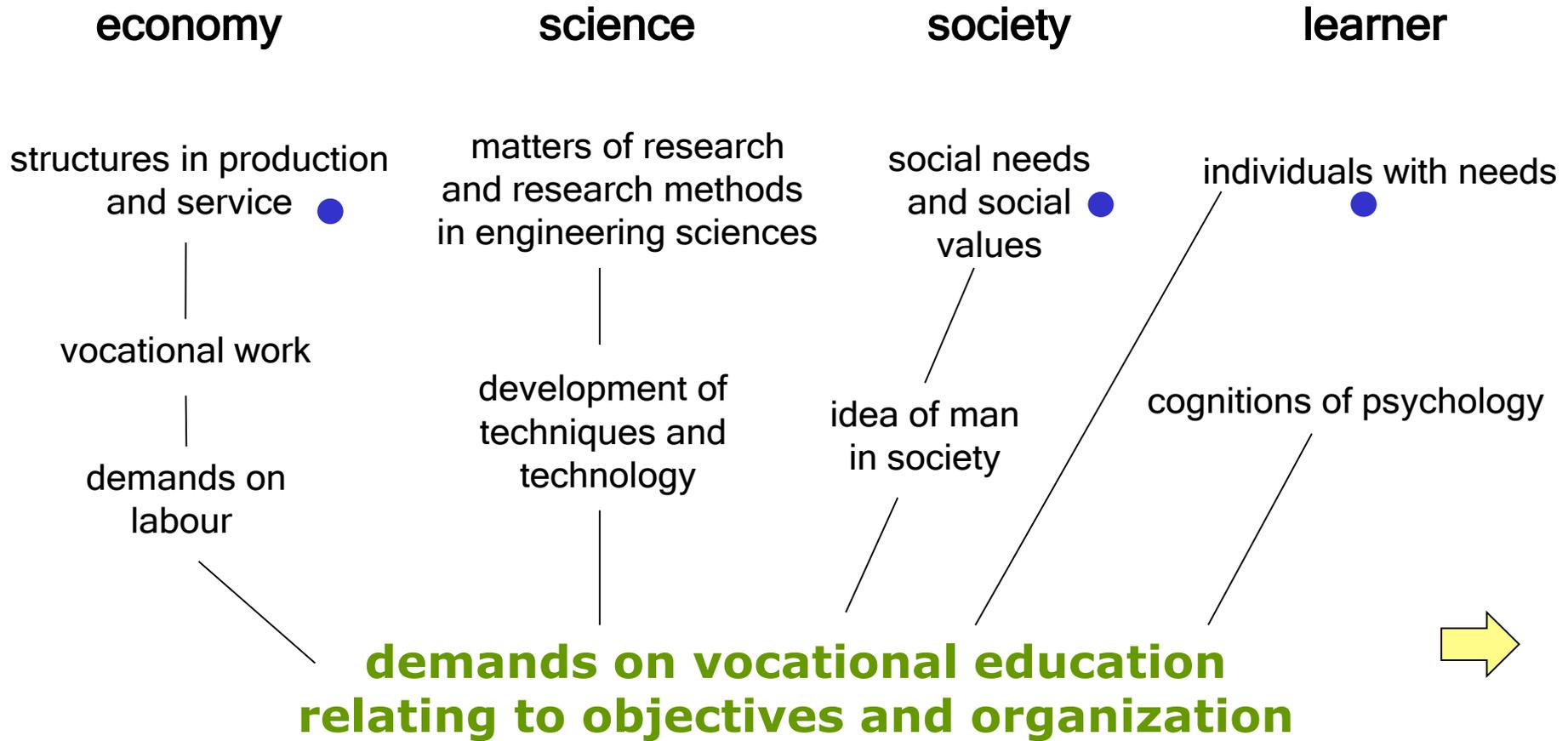Didactics of Vocational Education

Design of demand-oriented vocational education for modern structures of production and service

