

# A COMPETENCY MODEL FOR HIGHER EDUCATION

Which competencies are essential to effective  
academic teaching at Technische Universität München?

Andreas Fleischmann · Christine Jäger · Alexandra Strasser

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A pragmatic approach

Andreas Fleischmann  
Christine Jäger  
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# Introduction



## Introduction

**As educators at Technische Universität München, it goes without saying that you have achieved an outstanding level of expertise in your chosen disciplines. You have systematically built your professional know-how in the course of a multitiered educational process, while simultaneously refining and enhancing your specialized competencies through an ongoing peer exchange. Your teaching skills, by contrast, are less likely to be based on a methodical, progressive approach; rather, in all probability, they will have emerged from day-to-day experience – i.e., through learning by doing. Accordingly, much of higher education today – regardless of the actual quality of the instruction delivered – is still characterized by a semiprofessional approach to teaching. Introducing students to the principles of scientific inquiry and leading them to a level of skill where they can make research contributions of their own, is a vital and challenging task, particularly in today’s Information Age – and an endeavor that deserves to be pursued with a high degree of professionalism. For academic instruction to become thoroughly professionalized, the intuitive know-how gathered through classroom experience needs to be rendered explicit, systematized in accordance with current best practices – and then optimized as necessary. This competency model provides a synopsis of the core concepts of academic teaching, along with an in-depth analysis of four key competency areas; furthermore, it is designed to help you evaluate your own teaching proficiency through graded self-assessment questions, while offering a multipronged impetus for the enhancement of your teaching instrumentarium and your competency profile.**

In addressing teaching strategies, this model is admittedly examining only one facet of the full scope of duties of academic staff, which may also include research and management tasks, among others. By focusing on instructional methodologies, we by no means intend to minimize the importance of specialized expert knowledge – which is obviously a sine qua non for

university educators, along with further key competencies such as soft skills and self-management techniques.

Fundamental to this model is an educational philosophy based on competent action (according to Weinert, 2001), in which competencies are described as retrievable or learnable cognitive skills and capabilities enabling an individual to resolve certain problems, and a concomitant ability, in motivational [...] and social terms, to draw upon these problem-solving skills successfully and responsibly in varying situations (2001, p. 27). For the sake of simplicity, we have pared this description down to a compact definition of competencies, which we see as representing bundles of knowledge, attitudes, and skills.

Further points of reference for this paper include (a) a structural model developed by Schaper (2012), elucidating the competency areas required for academic teaching (developing a teaching plan, implementing a teaching plan, organizing the framework for teaching, and reviewing and refining one’s own teaching competencies) along with the related pedagogical know-how and skills; and (b) the graded scheme introduced by North (2007), which identifies three developmental levels for each of the associated competencies (namely, “introductory,” “advanced,” and “master”; or more simply, “skilled,” “highly skilled,” and “expert”). Whereas the structural model delineates the competencies essential to effective teaching in addition to providing self-assessment guidelines, the graded scheme comprises self-evaluation questionnaires for each competency, and outlines the criteria for advancing to the next higher stage.

In contrast to empirical research approaches, our competency model is based on professional experience of our own, which includes academic training in pedagogy and psychology, as well as extensive teaching practice at Technische Universität München and various other universities, together with innumerable peer reviews, coaching sessions, and discussions with teaching staff and students. Faced with the challenge of establishing a broad-based model while at the same time



identifying tangible points of departure for a concerted professionalization effort, we made a conscious decision to map out clearly defined competencies and to formulate the related self-assessment questions accordingly. An across-the-board consensus is not what we are striving for; rather, this paper seeks to encourage peer exchange by offering a variety of impetuses for critical analysis. By fostering the ongoing debate between theorists and practitioners, we aim to promote self-reflection among academic teaching staff – an element which, in our view, is crucial to advancing the quality of higher education. In this

vein, we cordially invite you to open yourselves to inspiration by the following chapters, and to accept the challenge of engaging in a mutually enriching critical dialogue!

