Worked-Based *Higher* Education –

Insights from the US and Germany

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Inez v. Weitershausen

Work based Higher Education (WBHE): Definition and Characteristics

- "Hybrid form of learning, located between higher education and VET, through integration of university curriculum and real-life work experiences"* (Graf 2017)

- Characterized by:
  - Integration of scientific and practice-oriented content
  - Acquisition of technical skills and social competences
  - Cooperation between HEI and companies on the basis of 'duality principle' (which also governs VET)

Dimensions of 'Duality'
1) Duality of **place of learning** → HEI and company
2) Duality of **areas of education/content** → academic study and in-company training
3) Duality of **degrees** → university-level degree and professional degree/certificate in recognized area
4) Duality of **coordination** → input from all parties regarding organization and learning content
5) Duality of (contractually agreed) **rights and obligations** → clear guidelines govern all relationships
6) Duality of **organization** → alternating phases of theory and practice

Project

- Context: Need to matching employer's demands for skills with educational/training practices
- RQ: 'How is WBHE organized in different educational and institutional contexts?'
- Comparative study of two specific forms of WBHE: **US Coop programs** and **German dual study programs** ('*Duales Studium*')
  - data on proliferation, enrollment and design of WBHE programs;
  - In-depth case study of two illustrative examples:
    - Deutsche Hochschule Baden-Wuerttemberg, Stuttgart, Germany
    - Wentworth Institute of Technology, Boston, MA, USA

Project (contd.)

- Dimensions of comparison

Area of cooperation	Level of analysis	Indicators
Student Recruitment and Admission	HEI Admin office, HR departments	Form of involvement of HEI / company in selecting students
		Financial aspects related to admission
Curriculum design and Renewal	Consultation bodies	Staffing decisions (no. of CEOs vs HR vs technical managers)
		Dynamics of collaboration (incl. type and frequency of interaction and final decision-making power)
Training and Instruction	Classroom	Instructor profile (number/percentage of total faculty, qualifications, position/title, training requirements, evaluation/performance indicators)
		Instruction method and organization of practice phases (duration, intensity, mentoring)
Assessment and Examination	Faculty/company representatives	Interaction and relative power of company and faculty in grading process
		Metrics used for grading/evaluation (company-specific vs. general; pass/fail vs. other)

Findings (specific)

- **Student Recruitment and Admission**

Germany: students apply directly to company of their choice, and undergo the latter's respective screening and selection procedures.

US: selection is made by HEI

- **Curriculum design and Renewal**

Germany: regular meetings of HEI and company reps, plus numerous additional pathways

US: input from discipline-specific 'Industry Advisory Committees', often composed of HR specialists, alumni and technical managers

Findings (specific)

- **Training and Instruction**

Germany: official guidelines for academics (incl. ‘full professors’) to engage with industry → at DHBW, approx. 60% of teaching staff are also active in industry/social institutions;

US: clearer divide between academics and practitioners → at WIT, industry practitioners make up at most 40% of the faculty and tend to be hired as adjuncts

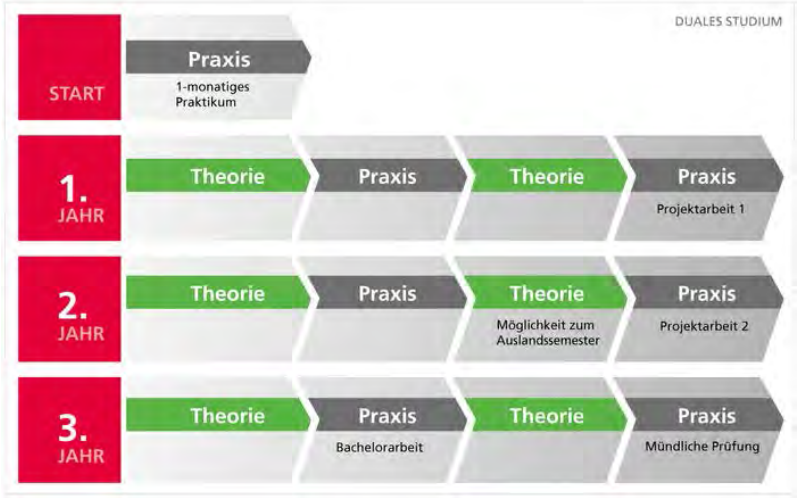
- **Assessment and Examination**

Germany: companies continuously oversee projects and case-studies, grade written reports and conduct oral examinations and provide extensive reports on students’ performance