Dresden/Beijing March 2022

Prof. Dr. Steffen Kersten

Influence factors of vocational education

economy

science

society

learner

structures in production and service ●

matters of research and research methods in engineering sciences

social needs and social values ●

individuals with needs ●

vocational work

development of techniques and technology

idea of man in society

cognitions of psychology

demands on labour

demands on vocational education relating to objectives and organization

TECHNISCHE UNIVERSITÄT DRESDEN

Influence factors of vocational education

职业 ●

教师该职业是
社会生产和
服务结构中的
重要组成部分

工程科学

工程科学的发展
及其对技术、工艺
的影响

社会和教育政策 ●

社会规范和
道德价值标准
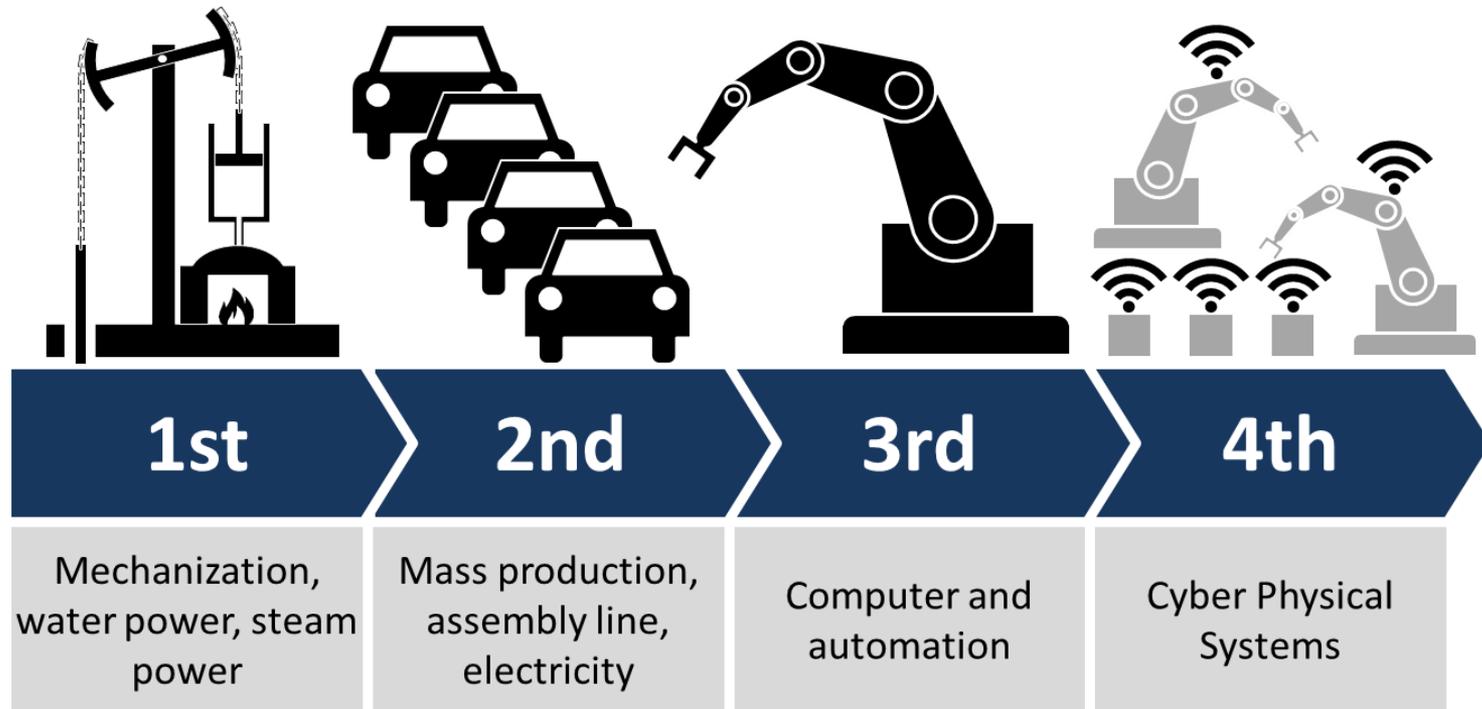→社会化过程
学校法、学校规章制度、
教学大纲、教学计划

