OECD's *21st century skills* hvor *soft skills* (sosial kompetanse) som samarbeid, kritisk tenkning, kreativitet og kommunikasjon anses som nøkkelkvalifikasjoner nødvendig for livslang læring, og det å mestre arbeidslivet (DiBenedetto, 2019). Flere forskere hevder at estetiske læreprosesser i utdanning generelt (Biesta, 2017), og i lærerutdanning spesielt (Shockley & Krakaur, 2021) vil imøtekomme OECD's uttrykte forventinger til det globale utdanningssystemet i det 21. århundre. I likhet med andre lærerstudenter bør derfor fremtidige yrkesfaglærerstudenter gis muligheten til å utforske den estetiske dimensjonen av læring og undervisning med relevans for det didaktiske arbeidet lærerstudenten skal ha ansvar for i skolen (Kunnskapsdepartementet, 2013; NOU 2015:8).

I denne studien utforskes hvordan *erfaringer* med estetiske læreprosesser kan bidra til utvikling av yrkesfaglærerstudentenes profesjonskompetanse. Den estetiske læreprosessen (EL) inngår i emnet yrkespedagogikk hvor både undervisningen (prosess) og arbeidskrav (produkt), et multimodalt uttrykk (MU), gjennomføres digitalt. Studentenes læreprosess omhandler her både pedagogikk, estetikk og informasjons- og kommunikasjonsteknologi (IKT).

Profesjonskompetanse kan defineres som teoretisk kunnskap, yrkesspesifikke ferdigheter og personlig kompetanse (Skau, 2017). Teoretisk kunnskap er faktakunnskap og allmenn forskningsbasert viten, mens yrkesspesifikke ferdigheter relateres til det profesjonsspesifikke "håndverket". Personlig kompetanse handler om hvem vi er og hvordan vi forholder oss til oss selv og samspiller med andre. Ettersom yrkesfaglærerstudentene allerede har yrkeskompetanse fra sitt tidligere yrke vektlegges pedagogikk, yrkesdidaktikk og erfaringer i praksis i lærerstudiet. For yrkesfaglæreren er det nødvendig å være kompetent både i sitt tidligere yrke og i lærerprofesjonen (Köpsén & Andersson, 2017). En yrkesfaglærer har derfor en dobbel yrkesidentitet: identitet som lærer og identitet som yrkesutøver, f.eks. tømrer, utviklet i en dobbel yrkessosialisering (Köpsén & Andersson, 2017). Det interessante er hvordan sosialiseringen inn i det tidligere yrket og læreryrket foregår. I yrkesfaglærerutdanningen legges det til rette for den doble yrkessosialiseringen gjennom en refleksjon over egen sosialisering inn i det tidligere yrket og læreryrket.

Tradisjonelt har estetikkbegrepet tilhørt de praktiske og estetiske fagene i skolen (Birkeland & Eriksson, 2021; Österlind et al., 2016). Selv om det ikke er en entydig definisjon av estetiske læreprosesser (Birkeland & Eriksson, 2021), forstås den som en kreativ prosess hvor både sanser og følelser aktiveres (Ross, 1984) og er mangefasettert (Österlind et al., 2016). Det er likevel en enighet om at en estetisk læreprosess skal danne selvstendige, kritisk tenkende og kreative mennesker (Brekke & Willbergh, 2017; Illeris, 2012; Ulvik, 2020). Austring og Sørensen (2012) foreslår en ny definisjon av estetiske læreprosesser som involverer et vidt spekter av lærepotensialer. Blant annet peker de på at deltakere i estetiske aktiviteter kan utvikle kulturell identitet, sosiale ferdigheter og evnen til å reflektere. Individet kan dele sine innerste tanker med andre. Austring og Sørensen (2012) hevder at estetiske læreprosesser alltid er relasjonelle og utviklet i samspill med den kulturelle konteksten.

Det er få empiriske studier om estetiske arbeidsformer i lærerutdanning generelt (Bamford, 2012; Møller-Skau & Lindstøl, 2022), og spesielt fra et pedagogisk perspektiv (UNESCO, 2006). I yrkesfaglærerutdanningen har estetiske læreprosesser i hovedsak vært forbeholdt kunst- og håndverksfagene (frisør, blomsterdekoratør, interiør osv.) (Meltzer & Schwencke, 2020). Med bakgrunn i dette gjennomførte Meltzer og Schwencke (2020) en studie om "arts-based learning" relatert til pedagogikk og didaktikk. Funnene viser at kunst-basert læring førte til at deltagerne utforsket nye sider ved seg selv, utviklet egen profesjonskompetanse og fant mot til å være kreativ og finne nye alternativer. Deltagerne i denne studien var rekruttert fra ulike yrkesfaglig utdanninger ved OsloMET, også noen fra yrkesfaglærerutdanning.

Utvikling av studentenes profesjonsfaglige digitale kompetanse er også relatert til den estetiske læreprosessen i vår studie. Et teknologirikt samfunn og arbeidsliv krever at yrkesfaglærere bidrar til å fremme elevens digitale kompetanse relatert til fagopplæringen og som grunnleggende ferdighet (Kunnskapsdepartementet, 2016, 2019a). Den teknologiske utviklingen med digitale verktøy og læreplattformer påvirker derfor lærerens praksis, spesielt lærings- og undervisningsarbeidet, og krever at læreren har en profesjonsfaglig digital kompetanse (Kelentric et al., 2017). Yrkesfaglærerutdanningen må på dette området være relevant for lærerstudentenes kommende yrkesutøvelse i skolen, og for digitale arbeids- og samfunnskrav (Kunnskapsdepartementet, 2013; NOU 2015:8). Forskning på området viser at studenter i ulike profesjonsutdanninger tilegner seg digital kompetanse blant annet ved å visualisere egne erfaringer (Walters et al., 2011). I vår studie søkes kunnskap om yrkesfaglæreres erfaringer med estetiske læreprosesser, spesielt det å skape et multimodalt uttrykk om egen yrkessosialisering. Å mestre den profesjonsfaglige digitale kompetansen blir dermed sentralt for å lykkes i den kreative prosessen. Sentralt er studentenes evne til å være kreativ, kritisk tenkende, reflektere og

skape en fortelling ved hjelp av ulike modaliteter (Barton & Ryan, 2014; Dahl et al., 2019; Selander & Kress, 2010). Ifølge Selander og Kress (2010) kan multimodalitet betegnes som en prosess hvor menneske forstår og skaper mening i verden ved å benytte tilgjengelige modaliteter. Gjennom å benytte ulike uttrykksmåter (tekst, lyd, bilde, tale) tilføyes både prosessen og produktet nye dimensjoner. Summen av de multimodale uttrykkene, en multimodal klynge, gir en rikere personlig fortelling som åpner for en ny dimensjon. Den skapende prosessen blir til nye mønstre, ny forståelse og kan slik berøre mottakeren på en annen måte (Dahl et al., 2019). Det digitale produktet av den estetiske læreprosessen bidrar dermed til å utvikle lærerstudentens profesjonsfaglige digitale kompetanse (Kelentric et al., 2017; Krumsvik, 2011a).

I norsk kontekst finnes det svært lite forskning på yrkesfaglærerstudenters erfaringer med digitale historiefortellinger. Wolden og hennes kolleger finner blant annet at digital historiefortelling i en kontekstuell læreprosess kan fremme både didaktisk- og profesjonsrettet digital kompetanse hos yrkesfaglærerstudenter innen design og håndverk, altså innen et praktisk-estetisk fag. Med dette som bakgrunn har artikkelen følgende problemstilling:

Hvordan kan erfaringer med estetiske læreprosesser bidra til å utvikle yrkesfaglærerstudenters profesjonskompetanse?

Teoretisk rammeverk

De estetiske erfaringer betraktes som skapende prosesser, og krever en rekke forutsetninger i en pedagogisk kontekst. Dewey (2005) knytter kunstens skapende prosesser til hverdagserfaringen, altså både til de finere kunstarter, og til håndverk i mer teknologisk forstand. Kunstformer handler om å gjøre noe *med* kroppen eller verktøy som har som mål å skape noe som kan ses, høres og berøres. *Erfaring* forstås som et koordinert samspill mellom tanke og handling, og omfatter det kroppslige, tankemessige og språklige (Dewey, 2009). En *erfaring* oppstår i møte med emosjonelt utfordrende situasjoner hvor vanemessige tanker og handlinger ikke strekker til (Dewey, 1933) og må ha et estetisk preg for å være helhetlig (Dewey, 1934). Slik har *estetisk kvalitet* et emosjonelt tyngdepunkt, og oppstår når den praktiske aktiviteten er sammenhengende og i fri bevegelse mot sin fullbyrdelse (Dewey, 1934). Det estetiske utfolder seg fra erfaringen og ikke som noe som påtvinges utenifra. Sentralt i Dewey's (2013) forståelse av erfaring er kritisk refleksjon; en *prosess* hvor mulige løsninger og begrunnelser for løsninger utforskes ved å se til tidligere erfaringer, begreper eller teori. Impulsen til å reflektere oppstår i menneskets behov for å finne mening i erfaringen og er slik det første steget i en erfaring. Dewey hevder videre at refleksiv tenkning er en tilstand preget av uro, frustrasjon og tvil, og av en søken etter å finne et

handlingsalternativ som kan fjerne uroen og stoppe forvirring. Dette forstås som at utforskingen starter i en erfaring som utfordrer etablerte tankemønster, og hvor målet er balanse og harmoni (Dewey, 2009, 2013).

Ross (Ross & Bradnack, 1978) beskriver den skapende prosessen som et *møte* (encounter), der det skapes en ubalanse med eksisterende *skjema* som setter i gang samspillet mellom indre og ytre verden med mål om å oppnå en balansert helhet. *Møte* er det potensielle rom for å etablere seg selv i den ytre og indre verden (Ross & Bradnack, 1978). *Møte* er selve grunnlaget for den skapende prosessen, og påvirker derfor alle de andre elementene i den. Impulsen må få forbindelse med dypereliggende følelsesstrukturer, og ha preg av studentens individualitet. En skapende prosess forutsetter at individet er villig til å innta en lekende posisjon uten at produktet er kjent. Individet føler spenning mellom det nye og usikre, og det trygge.

Det kreves vilje og *mot* for å åpne opp for følelser som kan gi tilgang til fantasi og forestillinger som påvirker form. Rollo Mays teori kan bidra til å forstå og forklare motet til å være kreativ (May, 1994). May omtaler flere former for mot, men det viktigste av alle er skapende mot som er å oppdage nye former, nye symboler og nye mønstre som et nytt samfunn kan bygges på. May sier at alle yrker vil kreve et visst skapende mot, og behovet for skapende mot står i et direkte forhold til forandringene som et yrkesområde gjennomgår. Den prosessen som går ut på å gjøre, skape, gi eksistens, betegner May som kreativitet (May, 1994).

Møte er viktig for den estetiske og emosjonelle betydningen som uttrykkes i en *form*. Når egne bilder som tar opp i seg følelsesimpulsen og utvikler følelsesintelligensen skal lages, er det viktig å kjenne egenskapene, karakteren og mulighetene som ligger i de medier som tas i bruk (Ross & Bradnack, 1978). Bildet må framkalle en betydningsfull følelse hos individet, og kan sammenlignes med drømmebilder som viser vei inn i dypere følelsesstrukturer. Det er i denne prosessen at det oppstår ulike følelser som sorg og glede, overmot og avmakt osv. Det er denne "kampen" som Ross omtaler som *kreativitet*.

Estetiske læreprosesser kjennetegnes av at omverden omformes i en kognitiv, en fysisk, en følelsesmessig og en sanselig dimensjon. I en estetisk læreprosess får deltagerne mulighet til å prøve ut nye roller og i et samspill dele sine innerste tanker med andre (Johansen, 2018). I en slik prosess er målsettingen å stimulere studentene til å våge å bygge på egne erfaringer, noe som innebærer at de involverer hele sin person. Estetisk læring bygger på erfaring, og mobiliserer sensitiviteten og involverer hele mennesket. Ifølge Johansen (2018) må man som lærer være oppmerksom på det kroppslige, det intellektuelle og den åndelige utvikling, og dette krever estetisk læring. For studentene i vår studie innebærer dette å innta et eksistensielt og filosofisk perspektiv som krever kunnskap det kan være vanskelig å finne fram til på egen hånd, og hvor deling av erfaring med

andre vil kunne gjøre en stor forskjell. I undervisningen kan det skapes rom for å reflektere fritt og utvikle evnen til å tenke kritisk på en konstruktiv måte. Man blir bedre ved å øve seg, men en erfaren lærer kan spille en viktig rolle.

Det er visse forutsetninger som må være til stede for at studenten skal få ny fagkunnskap (Karlsen & Bjørnstad, 2019). Det estetiske uttrykket som løsrives fra en bestemt kontekst i samfunnet, må oppleves som relevant i forhold til egen erfaring. Den estetiske læreprosessen blir en kilde til etisk refleksjon ettersom man på en kritisk måte kan vurdere standpunkt og verdier som man har.

Ross og Bradnack, som Dewey, vektlegger håndverk og teknikk og hvordan studentene klarer å benytte disse i en skapende prosess (Ross & Bradnack, 1978). Det er en nær forbindelse mellom uttrykksmidlene og form/produkt. Kunnskap om uttrykksmidlene har betydning for hvordan studentene klarer å utrykke følelsene og de indre bildene den enkelte har. I en slik sammenheng må ikke teknisk kompetanse bli et mål i seg selv, men kobles mot de ulike elementene i den skapende prosess (Ross & Bradnack, 1978). Det vil likevel være en viss sammenheng mellom uttrykksmidlene og hvordan man klarer å uttrykke de følelsene og indre bildene den enkelte har. Slik sett vil det ha betydning hvilke uttrykksmidler som tas i bruk (Ross & Bradnack, 1978).

Metode

Kontekst: Den estetiske læreprosessen i yrkesfaglærerutdanning

Den estetiske læreprosessen inngår i et yrkespedagogisk emne (15 European Credit Transfer and Accumulation System (ECTS)) i 2. studieår ved praktisk-pedagogisk utdanning for yrkesfaglærere (PPUY) ved et norsk universitet. Emnet omhandler skole og samfunnsmessige forhold som omfatter læring, sosialisering og utvikling i det aktuelle yrkesfaget med vekt på kritisk tenkning, nytenkning og innovasjon. PPUY er et nett- og samlingsbasert studium på 60 ECTS. På grunn av Covid-19 ble all undervisning gjennomført digitalt. Kullet bestående av 70 yrkesfaglærerstudenter, fordelt på tre klasser, har generelt få forkunnskaper om estetiske læreprosesser. I løpet av seks timer digital undervisning *om, i, med og gjennom estetiske læreprosesser* (Lindström, 2002), hvor ulike illustrasjoner (tegning, maleri, bilder, film og musikk) ble benyttet i dialogiske refleksjoner i grupper og/eller i plenum. Ved start av undervisningen utfordres studentene til å presentere en artefakt som kan assosieres til dem selv eller deres primære yrke, f.eks. tømrer. Kommunikasjonsøvelsen bidrar til at både studenter og lærer blir bedre kjent med hverandre. I tilknytning til en innføring i grunnelementer i dramaturgi og dramatiske virkemidler (Østern, 2014), skal studentene gjennomføre en oppgave som vektlegger det kreative og skapende. Denne oppgaven starter med at studentene observerer et maleri av

Henrik Rom (1919) som heter ”That’s how we live our lives”. Maleriet viser en mann og en kvinne sittende ved et dekket bord, han med et glass og hun med en kopp foran seg på bordet. Begge er kledd i fine klær, han i sort dress og hun i en rosa kjole. På veggen bak paret er det to maleri som gir assosiasjoner til to av Munchs kjente verk ”Vampyr” og ”Madonna”. Med utgangspunkt i observasjonene av maleriet og innføringen i dramaturgi skal studentene, i grupper på 3–4, skape en tenkt dialog mellom han og henne. Dette skal så presenteres som et rollespill med 5–10 replikker og tilpasses det digitale mediet. For å tydeliggjøre dialogen og ansiktsmimikken skal kamera kun være på når gruppen fremfører rollespillet for de andre i klassen. I forlengelsen av undervisningen skal lærerstudentene gjennomføre et individuelt arbeidskrav som er et digitalt multimodalt uttrykk (MU) hvor de skal visualisere erfaringer knyttet til egen doble yrkessosialisering (Köpsén & Andersson, 2017). Utfordringen for studentene er å forstå estetiske læreprosesser og dramaturgi knyttet til bruk av digitale verktøy. I denne studien assosieres derfor håndverk (Dewey, 2005; Ross & Bradnack, 1978) til blant annet digital kompetanse. Krumsvik (2011a, 2011b) definerer lærerens digitale kompetanse som evnen til å benytte IKT i læringsarbeidet basert på et godt pedagogisk-didaktisk IKT-skjønn hvor læreren har en forståelse for hvordan dette påvirker elevenes lære- og danningsprosesser. For å oppnå en profesjonsfaglig digital kompetanse, må relevante didaktiske oppgaver, øvelser, modeller og metoder inngå i læringsarbeidet for lærerstudenter (Istenic Starčič et al., 2016; NOU 2015:8). Studenter må utvikle kunnskap om pedagogisk bruk av digitale verktøy relatert til det faglige innholdet (Mishra & Koehler, 2006). Arbeidet med å skape et digitalt multimodalt uttrykk vil kunne bidra til å utvikle lærerstudentenes profesjonsfaglige digitale kompetanse (Kelentric et al., 2017), men forutsetter lærerstudentenes forståelse for pedagogiske teknikker hvor digitale verktøy benyttes konstruktivt i læringsarbeidet. Digitale verktøy inkluderer både digitale læremidler, digitale ressurser og digitalt utstyr (Kelentric et al., 2017).

I det multimodale uttrykket skal studentene reflektere over hvordan de først ble sosialisert inn i deres primære yrke, f.eks. tømrer, og deretter inn i læreryrket ved hjelp av bilde, tale, tekst og lyd. MU’en skal ha en varighet på fem minutter og leveres som en mp4-fil. Arbeidskravet ble gjort kjent for studentene i den digitale læringsplattformen Canvas ved studiestart og deretter gjennomgått i forbindelse med undervisningen om estetiske læreprosesser. Studentene har fire uker til å jobbe med eget multimodalt uttrykk før innlevering. Begge forskerne har i fellesskap vært fagansvarlig for utviklingen, gjennomføringen og veiledningen av temaet og arbeidskravet, mens en av oss har undervist i temaet estetiske læreprosesser.