In designing this conceptual framework, our ultimate aim is to catalyze a university-wide discussion – which in turn may well lead to wide-ranging modifications to this model in its current form. At the back of this brochure, you will find the online address where you can submit your ideas and suggestions. We look forward to your contributions to our joint professionalization process.

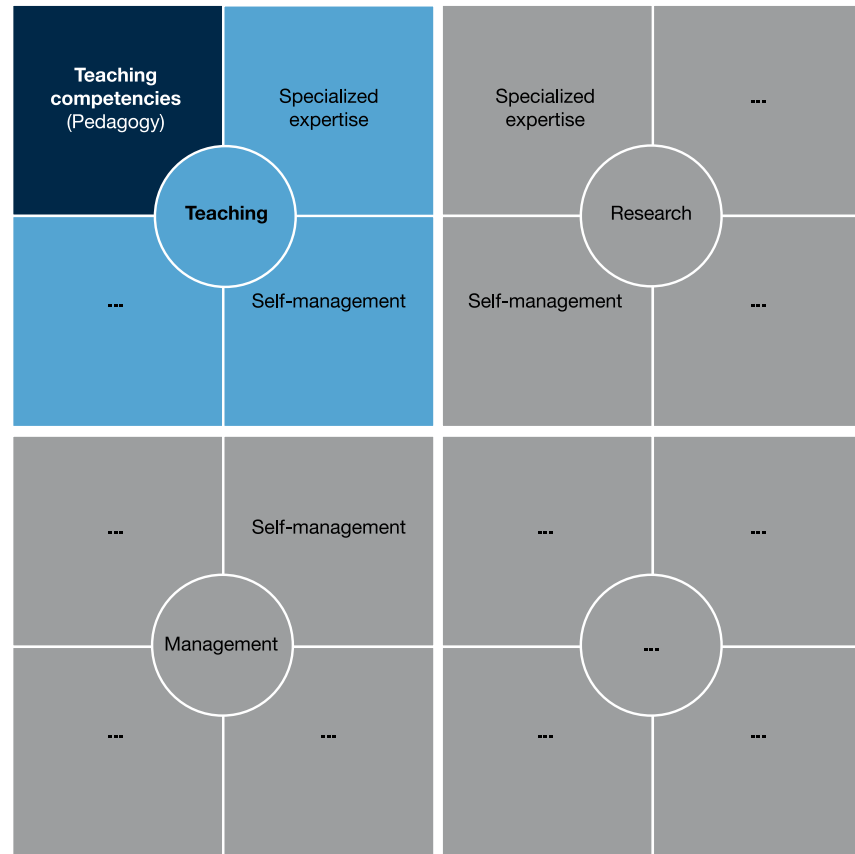


Fig. 1: This competency model focuses on the pedagogical aspects of academic teaching.





# Professional teaching competencies

In addition to outlining the basic principles of academic teaching, this competency model examines the four key competency areas we consider essential to successful university instruction: the ability to develop teaching plans and examinations; to implement these plans and deliver the attendant examinations; to organize an effective teaching infrastructure; and to reflect on one's level of instructional expertise.



Professional teaching competencies

## Fundamentals of effective academic teaching

A solid familiarity with the psychology of learning, including the neurodidactic factors involved in effective instruction, will enhance your teaching strategies by sensitizing you to the extrinsic factors affecting your instructional framework, thus enabling you to fine-tune your approach. Many university educators gradually develop an intuitive grasp of these basic principles in the course of their careers, but this understanding often remains difficult to pin down, reflect upon, discuss, and deepen. For this reason, the following chapter systematically addresses these concepts in explicit terms, as a point of departure for more in-depth reviews of the individual competencies discussed in subsequent chapters.