教育学 ●

教学法原理
教学方法的发展更新
媒体教学技术的变革

manufactory
production

Taylorism

Neo-Taylorism
Fordism

Toyotism
lean management

1800 1850 1900 1950 2000
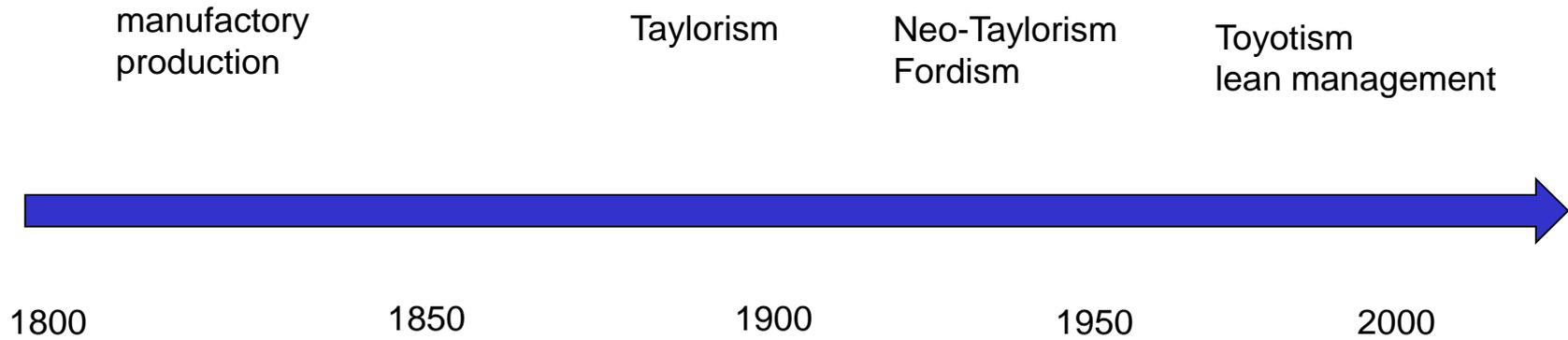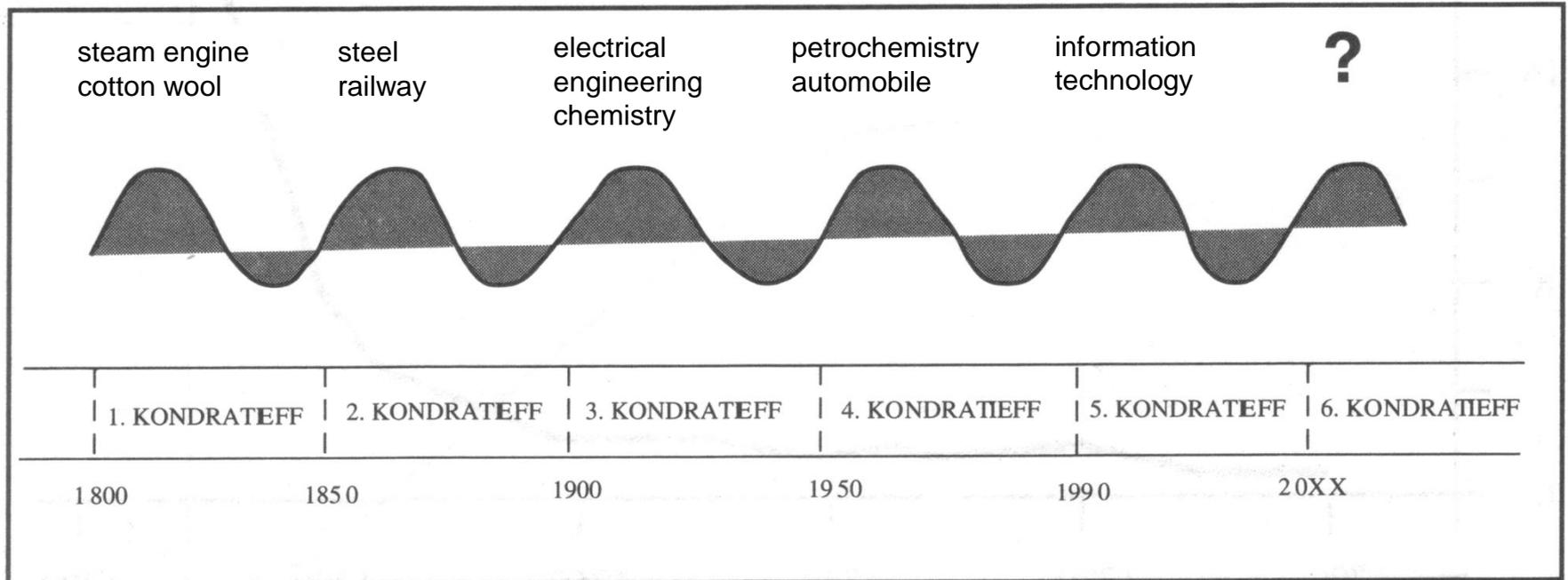
The long waves in the economy and its basic innovations (Nefiodow 1999, p.3)

1st	2nd	3rd	4th
Mechanization, water power, steam power	Mass production, assembly line, electricity	Computer and automation	Cyber Physical Systems

FRIELING: components of modern production structures
which are relevant for vocational education:

➢ Process-chain-oriented company organization instead of functional hierarchies

➢ Customer-orientation instead of product-orientation

➢ Responsibility for the project/venture and budget instead of hierarchically structured task management

➢ Working in teams or groups instead of working alone

➢ Complete operations instead of individual/single acts

➢ Self-regulation instead of standardized input/guidelines

➢ Involvement instead of heteronomy

➢ Continuous improvement instead of hope for innovation.

(cp. Frieling (1993): Das lernende Unternehmen, p.32)
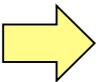
现代化生产结构的特征

➢ 以过程为导向的组织取代了功能等级制

➢ 以客户需求为导向取代了以产品为导向

➢ 项目和预算负责制取代了等级结构性的任务管理方式

➢ 团队或小组工作取代了单个个体作业

➢ 完整的行为取代了单一的工作

➢ 自我控制和管理取代了接受标准化指令

➢ 参与取代了依赖

➢ 持续性改善和优化取代了等待改革和创新

(cp. Frieling, Ekkehart: Das lernende
   Unternehmen.- Hochheim 1993 , p. 32)

idea of man in the society

Which personality traits should have an ideal personality for the society?

→Socialization mission of vocational education

Responsible (mature) citizens

- general capabilities of human and social nature

- autonomy in activity

- responsibility in the individual life and in public life

- participation in democratic processes

- autonomous lifelong learning

➢ activity is a necessary condition to personality development
➢ activity has to be   - cognizant
                                   - goal-oriented

➔ term: act ●

➢ individual needs are necessary conditions for acting
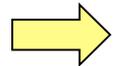
➔ motive for act ●

➢ acts takes place in 3 fields of personality
          - cognitive field
          - affective/emotional- volitional field
          - psychomotor field

➔ holistic act ●

➢ the basic structure of human acts has the follow components
          - orientation
          - accomplishment
          - evaluation