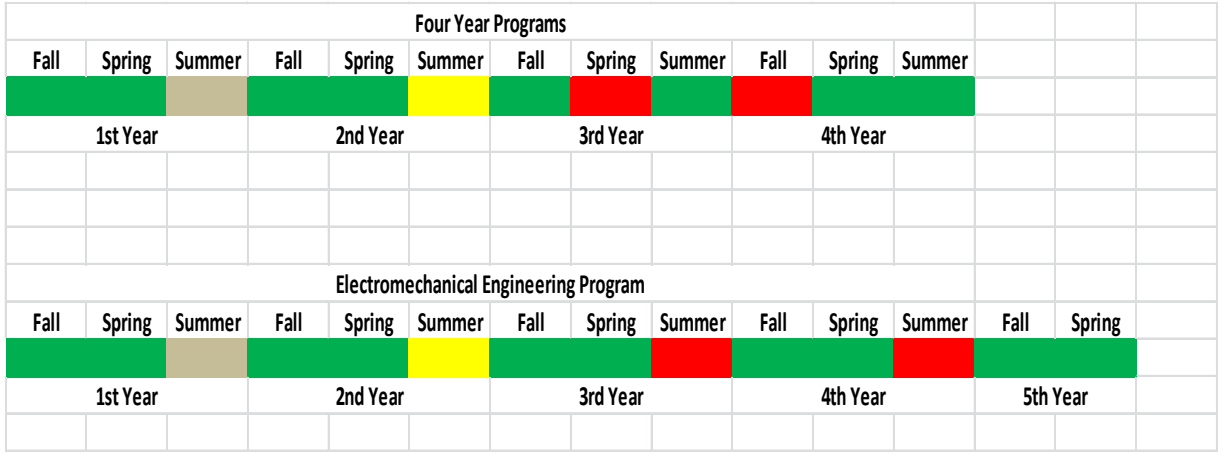
US: HEI personnel in charge academic matters, including assessment, companies only to provide fail/pass on coop experience

Example: Training and Instruction

- Overall time spent to obtain degree:
  - Germany: approx. 6-8 semesters
  - US: approx. 8-10 semesters
- Length of time spent in industry
  - DHBW: ca. 50% (through block, week and semester model)
  - WIT: 20-40%



Dual study program at Duale Hochschule Baden-Wuerttemberg (DHBW)



Coop Program at Wentworth Institute of Technology (WIT), Boston, MA

Findings (general)

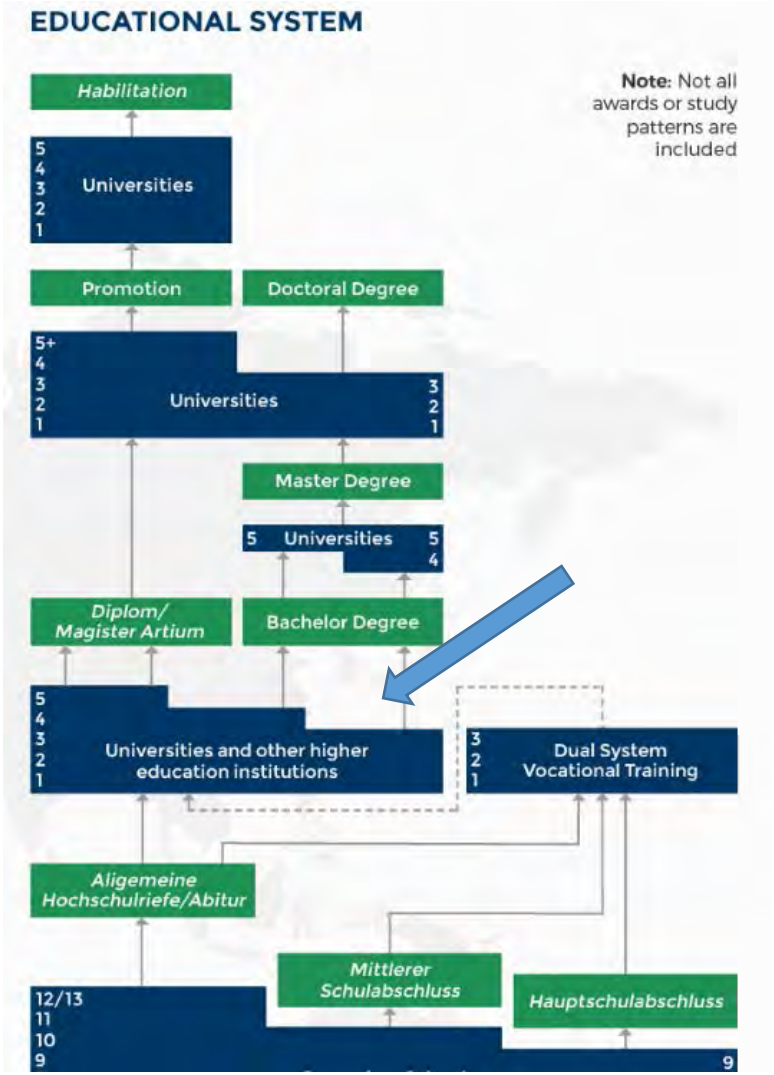
(see “Duality of **coordination** → input from all parties regarding organization and learning content)

- Intensity of cooperation between the HEI and companies stronger in Germany and based on a wide range of specific legal guidelines as well as established practices
- More ‘ad hoc’ cooperation between HEI-industry representatives in the US, often on the basis of personal connections → greater diversity of practices/programs
- Next step: assess impact on outputs (‘fit for labor market’) in both countries