## “Co-constructing” knowledge

The prevalent notion of teaching as a transfer of knowledge is fundamentally problematic: As shown by studies conducted in areas ranging from neurodidactics to the psychology of learning, knowledge (unlike information) cannot simply be disseminated along the lines of a transmitter-receiver model (see Arnold, 2006 and Siebert, 1999, for example). Rather, comprehension occurs when learners “connect the dots” between new input and prior knowledge – i.e., during cognitive accommodation and assimilation, as the brain is building neural pathways and cortical activity patterns, thereby constructing a perspective unique to the learner. For this reason, education has been held to consist in “the kindling of a flame, not the filling of a vessel” (Aristophanes), and experts postulate that learning can

only be fostered to a limited extent by traditional instructional means (Arnold, 2013). Recent findings indicate that enduring success in the learning process ensues chiefly from methods of information processing that include critical thinking, active student engagement, independent research, and focused question-and-answer sessions. According to constructivist learning theories, instruction is most effectual when educators center their efforts on fostering students’ self-study techniques, while also introducing them to specific contexts of action or experience (such as sample applications illustrating how course content relates directly to professional practice, or opportunities to reflect on such practice) (Gerstenmeier & Mandl, 2001).

### INTRODUCTORY LEVEL

Have you familiarized yourself with a recent learning theory (such as constructivism or connectivism)? Can you explain and elucidate this theory on the basis of examples?

### ADVANCED LEVEL

Have you integrated the principles of learning theory into your teaching practice? Are you striving to implement your knowledge of the basic mechanisms of teaching and learning? Are you helping your students not just to access information, but also to process it – e.g., via questions, exercises, discussion opportunities, or exercise sheets? Are you basing your instructional directives on students’ prior expertise (by building on their preexisting knowledge, while providing useful correctives, explanations, and enhancements)?

### MASTER LEVEL

Are you well-versed in a number of different branches of learning theory, and have you refined your own perceptions and strategies accordingly? Are you implementing your know-how in a systematic manner, by utilizing this theoretical basis as the cornerstone of your teaching practice?

- Böss-Ostendorf, Senft (2010): Einführung in die Hochschul-Lehre.
- Herrmann (2006): Neurodidaktik. Grundlagen und Vorschläge für ein gehirngerechtes Lehren und Lernen.
- Waldherr, Walter (2009): Didaktisch und Praktisch. Ideen und Methoden für die Hochschullehre.

## Learner-centered teaching

The Bologna reforms have reinforced the paradigm change from input-based (i.e., teacher-centered) to outcome-based instruction focused on students’ learning and learning progress. In today’s academic setting, lecture-style presentations should no longer be the standard point of departure; rather, university educators should increasingly foster self-study competencies and offer a framework for learning that provides students with direction and impetus. With this fundamental “shift from teaching to learning,” teachers are assuming a new role: Those who have seen themselves primarily as conveyors of knowledge

are now faced with the challenge of becoming consultants, mentors, and self-study coaches: “From Sage on the Stage to Guide on the Side” (King, 1993). In addition to requiring instructors to define and communicate clear-cut learning outcomes, this change in perspective may also entail searching for new methods of spurring motivation, injecting variety into your course materials, and creating supplementary feedback loops for teaching staff and students, including peer feedback, online evaluations, and sample solutions.

### INTRODUCTORY LEVEL

Can you define the learner-centered paradigm shift, and explain its importance to effective teaching? On the basis of examples and counterexamples, can you illustrate this change in perspective, and describe the new role of learning facilitator?

### ADVANCED LEVEL

Can you give examples of how you could implement learner-centered teaching principles? Are you striving to deepen your understanding of your target group, and to incorporate your knowledge of students’ interests and prior expertise into your teaching strategy? Are you helping students recognize the relevance and meaningfulness of course content, in order to strengthen their intrinsic motivation? Have you reflected on elements that dampen students’ motivation, and are you making an effort to minimize them in your teaching practice?

### MASTER LEVEL

Is your instructional approach focused on interaction with students? Do you take nonverbal feedback (such as bored or blank looks) seriously, and do you fine-tune your techniques accordingly (by readjusting your tempo, for instance, or providing additional examples, elaborating on difficult topics, communicating your demands more clearly, or setting better-defined boundaries)? Have you developed a varied repertoire of teaching strategies enabling you to adapt your agenda flexibly to student requirements?