➔ complete act ●

发展心理学和工作心理学的一些观点

- 通过有意识、有目的的行动可以促进个性的发展。●

- 动机驱动行动。●

- 行动是认知、肢体运动和情感三个层面的综合。●

- 完整的行动 (定向、实施、检测) 促进个性的发展。●

Matters of acquisition

norms, standards
orders ….
rules, methods,
algorithms,
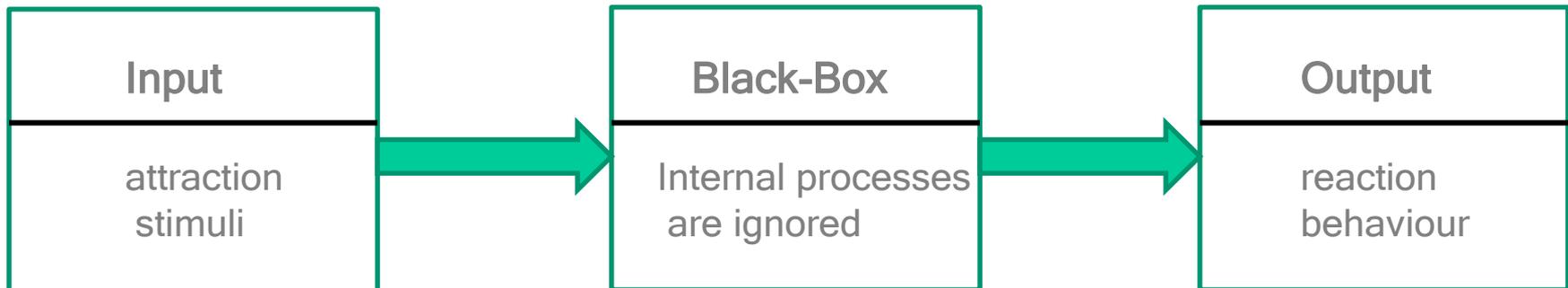principles

terms, statements
theories, questions

Acts

working
acts

Observable characteristics

behaviour
performance

Behaviourism (WATSON, SKINNER)

Input	Black-Box	Output
attraction stimuli	Internal processes are ignored	reaction behaviour

0 Matters of acqusition	1 Manner of acquisition	2 Personality traits	3 Dispositions-function	4 Aim of acquisition	5 Acts	6 Observable characteristics
norms, standards orders …. rules, methods, algorithms, principles terms, statements theories, questions	as develop-mentguided act of acquisition of the subject	needs interests attitudes convictions abilities skills knowledge	knowledge volitional dispositions skills	act power	workig acts	behaviour performance
idealistic matters which exist outside of the learning subject as societal experience and knowledge		didactic target areas	requirements on the professionals as demands of professional activities			

Source: Zimmer, Neumerkel 1988

Matters of acquisition	Personality features (PF)	Functions of personality features in activities	Forms of behaviour

descriptive matters of acquisition
- terms
- statements
- theories
- hypotheses
- ...

regulative matters of acquisition
- rules
- methods
- algorithms
- principles
- ...

normative matters of acquisition
- norms/standards
- fiats/commandments
- orders/instructions
- ...

- knowledge
- insights
- skills
- abilities
- attitudes/mindset
- convictions/opinions
- attitudes
- ...

Qualification

as a disposition of personality features oriented/aimed at professional/vocational activities

Multifunctional key abilities reconstruct and construct functions and PF in acts

Knowledge
- informative pre-condition for professional/vocational act

Skill
- subjective possibility for professional/vocational act

Volitional Disposition
- subjective necessity for professional/vocational act

Output

as result of
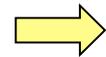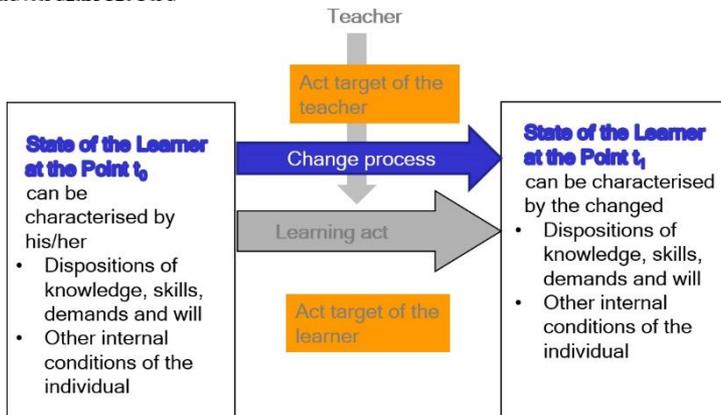
behaviour/ conduct

on the basis of existing abilities for vocational/professional "Handlungskompetenz"

Teacher

Act target of the teacher

Change process

Learning act

Act target of the learner

State of the Learner at the Point t₀
can be characterised by his/her
- Dispositions of knowledge, skills, demands and will
- Other internal conditions of the individual

State of the Learner at the Point t₁
can be characterised by the changed
- Dispositions of knowledge, skills, demands and will
- Other internal conditions of the individual