Design, datamateriale og analyse

Studien er utforskende og kvalitativ med form som en casestudie (Hatch, 2002). Utforskende og kvalitativ fordi studien utforsker yrkesfaglærerstudenters subjektive erfaringer med hvordan deltagelse i en estetisk læreprosess har bidratt til å utvikle egen profesjonskompetanse. Dette peker mot en casestudie hvor deltagernes erfaringer knyttes til et "bundet/kontekstualisert fenomen", eksempelvis en hendelse, en institusjon eller en prosess innen utdanning (Hatch, 2002). Casen her er den estetiske læreprosessen. I en kvalitativ studie er det i samtale mellom forskeren og deltagerne at ny kunnskap (re)konstrueres (Nilssen, 2012). Datamaterialet bygger på to fokusgruppeintervju med henholdsvis 6 og 4 lærerstudenter. Utvalget bestod av en subgruppe med studenter (Tjora, 2017) basert på frivillig deltagelse og strategisk utvelgelse: Lærerstudentene hadde deltatt i alle aktivitetene i den estetiske læreprosessen, de representerte ulike yrkesfaglige utdanningsområder (tabell 1) og at de kommuniserte godt. Utvalget består av både kvinnelige og mannlige yrkesfaglærerstudenter innen sju (*) av i alt ti yrkesfaglige utdanningsområder i videregående opplæring:

*Tabell 1. Yrkesfaglige utdanningsområder. Utvalgets tilhørighet er merket med *.*

Bygg- og anleggsteknikk*	Helse- og oppvekstfag*
Frisør, blomster, interiør og eksponeringsdesign	Restaurant- og matfag
Håndverk, design og produktutvikling	Informasjonsteknologi og medieproduksjon*
Elektro og datateknologi*	Teknologi- og industrifag*
Naturbruk*	Salg, service og reiseliv*

Fokusgruppeintervjuene ble ledet av forskerne som introduserte tematikk og spørsmål relatert til deltagelsen i den estetiske læreprosessen som lærerstudentene så samtalte om. Intervjuene hadde en varighet på 1–1,5 time, ble tatt opp med digitalt opptak i teamsmøte på pc og transkribert.

Fokusgruppeintervju betraktes som velegnet til en utforskende kvalitativ studie hvor det legges til rette for en relativt naturlig kollektiv ordutveksling om tematikken (Kvale & Brinkmann, 2015). På grunn av pandemien ble intervjuene gjennomført digitalt i Teams i etterkant av den estetiske læreprosessen med innlevering av arbeidskravet (MU). Svakheten med et digitalt medium er at det svekker opplevelsen av den non-verbale kommunikasjonen og kan begrense flyten i en samtale. Ettersom studiet er nett- og samlingsbasert, var studentene relativt godt kjent med dialog og refleksjon i det digitale mediet. I tillegg måtte

alle deltagere være synlig på skjermen til enhver tid. Begge forskerne deltok selv om bare den ene ledet intervjuet.

Studentene ble tidlig i semesteret informert både muntlig og skriftlig om hensikten med forskningsprosjektet hvor det ble understreket at vurdering i emnet ikke påvirkes av hvorvidt studenten deltar eller ikke. Studien bygger på deltagernes informerte samtykke og følger etiske prinsipper for anonymitet og konfidensialitet (Kvale & Brinkmann, 2015). Studien er meldt til Norsk senter for forskningsdata (329433). Deltagende studenter benevnes S1, S2 osv.

En kvalitativ tematisk innholdsanalyse ble benyttet for å meningsfortette datamateriale for slik å identifisere yrkesfaglærerstudenters erfaringer med deltagelse i estetiske læreprosesser. I en slik analyse er det hva som blir uttalt relatert til erfaringen som er av interesse (Fejes & Thornberg, 2015; Kvale & Brinkmann, 2015). I første fase ble datamaterialet lest av forskerne for å få et innblikk i helheten i det enkelte intervju, men også med tanke på sammenhenger på tvers av de to transkriberte intervjuene. Allerede her startet en meningsfortetting og første tolkning av datamaterialet. I fase to ble programvaren Nvivo11 benyttet i den videre analyseprosessen hvor materialet ble kodet og kategorisert utviklet i et samspill med elementene i den estetiske læreprosessen: møte, mot, kreativitet, impuls og form. Dette resulterer i en ny meningsfortetting hvor likheter i studentens uttrykte erfaringer identifiseres. For å ivareta den interne gyldigheten av studien analyserte forskerne datamaterialet hver for seg for så å drøfte seg frem til en felles tolkning av materialet (Kvale & Brinkmann, 2015).

Resultat

I lys av tidligere presentert teori kan den estetiske læreprosessen i yrkesfaglærerutdanning betegnes som et *møte* mellom studentens indre verden og den ytre verden, hvor det kreves *mot* for å stå i usikkerheten mellom det kjente og trygge, og det nye. Det er i dette møtet den *kreative prosessen* kan oppstå og hvor nye *indre bilder* skapes og oppdages på veien frem til et *produkt*; i denne konteksten det multimodale uttrykket som blant annet krever digital kompetanse. Med bakgrunn i en slik forståelse er resultatkapittelet organisert i de tre kategoriene: *Møte og mot*, *Kreativitet og indre bilder* og *Digital kompetanse og multimodalitet*. Nedenfor presenteres en deskriptiv fremstilling av yrkesfaglærerstudentenes erfaringer med den estetiske læreprosessen. Illustrasjonene er representative eksempler på studentenes refleksjoner knyttet til tema.

Møte og mot

Yrkesfaglærerstudenter har relativt lange yrkeskarrierer bak seg når de velger å gå inn i lærerutdanning. De representerer yrker, f.eks. bilmekaniker, hvor det

ofte foreligger standarder og rutiner som regulerer arbeidsoppgavene. En estetisk læreprosess oppleves derfor veldig fremmed for disse studentene fordi den er åpen, prosessuell og fri. I fokusgruppeintervjuene beskriver flere av studentene møte med estetiske læreprosesser som frustrerende, forvirrende og utfordrende. Frustrasjonen relateres blant annet til møtet med en oppgavetekst som er åpen for tolkning:

> S1: Jeg var kjempefrustrert i starten. Jeg skjønte ikke helt hvor dette skulle ende. Jeg er på elektrofag, så det å koble det opp mot elektrofag som ikke akkurat er koblet opp mot følelser. Så jeg var på nett og leste alt jeg fant om estetiske læreprosesser for å prøve å finne ut hva dette egentlig handlet om. Da lærte jeg veldig mye. Og så klarte jeg å koble det opp mot undervisningen. Det ble en veldig god prosess, men jeg startet ut med masse frustrasjon.

Utsagnet illustrerer hvordan studenter med få erfaringer med estetiske læreprosesser opplever møtet med det ukjente. De opplever en frustrasjon omkring forståelsen av estetiske læreprosesser og hensikten med å skape et multimodalt uttrykk. I tillegg viser utsagnet at studentene opplever en læreprosess som involverer følelser, noe som oppleves som fremmed i forhold til eget yrkesfag. Studenten stiller spørsmål om sammenhengen mellom et teknisk yrkesfag skal kobles til følelse som tilhører privatsfæren. Studenten forteller også hvordan følelsen av usikkerhet ledet studenten til selv å søke kunnskap ut over det som ble tatt opp i undervisningen.

Andre studenter utdyper "S1" sitt *møte* med estetiske læreprosesser hvor de trekker frem hvilke andre følelser som også aktiveres i møte med det ukjente:

> S2: Jeg synes det var kjempeartig. Jeg synes det er veldig interessant når hodet tvinges til å tenke utenfor boksen. Tenke litt utvidet, litt annerledes og så skapes det en del følelser og assosiasjoner som jeg synes er interessante. Hva er det egentlig læreren ønsker at vi skal få ut av dette her?

Som utsagnet viser forteller studenten hvordan møtet med det ukjente fører inn i en følelsesmessig positiv utforskende prosess som krever annerledes og utvidet tenkning. Utsagnet illustrerer også usikkerheten knyttet til det å gå inn i en prosess hvor målet ikke er gitt.

I fokusgruppeintervjuet omtaler ikke studentene seg selv som modige, eller at det kreves *mot* for å skape, men flere utsagn viser likevel at mye handler om mot. Spesielt løfter studentene frem sårbarheten med å kommunisere egen forståelse av maleriet "That's how we live our lives" av Henrik Rom (1919) benyttet i undervisningen. På bildet ser vi en mann og ei kvinne som sitter ved et bord. Studentene ble bedt om å lage et rollespill hvor personene i maleriet gis navn, hvor de befinner seg, hva anledningen er og hvilket tidspunkt på døgnet dette møtet foregår. Både relasjon og maktforhold mellom personene skal også komme frem i en kort dialog:

> S2: Jeg hadde på en måte et veldig klart bilde av hva dette er, men samtidig så følte jeg litt sårbart å presentere mine tanker om hva dette egentlig er. Hva slags forhold de to har da – den følelsen satt jeg egentlig med når jeg skulle fortelle om meg selv og mitt eget liv. Den sårbarheten i det å late som at jeg tror at jeg vet hvorfor at jeg er her jeg er. Kjenner den livsløgnen.

Maleriet vekker og åpner opp for lignende følelser til sitt eget liv, og hvordan det oppleves å skulle fortelle om maleriet og samtidig fortelle om seg selv. Andre studenter utdyper at sårbarheten også handler om møtet med personlige og nære minner i utforskingen av egen doble yrkessosialisering.

I fokusgruppeintervjuet dreies samtalene inn på forskjellen på den intellektuelle og åndelige dimensjonen. Dimensjonene relateres til en større diskusjon innen filosofi hvor studenten forbinder det åndelige med meningen med livet og hvorfor man er til. Det handler om å se seg selv i en større sammenheng:

> S2: Kjernen i den estetiske læreprosessen handler for meg om de tre elementene som du trekker frem: det intellektuell, det åndelige og kroppen. Å tørre å jobbe med de elementene likestilt og ikke pushe det ene fremfor det andre, for det har vi tendens til å gjøre i samfunnet. For meg som er teknolog så er denne typen undervisningen av våre unger og ungdommer viktig for det er det som gjør de til mennesker og gjør de i stand til å kunne programmere roboter i fremtiden på en god måte rett og slett.

Kreativitet og indre bilder

Kreativitet knytter studentene til det å tenke alternativt og variert i lys av tidligere erfaringer. Opplevelsene ved å delta i undervisningen og det å gå inn i en skapende prosess handler om å tenke og gjøre annerledes:

> S5: Jeg gjør det litt annerledes, er mer kreativ, tenke litt alternativt og litt sånn variert i forhold til det jeg kanskje har gjort før. Jeg ble utfordret på en helt annen måte og det var veldig bra og hadde vel godt av det. Noe som jeg kan bruke senere også.

Utsagnet viser at den estetiske læreprosessen utfordrer studentene på kreativitet, og at dette oppleves å gi mer utbytte, samtidig som det er relevant for fremtidige arbeidsoppgaver yrkesoppgaver. Lærerstudentene trekker også frem hvor annerledes det var å jobbe på denne måten hvor den estetiske, digitale og pedagogiske dimensjonen sammen utfordret studentene på en mer helhetlig måte:

> S4: Det å stille noen spørsmål til seg selv om hvorfor jeg gjorde de valgene jeg har gjorde og gikk den veien jeg gikk [egen yrkessosialisering]. Det var mye læring i det for min del. Og det er interessant det med hvordan jeg tar tak i teoristoffet på en annen måte i sånne type oppgave [MU], sammenlignet med det å sitte og forme en tekst rundt et tema. Jeg opplever å ta i bruk flere sider av meg selv. Det synes jeg var litt spennende.

Studentene reflekterer over innhold og form, og overveier forholdet mellom det personlige og private rom. I denne prosessen er det viktig å være åpen for det

ukjente slik at indre bilder kan sette i gang fantasien. I denne sammenhengen er indre bilder det som studentene omtaler som ideer.

> S9: Jeg synes formen er artig og jeg hadde mange ideer. Det med å lage en historie, men at det var teknisk mer utfordrende.

Utsagnet viser at studentene utforsker og visualiserer forestillingen om hva som ønskes uttrykt, og hvordan det digitale multimodale uttrykket skal være.

Digital kompetanse og multimodalitet

Håndverket er hvor godt studentene mestrer de digitale læremidlene og hindringene de støter på underveis i prosessen. Studentenes digitale kompetanse vil ha betydning for hvordan indre bilder og følelse uttrykkes i det multimodale uttrykket som framstår som et personlig symbol og bilde på den estetiske læreprosessen. Ettersom det multimodale uttrykket er et arbeidskrav som skal vurderes, forsterkes presset på hva og hvordan MU (*formen*) skal se ut, og gir opphav til usikkerhet. For de fleste studentene resulterte arbeidet med MU i utfordringer og bratte lærekurver:

> S1: Jeg har lært veldig, veldig mye. Jeg har hatt en kjempebratt digital lærekurve. Jeg synes det har vært utrolig spennende og veldig lærerikt. Jeg tror at hvis jeg skulle gjort det på nytt igjen så ville den teknisk kvalitet hadde blitt mye bedre.

De fleste informantene opplevde den digitale læreprosessen som krevende, utfordrende og omfattende. For noen studenter er det nettopp lysten til å jobbe med "tekniske ting" som setter i gang den skapende prosessen og som bestemmer utformingen av det multimodale uttrykket:

> S6: Jeg liker å jobbe med tekniske ting. Jeg så for meg at jeg hadde skjønt oppgaven, så jeg gledet meg til å fordype meg i det teknisk. Jeg tror jeg rotet meg litt bort i alt det tekniske og så fikk jeg ikke fram budskapet ordentlig ut ifra de tilbakemeldingene jeg har fått.

De "tekniske" utfordringene og ønsket om å få til et godt multimodalt uttrykk tok overhånd i forhold til innholdet, den doble yrkessosialiseringen. Det er likevel flest studenter som erkjenner at den manglende digitale kompetansen opplevdes som en begrensning i forhold til egen kreativ utfoldelse:

> S2: Selve innholdet og den røde tråden i MU synes jeg ble bra. Jeg fikk sagt det jeg ønsket å si og jeg tror at det også var relevant i forhold til den jeg er i dag. Men det rent tekniske og estetiske uttrykket kan forbedres på absolutt alle måter. Det gjelder komposisjon, valg av bilder, tekst, hvordan ting går over i hverandre, hva som blir fremhevet.

Som utsagnet viser, førte den manglende digitale kompetansen til lav mestringsfølelse hos noen studenter. Utsagnet illustrerer også hvordan studentene er i en "sirkulær" refleksjon i den estetiske læreprosessen.

En av intensjonene med den estetiske læreprosessen og arbeidet med det multimodale uttrykket var å skape en forståelse av hvordan estetikk og teknologi kan benyttes didaktisk i skolen. Flere studenter løfter frem hvordan erfaringen med estetiske læreprosesser er inspirerende og relevant for egen yrkesutøvelse som yrkesfaglærer:

> S2: Men samtidig var jeg veldig inspirert og begynte å kverne på hvordan jeg kan bruke dette i mine fag [i videregående].

Studentene har gjort seg erfaringer med pedagogisk og didaktisk bruk av digitale verktøy så vel som estetiske læreprosesser.

Diskusjon

Hensikten med denne studien var å utforske hvordan erfaringer med estetiske læreprosesser kan bidra til å utvikle yrkesfaglærerstudenters profesjons-kompetanse. Sentralt i den estetiske læreprosessen er å skape et rom for refleksjon som gir studentene mulighet for å kunne forestille seg noe annet enn det de tar for gitt. Studentene inviteres til å bruke sine egne erfaringer i refleksjonene. De må kjenne på og mobilisere sensitivitet for den reisen de har tatt i egen yrkessosialisering, noe som innebærer at de involverer hele sin person og noe som er større enn dem selv (Johansen, 2018).

Som resultatene viser, oppstår og utforskes ulike følelser (impuls) i møtet med det ukjente; frustrasjon, forvirring, utfordring og usikkerhet, men også at det er ”kjempeartig” (S1). Studentene opplever motstand som overvinnes og går over i en skapende fase som fører til mestringsfølelser. Studentene beskriver en refleksjonsfase utløst av en uro hvor de må tenke utvidet og annerledes, og de må utforske mulige løsninger. Dette viser at studentene, i møte med det ukjente har gått inn i en utforskende prosess hvor nye tankemønster og handlings-alternativer utvikles (Dewey, 2009, 2013; May, 1994; Ross & Bradnack, 1978).

Resultatene viser at studentene knytter kreativitet til det å tenke annerledes og ”utenfor boksen” (S5), og samsvarer med funnene hos Meltzer og Schwencke (2020). Dette tyder på at studentene inntar en lekende posisjon hvor de evner å lage indre bilder. Som Ross beskriver, åpner den kreative prosessen et potensielt rom hvor nye følelser kan oppstå. Her viser resultatene at studentene opplever en nærhet og sårbarhet knyttet til det å skulle formidle en personlig historie om egen yrkessosialisering. Studentene er i en ”kamp” med seg selv om å skape et multimodalt uttrykk som tilsynelatende virker urimelig. Slik beskrives motstanden de møter og motet som må til for å skape (May, 1994).

Den utforskende og skapende prosessen gir mening for lærerstudentene spesielt med tanke på å skape refleksjon og undring, altså en egenverdi. Johansen (2018) beskriver egenverdi som en følelsesmessig og åndelig dimensjon av den

estetiske læreprosessen. Studentene trekker frem disse dimensjonene som viktig for undervisning på yrkesfag, og at dette har ført til en utvidet forståelse av læring og den estetiske kvaliteten i en erfaring. Erfaringene studentene gjør seg tyder på at prosessen har hatt en egenverdi; og at de har utforsket estetikken i møte med pedagogikken, den doble yrkessosialiseringen, ved å bruke digitale verktøy i den skapende prosessen. Det kan derfor argumenteres for at det å delta i en estetisk læreprosess har bidratt til å skape undring omkring forhold som tas for gitt, og bidratt til å se ting på en ny måte, men også til å reflektere rundt forhold som tas for gitt (Østern, 2014). Slik kan de deltagende yrkesfaglærer-studentene få øye på nye handlingsmuligheter og utvide handlingsrepertoaret. Det fremkommer også i resultatene at noen studenter "roter seg bort i det tekniske" (S6) og vektlegger produktet mer enn den skapende prosessen. Det er rimelig å stille spørsmål til i hvor stor grad studentene lyktes i å visualisere egne erfaringer (Walters et al., 2011), og om teknisk kompetanse ble målet heller enn form og impuls (Braanaas, 1999; Ross & Bradnack, 1978). Likevel kan det hevdes at studentene har utviklet både sin pedagogiske og didaktiske kompetanse, dog kanskje ikke like mye hos alle.

Essensielt er dynamikken mellom de ulike faktorene i den kreative prosessen. Det multimodale uttrykket, stilte krav til studentene at de gjennom å bruke bilde, tale, tekst og lyd skulle vise sin doble yrkessosialisering. Resultatene viser at studentene har et godt digitalt læringsutbytte og at de ser relevansen og nytteverdien for egen utøvelse av læreryrket. Dette kan tyde på at studentene har utviklet bedre profesjonsfaglig digital kompetanse i møte med den estetiske læreprosessen (Istenic Starčič et al., 2016; Krumsvik, 2011a; Wolden et al., 2018). Likevel viser resultatene at studentene opplever at lav digital kompetanse begrenser kreativiteten. De etterspør derfor bedre og mer opplæring i IKT (håndverk/teknikk) som pedagogisk- og didaktisk verktøy – altså det å få frem budskap og mening med ulike digitale verktøy (Ross & Bradnack, 1978). Studentene vektlegger relevansen og nytteverdien av estetiske læreformer og digitale verktøy relatert til det å undervise på yrkesfag i videregående opplæring. Dette tyder også på at den estetiske læreprosessen har bidratt til å utvikle studentenes pedagogiske og didaktiske kompetanse.