- Brinker, Schumacher (2014): Befähigen statt belehren. Lehrkit für Hochschuldozierende.
- Entwistle (2009): Teaching for Understanding at University. Deep Approaches and Distinctive Ways of Thinking.
- Weimer (2002): Learner-Centered Teaching.



## Competency-based teaching

Most traditional higher education models are based on the implicit assumption that students who have attained a given level of expertise will automatically be capable of translating this knowledge into competent action. Since experience has not necessarily borne out this assumption, today's students are still taking in huge quantities of "inert" knowledge (Renkl, 1996), i.e., theoretical expertise, without having developed the attendant hands-on capabilities. For this reason, the competency-based teaching model has placed action-oriented competencies rather than factual expertise at the center of academic instruction – and has thus shifted its emphasis from conveying knowledge for its own sake to embedding this know-how into concrete application contexts.



### INTRODUCTORY LEVEL

Can you define "inert" knowledge, and identify areas in your field where this type of expertise can impede rather than facilitate skill acquisition? Can you describe how competency-based teaching can effectively counteract this tendency? Can you explain the difference between the competency-based model and approaches centered on employability criteria? Can you provide examples and counterexamples of competency-based learning outcomes and examination formats?

### ADVANCED LEVEL

Can you provide straightforward descriptions of the knowledge and competencies your students are expected to acquire? Are you defining competency-based learning outcomes in concrete terms? Are you making an effort to convey not only factual expertise but also practical skills and competencies? Have you created an academic framework enabling students to acquire these competencies?

### MASTER LEVEL

Have you placed the capacity to take competent action at the center of your teaching strategy? Can you convey the requisite theoretical foundations in a practical context, without straying too far from the methodologies customary to your discipline?

## Constructive alignment

While university educators are generally intent on achieving learning outcomes, most students gear their self-study techniques toward the examination questions they are anticipating. Thus, examinations need to be designed and developed with care – for it is only when learning outcomes and exams have been brought into agreement that teaching and learning processes can reach their full potential. Educators who do not succeed in striking this balance will risk losing their motivating and supportive influence; at worst, they may even thwart students' learning efforts. A proven means of attuning your teaching strategies to predefined examination goals is the so-called constructive alignment method (Biggs & Tang, 2007), which entails (1) defining your learning outcomes; (2) designing your examinations on the basis of these learning outcomes; (3) fine-tuning your learning outcomes and exams (by means of an iterative procedure); and only then (4) choosing suitable instructional techniques. This process ensures that teaching staff and students are aiming for the same targets, and that lecturers can provide maximum support to student learning processes.

### INTRODUCTORY LEVEL

Can you explain why effective teaching requires that students' primary goals (specifically, the aim of passing examinations) and educators' key objectives (such as imparting a deep understanding, in addition to conveying research methodologies and hands-on capabilities) be brought into agreement? Can you describe the difference between constructive alignment and curriculum planning? On the basis of examples and counterexamples, can you explain when and why it makes sense to design exam questions before deciding on suitable instructional methods?

### ADVANCED LEVEL

Are you implementing constructive alignment principles in your teaching practice? Are you defining learning outcomes in concrete terms? Are you developing examination formats enabling these learning outcomes to be checked? Are you continually readjusting your teaching strategies to your current examination formats and to the degree to which the desired learning outcomes have been achieved?

### MASTER LEVEL

Are you engaged in a group effort, together with your colleagues, to implement constructive alignment at the module or degree program level?

## Inducing irritation

Certain kinds of learning (in particular, the assimilation of far-reaching paradigm shifts, often termed “conceptual change” or “threshold concept change”) require a massive reshuffle of partly fallacious preexisting knowledge – which may often engender a certain amount of resistance. To overcome this resistance, the false or incomplete notion must first be reactivated and then forcefully dismantled by pointing out its deficiencies in a factually and emotionally convincing manner (i.e., by inducing irritation). Only then can the new mental model be processed, and only then can a paradigm change take place (for a compelling case study from university-level physics, see Bain, 2004).



### INTRODUCTORY LEVEL

Have you looked into the problem of resistance to paradigm changes and, based on examples, can you gauge whether this problem is relevant to your field?