要掌握的内容　　人格特质　　　个性在职业中的作用和功能　　表现形式

<div style="display:flex">

描述型：

定义、

见解、

理论、

假设等

规则型：

规则、方法

算法、原则等

规范型：

规范、

戒律、

</div>

- 知识
- 判断力
- 技能
- 能力
- 自制力
- 信念
- 态度立场
- …

资格能力

通过人格特质

表现出来的职

业素养、职业

行为能力

塑造和重塑个性在职业中的作用和功能

知识
- 是完成职业行为所需的信息性的前提条件

能力
- 是完成职业行为的主观可能条件

意愿
- 是完成职业行为的主观必要条件

成绩、绩效是行为的最终结果

以现有的

职业行为能力

为基础

Teacher

Act target of the teacher

Change process

State of the Learner at the Point t₀
can be characterised by his/her
- Dispositions of knowledge, skills, demands and will
- Other internal conditions of the individual

Learning act

State of the Learner at the Point t₁
can be characterised by the changed
- Dispositions of knowledge, skills, demands and will
- Other internal conditions of the individual

Act target of the learner
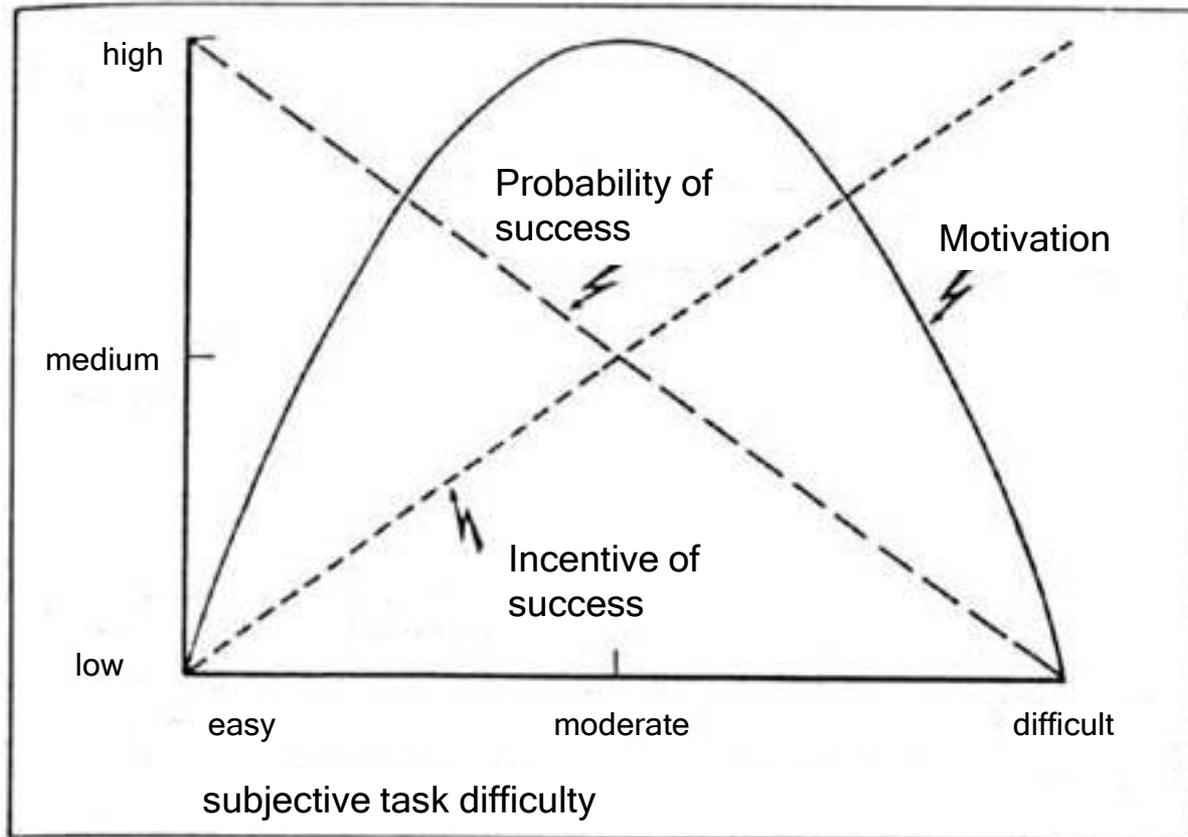
- Intrinsic motivation (interest or enjoyment in the task itself)
- Extrinsic motivation (influences outside of the individual)

Individual with Needs

(Motives for Acting)

Activity, Acts

(active dealing with the environment and with oneself for the purpose of need satisfaction)