Samlet tyder resultatene på at erfaringer med estetiske læreprosesser bidrar til å utvikle studentenes profesjonskompetanse. I vår studie knyttes dette spesielt til utviklingen av personlig kompetanse som handler om å utvikle nye tanke-mønster, verdier og det å se seg selv inn i en større sammenheng (Johansen, 2018; Skau, 2017). Dette samsvarer med funnene til Meltzer og Schwencke (2020) hvor deltagerne utforsket nye sider ved seg selv i møte med kunst-basert læring og utviklet egen profesjonskompetanse. Resultatene i vår studie viser i tillegg at yrkesfaglærerstudentene spesielt vektlegger den emosjonelle dimensjonen i den kreative prosessen og hvor krevende det har vært å dele sin personlige mening

og fortelling. Ifølge Ross, kreves vilje og mot for å åpne opp for følelser og å åpne for det private rom. Dette kan tolkes til at studentene har erfart en estetisk læreprosess; en erfaring med estetisk kvalitet (Dewey, 2005). Yrkesfaglærer-studentenes deltagelse i den estetiske læreprosessen har ført til erfaringer med helhetlige læring og spesielt det følelsesmessige aspektet (Dewey, 2009; Ross & Bradnack, 1978). Det kan derfor hevdes at estetiske læreprosesser har en rettmessig plass i yrkesfaglærerutdanning på grunn av relevansen til det å utvikle profesjonskompetanse.

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Collaborative problem solving: A pedagogy for workplace relevance

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Abstract

Collaborative problem solving (CPS) is a widely used pedagogical approach in work-based learning. To facilitate the complex process of situated learning, researchers have emphasized the need for scaffolding to enable learning of skills while engaged in problem-solving. While CPS as a pedagogical practice has mainly been examined in classroom situations, a research gap exists in studies of CPS in real-world contexts. In this study, we contribute to the understanding of CPS by examining the contextual characteristics that shape students' and teachers' experiences in situated learning. Consequently, we present a multi-case study to investigate involvement of a business professional as a source for scaffolding on site, in a hotel business environment. We employed a qualitative, multi-case methodology in the study. An ill-structured, real-world problem of food waste in the hotel service sector was presented to students (N = 72) and their accompanying teachers (N = 9) from second and tertiary education. They were provided with access to expert knowledge and opinion by industry professionals (N=5) on site. We collected data via observations, interviews, and questions from the involved stakeholders in three physical locations in Denmark and in Finland. Additionally, we documented their experiences using an online collaboration tool in each case. Despite the scaffolding provided by the business professionals, students underused the resources available for their learning in the extended learning environment. Students benefited from guided exploration of the problem space, structured feedback, and teacher interventions, resulting in improved perspective taking, participation, social regulation, task regulation and knowledge building.

Keywords: collaborative problem solving, situated learning, instruction, case studies

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Introduction

Collaborative problem solving (CPS) is a widely used pedagogical approach in work-based learning and work-integrated learning. Defined as a performance activity that requires a group of learners to work together to solve problems, CPS is essentially a social form of learning (Harold et al., 2003). In CPS learners interact purposefully to transform a current state into a desired goal state (Hesse et al., 2015, p. 39; O'Neill et al., 2004), while using their teamwork, communication, leadership and problem solving skills (Oliveri et al., 2017.)

To facilitate this complex process, researchers have emphasized the need for scaffolding to enable learning of skills while engaged in problem-solving (Loes & Pascarella, 2017). Despite of this concern for preparing students with the right skills set for the world of work, research in CPS has been completed mainly in classroom situations (see e.g., Carnevale et al., 1990; Ruder et al., 2018), where a group of students are engaged in a simulation with the purpose of solving a clearly defined problem statement under supervision of a teacher. A research gap exists in studies of CPS in real-world contexts, where students receive support for their collaborative inquiry from an experienced practitioner, a business professional.

In this study, we aim to contribute to the understanding of CPS by examining the contextual characteristics, e.g., situational clues, form of feedback and scaffolding available, that shape students and teachers experiences in situated learning. Consequently, we present a multi-case study to investigate involvement of a business professional as a source for scaffolding on site, in a hotel business environment. In the cases, an ill-structured real-world problem of food waste in the hotel service sector was presented by a business professional. Defined as unconsumed food at all stages – from food production to consumption (Juvan et al., 2018), *food waste* is a significant issue for the hotels, as for the whole food service sector.

The qualitative data in the form of interviews, observations and anonymous answers to question prompts on the online collaborative tool were collected in Denmark and Finland, over the course of a 12-month period from September 2019 to September 2020, by carrying out four experiments, each involving different groups of students, teachers, and business representatives. Two of the groups studied culinary studies in Vocational Education and Training (VET) and two service, tourism and hospitality management in Higher Education (HE). Three physical locations were used with varying contextual characteristics to investigate the enablers and restrictors for CPS with similar and varying prompts for the assignment. The online collaboration tool Mentimeter was used to voice out students and teachers experiences from these interactions during and after the experiments.

Theoretical framework

Research has pointed out that workplace learning is characterized as experiential, social, situated and practice bound (Tynjälä, 2014). When students embark in the world of work, they encounter real-world problems that are often messy, ill-defined, and ill-structured (Xun et al., 2016). In education, pedagogical approaches such as collaborative problem solving (CPS) are used to advance students' preparation to professional practice. Whereas in the classroom situations, CPS follows a structure of well-defined initial state, and a known goal state, learners in professional contexts face objectives that are vaguely defined or unclear.

In the practice-based theorising of knowing and learning in organizations, attention is directed to situated learning and learners' capacity to think and act collectively and cooperatively *in situ* (Gherardi, 2000). Furthermore, learners need scaffolding for their learning (Zheng et al., 2019), especially in development of purposeful collaboration patterns (Chang et al., 2017). In this paper, we take CPS to the workplaces, and investigate students' and teachers' interaction in their attempts to occupy a problem space and to solve a real-world problem The metaphor of scaffolding is used here in the sense of cognitive support given from more experienced others to allow students to solve tasks that they would not be able to solve working on their own. In classroom situations, teacher scaffolding is temporary support such as questions, feedback, and explanations, enabling students to initiate and carry out their CPS activities (Haataja et al., 2019; Fernández, 2015). In our study, we examine scaffolding as support for student collaborative inquiry from an experienced practitioner, who interprets students' need for support, intervenes when necessary and fades out when students' actions and competence allow it. In accordance with Wood's et al. (1976) introduction to the concept, scaffolding has become a widely used concept in CPS, offering a metaphor for the process where a more knowledgeable other guides students' emerging understanding and allows them to engage with the learning affordances at hand (Raes et al., 2012; Rojas-Drummond et al., 2020; Wu, 2020).

In retrospective, pedagogical approaches such as CPS are motivated not only by scholarly contributions. Graduates' employability continues to be a concern for policy makers and educational institutions alike (Powell & Walsh, 2018). The OECD and European Union have addressed the need to advance working life orientation in education. In Europe and North America, this discourse has been recognised as work-based learning (WBL), whereas in Australia and New Zealand the same approaches have become familiar as work-integrated learning (WIL). Within both discourses, CPS has been examined as a pedagogical approach to combine learning in educational institutions and student exposure to the world of work (Jackson, 2018), and to advance the knowledge of individuals and organisations through interactions with peers (Scardamalia &

Bereiter, 2014). However, purposeful social actions, such as learning, are seldom accomplished simply by placing students in workplace situations.

Pedagogy for workspace relevance relies on industry, and as aptly stated by Jackson (2019, p. 220), 'networking opportunities and insight into professional practice, aiding both career development learning and professional identity formation'. Furthermore, research has also explored student metacognition during collaborative learning (Biasutti & Frate, 2018) and student learning style, satisfaction, and sense of community in hybrid environments (Chen & Chiou, 2014). Hence, research should critically examine what factors enable or restrict students' situational learning.

CPS of ill-structured problems involves multiple problem spaces and representations. Ill-structured problems are typically situated and emerging from a specific context. Moreover, they are not constrained by the content domains being studied at the classroom (Jonassen, 1997, p. 68). The process of CPS requires active manipulation of the problem space (Esereyel et al., 2013, p. 445). In this attempt, several cognitive and metacognitive processes take place. Xun and Land (2004) have proposed a framework, where CPS of highly contextualised problems are seen as two self-regulatory cycles, namely those of problem representation and solution generation. In each of these cycles, the learner is engaged in phases of planning, execution, and reflection, while encountering the different situational clues in the problem domain and context. To facilitate this complex process, researchers have emphasized the need for scaffolding to enable learning of skills while engaged in problem-solving (Loes & Pascarella, 2017). In the following, we take a step towards the world of work, and explore the context of hotel business environment. We elaborate the ill-defined problem students, teachers, and industry professionals encountered as socially constructed realities (Guba & Lincoln, 2005). Hence, we employ an epistemological stance of interpretivism, with the aim to understand the subjective meanings constructed by the participants as part of the CPS processes (Kaplan & Maxwell, 1994; Orlikowski & Baroudi, 1991).

Food waste in the food service sector

Defined as unconsumed food at all stages – from food production to consumption (Juvan et al., 2018), food waste is a significant issue for the food service sector. The food service sector in the European Union alone produces 21 kilos of food waste per person annually (Stenmarck et al., 2016). This not only has a detrimental impact on the environment, but on social and economic drivers as well (Gustavsson et al., 2011). Research has revealed that food waste can be reduced by creating cooperative strategies for staff (Oliveira et al., 2016; Pirani & Arafat, 2016), educating customers (Sakaguchi et al., 2018), and selecting managerial decisions regarding food planning operations, such as actively

measuring food waste (Sakaguchi et al., 2018), selecting serving styles which are better for reducing food waste – e.g., avoiding buffets and opting for à *la carte* services (Papargyropoulou et al., 2019) or providing 'nudging' strategies for customers (Kallbekken & Sælen, 2013).

Such strategies can reduce food waste generation in the industry, yet a fundamental change in mind-set on how to approach food waste is sorely needed, particularly with developed countries' issue of surplus food. As Garrone et al. (2014, p. 129) stressed, a 'bottom-up approach is needed to understand and model surplus food generation and management throughout the supply chain'. To understand and address this gap, it is critical to take into account social aspects of management and professional skills, as when ignored, the programmes are prone to failure (Heikkilä et al., 2016). Culinary schools and other hospitality management educational institutions are therefore an integral part in educating current and future employees in having the necessary professional skills regarding food waste.

Based on this, we seek answers to the following research questions:

RQ1: How do contextual characteristics in workplace situations affect problem representation and solution generation in CPS?

RQ2: What meanings do students and teachers attach to learning affordances in CPS when given access to expert knowledge and opinion?

With this article, we contribute to the field by providing an innovative and collaborative learning method involving educators, learners, and practitioners.

Methods and materials

A multi-case study approach was used, with two cases taking place in Denmark and two in Finland over a course of one year, from September 2019 to September 2020. Case-studies have long been heralded as a powerful teaching tool, as they are 'stories that represent real, complex and contextualised situations, which often involve dilemmas, conflicts or problems with no obvious solution' (Davis, 1993, cited in Escartín et al., 2015, p. 47). While case-studies were originally designed for the classroom, our case-studies were conducted on-site (at the case study company's location), an expansion of the learning environment which is often dismissed (Sommarström et al., 2017).

Due to the nature and goals of this study, the approach could from a preliminary glance be defined as either a set of case studies (multi-case study) or action research – a distinction educational researchers are still working on (see Sáez Bondía & Cortés Gracia, 2022), since case studies have often been used as an umbrella term, and numerous classifications and methodological considerations tend to overlap and have complementary goals and functions. We define this

study as a multi-case study approach based on two rationales, namely that (1) the nature of action research's reflective cycles is not present in our study, and (2) the phases of research in a case study are more appropriate in how this study was conducted. This is explained in greater detail below:

1. Action research aims to improve educational practices by means of reflective cycles (Bergmark, 2022), where particularly teachers aim to solve a particular issue (often immediately). Case studies, oppositely, focuses on understanding (classroom) situations in real contexts, and are conducted over a longer period of time and focus more on observing and analysing a particular phenomenon. Our approach did not call for teachers to reflect, and thereby (re)implement their reflections for improved educational practices. Rather, our study focused on observing and analysing a phenomenon through multiple cases, and we (as researchers) functioned as external agents 'facilitating the collection and processing of the data' (Sáez & Carretero, 1996, p. 42). Moreover, we did not intervene during the case to alter the outcome of the students' learning affordances. Our only intervention was to ensure a smooth process of the framework, not to assess different potential issues or outcomes immediately.
2. When comparing the features in the phases of research between action research and case studies presented by Sáez Bondía and Cortés Gracia (2022), this study aptly fits the case study approach (see table 1).

Table 1. Summary features between AR and CS approaches: Phases of research.

Action Research	**Case Study**
1. Identifying and clarifying the change 2. Recognising and reviewing of the problem 3. Structuring the plan to change 4. Implementing action research 5. Evaluating the action trough reflection and starting a new action-reflection cycle	A. Preliminary planning: literature review and research B. Choicing and establishing of boundaries between the case and the context C. Designing the case D. Preparing the data and collation and collating data E. Data analysis, interpretation and report writing

Source: Sáez Bondía and Cortés Gracia (2022, p. 860).

Students (N = 72) from second and tertiary education (Vocational Education and Training, VET, and Higher Education, HE) participated across the four case studies, as well as their accompanying teachers (N = 9), and the relevant on-site industry professionals (N = 5). The line of education was identical between the two VET and the two HE student groups. The case studies in Denmark took place

at two stand-alone upscale hotels in Sønderborg, a town of 28,000 inhabitants. The case studies in Finland took place at a franchise hotel in Pori, a town of 85,000 inhabitants. Although all case studies followed the same structure and collected similar kind of data, each case study contained minor variations within the framework. This variation of the contextual characteristics is illustrated in table 2.

Table 2. Case-specific context for CPS, 2019–2020.

Case study	**Contextual characteristics examined**	**Participants**	**Education**
DK1 27 September 2019 09:00-14:00	Access to how an expert thinks Setting where skills can be accumulated	1 teacher 5 students 1 executive chef 2 facilitators	VET – Culinary Studies
FI1 22 November 2019 9:00-13:00	Access to how an expert thinks Setting where skills can be accumulated Structured feedback	3 teachers 16 students 1 hotel manager 2 facilitators	VET – Culinary Studies
DK2 23 September 2020 09:00-14:00	Access to expert skill and opinion from a variety of sources Setting where skills can be accumulated Students able to move at will	1 teacher 12 students 1 executive chef 1 marketing coordinator 1 hotel manager 2 facilitators	University of Applied Sciences – Service, tourism and hospitality management
FI2 23 September 2020 12:00-16:00	Access to expert skill and opinion from a single source Setting where skills can be applied Students able to move at will Unstructured feedback	4 teachers 39 students 1 hotel manager 2 facilitators	University of Applied Sciences – Service, tourism and hospitality management

To ensure that the hotels would be capable host sites for our multi-case studies, the hotels were selected based on several criteria, namely (i) food waste (and its subsequent reduction), in particular the morning buffet, has been on the strategic agenda for the hotels, (ii) the hotels had made previous attempts to reduce food waste, but with limited success, and (iii) had previous collaborations with VET and HE schools.

All student groups consisted of both men and women, young students in their initial vocational training and adult learners who were upskilling to new occupational positions. The student groups in total presented an age range of 16 to 54 years. In this study, we adopted the Framework of Teachable Collaborative Problem Solving Skills by Hesse et al. (2015, p. 43–48), so that the case-study programmes were arranged in five phases, each phase containing specific tasks and questions to the students, teachers, and industry professionals (experts). Hence, the CPS followed the stages of 1) Perspective taking, 2) Participation, 3) Social regulation, 4) Task regulation, and 5) Knowledge building.

Scaffolding for examining the problem space

In each case, the simulation started with the working life representative contextualising the problem-solving situation with implications to the organisational strategies, policies and practices on site. This included e.g. a Green Key certificate for sustainable development in a hotel environment, a description of sustainability actions in use within services offered to the customers and the way it affects the work of different staff members in the company.

The researchers instructed students and teachers to document and present the different stages of the CPS process using Post It-notes and posters. The restaurateur or hotel manager (the expert) presented the problem to the students on a deliberately general level, in order to allow student creativity to step in and formulate their understanding of the problem in question. Students were advised to ask further clarification from the expert, in order to make full use of the learning affordances available on site. Teachers were asked to observe the learning curve and collect the students' social and cognitive skills during the CPS process using the elements, indicators and levels of performance (low–middle–high) presented in the Framework of Teachable Collaborative Problem Solving Skills (Hesse et al., 2015, pp. 43–48). Together with the framework completed by the teachers, researchers were able to study the students' learning process and the importance of case-specific context for their CPS, by means of an online collaboration tool, Mentimeter.

The Mentimeter tool was used to make visible the students' strategies of interaction in the problem space – defining the problem to be solved and attempting to solve it. The students were presented with questions to help monitor and reflect on their learning process. By using mobile devices, students logged into an online presentation where they answered questions and respectively, saw each other's answers in real time, yet anonymously presented by the software (see tables 3–7). After the CPS process had concluded, teachers were invited to reflect on the case with questions of their own presented with the Mentimeter tool.

Two researchers were engaged with the scaffolding of each case study, taking pictures, and making notes on their observations, and comparing them later in the research team in order to compose a thick description of the contextual characteristics and the social meanings presented by the participating stakeholders in the cases. We documented and stored answers to the online collaboration tool questionnaire as part of the qualitative data. Furthermore, researchers collected the teachers' observations through short interviews after each case in order to collect direct feedback from the teachers about their experience and the students' learning process for which they had a rather passive role, compared to a normal teaching setting in the classroom.

In the first (DK1) and third cases (DK2), the students had tours of the hotel prior to being introduced to CPS of the ill-structured problem. Each study also had a different setup with regards to which industry professionals were present to offer scaffolding (see table 1), not only for presenting the ill-structured problem, but also for clarifying questions and giving feedback when the students were pitching their solution(s). The DK1 case gave access to the way an expert would think with a single industry professional, whereas the DK2 case setting enabled students with access to expert skill and opinion from a variety of sources. In both cases, the students were given freedom with as far as how to tackle the ill-defined problem (i.e., using mind-mapping tools for brainstorming, physically investigating the areas where food waste is an issue, etc.), as well as how their teachers wished to interact with them.

In the second case (FI1), the venue for collaborative problem solving took place in a multipurpose room adjacent to the hotel pub, situated across the street of the main hotel building. Contextual clues were presented only through presentation and dialogue with the hotel manager. These included statistics of food waste produced by guests at the breakfast buffet, measured by the hotel staff over a period of 10 days. Further prompts included classification of hotel guests (e.g., ratio of business travellers or families with children) each day and amount of waste generated by calendar day (with significant variation between week and weekend days) and staff job categories involved in the breakfast buffet planning, preparation, and delivery. In this case, the dialogue with the hotel manager gave access to the way an expert's opinion and perspective, giving prompts on how to address the customers with information on food waste. The venue provided the learners with a semi-authentic setting where skills can be accumulated but did not give access to direct application.