Background slides

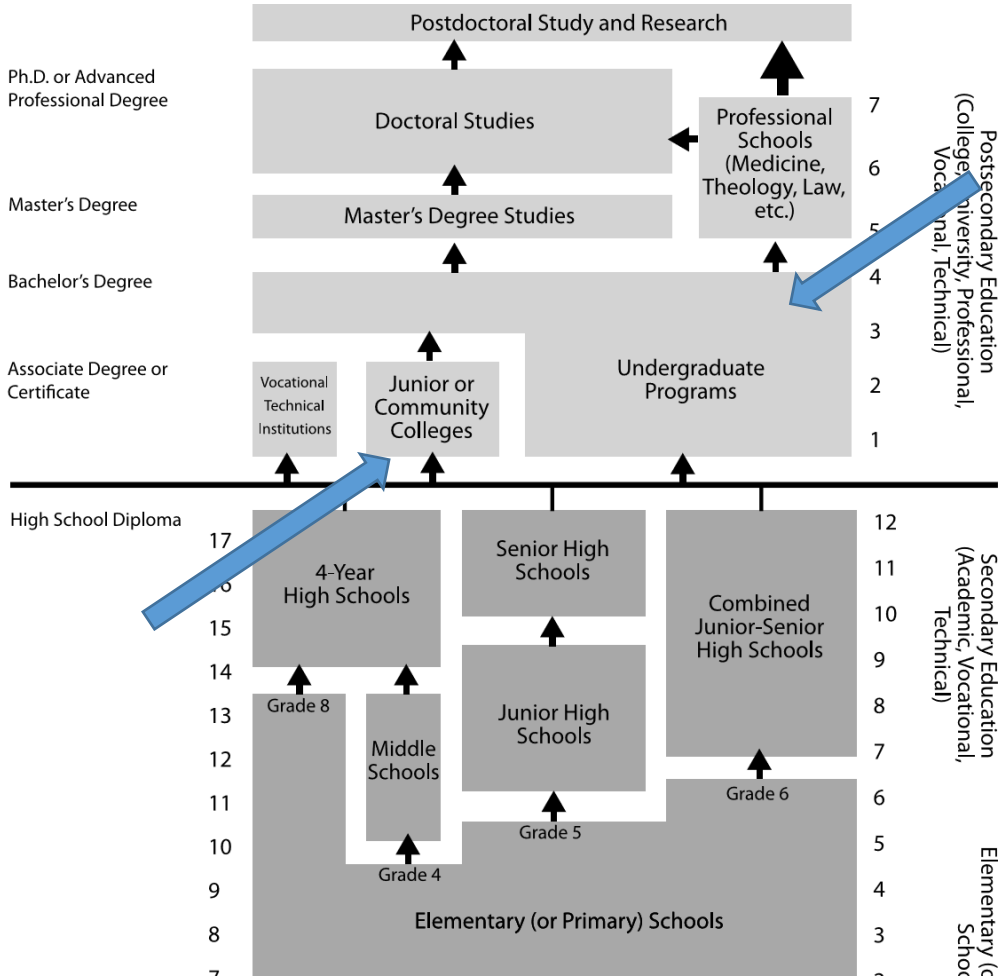
Position of WBE programs in education systems

Germany



Source: [WENR 2019]

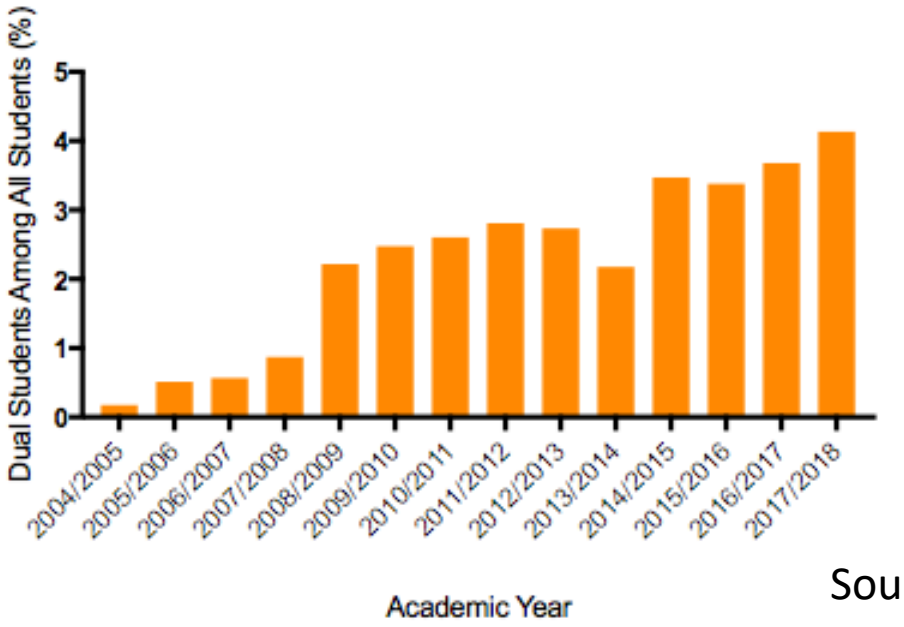
USA



Source: National Center for Statistics 1999

Dual Study Programs: Developments in 2004-2018

- Growing number of students
- Increasing diversity of HEI (Universities of Applied Sciences, Berufsakademien, technical universities, traditional universities)
- Increased number of programs, esp. in NRW, Bayern and Baden-Wuerttemberg