Result of Activity

(New needs and new conditions for activities)
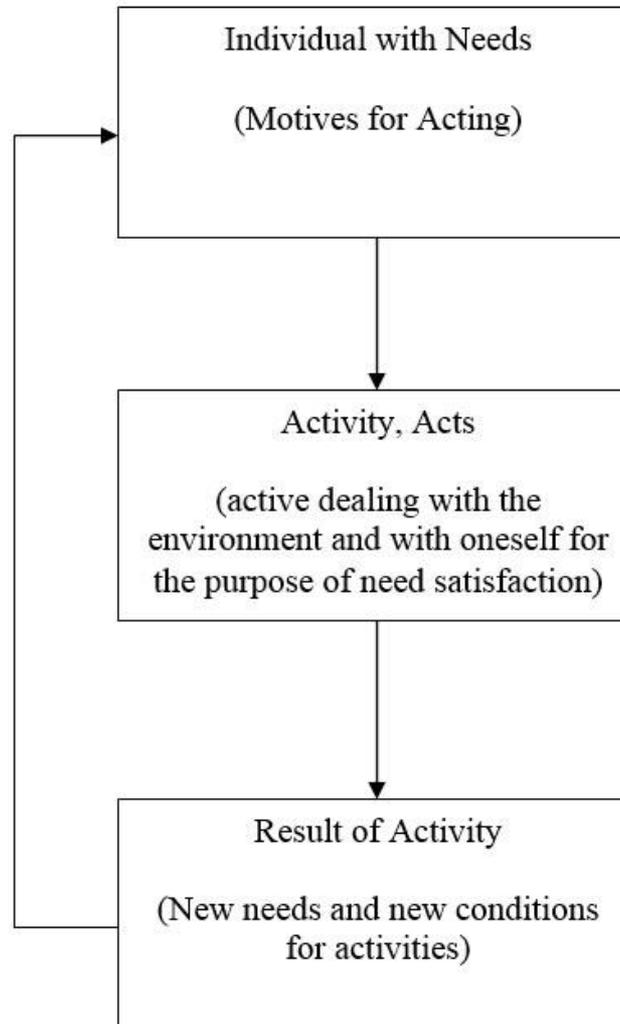
Source: Hortsch, Hanno: Didactics of Vocational Education. Dresden 2012, p.13

Curve of achievement motivation in risk-choice model (modified from Atkinson in 1957, p.71)

Attribution theory assumes that people attribute their successes or failures special causes.

These causes can be classified as follows:

internal fixed attribution   → e.g. talent, heredity

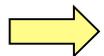internal variable attribution   → e.g. effort, learning strategies

external fixed attribution   → high performance requirements
                                       of the educational institution

external variable attribution   → Good or bad luck

归因理论指人们将他们的成功或失败归因于特殊的原因的理论。

其原因分类如下：

内部的、稳定的归因 → 例如：天赋、才能、遗传的特质

内部的、变量的归因 →例如：努力程度、学习策略方法

外部的、稳定的归因 → 教育机构教学水平的高低

外部的、变量的归因 → 幸运 或者 霉运

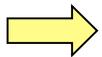| Matters of acquisition	Personality features (PF)	Functions of personality features in activities	Forms of behaviour
<u>descriptive matters of acquisition</u> •terms •statements •theories •hypotheses •... <u>regulative matters of acquisition</u> •rules •methods •algorithms •principles •... <u>normative matters of acquisition</u> •norms/standards •fiats/commandments •orders/instructions •...	•knowledge •insights •skills •abilities •attitudes/mindset •convictions/opinions •attitudes •... **Qualification** as a disposition of personality features oriented/aimed at professional/vocational activities	**Knowledge** • informative pre-condition for professional/vocational act **Skill** • subjective possibility for professional/vocational act **Volitional Disposition** • subjective necessity for professional/vocational act	**Output** **as result of** **behaviour/ conduct** on the basis of existing abilities for vocational/professional "Handlungskompetenz"

Multifunctional key abilities reconstruct and construct functions and PF in acts

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要掌握的内容　　人格特质　　　个性在职业中的作用和功能　　表现形式

描述型：
定义、
见解、
理论、
假设等

规则型：
规则、方法
算法、原则等

规范型：
规范、
戒律、
指令等

●知识
●判断力
●技能
●能力
●自制力
●信念
●态度立场
●…

资格能力
通过人格特质
表现出来的职
业素养、职业
行为能力

塑造和重塑个性在职业中的作用和功能

知识
● 是完成职业行为所需的信息性的前提条件

能力
● 是完成职业行为的主观可能条件

意愿
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成绩、绩效是行为的最终结果

以现有的
职业行为能力
为基础

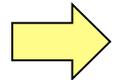| Group of Elements	Didactic Function	Didactic Intention	Stages of Learning Acts
1.	Starting with practical examples Getting in the mood of Motivation Orientation for action Preparation Decision for action	Getting the learners ready for the learning act	Orientation
2.	Working on new contents/learning acts	Opening up the contents for the learners	Performing of tasks
3.	Working on known contents/learning acts Consolidation of formerly acquired knowledge/skills	Improving the availability of learning results for the learners	Performing of tasks
4.	Evaluation of results/outcomes Assessment of learner performance	Feedback on the performance level for learners and teacher	Evaluation of results/outcomes

Folie 22

Source: Hortsch, Hanno: Didactics of Vocational Education. Dresden 2012, p.43
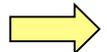
教学功能