In the fourth case (FI2), the venue for CPS was the authentic restaurant for breakfast located in the main hotel building. Along with the prompts mentioned earlier, students could move freely in the space and observe the actual display of the buffet offerings such as equipment and accessories, along with the hotel campaign to reduce food waste placed on boards on the walls and brochure

holders on the tables. In both FI1 and FI2, the hotel manager provided the scaffolding to the students. However, the cases differed on how feedback was given. In FI1, access was given access to experts' opinion and perspectives, followed with structured feedback between the student groups. In FI2, access was given to expert skill and opinion, but facilitators left the feedback between students unstructured. In conclusion, we examined in regards of the first research question how situational clues, form of feedback and scaffolding available affect problem representation and solution generation in CPS.

In the following, we shortly clarify the Collaborative problem solving protocol applied in our case studies. We use table analysis to give voice to students, teachers and business professionals, and their direct experiences, as they occupy a highly contextual and ill-structured problem space (Baxter & Jack, 2008). We investigate similarities and differences between and across the cases, with the attempt to contribute to the research gap mentioned and to identify protocols for future case studies (Yazan, 2015).

Phase 1: Perspective taking

In Perspective taking, the key learning activity examined was student ability to consider others' perspectives, taking the contributions of others into consideration and adapting behaviours to those of others to enable mutual modelling. Prior to each case study, the experts and the teachers involved were briefed on the nature and purpose of the case study by the facilitators. In this phase we investigated how broadly or accurately a problem should be presented to enable students to work collaboratively to define (and redefine) the problem statement.

Phase 2: Participation

In the second phase, the key learning activity was readiness to share information and externalise thoughts, and to participate in collaborative ideation. Student interactions were observed to examine activity in the environment. Teachers also assessed individual student perseverance in completing the task. In examining the contextual characteristics in this phase, we experimented with situational clues related to students either roaming freely in the space or attending a guided walk in the venue. Furthermore, contextual characteristics involved in the experiments varied between teacher high- and low-level participation in accommodating learning.

Phase 3: Social regulation

In the third phase, the key learning activity was awareness of strengths and weaknesses – those of oneself and of other group members – and the group social skills in collaborative problem solving. In this phase, we experimented with

pedagogical design to accommodate feedback between students and between students and experts.

Phase 4: Task regulation
In the fourth phase, the key learning activity was planning and monitoring skills for developing strategies towards problem solving and shared problem representation. In this phase, we experimented with pedagogical design on how to facilitate the role of business professional(s) as a source for scaffolding.

Phase 5: Knowledge building
In the fifth and last phase, the key learning activity was ability to learn and build knowledge through group interaction, and self-reflection over own actions and ability to solve a work-based problem. In this last phase, we investigated the meanings students and teachers attached to getting access to expert opinion and perspective during the collaborative problem solving, and what benefits it heralded to their situational learning.

Results

In the following, we investigate the impact of contextual characteristics to students' and teachers' interaction across and between the case studies, and study how they experienced the use of industry professionals as a source for scaffolding. The case studies yielded several novel insights and recommendations, as well as suggestions for future studies. We compile the students' views presented via the Mentimeter tool, and teachers' views presented both with Mentimeter and with interviews to tables, to accompany our analysis on each phase of the CPS.

Perspective taking: Engaging with the problem statement

In the Perspective taking phase, students were invited to answer the following questions to study the individual and collaborative problem identification and representation:

- Was the problem too defined or opened to pursue?
- How did you help others to understand the problem?

As a result, across all the cases, we found that it was imperative to discuss between experts and teachers prior to CPS on how to formulate the problem statement, considering the baseline understanding of the specific student group. This was particularly made apparent in the two Danish case studies, where the executive chef in the case DK2 presented the problem in a far too general manner

(and hastily), thus resulting in a third of the class stating that the problem was defined as too open to pursue (see table 3).

Table 3. Contextual characteristics in Perspective taking – quotations.

	Students	**Teachers**
Access to a way an expert would think	'It wasn't too clear but it gave room for our own thinking' 'We started by discussing why customers take too much food in the first place'	'It was OK how he presented, but it went a bit too fast for the students. He threw around several terminologies that students wouldn't know yet' 'To some extent, maybe too good tips were given'
Structured feedback	'It progressed our own ideas' 'We developed new ideas based on their feedback'	'I interrupted them a little bit, for example to make them think from a larger perspective'
Unstructured feedback	'There was not much feedback' 'She was an observer and help us to stay on the right track'	'The executive chef needs to explain a bit more from what he wanted but (researchers) helped to ask follow-up questions to explain the problem in a bit more detail'
Setting where skills can be accumulated	'You will never get answers if you don't ask, and you can only get wiser'	'Being outside the classroom really adds a new dimension – the students take it more seriously' 'I got to see my students operate in another environment that they are not used to'

Regarding the initiation of CPS process in the Perspective taking, challenges were found when allowing the expert to present their perspectives on the food waste case study. This was reflected in the subsequent interviews with the teachers when prompted whether the problem was explained in too much detail. In the case of DK2, teachers saw that researchers' additional scaffolding was the needed enabler for student reflection and inquiry in the problem space.

However, the need for limited, adjusted, and temporary support in perspective taking remained negotiable. As perceived oppositely in the case FI2, the teachers claimed a too much detailed description of the problem as an unnecessary restrictor for CPS. Hence, our findings relate to other studies, which have marked the value of preparing the ill-structured problem 'precisely enough', in order to create conditions for collaborative problem solving in a level just beyond the existing abilities, hence providing scaffolding for learning (Margolis, 2020, p. 23; Verenikina, 2012; Vygotsky, 1979). Consequently, describing the problem at

an optimal level enabled co-construction of knowledge between students and their teachers. In addition, experimenting with a style of feedback as a contextual characteristic proved to be paramount for student learning: structured feedback acted as an enabler and unstructured feedback as a restrictor for the Perspective taking.

Participation: Teacher offering temporary support with learning affordances

In the participation phase, students were invited to answer the following questions to investigate their interaction within the group and with the teacher:

- How did you as a group support each other's opinions/ideas?
- How do you see the role of the teacher in the group work?

In this study, the venues themselves differed as between a venue where skills can be accumulated to a venue where skills can also be applied. We observed that students were able to engage proactively with the available learning affordances due to being able to walk around in a real-life setting and gather personal experiences. By having the industry professionals conduct a tour of the hotel, this further allowed the students to understand the framework which they were working with. These findings are in line with Wells (1999) who argues that scaffolding should scrutinise the kind of activity in which knowing is embedded and consider the role of artefacts that mediate knowing, to allow learning at the zone of proximal development (Wells, 1999, p. 12). In our study, the possibility to move at free will in the problem space with the professionals, allowed perspective taking and participation beyond the scope of a normal classroom.

In one case (DK2), a teacher also emphasized the importance of receiving feedback from industry professionals on their developed ideas on-site. Scholars have argued that students (particularly in business studies) are struggling with critical reflection – both of their own and others' work (Tomkins & Ulus, 2015). Receiving constructive criticism from a professional was, according to their teacher, 'a reality check. The executive chef wasn't impressed with all the solutions, but this also gives them a reality check with how to deal with people in the field, and the level with which they are expected to perform'.

While this could be worrying that negative feedback could be detrimental for the students, it is important to remember that studies have revealed negative feedback has no effect on intrinsic motivation when compared to neutral or no feedback, and was also less demotivating when paired with instructions on how to improve, as well as using criterion-based standards and being delivered in person (see Fong et al., 2019). This was also echoed in the DK1 case, where the teacher stated that coming from an industry professional, feedback was 'more credible'. Furthermore, by commenting that student ideas may have a 'direct

impact on his business', the teacher further emphasized the significance of the now established connection between education and the world of work.

Table 4. Contextual characteristics in Participation – quotations.

	Students	**Teachers**
Access to expert skill and opinion	'Gave us facts that we need to use for our idea' 'Used it to formulate new ideas' 'Gave me much better idea on what was possible/realistic to do as a solution' 'To help us develop our idea'	'It was very important – I might be able to say that their idea is very good, but there is a certain level of expertise that coming from the sous-chef that makes it more credible. He will also be more critical of their ideas, because it is something that would have a direct impact on his business'
Structured feedback – teacher high level of participation	'She asked good questions to the expert that we hadn't thought of' 'She came with great input and was very good at explaining matters if we did not understand the task at hand' 'We took all feedback and reflected to take a new approach to the problem' 'She helps us when we got stuck with what to do'	'I also intervened once more when I could see they were getting a bit stuck in a discussion and not making any new ground. But the difference maker was that I knew these students, I couldn't do this if I didn't know them this well' 'Yes – because I know my students and they are a bit sluggish to get going. So I knew if I gave them a bit of a kickstart at the beginning, then they would be able to roll the ball themselves, work independently from me'
Unstructured feedback – teacher low level of participation	'Teachers', other students' and hotelier feedback were important' 'Contributions of others are used to suggest possible paths' 'She is a spy' 'I listened all the feedback but I don't feel that based on them, I would change my own behaviour'	'I have really learnt how my new class cooperates in groups – this method is really good at seeing how students interact with one another, for better or worse!' '…Finally, I enjoyed that as a teacher, you also take a more passive approach, in that the students take much more control of their learning, and it's not me whipping them around – it was wonderful to see that so much of their learning was at an arms-length from me'

In our study, scaffolding from professionals enabled students to align their understanding of the problem statement and the solutions generated to the industry needs, specifically with domain specific observations on customer behaviours in tourism and hospitality. In practice, this yielded a deeper understanding on how educational programs should prepare future graduates to address the problem of food waste in hotels. Furthermore, teachers were able to distinguish behavioural patterns between business and leisure time customers in producing food waste in a hotel breakfast buffet. These findings are in line on what is reported on using technology-enhanced scaffolds in classroom problem-solving, e.g., by Kim and Hannafin (2011) who argue that learners may simply comply with directions rather than internalise guidance. On a similar note, McLoughlin (2002, p. 155) suggests that effective scaffolding can reduce the scope for failure and bring learners closer to a state of independent competence. By using technology-enhanced scaffolds, like the Mentimeter used here in this study, we observed that teachers can monitor students' progress in CPS and provide feedback while supporting learner autonomy.

Social regulation: Evaluating the skills of oneself and of the others

In the social regulation phase, students were asked to reflect the negotiation behaviour in their group:

- Were there conflicts within the group?
- If so, how did you solve them?

Teachers accommodated student learning using prior knowledge of their personality straits. However, experiences of learning were more positive when feedback was structured compared to the case with unstructured feedback. Similar to Lave and Wenger (1991), students' and teachers' meaning making on participation speak for CPS as a negotiated, interactional and bilateral process.

By having facilitators present to steer the students through the various stages of the case studies, the teacher was more readily available to observe the students, as well as provide guidance when needed. The role of researchers as facilitators was to introduce the upcoming phases and make sure the students followed the process of the case. Having the teacher detached from the content of the case allowed the research team to identify that there were several instances of student groups being suspicious of the teacher's role, by e.g., labelling the teacher as a 'spy' (FI2). This is fascinating, as it indicates a sense of ownership of their ideas, solutions and self-agency, important components in settings where an achievement gap exists (Conley & French, 2013).

Table 5. Contextual Characteristics in Social regulation – quotations.

	Students	**Teachers**
Flexibility and ambiguity – setting goals and collecting elements of information	'Listening to others' 'Cooperation and creative thinking' 'To help my group to cooperate better in solving the problem'	'Yes, with the exception of the one group who could not decide on which action to take…'
Resource management – industry professional providing students with instructional scaffolding	'help us to find answers on the tasks we were trying to solve' 'helped us to further build on our idea on a practical solution' 'We got positive feedback, which spurred us to further work on our ideas'	'It was super important because it also gave them a reality check. The executive chef wasn't impressed with all the solutions, but this also gives them a reality check with how to deal with people in the field, and the level with which they are expected to perform.' '…But all worked together actively – I really enjoyed hearing that from the get-go, everyone used the word we – these are also students who did not know each other a few weeks past, so it was really nice to see that a common task could get them together so rapidly.'

Due to the action-based research approach taken in this paper, it was deemed necessary to have the authors operating as facilitators of the case-studies, while the students' teachers were given the tasks of evaluating the students' collaborative problem-solving skills and assisting any of the student groups when necessary. This format proved beneficial to enable students' self-regulation of learning, which was voiced by a teacher: '…You also take a more passive approach, in that the students take much more control of their learning'. Additionally, having industry professionals to provide scaffolding for students' learning process gave students an understanding of how to engage and behave outside the classroom as a teacher stated: '…it gives him/her a reality check with how to deal with people in the field, and the level with they are expected to perform'. Thus, a purposeful pedagogic design combining scaffolding from teachers and experienced practitioners enabled development of students' agency and industry knowledge in CPS.

Task regulation: Students rushing into solutions

In this phase, students were asked to reflect on how they utilised the skills and opinions of the business professionals:

- How did you use the feedback given from the expert (e.g., the sous-chef) and the other groups?

Students underused the resources at hand in the business context by not actively collecting elements of information from the industry professional(s) present in the situation. Here our findings contrast to what research states (e.g., Hesse et al., 2015) that the more similar the representations of a problem are in the group, the better the quality of the collaborative problem solving is. We observed that quality of the problem solving may vary also because of how students engage in the learning affordances at hand, and how actively they explore the problem space.

Even though students were given access to expert knowledge in the Task regulation phase it was more used to rubber stamp their own ideas, as seen by the comments from Mentimeter in table 6.

Table 6. Contextual characteristics in Task Regulation – quotations.

	Students	**Teachers**
Flexibility and ambiguity – setting goals and collecting elements of information	'Listening to others' 'Cooperation and creative thinking' 'To help my group to cooperate better in solving the problem'	"Yes, with the exception of the one group who could not decide on which action to take…"
Resource management – industry professional providing students with instructional scaffolding	'We got positive feedback, which spurred us to further work on our ideas'	'It was super important because it also gave them a reality check. The executive chef wasn't impressed with all the solutions, but this also gives them a reality check with how to deal with people in the field, and the level with which they are expected to perform.' '…But all worked together actively – I really enjoyed hearing that from the get-go, everyone used the word we – these are also students who did not know each other a few weeks past, so it was really nice to see that a common task could get them together so rapidly.'

However, based on analysis on the students' answers to the question prompts presented, we can argue that the online collaboration tool enabled students' shared reflection during the CPS while encountering the different situational clues in the problem domain and context.

The experiences voiced out by students are very much in line with previous research on collaborative problem solving where students prefer problem analysis, solution finding and solution implementation, as opposed to problem finding (e.g., Titus & Koppitsch, 2018). Titus and Koppitsch's research further reinforces the dilemma of the ill-structured problem, as they revealed that 'students reported a strong dislike for problems that have no definitive or singularly correct answer' (2018, p. 249).

Knowledge building: Differences between classroom and the real world

In the last phase, students were invited to reflect on their knowledge building:

- In your opinion, what is the most important skill to succeed in the workshop?

In this phase, our analysis of situational learning focused on giving access to expert skills and opinion. Students, particularly in business studies, are frequently given cases where most of the focus and work needed is to provide solutions, and as such, merit is often based on the solution. Yet, according to Basadur et al. (2014), it is adaptability which guarantees companies (and its employees) to thrive. Knowing that adaptability can be explained as a four-stage process of collaborative problem solving, namely generation, conceptualisation, optimisation, and implementation (Basadur & Gelade, 2006), it is vital that students learn to not only focus on developing solutions (optimisation and implementation), but also to proactively acquiesce and generate new information to identify problems (generation), to then analyse the identified problems (conceptualisation) conceptually.

In this study, we found out that teachers were highly satisfied with conducting the case studies on-site in a business environment. In the case DK1, the teacher stated that 'being outside the classroom really adds a new dimension – the students take it more seriously'. The teacher also added an unanticipated benefit, stating that by taking the students on-site, this could 'help the students in the future to secure internships – a good way for them to get noticed and be aware of the options out there'. Compared to a location, where skills can be accumulated, location where skills can be applied yielded a broader scope of perspective taking and participation, thus allowing development of learner agency and self-regulation.

Table 7. Contextual characteristics in Knowledge building – quotations.

	Students	**Teachers**
Representing and formulating relationships in a situated learning context	'Problems like these cannot be fixed here and now – need long-term solutions' 'There are no easy solutions to complicated problems' 'A good group dynamic is critical for success! Our product/solution was not delivered as wished'	'Being outside the classroom really adds a new dimension – the students take it more seriously' 'I got to see my students in an environment that they are not used to do'
Understanding cause and effect to develop a plan, constructing hypothesis	'A how-to approach to solving things' 'How to develop ideas, and doing so ethically'	I was able to see a 'modern' hotel operate – so I can bring back new ideas for teaching"
Assessing one's and group learning when access to expert skill and opinion	'Guests are not always easy to deal with' 'Other peoples' insight and understanding of an industry'	'This can also help the students to secure internships – good way for them to get noticed/be aware of the options out there'

In this study, students received support for their collaborative inquiry within a real-world context from an experienced practitioner, a business professional. When facing an ill-defined problem and the diverse situational clues present, teacher temporary support was needed to assist students' adaptability in CPS. Hence, we observed that when extending the learning environment from classroom to the workplace, educators need to consider pedagogical design for supporting group interaction and students' self-reflection in addition to the scaffolding provided by an experienced practitioner.

As reflection plays a critical role in work-based learning (e.g., Helyer, 2015), as well as a part of self-regulation in ill-structured problem solving (e.g, Xun et al., 2016), the case studies used three mechanisms to ensure continuous and critical reflection from the students: (i) the Mentimeter online collaboration tool, (ii) feedback from industry professionals, and (iii) feedback from other student groups. The desire to create continuous reflection (as opposed to the standard operating procedure at the end of a case-study) was to not only collect responses from the students' experiences and thoughts on the case-study, but to instigate an interactive reflection process for the students. This allowed the students to not only reflect on their own learning, but also on the feedback received on their case-study work.

The authors observed that by interjecting questions by means of the Mentimeter tool during each collaborative problem-solving phase, the students were made aware of their own learning, having to self-assess their own learning and thus providing learner agency. In addition, by using the Mentimeter tool at intermittent periods (between phases), this made the process more manageable for teacher and students. This was corroborated by a teacher (in case DK2):

> I really enjoyed this in terms of how it was structured into different phases, or checkpoints. I liked that it was broken down into phases, which make it more manageable, both for teacher and classroom. I can't bring them out to a case company every time, but I can definitely use this structure to make casework in the classroom more manageable.