Source: Hochschulstatistik 2018

Source: BIBB AusbildungsPlus 2017

Dual Study Programs: Key facts and developments

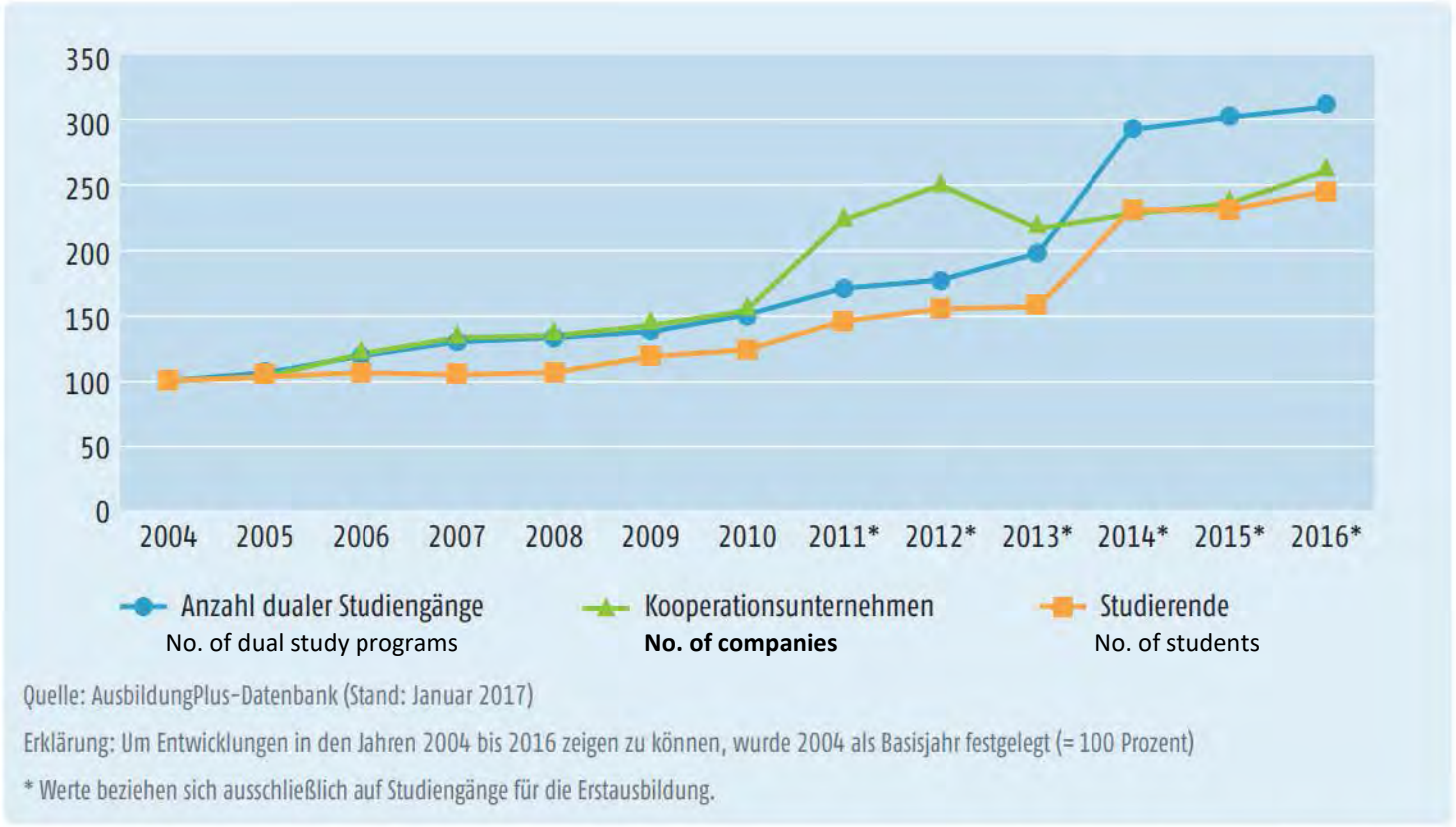


Abbildung 2: Entwicklung von Kooperationsunternehmen und Studierendenzahlen in dualen Studiengängen von 2004 bis 2016

2016

- No. of programs: 1592
- No. of students: 100.739
- No. of companies: 47.000

→ 72% of companies involved are SMEs, but the percentage of large organisations is increasing

Source: BIBB 2017

Dual Study Programs: by subject (2016)

- 600 engineering programs with >27.400 students
- 540 business admin programs with >44.600 students
- 193 computer sciences with >10.300 students (note: HPI as innovative competitor)