### ADVANCED LEVEL

Can you estimate which parts of your course content can pick up where students’ prior knowledge leaves off, and which parts are counterintuitive? To sensitize yourself to potentially erroneous lines of reasoning, do you analyze the solution strategies used by students in tackling their exercises and examination questions? Have you implemented these insights in your teaching practice?

### MASTER LEVEL

Are you making a concerted effort to identify and dispel fallacious thinking? Are you putting the principle of “getting students to learn from their mistakes” to good use, without taking the wind out of their sails?

## Building rhythm and structure

In designing your teaching units, you will need to reconcile various basic educational objectives (Kiel, 2008), including the following: (a) gearing students up for their studies (by making contact with them, awakening their interest, and giving them a sense of direction); (b) reactivating prior knowledge; (c) organizing, formatting, and conveying content, and providing an impetus for learning; (d) giving students a chance to digest new information (via questions, assignments, or group discussions, for example); (e) ensuring that students achieve the desired learning outcomes; and (f) evaluating the learning process as a whole. To build rhythm and structure, you will also need to choose suitable methods and effective social learning constellations (such as one-on-one tutoring, small groups, or plenary sessions, for example). A good way to

sustain students’ attention and to create a dynamic learning environment is to insert well-placed breaks, while also varying your media and methods and regularly switching back and forth from teacher input to information processing phases. Students often have trouble sorting out large amounts of information; a well-structured teaching unit will help them draw connections and set priorities, and keep them from feeling overwhelmed. Building structure may require offering guidance on your course framework and content, as well as carving up unwieldy sections into manageable, coherent chunks (i.e., modularizing your material). Further means of heightening the transparency of your teaching units include accentuating core concepts, highlighting key examples, and clearly identifying areas where students may optionally proceed to a more advanced level.

### INTRODUCTORY LEVEL

Can you explain why most adults require a clearly defined structure for optimal learning? Have you developed instructional tools that provide for structure and structural transparency? For example, do you use intermittent verbal or visual cues to help your students stay on track?

### ADVANCED LEVEL

Are you making a conscious effort to build rhythm and structure? When you are delivering a teaching unit, for example, do you take time to reactivate students’ preexisting know-how and to set the stage for your new material? In addition to presenting your content, do you give students an opportunity to process it? Do you conclude with a summary, a take-home message, or the like?

### MASTER LEVEL

Can you explain why maximum transparency and a dramaturgical buildup are goals that can be difficult to reconcile? Where do you see yourself between these two opposing poles? Are you familiar with rhetorical instruments, for example, that can instantly heighten transparency in a teaching situation? Have you considered whether these tools could be suited to your teaching style? Can you readjust your instructional rhythm and structure as the situation may require?

## Arriving at style and authenticity

By means of the distinctive gestures and expressions that are characteristic of your teaching style, you are putting a unique face on your thematic content and lending a voice to your field. In this way, you as a person are bringing information to life – by encouraging students to develop a personal approach of their own while at the same time strengthening their sense of meaning. You can reinforce this effect by voicing your personal attitudes and opinions on selected topics – bearing in mind,

however, that the way you present yourself has an impact on students: In particular, incongruities such as teachers not “walking the talk” or significant disparities between a teacher’s personality and their teaching style, can actually obstruct the learning process. By finding a happy medium between passion and authenticity, and seeking ways to derive enjoyment and inspiration from your work, you can leverage your personality to best advantage in your teaching practice.

### INTRODUCTORY LEVEL

Can you explain why and how an educator’s personality can boost students’ motivation and advance their learning processes? Using examples and counterexamples, can you illustrate how teachers as people can affect learning outcomes both positively and negatively? Are you fully aware of your own attitudes and opinions on important aspects of your thematic content and course design?

### ADVANCED LEVEL

Have you reflected on your teaching style? Can you identify elements of your approach that are uniquely yours? Do you frequently check whether you are “walking the talk”? Does your demeanor as a university educator jibe with your behavior off campus?