要素组	教学功能的名称	教学目的	各教学学习阶段的名称
1.	引入、 在情绪上有所准备、 行动导向、 再次激发激活、 行为抉择、 目标导向	学生了解教学学习活动	定向
2.	初次领悟掌握	向学生介绍解释教学资料	行动
3.	巩固、 加深、 加强结合运用	学生更好地掌握运用学习成果	行动
4.	检测、 评估	了解学生的学习成果 了解教师的教学成果	检验
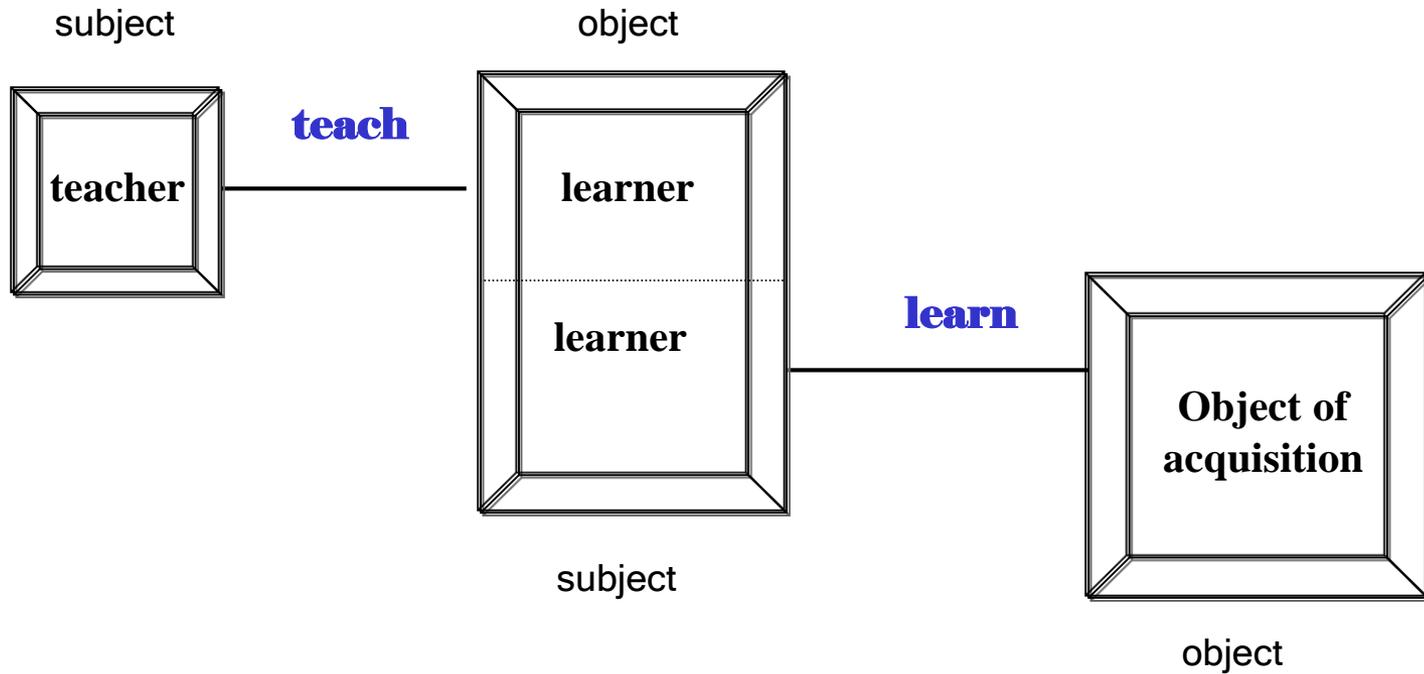
subject

object

teacher

teach

learner

learner

learn

Object of acquisition

subject

object

Hortsch, H.: Didaktik der Berufsbildung
          Merkblätter zur Vorlesung
          Dresden 1994