FACHRICHTUNGEN VON DUALEN STUDIENGÄNGEN

Fachrichtung	Anzahl der angebotenen Studiengänge	Anzahl der Studierenden in der jeweilgen Fachrichtung
Wirtschaftswissenschaften	**540**	**44.631**
Sozialwesen/Erziehung/Gesundheit/Pflege	**159**	**10.661**
Informatik	**193**	**10.304**
Ingenieurwesen		
Allg. Ingenieurwesen	93	3.126
Wirtschaftsingenieurwesen	83	4.848
Elektrotechnik	129	6.657
Maschinenbau/Verfahrenstechnik	231	10.196
Bauingenieurwesen	64	2.583
Gesamt	**600**	**27.410**
Sonstige		
Wirtschafts- und Gesellschaftslehre	50	5.766
Architektur	6	211
Mathematik	5	541
Verkehrstechnik/Nautik	27	938
Kommunikation und Design	10	251
Raumplanung	2	26
Gesamt	**100**	**7.733**
Summe	**1.592**	**100.739**

Quelle: BIBB, Ausbildungsplus-Datenbank (Stand: Januar 2017)

Dual Study Programs: Characteristics & Trends

- 4 types (characterized by decreasing degree of formalization and intensity of cooperation between HEI and company)
- Based on different types of contractual agreements with company
- HEI frequently offer same course of study in different formats

Individueller Bildungsabschnitt		Studienformat
Erstausbildung	mit Berufsausbildung	**ausbildungs-integrierend** (Bachelor)
	mit Praxisanteilen	**praxisintegrierend** (Bachelor) gestalteter Ausbildungs-anteil beim Praxispartner

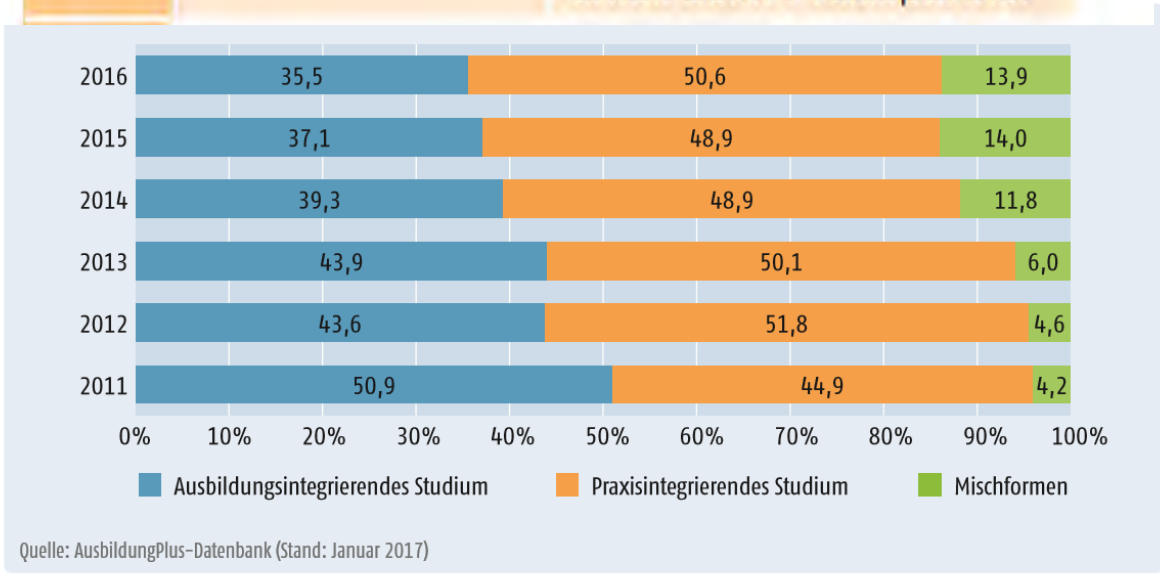


Abbildung 3: Verteilung dualer Studienformate der Erstausbildung 2011 bis 2016 (in %)

Coop program: Key facts and developments

- Classified by Career & Technical Education Statistics (at the National Center for Education Statistics 2016) as 'work experience program'

→category which consist of "internship, coop, practicum, clerkship, externship, residency, clinical experience, apprenticeship or similar program"

- and as "training for working-class youth"

→Lack of large N, systematically-collected data on student population, type and number of participating companies, profiles of HEI, but…

Coop program: Key facts and Developments (contd.)

IES NCES National Center for Education Statistics ☰ MENU Search Go

Table A10. Percentage distribution of adults whose last work experience program had selected characteristics, by type of work experience program: 2016

Work experience program characteristic	Work experience program was part of a high school education program	Work experience program was part of a postsecondary education program	Work experience program was not part of a formal education program
Total, all work experience program completers	3.5	64.6	31.9
Among each type of program:			
Length of program			
Less than 6 months	43.4	55.1	51.8
6 months to less than 2 years	36.3	29.3	25.3
2 years or more	20.3	15.6	22.9
Training and evaluation			
Received on-the-job training or on-the-job evaluation*	85.9	93.0	93.1
Program wage			
No wage	51.9	60.8	26.3
Paid a wage	48.1	39.2	73.7
Paid training wage that was lower than the wage of a fully qualified worker	29.1	25.9	44.6
Paid the same wage as a fully qualified worker	19.0	13.3	29.1
Preparation for credentialing			
Helped prepare respondent for a certification or license	33.5	57.9	29.2