Peer-to-peer feedback between students was framed differently across the case studies (see table 1), resulting in varying outcomes. Two types of feedback sessions were seen as the most beneficial for critical reflection and learner agency. In FI1 and DK1, student groups would only present to one other student group and exchange feedback with the same group. The added value was that the feedback was more constructive, and all students in the groups were attentive. Oppositely, in the case FI2, one group would present to all the other student groups and then receive feedback from the entire class of students. Students not presenting were less attentive, and as one student responded about how they worked with the feedback given from their peers: 'we didn't get any feedback'.

The feedback sessions in DK2 functioned as an 'island' concept, where student groups would appoint one student to present their idea to visiting student groups, and the remaining students in the group would visit the other 'islands' to hear about the other groups' ideas. This proved beneficial, as this resulted in (i) constructive feedback from multiple perspectives of different student groups, (ii) students bringing back new and/or revised ideas to implement to their own solutions, and (iii) a rehearsal before presenting their final solution to the industry professionals.

Discussion

The aim of this paper was to contribute to the understanding of Collaborative Problem Solving (CPS) as a pedagogical approach, with the intention of advancing working life relevance of education. In this paper, we extended the learning environment from the classroom to the workplace and sought to answer how contextual characteristics such as situational clues, form of feedback and scaffolding available affect problem representation and solution generation in CPS (RQ1). With this approach, we intended to provide insights to how these mentioned contextual characteristics either enable or restrict student collaborative inquiry in CPS and, in particular, how workplace situations affect problem

representation and solution generation. We followed the five phases presented in the Framework of Teachable Collaborative Problem Solving Skills by Hesse et al. (2015) to structure our study process and the respective data collection to investigate these research questions.

In our analysis, this approach yielded many novel findings on enablers and restrictors for CPS, when students and teachers are faced with an ill-defined problem in real-world contexts. In the perspective taking phase, scaffolding from a number of business professionals present may enable students to generate multiple views to the problem, in contrast to a scaffolding from one experienced other. In this study, we noted that lack of student prior experience of the workplace context restricted understanding of the ill-structured problem, and the customer social behaviours resulting in food waste at the breakfast buffet. Hence, guided exploration of an authentic context accommodated a better connectivity with the problem statement in contrast to student free roaming in the space. Here we were able to align our observations with findings by Jackson (2019) on the pedagogy of workspace relevance relying on industry support. However, results from our study suggest that intervention may be needed from teachers to direct student attention to defining and re-defining the highly contextualised problem statement, avoiding the rush to generate solutions. Hence, our study relates to the balance between problem representation and solution generation as proposed in the framework by Xun and Land (2004). Consequently, we found a too clear or loose problem statement to be a restrictor to initiate the CPS, causing conflict or distraction in the group collaboration.

Furthermore, we attempted to answer what meanings students and teachers attach to learning affordances in CPS when given access to expert knowledge and opinion (RQ2). In the participation phase, further scaffolding, and structure to CPS from teachers and researchers as facilitators enabled broader perspective taking and participation beyond the scope of a normal classroom. Furthermore, the participation phase provided an opportunity for reflection and enquiry between the students, teachers, and business professionals. This was in line with CPS strategies identified by the research, e.g., Oliveira et al. (2016), Sakaguchi et al. (2018), Papargyropoulou et al. (2019), and Kallbekken and Sælen (2013). In our study, we noted the importance of structured feedback and teacher additional scaffolding in facilitating purposeful collaboration patterns between students. This was evident for collaboration problem solving in highly contextual and ill-structured problem spaces, as described in our multi-case study protocol.

The diverse effects of structured and unstructured feedback were further clarified in the Social regulation and Task regulation phases. Unstructured feedback restricted mutual modelling and lack of teacher scaffolding led students to comply with directions rather than internalise guidance, as suggested by Kim and Hannafin (2011). Furthermore, students underused the opportunity to

engage with the business professionals. As noted by Titus and Koppitsch (2018), students in our cases also preferred problem solution and application in contrast to exploiting the resources at hand to further elaborate and comprehend the ill-defined problem. When extending the learning space from classroom to workplace, teachers and experts on site need to facilitate students' emerging understanding by encouraging them to explore the problem space and engage with the learning affordances at hand. Furthermore, more knowledgeable others may need to direct newcomers' focus by pointing out the situational clues available. Purposeful interactions using questions, feedback, and explanations facilitated learning the most of those students who had no previous experience in operating in the context – whether in the role of a customer or a worker.

In the knowledge building phase, purposeful pedagogical design enabled peer-to-peer feedback and mutual modelling, which further enhanced students' self-regulation and adaptability to address the professionals at the workplace with their solutions, as suggested by Xun et al. (2016) and Helyer (2015). Interventions to reflect the individual and group processes using the online voting tool contributed to student understanding of their own learning and collaboration.

Regarding the ill-structured problem in our study, food waste in the food service sector continues to be a significant global problem, and while our article contributes mainly to further the field's understanding of CPS as a pedagogical approach, the study also contributes to Garrone et al.'s (2014) call for a bottom-up approach of tackling food waste in the supply chain, as well as Oliveira et al.'s (2016) cooperative strategies for staff to reduce food waste. Specifically, our study provided a platform for CPS to be used in a real-life context for both future and current professionals in the food service sector to tackle food waste, where student, teacher, and practitioner could contribute to the self-regulatory cycles of problem representation and solution generation. Our approach helped to break down barriers between the classroom and the 'real world', which should help strengthen similar programmes, and not ensure their failure as Heikkilä et al. (2016) noted.

Limitations and future research

In this research, the authors shed light on collaborative problem solving and ill-defined problems in the setting of the hospitality management industry. Despite the multi-case approach employed in this qualitative study, the sample sizes do not allow us to make generalisations of our findings within education across other disciplines. We collected data via observations, interviews, and answers to question prompts via an online collaboration tool from different stakeholders involved in CPS. However, we acknowledge that data collected using the mentioned methods is self-reported and hence cannot be independently verified.

The social interactions analysed in the study may contain bias due to e.g., students attributing positive events and outcomes to one's own agency but attributing negative events and outcomes to external forces (other students, teachers). Furthermore, bias may be generated by teachers and researchers possibly exaggerating the significance of some events (group conflict), due to the situational and highly contextual nature of this experimental study.

We identified a number of future study protocols for interpretative multi-case studies. Research should investigate what personal factors hinder students from using the resources made readily available to them in an authentic, real-world context. More detailed study is also needed to evaluate whether more structured peer-to-peer feedback at multiple stages of CPS would yield to improved agency and self-regulation in students.

Despite the limited time for student and teacher exploration in the problem space, the findings in this study implies that a shared understanding of ill-defined problems in the group can be facilitated through purposeful design of scaffolding. Further study is needed to explore pedagogical design for combining scaffolding from teachers and experienced professionals in CPS, in particular among students with low self-regulation skills and agency.

Conclusions

Due to the mentioned limitations of this qualitative multi-case study, we cannot make any generalisations of our data. However, the findings of this study add knowledge about use of CPS as a pedagogical approach in education. We sought to answer how contextual characteristics such as situational clues, form of feedback, and scaffolding available affect problem representation and solution generation in CPS. In addition to scaffolding provided by the business professionals, students benefited from structured feedback and teacher interventions, resulting in improved perspective taking, participation, social regulation, task regulation, and knowledge building as presented in the Framework of Teachable Collaborative Problem Solving Skills by Hesse et al. (2015). We also wanted to know what meanings students and teachers attach to learning affordances in CPS when given access to expert knowledge and opinion. Teachers appreciated the opportunity to get access to expert skill and opinion, allowing updates of their own professional skills and competences. Teachers also acknowledged the value of the mentioned framework in constructing sequencing to learning in CPS at the classroom. The learning affordances for student and teacher exploration in the study, namely the authentic business context with access to expert skill and opinion, resulted in adapting and incorporating contributions and prompts from others. Use of multiple business professionals as experts lead to increased audience awareness in students, and the use of an

online inquiry tool allowed to evaluate the strengths and weaknesses in individual and group levels. Both students and teachers favoured the use of the Mentimeter online collaboration tool to assist reflection and inquiry during the CPS process.

The specific contextual characteristics of each case study were authentic business contexts with access to expert skill and opinion, thus served as learning affordances for student and teacher exploration in the study. Learning affordances from contextual characteristics resulted in adapting and incorporating contributions and prompts from professionals, teachers, and students. Use of multiple business professionals as experts and interactions between students, teachers, and business professionals lead to increased audience awareness in students. Furthermore, contextual characteristics increased problem awareness and complexity in each case setting thus students and teachers realised food waste as a multi faced solution. From generic understand of a problem to a concrete problem. From generic solution to specific context dependent solution.

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A PRIDE-theory-based analysis of a positive learning environment in a Finnish vocational education and training (VET) institution

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Abstract

The aim of this study was to analyse Finnish students' perceptions of a positive learning environment. Because of the reform of Finnish vocational education and training (VET) and the recent decrease of students' well-being, it is important to study how students' well-being and learning can be enhanced. This study applied the PRIDE theory to describe the positive learning environment. The acronym PRIDE is derived from these words: positive practices, relationship enhancement, individual attributes, dynamic leadership, and emotional well-being. The data was collected with semi-structured student interviews (N=12) from a northern Finnish VET institution. The interviews were analysed with a theory-based content analysis leaning on the PRIDE theory. The research provided important information of the positive learning environment from the students' perspective, through which learning environments that support students' well-being and learning can be designed and developed in VET. In addition, the study provided an example of how to use the PRIDE theory for analysing positive learning environments and education.

Keywords: vocational education and training (VET), positive learning environment, PRIDE theory, student well-being

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Introduction

In Finland, about a half of students ending their compulsory basic education continue to vocational education and training (VET). Previously the upper secondary level studies were voluntary but starting from 2021, compulsory education expanded from 15-year-old to 18-year-old students (Ministry of Education and Culture, 2023). It means that students have to continue to general upper secondary education (similar to high school) or to VET after basic education. VET is not just for the youth but also adults can develop their professional skills in VET through vocational upper secondary qualification, further vocational qualification, and specialist vocational qualification. Upper secondary education provides students with eligibility to higher education (Ministry of Education and Culture, 2023).

Vocational education and training (VET) in Finland and elsewhere have faced numerous changes during the past decades. In Finland, the reform of VET took place at the beginning of 2018, changing the education from a curriculum-based into a competence-based model that also included the idea of performance-based funding for VET institutions. The principle of VET was to perform student-centered education by providing opportunities for individualised study paths (State Auditor's Office, 2021). While previously students studied according to the same curriculum, now their competences are identified first and they study according to their personalised competence-development plans (Kepanen et al., 2020).

The principle of VET was to perform student-centered education by providing opportunities for individualised study paths (State Auditor's Office, 2021). The recent changes necessitate a more personalised approach to VET, while at the same time, the purpose of education is to develop students' future skills and abilities to adapt to the changing world of work (McGrath & Powell, 2016; Mulder, 2019).

The new focus for the individualised study paths and wide support for students require pedagogical development from the perspectives of teachers' work, support structure, and learning environments (State Auditor's Office, 2021). VET has changed also by its pedagogical approaches as the traditional campus-based teaching has been replaced by an increasing number of virtual learning environments and workplace learning (Belaya, 2018; Dirzyte et al., 2021). Workplace learning is a fundamental part of VET and its width and implementation is decided individually when compiling a student's personal study plan (Ministry of Education and Culture, 2023).

In addition, the recent COVID-19 pandemic has posed its own demands on education. While the flexible teaching arrangements provide opportunities to student-centered learning and study paths, the lack of communality has been seen as a threat to student well-being (e.g., Syauqi et al., 2020). Feelings of fatigue,

insufficiency, and meaninglessness have increased not only among VET students but at other education levels too (Lavonen & Salmela-Aro, 2022).

The mentioned extended compulsory education in Finland necessitates commitment to upper secondary education regardless of the student's background. Previous research shows that factors in the VET learning environment have a great impact on how well students engage in their studies, especially those in danger of exclusion (Schmid et al., 2021). On the other hand, workplace-bound studies, experiences of success support from and positive, acceptive attitudes in teachers, and collaboration with peer students predict better engagement and performance in VET (Schmid et al., 2021). Thus, in the middle of national reforms, it is important to develop VET in a student-centered manner by noticing also those factors that support students' enthusiasm and engagement. A wholistic approach that pays attention to well-being and learning can be found from the framework for positive learning environment (Wenström & Kuortti, 2022).

In this research, we investigate Finnish VET students' perceptions of a positive learning environment. For this purpose, we use the PRIDE theory that is focused on the core elements of a positive organisation (Cheung, 2015). The acronym PRIDE is derived from these words: positive practices, relationship enhancement, individual attributes, dynamic leadership, and emotional well-being (Cheung, 2014, 2015).

The PRIDE theory as the basis for analysing positive learning environments

Positive education is a framework for including research in positive psychology as a part of education and teaching, focusing on the positive development and well-being of students, teachers, and others in all education levels (Seligman et al., 2009; White & Murray, 2015). Typically, the positive psychological approaches are implemented and studied through various interventions (e.g., Bernard & Walton, 2011; Elfrink et al., 2017; Katajisto et al., 2021; Shoshani & Steinmetz, 2014; White & Waters, 2014). In addition, positive psychological research can aim to a wider positive change leaning on, for example, the strengths of the whole school community (Elfrink et al., 2017; Wenström & Kuortti, 2022; White & Waters, 2014). Although this viewpoint is widely used (White & Murray, 2015), positive psychological research focusing on VET has been scarce. Furthermore, the findings from, for example, basic education (De Nobile et al., 2017) or higher education (Rusticus et al., 2023) cannot be adopted in VET as such.

Positive education is understood here as the positive-psychology-based viewpoint to how education can support students' well-being through a positive

learning environment. Learning environment means the social, psychological, and psycho-social environment for teaching and learning (Cleveland & Fisher, 2014). Positive learning environments support students' well-being and learning (see also Leskisenoja & Uusiautti, 2017; Seligman et al., 2009; White & Murray, 2015). In this research specifically, we analyse the elements of the learning environment in one VET organisation by leaning on the PRIDE theory that provides a tool to operationalise the core elements of a positive learning environment (Cheung, 2014). The theory is less used in education settings but in Finland, some research exists at the VET level in relation to VET teachers' enthusiasm at work (Wenström, 2020; Wenström et al., 2018). The research at hand introduces a new viewpoint by focusing on students and how they perceive the elements of positive organisation in VET.

The PRIDE theory was developed to measure the level of positivity in organisations (Cheung, 2014). Cheung's (2014) positive organisational index covers the elements of PRIDE: positive practices (P), relationship enhancement (R), individual attributes (I), dynamic leadership (D), and emotional well-being (E). We introduce the elements next.

Positive practices

Positive practices are methods, processes, resources, and other guidelines and actions that create a positive atmosphere and enable positive development even in challenging circumstances (Cheung, 2014, 2015). According to Wenström (2020), positive practices promote other elements of PRIDE. Positive practices can be, for example, support for autonomy, acknowledgements for teamwork and communality (Pfeiffer, 2003). The impact of positive practices appears in positive emotions and strengthening communal and individual resources (Cameron et al., 2011).

Positive practices in education are actions to promote learning, teaching, and well-being. Pedagogical methods, such as teachers' positive communication skills and ability to support students' cognitive, social, and emotional resources, are positive practices (O'Brien & Blue, 2018). Personal learning goals and other pedagogical methods to support self-directed learning and autonomy promote well-being and are also examples of positive practices (Stefanou et al., 2004).

Relationship enhancement

Interaction and collaboration enhance focus on positive relationships that promote communality and an open atmosphere in the organisation (Cheung, 2014, 2015). Appreciation, compassion, forgiveness, and support have a direct impact on an organisation's performance and atmosphere (Cameron et al., 2011). Likewise, education organisations benefit from these features (Huebner et al., 2009) as they provide the grounds for study satisfaction and engagement,

positive teamwork, and reciprocal relationships that promote success in studies (Pietarinen et al., 2014; Roseth et al., 2008; Wentzel et al., 2014).

Peer relationships have cognitive, behavioral, and motivational influence (Kindermann, 2016) and promote students' autonomy (Hurst et al., 2013; Martin & Dowson, 2009). Especially for young students, peer relationships matter (e.g., Blaskova & McLennan, 2018; Gowing, 2019) but some findings also suggest that peer support is crucial for older students' success and well-being (Li et al., 2011; Tian et al., 2015).

Individual attributes

Individual attributes mean the active noticing of organisation members' strengths and characteristics, appreciation of different people in the organisation (Cheung, 2014). Cheung's (2014) definition focuses especially on character strengths (Seligman et al., 2005), but it is possible to view attributes also based on a wide conception of strengths that covers talents, skills, interests, values, and resources too (Niemiec, 2018; Wood et al., 2011; see also Bakker & van Woerkom, 2018; Katajisto et al., 2021; Wenström, 2020). Combining strengths with individual goals makes achieving the goals easier (Mayerson, 2015) and more meaningful (Karima & Uusiautti, 2018; Wenström, 2020). In education, strengths recognition has wide-scale positive influence on well-being, success, motivation, and future-orientation (Gillham et al., 2011; Katajisto et al., 2021; Proctor et al, 2011; Weber et al., 2014; Vuorinen et al., 2021; Uusiautti et al., 2022). In VET, the personal competency development plan can, at its best, be used for supporting individual attributes in education (Wenström et al., 2018).

Dynamic (teacher) leadership

Dynamic leadership means leaders who inspire and support positivity in organisations (Cheung, 2014) and is also referred to as positive leadership (Cameron et al., 2003; Wenström, 2020). Hannah et al. (2009) emphasised the importance of positive examples that show trustworthiness, openness, expertise, and compassion (Mishra & Mishra, 2012). Thus, positive leadership is connected with positive emotions and interaction (Cameron et al., 2003) and performance in organisations (Wooten & Cameron, 2013). In this research, positive leadership is connected to the teacher's role from the student's perspective. Cheung et al. (2018) refer to teachers who collaborate, aim to promote meaningful learning, and provide resources. According to Cherkowski (2018), positive teacher leadership focuses on building communal well-being by highlighting every individual's positive development and learning (see also Quinlan et al., 2019), which is similar to the definition of dynamic leadership (Cheung, 2014; Hannah et al., 2009; Youssef & Luthans, 2012). Positivity in teacherhood means caring but not denial of negative emotions or adversities. Instead, positive teacher leadership becomes

crucial in challenging conditions when strength and inspiration are needed (Wooten & Cameron, 2013; Äärelä et al., 2016).

Reforms in VET have necessitated the renewal of teacherhood (Kepanen et al., 2020; Vähäsantanen & Eteläpelto, 2011; Wenström & Kuortti, 2022). Substance expertise is not enough but guidance, interaction, and future-oriented coaching skills have become more important (Draaisma et al., 2019) alongside networks, collaboration skills, and abilities to renew the pedagogical culture in VET (Wenström et al., 2019).

Emotional well-being

Emotional well-being in the PRIDE theory refers to how positive emotions and atmosphere are supported in the organisation (Cheung, 2014). Positive emotions are connected with individual and communal growth and well-being (Sekerka et al., 2012). Actually, positive emotions have an important role in well-being because they are interconnected with strengths recognition and positive interaction with other people (Seligman, 2011). In the learning environment, positive emotions spread easily and are connected with study well-being and success (Frenzel et al., 2018; Lu & Buchanan, 2014; Zullig et al., 2011).