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教师 — 教学 — 学生

学生 — 学习 — 教学材料
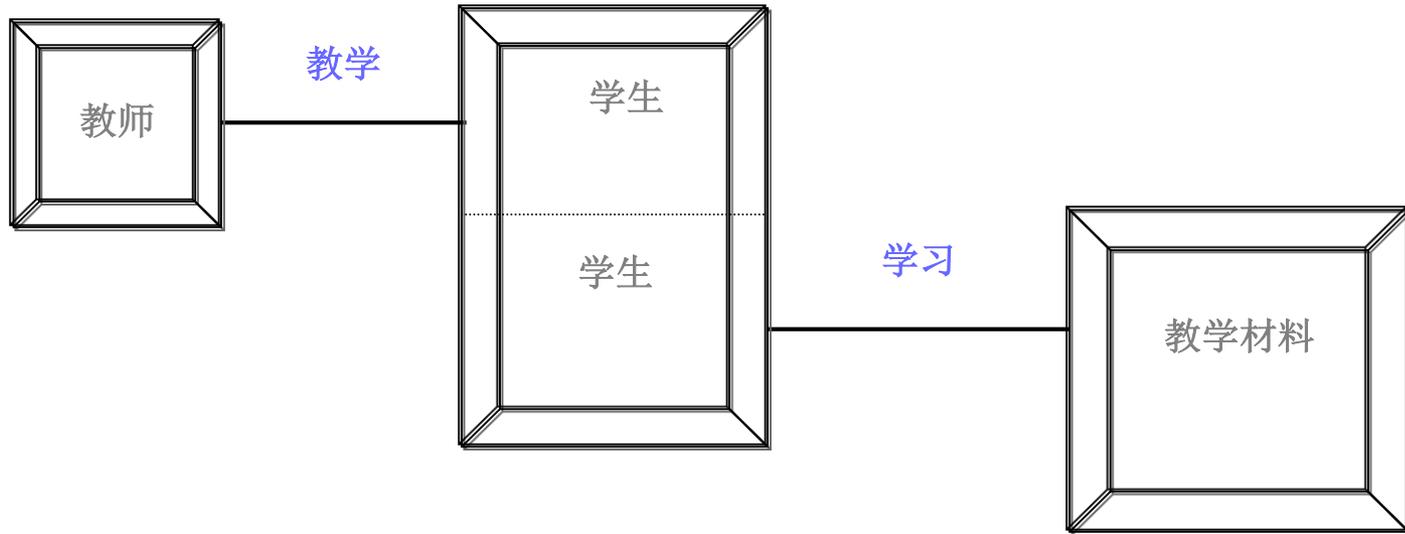
Hortsch, H.: 职业教育培训的教学论
Merkblätter zur Vorlesung
Dresden 1994
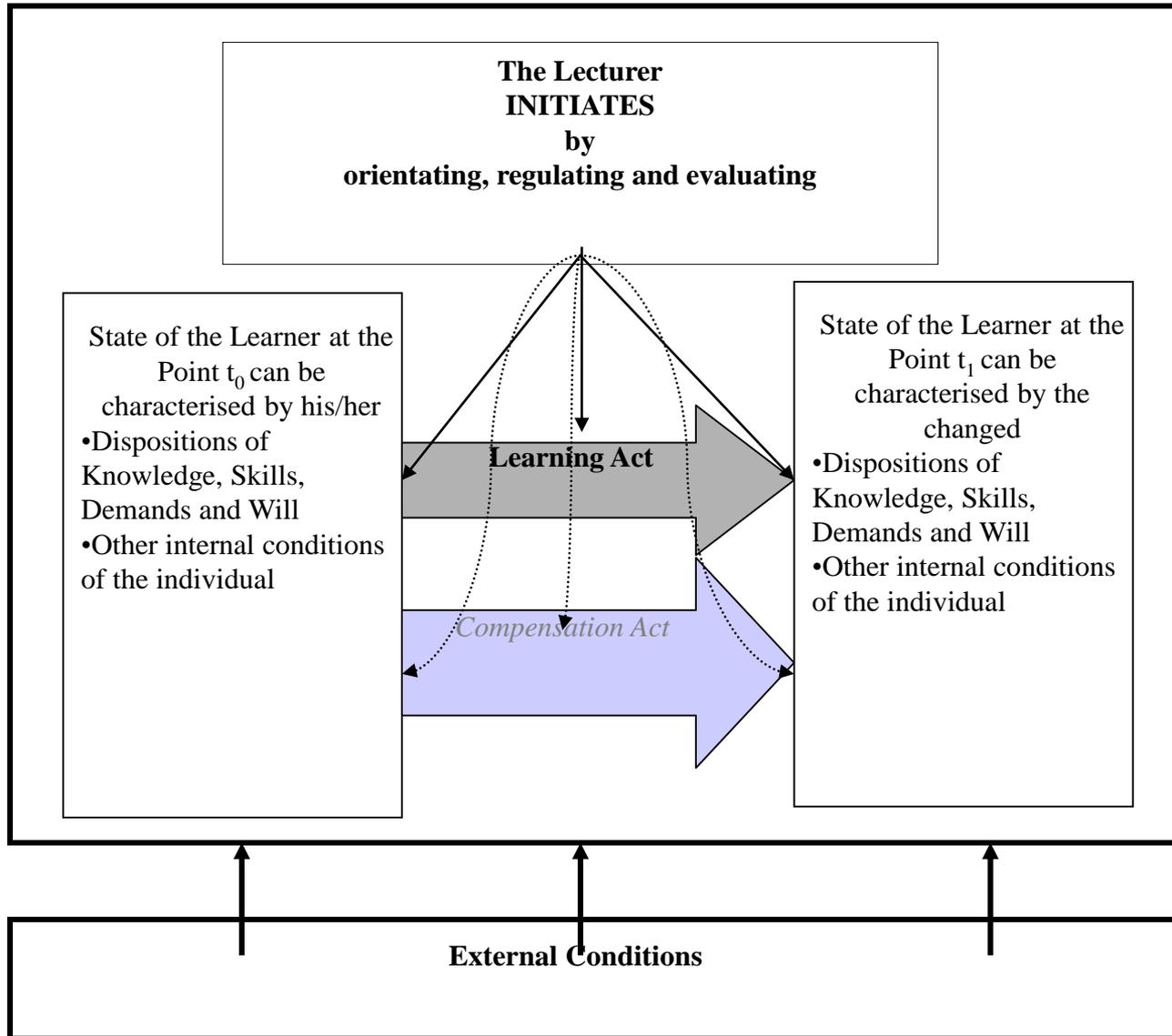
The Lecturer
INITIATES
by
orientating, regulating and evaluating

State of the Learner at the Point t_0 can be characterised by his/her
- Dispositions of Knowledge, Skills, Demands and Will
- Other internal conditions of the individual

Learning Act

Compensation Act

State of the Learner at the Point t_1 can be characterised by the changed
- Dispositions of Knowledge, Skills, Demands and Will
- Other internal conditions of the individual

Hortsch, H.:
Didaktik der Berufsbildung
Merkblätter zur Vorlesung
Dresden 1994

External Conditions

Thank you for your attention!

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https://wwwpub.zih.tu-dresden.de/~kersten