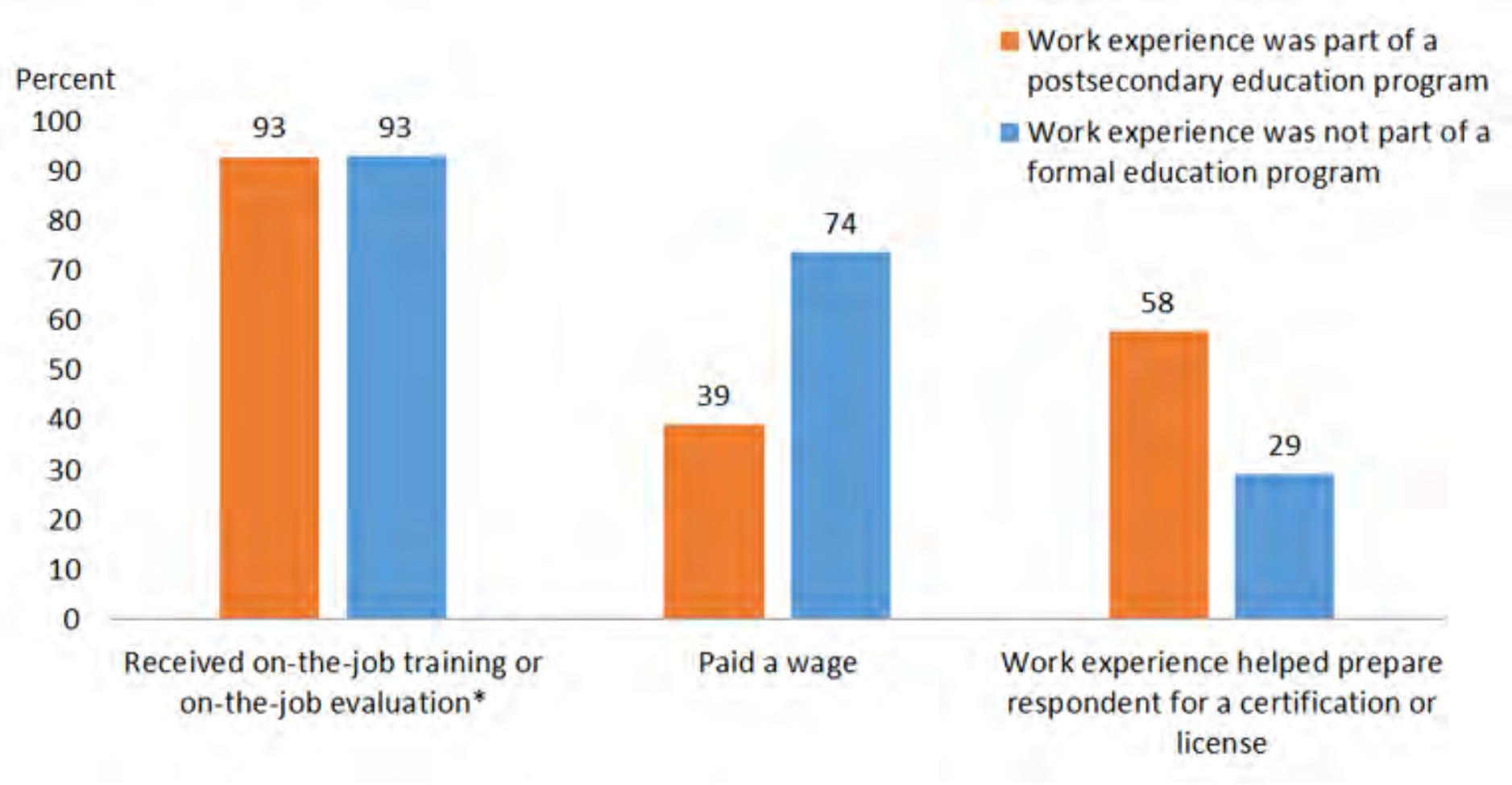
*Combines responses to two survey questions asking if the adult had been (1) instructed or trained by a co-worker or supervisor, or (2) evaluated by a co-worker or supervisor.

NOTE: As defined in the survey, adults are ages 16 to 65 and not enrolled in high school, and a work experience program is an internship, co-op, practicum, clerkship, externship, residency, clinical experience, apprenticeship, or similar program. Data describe the last work experience program completed.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Adult Training and Education Survey (ATES) of the National Household Education Surveys Program, 2016.

National Center for Education Statistics.

Developments in Coop program



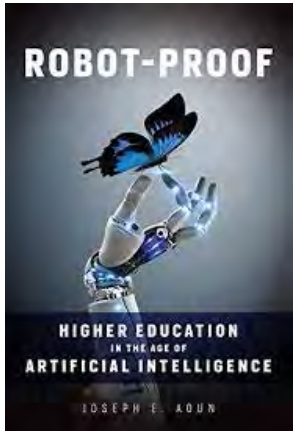
National Center for Education Statistics.
- https://nces.ed.gov/surveys/ctes/tables/A10.asp

Coop Programs: Characteristics & Trends

- Developed in early 1900s

- Often located at community colleges (WB element: apprenticeships), but also in ‘traditional’ 4 year institutions