Method

The aim of this study was to investigate students' perceptions of a positive learning environment. The research question was: How do the Finnish VET students describe the elements of a positive learning environment? A qualitative research approach was chosen, and the PRIDE theory provided the theoretical framework for the analysis.

The data were collected through themed interviews that were decided based on the PRIDE theory (Percy et al., 2015). The interview guide was designed by Wenström (2020) earlier when conducting research among VET teachers. The guide was revised so that the questions were rephrased to match better with the target group (students) of this research. The interview consisted of five themes adopted from the PRIDE theory. Questions were for example 'Please, describe a concrete situation in which you noticed that you learned the best.' (P); 'What kinds of characteristics or methods does a teacher who helps learning and well-being has? ' (D); and 'In what kinds of situations have you experienced positive emotions in studies? ' (E).

The research participants (N=12, aged 16–45 years) were recruited from one northern Finnish VET institution which participated in a development project enhancing organisational well-being. It is a multidisciplinary institution of about 2,000 students and operating in three places in Finland. The institution provided permission for research, suggested students to be interviewed, and provided

their contact details to the first author of this article. The purpose was to find students of different ages and from different study programs. The first author also conducted the interviews at the premises of the institution. Participation in the interviews was voluntary and confidential, and the students received movie tickets as the reward. The transcribed interview data were anonymised and, thus, the second and the third author of the article did not know the identities of the interviewed students.

The students were degree students of social services and health care (n=8), and education and guidance education (n=4), who graduate as nurses or youth counsellors and guides. The assumption was that students in these fields would be interested in well-being issues and thus participating in this research (see also Galletta, 2012). All were full-time students, and most of them (n=10) studied their first year. Half of students (n=6) came directly from basic education, and half (n=6) were older students who had already been working. The interviews lasted from 17 to 57 minutes (mean 32 min.) and comprised 383 minutes. The interviews were conducted in Finnish, recorded, and transcribed verbatim. The data extracts have been translated into English for this article.

The analysis followed a theory-led content analysis approach that is commonly used when the purpose is to strengthen or widen (Hsieh & Shannon, 2005) or test an existing theory and its usability (Graneheim et al., 2017). Thus, the analysis started by creating a framework categorisation based on the PRIDE theory (Elo & Kyngäs, 2008) followed by coding and categorisation of each interview under the five main categories. Each element of PRIDE had their own colour code and the themes arising from the data were organised by colours. The analysis continued by reduction and combination of themes resulting in wider groups under each main category representing similarities and differences between these themes (Elo & Kyngäs, 2008; Galletta 2012; Graneheim & Lundman, 2004; Hsieh & Shannon, 2005). The result of categorisation represents features of a positive learning environment as described by VET students and organised according to the main categories of PRIDE.

This was a qualitatively-oriented interview research in which the ethical questions comprise the practical encounters with students, power relationships and respect, and confidentiality (Brinkmann, 2013; Roth & von Unger, 2018). The purpose in this study was to bring up the students' voices. It was important to emphasise in the interview situations that there are no right or wrong answers, and the students did not have to answer a question if they did not want to. The students were told that the interview data would be recorded and the transcripts anonymised. All their experiences were relevant and important for this research, and therefore, the findings also include numerous data excerpts to show how the students described their viewpoints about well-being and positive learning environments.

It is also worth noticing that an interview situation always presents a delicate power setting between the interviewee and the interviewer (Kvale & Brinkmann, 2009). In this research, the interviews were conducted face-to-face in the students' VET institution which was considered a familiar and relaxing environment for them. The students were informed about the interview themes and the discussions were kept focused on the relevant topics (Roth & von Unger, 2018).

Results

Positive practices

According to students' perceptions, physical learning environment, various learning styles, and positive interaction supporting practices described the best a positive learning environment in VET.

The core elements of the physical learning environment were the school size, premises that supported teaching, learning, leisure, and the modern infrastructure. The students appreciated the small size of their institution because it made it easier to navigate at school and collaborate with peers and students. Colourful and modern premises were perceived as attractive and cozy: '…and there we have those sofas that are all of different colours. It brings colours especially when it is dark in the winter' (Student 3).

Various learning styles included collaborative learning, work-based and practical learning, and digital learning. Collaborative and work-based learning as a part of study practices increased well-being and enhanced learning. By collaborative learning, students mainly meant team working and building and sharing information and knowledge with each other. Getting experience from various teams was found to increase creativity, familiarisation between students, and improve interaction and collaboration skills.

> Teamworking because people are social by nature anyway and like to hang around with other people and talk. When we do teamwork and discussions, you learn more all the time and it has a positive impact because you don't have to work alone but have a team. (Student 8)

Workplace learning and practical learning were described as a pleasing part of studies when the students could familiarise themselves with the actual work in workplaces during longer practices and short-term visits, too. Students enjoyed combining theory with practice. A clear, weekly schedule for studies made combining the theory lessons and practical lessons and periods better as sometimes they found it difficult to prepare for studies. In addition to practical studies, variation in theory lessons increased motivation and enthusiasm in studies. 'When you can do by yourself and suck information with all your senses,

that is totally different from studying from the textbook or by listening' (Student 8).

In the minds of the students, digital learning included all digital environments and learning methods from personal computers to interactive whiteboards, applications, and virtual learning environments. The most important point was that they perceived the benefits and how digitalisation can support their learning, which was possible only through proper introduction. Students named several practical benefits such as taking notes, searching information, and easy access to materials. Online courses made studying fluent at some points. In addition, the students appreciated the opportunity to follow how their studies progressed via online systems.

> It is really convenient. For example, when doing a power point slide show at a computer and then share it between your team members. Even if everyone was not present, we could work with because you can do the tasks somewhere else too. (Student 6)

Practices supporting positive interaction were mainly greeting and having supervision meetings. Students emphasised that students and teachers should greet each other reciprocally.

> We have here every now and then those personal study plan meetings with the teacher. We have a look at study progress and whether all is going well and what do I think and so on. The meetings give you a sort of peace of mind. […] And at the same time, we discuss how I am doing and such. (Student 2)

Meetings with teachers were significant because they offered an opportunity to talk to teachers in private. Students found it important to be able to schedule meetings easily and especially before practical periods.

Relationship enhancement

Relationship enhancement was described in students' interviews as everyday interaction, human relationships and caring, and good team spirit.

At its best, everyday interaction was open, easy, and daily communication that everyone could enhance. Students appreciated versatile communication methods with pairs, in groups, with teachers and friends, face-to-face and via online applications such as WhatsApp groups for various study groups. Sharing experiences and thoughts, expressing opinions and various viewpoints taught students how others perceive the world. In students' opinion, this had a positive influence on learning through improved team spirit, motivation, and general well-being. 'This makes our group closer, improves team spirit when we discuss and listen to each other's opinions. […] You find out that "oh you can do it like that"' (Student 3).

Relationships and caring were important bases for well-being but also for learning. Students mentioned peer support and help and how the culture of caring was cultivated through reciprocal helping. In practice, this happened through caring for those absent from school and keeping them updated on materials and tasks, asking how everyone was doing, preparing for exams together, and offering support in good and bad times. Peers make students feel a solid part of their learning environment which is meaningful for their well-being as well.

> If you say something positive to your classmate […] that makes the peer happy. So, of course, you could today say that now your hair is nice or you have a nice shirt, something like this, that you sometimes forget to do but would be really important things. (Student 7)

The meaning of team spirit emerged from the data as the students described the grouping process. They found it important that a guided grouping process started immediately when studies started. If they managed to form a close and positive team spirit that would make an important part of a positive learning environment.

Individual attributes

Individual attributes in students' interview data could be categorised as the recognition of strengths, applying of strengths, and development of strengths.

The personal study plan was seen as a tool that helps recognise one's strengths and also plan the usage of strengths. The students had done various tests to identify their strengths and talents. They also mentioned that they recognised their strengths in practical periods in workplaces. The feeling that the occupation felt their own was described as rewarding and increasing motivation to study.

> I am very interested in various things about this field, I mean everything is interesting, trivia and all. I want to know it, and this kind of interest in the field is probably my strength. (Student 8)

> If you were studying a field that is not your thing at all, that would decrease your motivation. But I wanted to study this and therefore I have a totally different touch to it. (Student 4)

The students pointed out that they could apply their strengths in various ways in their everyday studies. They could find suitable study styles by leaning on their strengths and focus on using their strengths during work-place learning. The students also paid attention to strengths outside studies, for example in their personal relationships, and perceived the connection of applying strengths with better learning results and well-being. 'Well, I am quite visual so I usually like to take notes in a notebook and use various colours. I remember which colour I have used and for example these things help remembering' (Student 6).

The development of strengths appeared as opportunities to learn new things and get support for studies. The new process of recognising skills and knowledge and acknowledging it as a part of a personalised study plan, offered students ways to focus on learning what they needed to learn. 'You don't just go with one format that offers everyone the same because not everyone necessarily learns in the same way' (Student 9).

The processes of building personal study plans were important because the needs for special support could be identified. The students also described their weaknesses and strengths that they would like to develop more.

Dynamic (teacher) leadership

The students described the dynamic leadership as the teacher's positive features, the teacher as a leader of emotional atmosphere, feedback and encouragement for students, and personal encounters with and support for students.

The core features in a positive teacher were humanity, enthusiasm, professionalism and pedagogical skills, and positive attitudes toward students' development. Furthermore, students appreciated fair, accepting, and calm teachers. The students mentioned how the teacher's own motivation was inspiring. Combined with professional expertise, teachers could earn students' respect. On the other hand, lack of abilities to use versatile teaching methods, share information, and notice the needs of various students were perceived demotivating. 'The teacher has to have the practical experience. It is needless to come and tell us about things if learned only from books. You have to have concrete experiences' (Student 7).

Dialogical and listening skills were important if the teacher wanted to create a positive emotional atmosphere. The students mentioned that the teacher should be able to read the atmosphere and act accordingly if it was good. For example, if students were tired or stressed, the teacher could show empathy or try to lift the spirit by smiling and laughing with students and by noticing negative emotions and dealing with them. In addition, collaboration between teachers and its significance was mentioned in the interview data.

> It has a really big meaning. […] If the teacher decides that now we do everything in teams, it doesn't sound very good. But if we think about it together and decide how we will study these things… (Student 1)

> Always when we have a meeting, they smile […] and in lessons, they ask whether we have any thoughts. And we discuss difficult things, and how to say, the teacher kind of gives room if someone finds it difficult. (Student 6)

Feedback and encouragement for students were mentioned as an important way of increasing motivation and belief in oneself as a learner. Constructive feedback was appreciated because according to students' opinions, it showed that the teachers could talk about issues frankly. However, positive feedback was found

necessary in order to enhance a positive atmosphere and positive emotions in students.

> I think that the teachers encourage people to […] be positive in general through their own behaviours. […] There is no way to spur actively 'smile more' or 'wave more' but it is that the teachers bring it up by their behaviours. (Student 2)

> These small things that they write in the exam paper 'you have done great, carry on' and something like this. Very minor things but they are really meaningful. (Student 10)

Personal encounters with and support for students appeared as approachability, trustworthiness, and understanding. The students appreciated teachers who seemed to genuinely act for the students' best and cared for students by asking how they were doing at school and in their personal lives.

> The teacher does not have to cry with me if I am sad but at least could ask 'are you doing ok' if this is the situation. And very often our teachers ask 'how are you doing and what did you do there' […] that's nice. (Student 3)

> They are present. You don't feel like they are busy all the time and can't stop and focus on some specific issue. (Student 9)

The most fruitful and meaningful personal encounters focused on students' strengths and familiarisation with the students' situations. Knowing students by name and adjusting teaching based on students' needs were mentioned as concrete positive teachers' actions.

Emotional well-being

Emotional well-being was described by students as a positive atmosphere, experiences of success and joy of learning, acceptance of difficult emotions, and the sense of security. These notions were somewhat overlapping with previous elements of PRIDE but in this category, we focused on analysing how the emotions were described.

The positive atmosphere consisted of emotions such as communal, motivating, relaxed, and warm feelings. These emotions aroused in action and could be supported by friendliness, helpfulness, and focusing on the good. The physical learning environment was also igniting positive emotions and creating a positive atmosphere for its part.

> I would say that quite much it is the positive atmosphere and […] positive and determined, like you know in which direction you are going. […] When you come to school, you notice that the presence here is that we go forward, and we develop. (Student 2)

Especially experiences of success and joy of learning were central for positive emotions. The positive feedback from teachers was mentioned as an important

way of providing these experiences. Through experiences of success and joy of learning, students felt motivated and more confident in studies and seizing challenges. Teamwork was often mentioned as a source of the joy of learning as well. 'You can remember or benefit from earlier successes. I managed that so certainly I can manage the next one. You use it as a kind of memory, like "you can do it"' (Student 1).

Acceptance of difficult emotions was mentioned as one factor in positive learning environments. The students described that in a safe environment they can experience and express negative emotions, and deal with them properly and supported by others. 'Emotions are tolerated, all emotions are acceptable, of course. You cannot have a good day every day. And then we discuss and ask how we are doing. […] and show empathy' (Student 3).

Overall, the sense of security was a crucial feature of a positive learning environment and enabler of positive emotions that was created by the teachers, students themselves, and the physical learning environment. In addition to positive emotions mentioned previously in this section, the sense of security appeared as prevention of bullying among students and teachers. Teaching and showing respect as an unwritten rule were mentioned as the best way to prevent bullying. In addition, students pointed out some concrete safety measures, such as locking the doors during lessons, that for their part increased the sense of security.

Discussion

Based on the results, the multidimensional experiences among students about the positive learning environment could be viewed with the elements of PRIDE theory (see Table 1). The students' perceptions showed how the combination of the physical environment, atmosphere and interaction, various practices, positive emotions and the teacher's role formed the basis for building a positive learning environment. Also, students' positive attributes formed a distinct part of it being connected in the everyday activities, such as personal study plans, and future development including students' personal lives. Relationships with teachers and peers were evident in several PRIDE elements. The findings correspond with ones in Wenström et al.'s (2018) study among VET teachers.

Cheung (2014) described PRIDE elements clearly separately, but in this study, in the way the students described the learning environment, the different elements seemed to be in reciprocal connection with each other (see also Wenström et al., 2018). Interaction seemed to be a central feature and the foundation for the other elements. On the other hand, positive emotions that the students brought up apparently emerged from positive perceptions about the other elements of PRIDE. However, the teacher had the main role in creating a

positive atmosphere and relationships within which the recognition and use of personal strengths can happen.

Table 1. Results categories.

The element of PRIDE	Features of a positive learning environment in VET
Positive practices	Physical learning environment
	Various learning styles
	Practices supporting positive interaction
Relationship enhancement	Everyday interaction
	Human relationships and caring
	Good team spirit
Individual attributes	Recognition of strengths
	Applying of strengths
	Development of strengths
Dynamic (teacher) leadership	The teacher's positive features
	The teacher as a leader of emotional atmosphere
	Feedback and encouragement for students
	Personal encounters with and support for students
Emotional well-being	Positive atmosphere
	Experiences of success and joy of learning
	Acceptance of difficult emotions
	Sense of security

Thus, when analysing the students' perceptions, it seemed that the elements interacted highly, which is actually a typical feature of a learning environment (Manninen et al., 2007). In sum, a positive learning environment in a VET institution as described by students seemed to have similarities with positive organisations (Cheung, 2014). The similarities highlight how this viewpoint can enhance creating a positive learning environment in the changing world of work and VET. Furthermore, as the role of workplace learning is crucial as a learning environment in VET, the PRIDE theory can be useful for analysing also how the workplaces support VET students' positive interaction, well-being, and learning (see also Rintala & Nokelainen, 2020).

As such, the connections pointed out in the results support previous findings about students' well-being and how a positive environment can support their learning (e.g., Löfgren et al., 2023; Ryökkynen, 2023). Interaction, sharing, and caring among peers and by the teachers are similar to the notions made by for example Shan et al. (2014). The main contribution of our study is in the way the PRIDE theory helped operationalise the different elements that lay the foundation of a positive learning environment. The finding does not limit itself only within the VET institution but can also be developing the workplace learning as a part of VET since after the reform of VET, the majority of learning happens in the workplaces (Löfgren et al., 2023). Thus, it would be reasonable to apply research on positive learning environments also when developing the workplace as a learning environment (Pylväs et al., 2018). The PRIDE theory can be utilised for analysing and developing the learning environment as it helps pointing out which elements need further attention and how the elements also interact and support each other from the perspective of students' well-being.

When it comes to the recent reforms in VET, the study pointed out how the demands for efficient education should not be viewed separately from the students' well-being: positive education and learning environments support not only students' well-being but also their motivation to study (see also Löfgren et al., 2023; Ryökkynen, 2023). At its best, the positive learning environment supports successes, builds positive self-conception as a learner, and boosts belief in the future (Bonica & Sappa, 2010). School structures, autonomy, and collaborative learning were notions that appeared also in Välivaara et al.'s (2018) research, while the emergence of positive emotions and joy of learning were the key findings by Leskisenoja and Uusiautti (2017). Teamwork, enthusiastic and caring teachers, and communal atmosphere support learning and well-being, and there are findings that especially in VET, they support engagement in studies especially among students who have challenges in their lives and studies (Schmid et al., 2021). The PRIDE theory pays attention to self-directed action too, which can be supported by recognising and using strengths, personalised teaching and study plans, and focus on collaboration and communality (Ryan & Deci, 2002). However, all students do not possess skills of self-directed learning, and therefore, student counseling and guidance appear increasingly important in today's competence-based education (see also Katajisto et al., 2021; Kepanen et al., 2020).

Vocational School Student Survey (2019) revealed that students long for more face-to-face or on-site teaching, while the pandemic increased distance teaching and learning considerably (Lavonen & Salmela-Aro, 2022; Syauqi et al., 2020). The physical learning environment at the VET institution thus gets a more important role because it should provide opportunities for interaction,

collaboration, and various study methods, in other words using new pedagogies in a meaningful manner (Sandström & Nevgi, 2020).

Limitations and trustworthiness

There are some limitations in this research. The participants of this research represented just one VET institution and thus, their viewpoints can be considered somewhat limited. On the other hand, the interview data showed saturation and can be seen as an example of describing student perceptions widely in this particular example (Elo et al., 2014; Francis et al., 2010). Transferability of findings can also be questioned as the students in this study represented mainly the fields of social and health care and education and guidance. The findings might have been different among, for example, engineering students. However, findings from a recent study by Löfgren et al. (2023) among students in the field of technology and engineering were quite similar to the ones in our study.

For the trustworthiness of the research, we wanted to recruit various students for the interviews because after the reform of VET the student groups are very heterogeneous. The interviewees' age ranged from 16 to 45 representing quite well the reality of VET. The interviews showed that the students' needs for support and perceptions of a positive learning environment are various.

Conclusion: Using PRIDE theory to develop VET as a positive learning environment

This study widened the use of the PRIDE theory to analyse positive learning environments in VET. This is more topical than before because VET has gone through major structural changes during the shift to competence-based education and is now also corresponding to the demands of digitalisation. The reforms of education naturally follow and correspond to societal, sometimes even sudden changes (Morgan & Simmons, 2021). At the same time, VET does not attract students in the Nordic countries as it used to, and the Nordic countries have faced a lack of workforce with vocational education (Nordic Council, 2023).

At times of reforms and pursuit to attract more students to VET, attention to the development of positive learning environments is needed more than ever before. Student well-being should not be shadowed by administrative changes if we wish to serve the work life in the best possible way by providing quality VET. Our PRIDE-theory-based analysis provided a new way of paying attention to student well-being and learning in VET.

Students' perceptions and experiences of their current learning environments are significant for their own success and engagement and may have an even more crucial role than their earlier study experiences (Lizzio et al., 2002; Wang &

Holcompe, 2010). Therefore, having students participate in designing new learning environments would provide viewpoints that otherwise might be left unnoticed (Hunley & Schaller, 2009).

A positive learning environment is a multidimensional phenomenon widely affecting student well-being (Kern et al., 2015; Välivaara et al., 2018). The PRIDE theory can provide a structured model for analysing and identifying well-being and learning-promoting activities and elements in VET. At the time of need for responding to societal demand for a skilled workforce (Ministry of Economic Affairs and Employment of Finland, 2022), VET should pay attention to core elements of well-being and quality learning. It is the question of attractive VET that can also engage students and thus respond to the societal task the VET has. Positive VET learning environments also prepare experts who are ready for continuous learning, constantly changing work, and unforeseen future (Wenström & Kuortti, 2022) – with skills of using their strengths and optimistic attitudes.

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The vocational teacher, an inventor in special needs education: A study on Swedish vocational programmes

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Abstract

Upper secondary vocational education and training (VET) in Sweden has been subject to frequent educational policy reforms which have resulted in reduced numbers of students and student groups comprising many students with special education needs (SEN). These changes can be assumed to have resulted in increasing demands on VET teachers' work with special needs education (SNE). The purpose of this study is to contribute knowledge about VET teachers' conditions for, and work with, SNE in Swedish VET programmes. An analysis of interviews with 15 teachers from eight VET programmes revealed the following themes: 1) Framework factors in the learning environments affecting teaching and learning, 2) The schools' organisation of special educational competence and the VET teachers' application of special needs education, 3) Communicative teaching for increased knowledge of students' strengths and needs, 4) Adaptations at individual and group level, 5) Integration of theory and practice, and 6) Reconsidering teaching approaches through follow-ups. The analysis, based on Skrtic's theory, reveals a dichotomy in the VET teachers' conditions for, and work with, SNE. In the schools, a bureaucratic approach is applied where overriding goals are attributed high value, while the VET teachers strive for an adhocratic approach where the teaching is based on their students' needs. Based on Ainscow's theory, the analysis shows that the VET teachers take an interactive learning environment-related approach, which means that, based on their understanding of the students' difficulties, they develop adaptations to stimulate their students' learning and development.

Keywords: vocational education and training (VET), special needs education (SNE), upper secondary school, vocational teacher, special education needs (SEN), special educator

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Introduction

This paper is about vocational teachers' conditions for, and work with, special needs education (SNE) in upper secondary school vocational programmes in Sweden. In this study, SNE is defined as a pedagogical school activity where special educational functions are practiced by various actors in or outside the classroom (Pettersson, 2017; Ström & Linnanmäki, 2017; Tangen, 2012).

However, after the most recent upper secondary school reform in 2011, the purpose of which was to improve the education quality in order to meet the competence requirements of the labour market and the higher education sector (Gymnasieutredningen, 2008), the number of vocational students has decreased to just over 100,000 and student throughput remains at a low level, about 70% (Skolverket, 2021b).

The 2011 reform marked a stricter demarcation between vocational education and training (VET) programmes and general education programmes, resulting in the vocational content being increased in VET programmes at the expense of upper secondary foundation courses (Larsen & Persson Thunqvist, 2018). Thereby, vocational students' eligibility for higher education was abolished and a vocational degree was introduced (c.f. Helms Jørgensen, 2018). Follow-ups of the reform by the Swedish Government (Gymnasieutredningen, 2016) and the Swedish National Agency for Education (Skolverket, 2017) showed that the quality deficiencies identified before the reform were greater after the implementation of the reform. For example, shortcomings were identified regarding vocational teachers' pedagogical and special education competencies, the collaboration between vocational teachers and special educators, and the quality of the resources allocated to developing learning environments and teaching methods. These identified shortcomings can be linked to some of the common challenges identified in the Nordic VET systems, namely, how to address the low esteem of VET teaching and how to meet the overall goal of social inclusion, that is, to increase the number of students who start and complete their upper secondary studies (Helms Jørgensen, 2018).

The prioritisation of social inclusion in the Nordic countries' youth education systems has resulted in VET educating an increasingly socially differentiated student group than before, including young people with social and mental problems (Larsen & Persson Thunqvist, 2018). This, in turn, has contributed to the fact that students' need for SNE in VET has increased over time (Gymnasieutredningen, 2016). In Sweden, vocational teachers usually have a basic vocational training and many years of professional experience before they begin working as teachers. Many become qualified teachers after studies on vocational teacher programmes, which include minor special education elements, but the proportion of unqualified vocational teachers remains high, 50% (Skolverket, 2021b).

Furthermore, the government follow-up report states that student support measures seem to be designed on the basis of traditions, rather than on students' needs, and that the reasons behind the high drop-out rate can primarily be attributed to individual students' shortcomings instead of deficiencies in the upper secondary school's educational mandates, organisation and teaching. This view needs to be problematised, not least in the light of international agreements in the field of SNE. In 1994, Sweden signed the Salamanca Declaration (UNESCO, 2006), which was considered a breakthrough for inclusive education. In the Declaration, it is advocated that students should meet in inclusive learning environments (Nilholm, 2019).

The educational policy ambition in Sweden regarding SEN is stated in the Education Act (Skollag, 2010), the Curriculum for the Upper Secondary School (Skolverket, 2021a) and in regulations from the Swedish National Agency for Education (Skolverket, 2014). For example, the Education Act (Skollag, 2010) emphasises all students' right to education and development, which means that they must be given the opportunity to reach stated knowledge goals to the extent possible. In addition, a general goal for the upper secondary school is to promote the development of all students through adequate and equal learning environments. Thus, the upper secondary school has both a knowledge-oriented and a social educational mandate, which should be considered in SNE teaching (Tangen, 2012). Furthermore, the special educators, that is, qualified teachers with special education training, have duties which are described as twofold: 1) to act as 'qualified dialogue partners' to all teachers in the school and 2) to provide advice to teachers (Skolverket, 2014).

This assignment is often carried out via special education consultation provided by special educators. Idol (2006) defines such consultation as a form of indirect special education service delivery where the consulting special educator supports teachers who have students with SEN in their classrooms.

Teachers' professional and relational work in SNE is based on a holistic view of learning where knowledge and education are integrated. Trusting and caring relationships are seen as fundamental to students' learning and development (Aspelin & Persson, 2011). SNE is also described as an area of knowledge where research contributes to knowledge-building (Ahlberg, 2009). Similarly, researchers in the field of SNE, such as Ainscow (1998), Fischbein (2007), Ström and Linnanmäki (2017), Tangen (2012), and Westling Allodi (2007), claim that the overall goal in the school's educational mandate is that all students should be given the opportunity to learn and develop. Thus, the school actors, including school management officials, teachers, and special educators, are responsible for ensuring that their school's learning environment is conducive to all students' learning (Ström & Linnanmäki, 2017). If the students are not given the

opportunity to have extra support, Fischbein and Österberg (2003) argue that this can have a negative impact on students' self-esteem and study motivation.

The study's focus on vocational teachers' work with SNE in VET is justified for the following reasons: As described earlier, deficiencies have been identified in the wake of recent education reforms as regards the conditions and implementation of SNE in VET programmes (cf. Hirvonen, 2012; Larsen & Persson Thunqvist, 2018; Skolverket, 2017). An additional motive is that research in this area of knowledge is largely lacking. A Nordic review of SNE in upper secondary vocational programmes (Björk-Åman et al., 2021) shows that very few studies have been carried out in Sweden, in comparison with, for example, Finland, which suggests that this research area needs to be further explored. The connection between SNE and VET is therefore highly relevant and in line with Ahlberg (2007, 2009), who emphasises the importance of researchers in the field of SNE needing to create new mergers of previously unconnected knowledge and study objects. Such mergers can contribute to the development of context-related special and vocational educational theories that benefit both the scientific community and school stakeholders and actors.

The purpose of this study is to contribute knowledge about vocational teacher's work with special needs education in the learning environments of Swedish vocational programmes. The purpose is specified in the following research questions:

- What are the conditions for vocational teachers' work with SNE in VET programmes?
- How do teachers work with SNE in VET programmes?

Previous research on vocational education and special needs education

A review of previous research on VET shows that it is extensive, that it spans different levels in the public as well as the private sector, and that VET is contextualised in many different ways in different countries (Billett, 2011). The extent and diversity of VET research is demonstrated in Mulder and Roelofs' review (2012), in which they identify the following themes: organisation and leadership, learning and teaching, workplace-based learning and apprenticeship, and assessment. On the theme of learning and teaching, Kilbrink et al. (2021) show that the vocational subjects have many similarities, such as the interplay between theory and practice, the use of many different tools, problem-solving activities, and the complexity of interacting critical aspects. A review of current international empirical research on SNE in VET shows that such research is primarily conducted in Finland and, to some extent, also in Sweden (cf. Björk-Åman et al., 2021).

In a Finnish study, Hirvonen (2012) shows that SNE in vocational programmes has evolved from segregating forms of teaching to more flexible inclusive learning environments. However, the author claims that the vocational teachers' special educational knowledge needs to be developed and that the support structures for the teachers need to be improved. In addition, Pirttimaa and Hirvonen (2016) argue that SNE should be seen to a greater extent in relation to the vocational students' future occupations. However, Rosenblad et al. (2022) argue that the individualised, competence-based, and managerially governed focus in VET becomes a social divider where self-governing students are offered a fast track to the labour market, which distinguishes them from fellow students in need of learning support. This 'go-forward' engine limits the idea of equal learning of citizenship for all students, in favour of competence-based qualification measurements that are attributed a future economic value.

Ryökkynen et al. (2002) found that interaction between teachers and students in Finnish vocational education takes place primarily in teaching situations, in personal dialogues in connection with the planning of students' individual development plans, and in informal meetings between teachers and students. The importance of interaction in SNE in VET is corroborated also by Ryökkynen and Räty (2022), who point to the importance of involving the entire learning environment in order to ensure a secure and including environment where students dare to ask questions and express their needs, which is also important in their future working life. In the research field of SEN in the Swedish upper secondary school, Yngve (2020) shows that there is a clear connection between high school absence, attending a vocational upper secondary school programme or having a neuropsychiatric diagnosis and students' perceived need for support in several school subjects. The results show that students experienced limited participation in most school activities and rarely received satisfactory adaptations, and that the need for student support was greatest in the upper secondary school foundation subjects, especially among students on vocational programmes. Thus, one of the study's conclusions was that vocational students' need for support requires even more attention. On the theme of school absence among students in upper secondary schools, Forsell (2020) shows that the school staff, by developing a close relationship with the students, can function as an important bridge-builder between the students' different learning environments, thus contributing to higher school attendance. The results of the study emphasise that teachers' teaching and assignments are of key importance for the students' social and learning development.

In a study of students' and teachers' experiences and perceptions of relational pedagogy in VET, Gidlund (2020) shows that it promoted the learning atmosphere and the students' participation, commitment, and motivation in school.

Forsell's and Gidlund's studies are current examples of relational pedagogy, which in recent decades, has emerged as a reaction to the increasingly market-driven and individualised approaches to teaching and learning in schools. In this pedagogical focus, the importance of analysing, understanding, and thinking about education as a meeting place is emphasised, a place where students grow, develop and learn in relationships (Aspelin & Persson, 2011).

A review of Nordic studies on SNE in VET in upper secondary school shows that 20 such studies were conducted during the years 2010 to 2018 (Björk-Åman et al., 2021). Fifteen of the studies focused on the learning activities level, and the identified themes were Teachers' work and role, Teaching and learning, Student transition, and Student dropout. The remaining five studies focused on the organisational level with themes such as Changes to vocational policy documents and educational practices, and School organisation and its implementation. Most of the studies were conducted in Finland and only three in Sweden. The Swedish studies show that SNE was mainly conducted outside the regular classroom and with a focus on the subjects Mathematics, English, and Swedish (Ramberg, 2013, 2016, 2017). The review concludes that further studies are needed to increase knowledge about SNE in VET.

Overall, current vocational education research reveals several similarities regarding the teaching of the vocational programmes and students' extensive need for support. Within special education-oriented research, where the importance of relationship-building efforts, teachers' knowledge of SEN, and their access to support structures is emphasised, there are calls for more research on VET teachers' work with SNE.

Theoretical perspectives

In this section, the two complementary special education perspectives that were used to analyse the study's results are presented. Ainscow's (1998) and Skrtic's (1991b) theoretical perspectives on SNE share certain similarities as they both claim that development and learning can be advanced, regardless of biological or mental conditions. They also have a similar focus on students' learning and development through social interactions, where support, challenges, and experiences in the learning environment constitute important elements. There are also some differences between the two theoretical perspectives, which are described below.

Skrtic's organisational theoretical model is based on the understanding of the human as a social being (Skrtic, 1991a, 1991b, 2005; Skrtic et al., 1996), and he criticises society's shortcomings in meeting students' varied needs. Skrtic's perspective is useful for understanding students' SEN in school contexts, as well as the wider social, political, and organisational processes and how they affect

SNE in schools. Thus, Skrtic argues for shifting the focus from only applying to the individual's conditions to considering the entire learning environment's need for development. Skrtic claims that a school organisation can be either bureaucratic or adhocratic, and that both orientations have consequences for SNE in the schools.

A characteristic of the bureaucratic school organisation is a high level of trust in overriding decisions and regulations, such as education acts, curricula, guidelines, and pre-given solutions. When policy documents and plans are given a high value by school actors whose main focus is on fulfilment of overarching goals, the understanding and prioritising of students' needs may suffer. Such an organisation risks overlooking students' diversity and differences and instead strive for homogeneous groups of students. The bureaucratic organisation objectifies the shortcomings and diagnoses of the individual student, which can lead to classification and division of students based on their shortcomings (Skrtic, 1991a, 2005). Thus, there is a risk that teachers will focus on students' weaknesses and shortcomings, rather than on their strengths and the learning environment.

As a contrast, Skrtic (1991a, 1991b, 2005) describes the adhocratic school organisation as a flexible and supportive organisation which to a larger extent adapts to students' needs. In this kind of organisation, communication between school actors and students is central and aimed at increased participation and co-determination. Knowledge about students' needs, learning, and development can be made visible in professional informal or formal dialogues, which give the teachers opportunities to solve problems in a flexible way. When flexible working methods are promoted, the teachers' willingness to try new teaching methods and cooperate with other school actors is likely to increase. A flexible and problem-solving organisation lays a good foundation for supporting students' development and learning. This organisation is also characterised by the fact that school management officials have a high level of trust in the teachers' professional skills and responsibility for students' development and learning and encourage them to develop their professional collegial ability to work together (Skrtic, 2005).

The interactive learning environment-related perspective (Ainscow, 1998, 2002) complements Skrtic's theory by its focus on interactions and relationships in SNE. Rather than focusing on aspects that can be defined objectively, systematically observed, and measured accurately, this perspective highlights the teachers' and students' participation in learning situations (cf. Ainscow, 1998, 2002). Thus, in this perspective, SNE is seen as an activity where the students' different needs for support and the learning environment's adaptation to meet these needs are each other's prerequisites (cf. Ainscow, 1998; Fischbein, 2012; Tangen, 2012).

The study's two research questions that concern SNE both from an organisational perspective and an interactive environmental perspective justify the use of the complementary theories. Skrtic's organisational perspective (1985, 1991a, 1991b) has been used to deepen the understanding in terms of the conditions for and implementation of SNE in a school and VET programmes context, while Ainscow's interactive and environment-oriented perspective has been a support in the analysis of the vocational teachers' interaction with their students in the learning environments.

Method

This section presents the methodological aspects of the study, i.e., its study setting, participants, data collection methods, procedures, and data analysis.

Study setting

The Swedish upper secondary school comprises 18 programmes, of which 12 are vocational programmes. About a third of the students, just over 100,000, study on a vocational programme and some 8,000 vocational teachers are involved in VET, half of whom lack teacher training (Skolverket, 2021b). The participants in the study were vocational teachers who teach one or more vocational subjects to students usually aged 16–19. As vocational teachers, they teach both theoretical and practical modules. The teaching is carried out in workshops, practice rooms and traditional classrooms in groups of 8–16 students and teaching sessions often last two to four hours. VET teachers are also responsible for students' workplace learning by coordinating their placements and creating good conditions for the integration of theoretical and practical professional knowledge and skills in both the school-based and workplace-based parts of the education (Gustavsson & Persson Thunqvist, 2018). The vocational teachers participating in the study work at three upper secondary schools located in three municipalities in the northern part of Sweden.

Participants

The study's selection criteria were that the participants should be practicing vocational teachers and have at least five years of teaching experience from one of the 12 VET programmes. All 15 participants met these requirements, all of whom were qualified vocational teachers. Eight vocational programmes were represented, namely Building and Construction (BA, two teachers, teacher one [T1] and teacher two [T2]), Child and Recreation (BF, T1), Electricity and Energy (EE, T1), Health and Social Care (VO, T1, T2, T3), Hotel and tourism (HT, T1, T2), HVAC and Property Maintenance (VF, T1), Industrial Technology (IN, T1), and Vehicle and Transport (FT, T1, T2, T3, T4). Eight women and seven men

participated in the study, most of whom were more than 50 years old and had more than 10 years of teaching experience.

Data collection methods

In view of the research questions and their open-ended nature, semi-structured interviews were considered the most appropriate data collection method, as they allow the respondents to describe and reflect on their in-place experiences in more detail (cf. Kvale & Brinkmann, 2009). Based on their many years of teaching experience, the vocational teachers were asked to describe and reflect on 1) the conditions for working with SNE in their VET programmes, and 2) their work with SNE with VET students.

Procedure

An invitation to participate in the study was sent to 25 vocational teachers in three municipalities offering several VET programmes. The attached cover letter provided information about the purpose of the study, the research questions, and the selection criteria. Furthermore, the teachers were informed that their participation was voluntary, that the study was part of a research project and that the collected data material would be treated in accordance with ethical guidelines for scientific studies (Vetenskapsrådet, 2017). Of the 25 invited teachers, 15 chose to participate. The interviews, which lasted between 45 and 80 minutes, were carried out via video link, recorded, and transcribed verbatim.