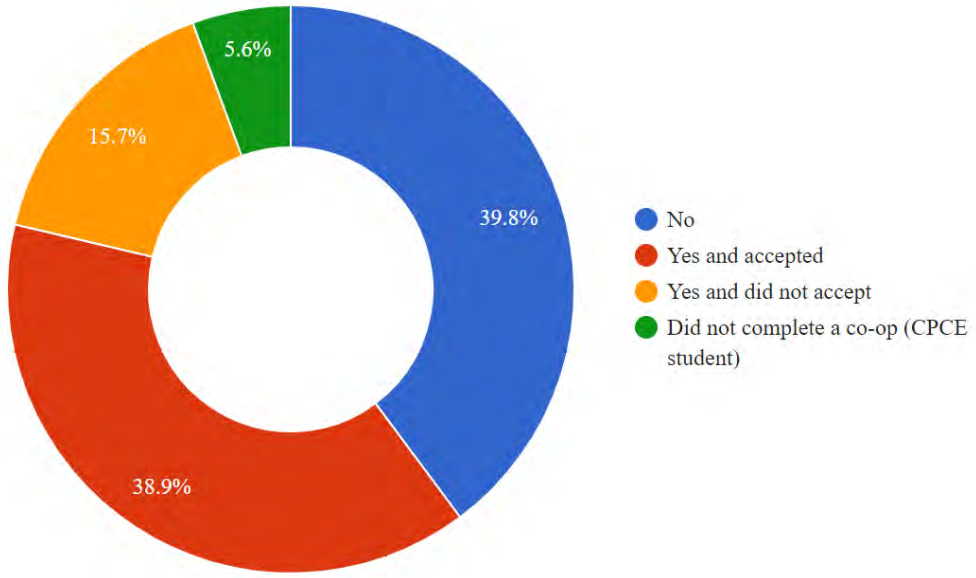
- Increasing no. of international collaborations (e.g. via Germany’s UAS7 initiative) and ‘intellectual backing’



Joseph E Aoun, President Northeastern University

Example: Wentworth students report…

Offer from Co-op employer Working in Field of Study



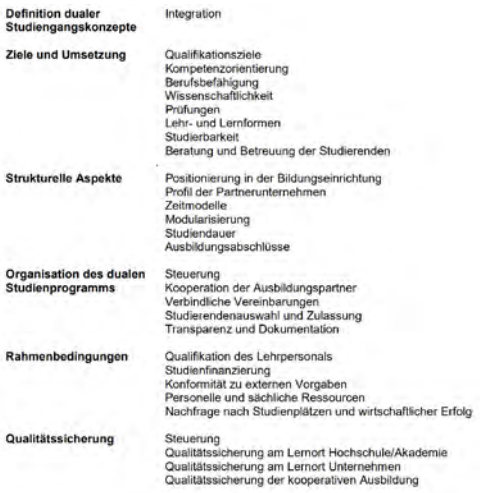
Mean:
$59,500
Yearly

Median:
$60,000
Yearly

Source:
https://coopsandcareers.wit.edu/outcomes/

Example: Dual Study Programs - Evaluation criteria

Adapted from ZEVa report 2016/7



Definition dualer Studiengangskonzepte	Integration
Ziele und Umsetzung	Qualifikationsziele Kompetenzorientierung Berufsbefähigung Wissenschaftlichkeit Prüfungen Lehr- und Lernformen Studierbarkeit Beratung und Betreuung der Studierenden
Strukturelle Aspekte	Positionierung in der Bildungseinrichtung Profil der Partnerunternehmen Zeitmodelle Modularisierung Studiendauer Ausbildungsabschlüsse
Organisation des dualen Studienprogramms	Steuerung Kooperation der Ausbildungspartner Verbindliche Vereinbarungen Studierendenauswahl und Zulassung Transparenz und Dokumentation
Rahmenbedingungen	Qualifikation des Lehrpersonals Studienfinanzierung Konformität zu externen Vorgaben Personelle und sächliche Ressourcen Nachfrage nach Studienplätzen und wirtschaftlicher Erfolg
Qualitätssicherung	Steuerung Qualitätssicherung am Lernort Hochschule/Akademie Qualitätssicherung am Lernort Unternehmen Qualitätssicherung der kooperativen Ausbildung

Definition	Integration
Objectives and Implementation	Qualification objectives Scientific quality Examination Forms of Instruction & Teaching Mentorship of students
Structural Aspects	Positioning within the HEI Profile of industry partners Time models Modularisation Overall study time Training degrees
Organizational Aspects	Steering Cooperation of Training providers Contractual Agreements Student selection and admission Transparency & Documentation
Framwork Conditions	Qualification of Teaching Staff Financing Conformity with external requirements
Quality Control	Steering Quality Control at the HEI Quality Control in the companies Quality Control of the cooperative education

Form of Quality Control

In Germany: formal, institutionalized

→ all parties overseen by third party (public actor)

- HEI: must obtain official accreditation and - if public - must accept students
- Companies: must fulfill general, content-specific and organisational requirements
- Students: must fulfil company‘s requirements and present training contract upon enrolment