Data analysis

Inspired by Braun and Clark (2006), a thematic analysis of the empirical data material was carried out consisting of several steps. Initially, readings and re-readings of the data material were carried out to obtain an overview and to note preliminary ideas about the content of the teachers' narratives. In the next step, the entire data set was coded systematically, which involved compilation of relevant data which then formed initial codes. Examples of codes were 'Group size and teaching time' with data extracts such as 'I have a small class where I am close to the students […]', and 'Physical learning environment' with extracts such as 'We have many students in the same classroom and the learning environment is very noisy'. In the third step, the codes were sorted into potential themes which, in the next step, were brought together in a thematic map and tested against coded extracts and the entire data set. For example, the above-mentioned codes could be merged to form the theme 'Framework factors in the learning environment that affect teaching and students' learning'. In the fifth step, the specifics of the identified themes were refined, named, and sorted on the basis of the study's research questions (cf. Braun & Clark, 2006).

The thematic analysis of the data material then generated an understanding of the choice of theories to be used in the further theoretically driven analysis (cf. Braun & Clarke, 2006; Bryman, 2016). Skrtic's and Ainscow's perspectives on SEN were judged to be useful for deepening our understanding of the data material. Thus, Skrtic's organisational perspective constitutes the overall theoretical framework, while Ainscow's interactive, environment-related perspective, supports the analysis related to the second research question.

Findings

This section presents the findings. The first part deals with the vocational teachers' perceptions of the conditions for working with SNE in VET programmes and the second concerns their work with SNE.

Conditions for special needs education in vocational programmes

In the teachers' reflections on the conditions for SNE in their VET programmes, two themes can be identified: 1) Framework factors in the learning environment that affect the teaching and students' learning opportunities, and 2) Organisation of special needs education, including access to special education consultations.

Framework factors in the learning environments that affect the teaching and students' opportunities for learning

In this theme, the identified framework factors are group size, teaching time and the physical learning environments.

Group size and teaching time. All teachers point to the importance of the teaching being framed by smaller groups of students and longer teaching sessions. Together, these frame factors contribute to teachers having time to pay attention and communicate with all students, thereby increasing the understanding of their strengths and need for support. The teachers claim that these opportunities constitute a basic prerequisite for them to be able to adapt the teaching to the students' theoretical and practical needs. One teacher describes these opportunities as follows: 'I have a small class where I am close to the students, which means that I know exactly how I can adapt my teaching in the best possible way' (HT, T1). Most teachers state that they work with student groups comprising 8–16 students and that the lesson sessions often last about 3 hours. Many teachers point to this framework as being important, as it allows them to use specific equipment in workshops in an optimal way and to divide students into smaller groups with a view to individualising the teaching, for example through follow-ups of previously taught content.

Physical learning environment. Most teachers express that the physical learning environments limit their teaching opportunities to some extent, and thus the students' opportunities for learning. Many of them describe that their teaching takes place in school buildings lacking satisfactory noise reduction and group study rooms. 'I would like to develop the learning environments by adding more flexible group study rooms. […] We have many students in the same classroom and the learning environment is very noisy' (FT, T2). According to the teachers, these shortcomings result in difficulties in adapting the teaching, not least for students who need a quiet environment to be able to concentrate on the lesson content.

The schools' organisation of special educational competence and the vocational teachers' application of special needs education

The teachers provide a uniform picture of how the special educational competence is organised in their schools. It is gathered in student health teams (in Swedish *elevhälsoteam*, EHT) made up of special educators and student counsellors who, in collaboration with teachers and principals, identify students' needs and develop various forms of learning support. However, the VET teachers express divided opinions as to whether the special educational competence provides support for students' learning in the vocational subjects. Only two of them state that they have a well-functioning collaboration with the special educators which facilitates concrete adaptations being made to the teaching of the vocational subjects. One teacher describes the collaboration as follows: 'We have a fantastic special educator. She helps us a lot and gives us tips and tools that can support our students' learning' (HT, T2). However, a large majority of the teachers claim that students' SEN in the vocational subjects are to a large extent marginalised compared to their needs in the upper secondary foundation subjects such as mathematics and Swedish. The consequence of these priorities is that the VET teachers' access to special educational consulting in the vocational subjects is limited. For example, many of the teachers interviewed state that information about SNE does not seem to reach them, and that their needs for support in the vocational programs are not considered by the school management. Two teachers describe the situation as follows: 'EHT have meetings about students' needs, but we, VET teachers, do not receive any information from these meetings' (IN, T1). 'We try to make students' needs in vocational subjects visible to the school management, but in the general student support workshop with special educators, there is no time for those needs' (FT, T4).

As a result of this marginalisation of SNE in VET, the teachers describe how they have set up their own informal vocational learning support workshops which students can attend to get extra support, for example with course content

that they have missed due to absence, or theoretical content or practical elements they need to review to be able to move on to the next module.

> We have our own support workshop where we see students in small groups when we have a gap in our work schedules and where we can work individually with them. This is made possible by using time intended for planning, preparation of premises and equipment and recovery. (FT, T3)

The quote exemplifies how these teachers, in their quest to support students in SNE, take on a responsibility for their learning that extends beyond their formal teaching responsibilities.

Vocational teachers' work with special needs education in vocational programmes

In the teachers' reflections on their work with SNE, the following themes can be identified: 1) Communicative teaching for increased knowledge of students' strengths and needs, 2) Adaptations at individual and group level, 3) Integration of theory and practice, and 4) Reconsidering approaches through continuous follow-ups with students.

Communicative teaching for increased knowledge of students' strengths and needs

All teachers emphasise the importance of clear and continuous dialogues with the students in order to be able to support their learning. Through such dialogues, which are initiated already at the beginning of the programmes, the teachers gain valuable knowledge about the students' strengths and needs at an early stage, which enables them to plan for long-term learning together with their students.

> We have continuous dialogues with the students, an overall study plan and an individual study plan which provide the students with good opportunities to think about what is going well and what can be improved. (IN, T1)

Furthermore, several teachers describe how they strive for clarity in their oral and written communication with the students as they have found that this benefits all students' learning. 'When I am clear in my communication, it benefits all students' (VF, T1). 'We have weekly planning schedules so that the students know exactly what they are supposed to do, and this creates clarity and security' (BA, T1). Other examples of the teachers' dialogue-oriented approaches can be identified in their task instructions and introductions of new teaching elements, where they try to engage in dialogues with the students in order to identify any ambiguities that may lead to misunderstandings.

> It is important that I have time to spot and deal with ambiguities that may hamper their understanding. Sometimes when I get a very strange answer to a question, I

> realise that I have not reached all students. Then I pause the teaching and discuss any ambiguities with the whole class. (BF, T1)

Some teachers also reflect on the importance of focusing on students' strengths in the dialogues in order to identify long-term development strategies. 'It is as [my colleague] says, the dialogues with the students are important, and it is also important to constantly highlight their strengths' (BA, T2).

Adaptations at individual and group level

The teachers provide many examples of how they use different adaptations at individual and group level to support the students' learning. In the analysis, three categories of adaptations can be identified, namely Multimodal teaching, Language support, and Organisation of teaching as support for all students' learning.

Multimodal teaching. All the vocational teachers describe how they continuously assess their students' different strengths and needs for support and therefore use different kinds of learning resources in their teaching. For example, they state that their students often prefer varied ways of learning new knowledge and skills and that they need different amounts of time to complete different tasks. To meet these needs, traditional oral and written elements are supplemented with other supportive and complementary teaching activities.

> In almost all modules, we use a video, a lecture, a written text and a practical element. We try to mix different types of learning resources because different students learn differently. We want to give them more opportunities for review and more chances to learn. (EE, T1)

This quote is one of several examples of how these teachers use a variety of learning resources and teaching methods in order to adapt their teaching to all students' learning.

Language support. VET programmes have their own specific professional terminology that students must acquire to learn the necessary professional knowledge and skills. Some of their students have Swedish as their second language and several other students are in need of reading and writing support activities. To facilitate these students' learning, many of the teachers use the 'Reading Service', whereby written teaching materials is made available in the form of downloadable audio files. Several teachers also state that they supplement written instructions with oral instructions to ensure that all students understand how they are expected to perform a particular work task. 'I very often adapt my teaching by providing oral instructions to students with language difficulties' (VO, T1).

Organisation of teaching to support all students' learning. All teachers point to the importance of organising teaching so that available teacher resources and

teaching frameworks can be used to create optimal conditions for their students' learning. For example, it may be about using the teachers and equipment to enable the formation of smaller student groups working in parallel with different practical activities. Two teachers describe some typical ways of organising the teaching: 'We divide the student groups so that half the group do their practice driving with my colleagues, while I have a theoretical lesson in the classroom with the other half' (FT, T2). 'We have added more hours so that one of us is always available when the students have self-study time' (FT, T1). These quotes show that organisational tasks aimed at adapting the teaching to the needs of all students are a central part of the teachers' work. Based on the prevailing structural and material conditions in their programmes, they develop alternative teaching arrangements which benefit the communication between teachers and students. The teachers' commitment to the work of organising the teaching is also evident in their narratives, as exemplified by this quote: 'We have to stretch our resources to the absolute limit to succeed in the organisation of the teaching' (EE, T1).

Integration of theory and practice

According to the VET teachers, the integration of theoretical knowledge and the practical application of vocational skills are crucial for students to be able to develop in their vocational learning. In similar ways, all teachers describe that their teaching usually begins with theoretical lectures followed by practical application exercises, and that the transition between these activities constitutes the most critical learning situation. In these situations, the dialogue with students is crucial for determining what support the students need. 'In practice driving with a student, there are many elements of SNE. In these learning situations, we can deepen our dialogue, and I get direct feedback on whether they have understood my instructions' (FT, T2). A further example of the integration of profession-specific knowledge and practical implementation is that students, must also develop their social competence in meetings with new people. Many teachers claim that it is very important to highlight this aspect of the profession prior to the students' periods of workplace learning (APL).

> My job, in addition to teaching them what they need to learn, also includes the social aspects of working life. How to behave towards customers, for example that they must be punctual and that they should not be using their phone during working hours. (BA, T1)

Reconsidering teaching approaches through continuous follow-ups

All teachers describe the follow-up of the teaching as very important to make students' strengths and shortcomings visible in the teaching, in APL and in the students' learning in relation to programme goals. The teachers largely agree that the main goal of their teaching is that all students should reach the knowledge

goals, and therefore the teaching teams have follow-up dialogues, sometimes with the support of special educators. 'We do the follow-up in our teaching team and our goal is that all students should pass the course from year one' (BA, T2). 'Our special educator participates in the follow-ups, and we discuss how the students are doing and how we can move forward' (HT, T2). In the follow-ups, individual adaptations to the teaching are discussed, and also suggestions from the student groups regarding changes in SNE.

> Course evaluations show that our students want to do the practical parts as soon as possible, they do not want to have a theory lesson and then do the practical part two weeks later. We have tried to change our teaching to accommodate these views. (FT, T4)

The follow-ups are also seen as very important in relation to the course objectives. The follow-up work requires extensive documentation, but the teachers seem to agree that this provides a clear view of the students' knowledge progression, which is also seen as positive by the students.

> We have three different follow-up and documentation mandates relating to the students' development of knowledge and skills: from the transport industry, the Swedish Transport Agency, and the National Agency for Education. The positive thing is that the students keep a close tab on their own performance. (FT, T2)

Follow-ups of the students' APL constitute another important part of the teachers' work, which is sometimes hampered by poor communication with the workplaces. 'Sometimes it is difficult to get feedback from supervisors in the workplace about their students, especially when a student has several different supervisors' (VO, T2). However, the feedback from the workplaces is seen as crucial for the teachers to be able to find workplaces that will suit the students' strengths and needs. 'If I get feedback from the workplace, it is easier for me to find suitable APL placements for my students' (HT, T2). Taken together, the teachers' narratives show that they put a lot of effort into identifying students' strengths and needs, making substantive structural and material adaptations to their teaching and that, through follow-ups of teaching activities and APL periods, they strive to achieve further improvements that can benefit all students' learning. However, many of the teachers point out that this extensive work is worth the effort, as they see that it benefits both the students and themselves in the long run. As one teacher put it: 'We work more than we have done before with the students, but that is positive. It feels as if we are doing less work but have more time with the students' (VF, T1).

Analysis and discussion

The analysis reveals a dichotomy as regards the conditions for SNE in VET. Despite the obvious need for SNE in the VET programmes, it turns out that most of the teachers lacked access to consulting from special educators. To increase the knowledge about this dichotomy, Skrtic's special educational organisational theory is used to visualise both aggravating bureaucratic factors and adhocratic enabling factors. Ainscow's interactive environment-related perspective is used to further clarify the results. The analysis highlights two central themes: a) Barriers to special needs education – lack of special educational consulting, and b) The VET teachers' views on the students' vocational learning and development are reflected in their work with SNE.

Barriers to special needs education – lack of special educational consulting

This study clearly points to the VET teachers' lack of special educational consulting. Only a few teachers indicated that they have access to relevant consulting from the school's special educator. As stated in the National Agency for Education guidelines, such access is to be provided for VET teachers (Skolverket, 2014), but the analysis shows that this is largely missing in the studied VET programmes. This identified shortcoming confirms the results of earlier analyses (Hirvonen, 2012; Skolverket, 2017). The lack of special educational consultation also contributes to VET students' difficulties in vocational subjects rarely being discussed and analysed. In the long run, we therefore see an obvious risk that vocational students' right to learning support in VET will be increasingly disregarded, despite what is shown in previous research (see e.g., Fishbein, 2007; Ström & Linnanmäki, 2017) and what is stated in the national guidelines (Skollag, 2010). According to Skrtic (1991a, 1991b, 2005), this lack of special educational support means that the school's bureaucratic system is in place and does not benefit the needs of VET students and teachers. In other words, when fulfilment of overriding goals take precedence over the teaching and the students' learning, there is an obvious risk that both teachers' and students' needs are made invisible.

Furthermore, it is shown that the lack of special educational support contributes to the fact that most of the VET teachers consider the EHT competencies to be a resource that is only available in the academic subjects. According to Skrtic (1991a, 1991b, 2005), this circumstance can be seen as a result of the school's organisation overlooking students' differences and varied needs of support in VET.

However, it is also evident from this study that many teachers on the VET programmes, in line with Skrtic's adhocratic approach (cf. 1991a, 1991b, 2005), invent and design programme-specific SNE activities as a support for VET

students' learning. This support is based on an approach to learning and development resting on an interactive environment-related perspective (cf. Ainscow, 1998, 2002; Fishbein & Österberg, 2003; Forsell, 2020). However, the teachers' support seems to be carried out under the radar, which means that the VET students' needs continue to be invisible to school managements and special educators (cf. Skrtic, 1991a, 1991b, 2005).

The VET teachers' work with SNE

Most of the teachers consider the design of learning environments to be particularly important when it comes to adapting their teaching to students' needs (cf. Ainscow, 1998, 2002; Skrtic, 1991a, 1991b, 2005; Ström & Linnanmäki, 2017). This approach is prominent in their reflections on teaching methods and supporting resources, where extensive consideration is given to their vocational students' learning needs. This means that different teaching adaptations are carried out in parallel to support students' different needs (cf. Pettersson, 2017; Skrtic 1991a, 1991b, 2005).

The mutual dialogues between VET students and teachers are made possible by the fact that the VET programmes in Sweden have smaller student groups and longer teaching sessions than the academic programmes. These conditions seem to facilitate the VET teachers' professional, adhocratic teaching (cf. Skrtic 1991a, 1991b, 2005) and the implementation of relational teaching methods (cf. Aspelin & Persson, 2011). Through in-depth and recurring dialogues, the VET teachers become aware of the students' needs, and what SNE adaptations and support may be needed. The students' needs constitute the focus of their teaching, and the entire learning environment is used as a resource to promote the teachers' design of SNE (cf. Ainscow, 1998, 2002). There is no doubt that the VET teachers in this study position themselves within the relational and interactive learning environment-related perspective, albeit to slightly varying degrees (cf. Ainscow, 1998, 2002; Ryökkynen et al., 2020; Westling Allodi, 2007). This does not mean that all teachers are aware that they conduct teaching within the SNE framework (cf. Ström & Linnanmäki, 2017). Instead, most of them would probably describe their teaching as being necessary to support the VET students' learning. From Skrtic's perspective, this is particularly clear in the teaching of several teachers who appear to strive to understand the students as social beings and therefore see the need to adapt the learning environment so that they feel safe and comfortable in learning situations. This approach is also shown in the teachers' professional interaction with the students (cf. Ainscow, 1998, 2002; Gidlund, 2020; Ryökkynen & Räty, 2022; Tangen, 2012) where they not only try to acquire knowledge about the students' varied needs, but also translate the knowledge into customised long-term sustainable solutions.

The teachers' long-term teaching strategies also indicate that they do not expect rapid changes in the students' school performance, as their experience is that many students often have had negative school experiences in the compulsory school (cf. Skrtic, 1991a, 1991b, 2005). The teachers' work of organising teaching so that vocational theoretical content is integrated with practical applications in school and in APL constitutes a particularly central part of their strategies to adapt their teaching to the students' knowledge in the long term. The analysis shows that the teachers base these strategies on their experience that the students' learning and development benefit from integrated teaching (cf. Forsell, 2020; Skrtic, 1991b, 2005; Yngve, 2020). However, our analysis indicates that, in order to facilitate long-term strategic development work with SNE in VET, many schools need to redesign the organisation of EHT (cf. Skrtic, 1991a, 1991b, 2005).

Conclusions and implications

The following conclusions can be drawn from this study:

SNE, as it is conducted in the studied VET programmes, can be described as bureaucratic systems, which is manifested in a lack of access to SNE support in the vocational subjects and a lack of communication between principals, EHT, and VET teachers regarding the vocational students' need for support. Despite the fact that previous research has identified challenges regarding social inclusion in VET, and although the right of all students to learning support is clearly outlined in national and international guidelines, this study shows that the need for support in the vocational subjects are marginalised, with the consequence that vocational students' learning opportunities risk being limited. Thus, the school's goal of supporting the students' development as far as possible cannot be considered to have been fulfilled, which inhibits many students' personal and professional development, and in the long run also hampers the recruitment to professions with a high demand for educated labour, for example in industry and healthcare.

Based on these identified conditions for SNE in VET, the study shows that the VET teachers, to varying degrees, 'invent' and develop programme-specific adhocratically and interactively-oriented SNE activities, where the students' needs, dialogues, and adaptations of the learning environments are at the centre of their work. This involves extensive relation-building work where the VET teachers-identify the students' strengths and needs for support and then adapt the teaching through extensive teaching and organisational efforts. However, the development of the SNE activities in VET programmes identified in this study is often carried out under the radar, which means that school management officials and EHT are often neither aware of the needs of students, nor of the adaptations

made in vocational subjects. Therefore, clear communication channels should be developed between school management teams, EHT, and subject representatives at the local school level, as well as dissemination mechanisms that can promote the spread of knowledge of SNE in VET between VET programmes, schools, and regions.

This study is limited in terms of the number of participating vocational teachers and schools, which means that more studies need to be done to develop knowledge in the field of SNE in VET. Students' experiences of SNE in VET programmes, and the work of special educators in VET are some examples of research areas that need to be deepened.

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