In the US: parties have greater freedom and flexbility and are subject

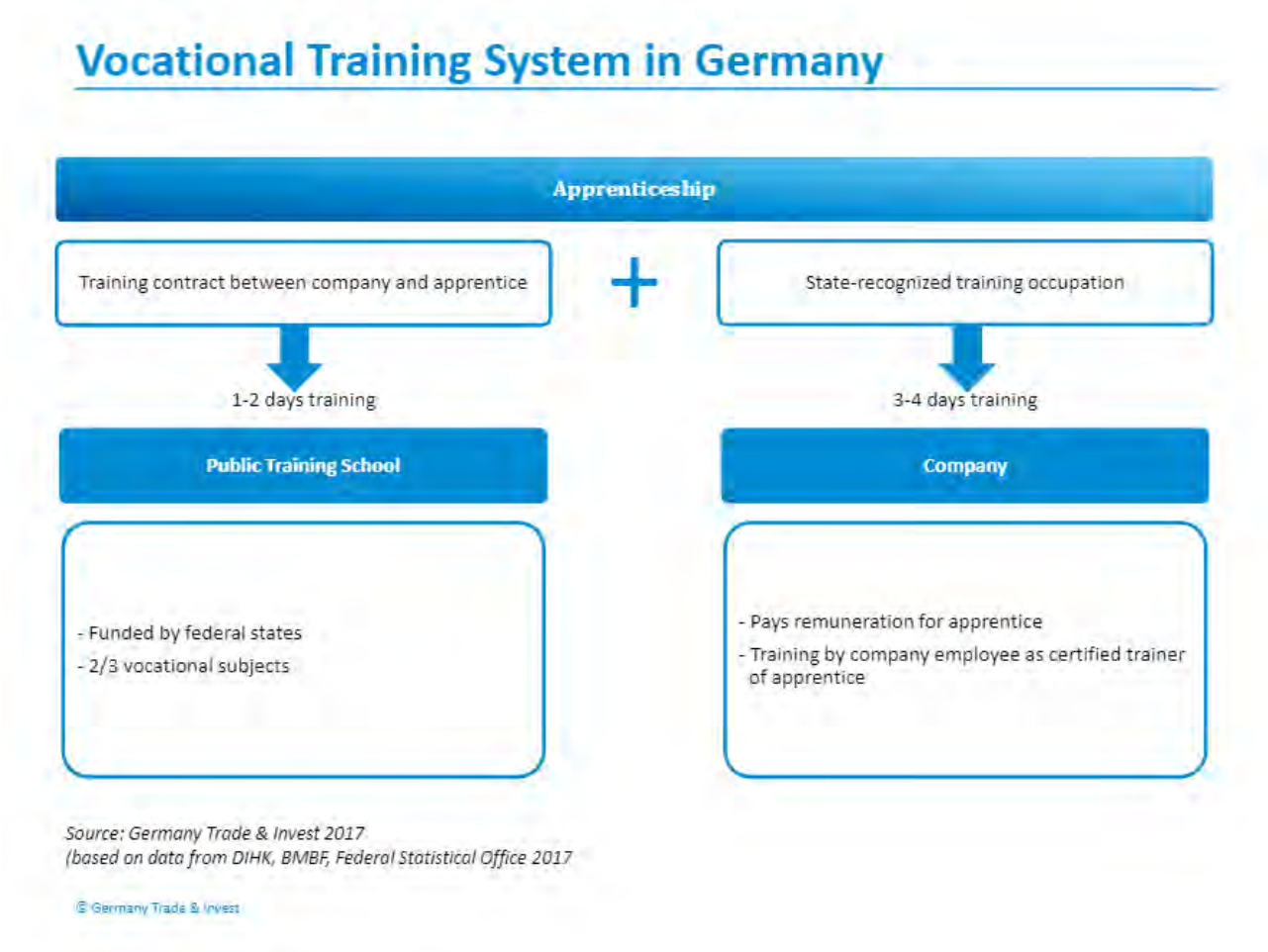
- HE: official accreditation easier to obtain, freedom to chose students
- Companies: Few official requirements, instead: guidelines (e.g. WBL Toolkit of Dept of Education) encouragement of ‘best practices‘ and feedback-loop with (voluntary) review
- Students: must pass university‘s entry requirements and go through hiring process

→Info on accreditation process/role of (external) actors,

→Formal vs. informal / institutionalized vs. ad hoc feedback

VET in Germany

- 20% of German companies participate in the dual vocational training system
- 80% of trainees are taken on as employees in production-based industries
- Country-wide quality control of training provided by government (which acts in close cooperation with the Chambers of Industry and Commerce (IHKs) and the German Confederation of Skilled Crafts (ZDH))



Types of dual study programs: initial and continuous education

Individueller Bildungsabschnitt		Studienformat
Erstausbildung	mit Berufs ausbildung	**ausbildungs-integrierend** (Bachelor)
	mit Praxisanteilen	**praxisintegrierend** (Bachelor) gestalteter Ausbildungs-anteil beim Praxispartner
Weiterbildung	mit Berufs-tätigkeit	**berufsintegrierend** (Master/Bachelor) mit gestalteten Bezugnahmen
	mit Praxisanteilen	**praxisintegrierend** (Master/Bachelor)

Quelle: Wissenschaftsrat „Empfehlungen zur Entwicklung des dualen Studiums“, 2013