### MASTER LEVEL

Do you deliberately reveal selected personal attitudes and opinions in order to encourage students to develop standpoints of their own? Are you engaging in a lively and authentic personal exchange with your students? Are you fulfilling your teaching tasks in such a way that they are inspiring and rewarding to you, in addition to posing challenges?

Bain (2004): What the best college teachers do.

## The teacher-student relationship

In conjunction with the shift from teaching to learning and the new emphasis on students’ responsibility for their learning processes, theorists have begun to speculate as to whether university educators have become expendable (in the traditional sense of their role as conveyors of knowledge), particularly in view of reports suggesting that lecture-style instruction hampers self-regulated learning (Arnold, 2013). Still other studies, however, have reconfirmed that teachers do play a central role in the instructional process (Hattie, 2008). Studying at university is a complex endeavor requiring not only intelligence but also organizational skills, discipline, self-motivation, and a high frustration tolerance – as necessitated by a demanding setting which, in addition to posing academic challenges, may often entail moving to a new city, setting up a first apartment, and building a new social network. Faced with mounting pressures, students often muddle through their course requirements – and

this is where university educators can play a vital supportive role. While teacher-student relationships can be consciously built and nurtured, they often emerge spontaneously as a matter of course. Either way, two factors are essential to fostering the learning process: Obviously, a certain level of expertise is a prerequisite for educators to be accepted and taken seriously by students. Equally important, however, is their perception of your interest in their progress – which, ideally, you are continually expressing by means of regular constructive feedback. The nature of teacher-student relationships can vary widely, and friendly personal attention can certainly provide a powerful motivational boost, but a certain degree of strictness, too, can prove beneficial, as long as students are interpreting your disciplinary measures as a sign of your commitment to their learning success.

### INTRODUCTORY LEVEL

Can you explain why and how teacher-student relationships can enhance the learning process? Can you think of examples illustrating how teacher-student relationships can differ, and how you as an educator can influence this relationship?

### ADVANCED LEVEL

Do you make an effort to build and maintain contacts with students? Do you take a sincere interest in your students’ progress? For example, do you picture your students maturing into members of your professional community?

### MASTER LEVEL

Do you perceive yourself not just as a conveyor of knowledge, but also as a guide and counselor? Are you aware of the extradisciplinary competencies that are crucial to your students’ success (i.e., motivation, organizational skills, and discipline), and are you supporting your students in acquiring and enhancing these competencies?

Hattie, Timperley (2007): The Power of Feedback.  
Bain (2004): What the best college teachers do.  
Hattie (2013): Lernen sichtbar machen.

## Target group orientation and student heterogeneity

The academic backgrounds and individual requirements of students originating from all over the world can diverge as widely as those of educators. As universities open their doors to ever broader target groups, a growing global talent pool is waiting to be tapped. Today's university educators are faced with the challenge of accepting and valuing student heterogeneity and the attendant variance in competencies, and of customizing their academic framework, methods, and content accordingly. Dealing with unaccustomed student constellations requires an awareness of the various aspects of diversity (such as age, gender, culture, religion, and prior expertise), the ability to assess the relevance of these aspects to a particular teaching context, and the willingness to analyze target groups in terms of their similarities and differences. To handle student heterogeneity, you can use any of the following three strategies: (1) design your teaching practice and course materials in such a way that diversity issues cannot arise; or, if this proves unfeasible, (2) make impromptu arrangements to accommodate diversity (by means of supplementary review sessions or preparatory courses, for example) or (3) integrate diversity into your teaching practice by embracing its numerous enriching facets. As your personal values and standpoints congeal, you will be managing heterogeneous student groups with increasing poise and self-assurance.

### INTRODUCTORY LEVEL

Have you familiarized yourself with the various elements of diversity, and can you gauge their relevance to the teaching and learning process? Do you take the motivation, interests, and prior expertise of your target groups into account, and do you devise strategies for building on these divergent backgrounds? Have you developed a repertoire of methods to systematically assess the heterogeneity of your target groups? Are you sensitive to diversity, and do you see it as a challenge?

### ADVANCED LEVEL

Do you see diversity not as an inconvenience, but as entirely commonplace? Have you developed a repertoire of teaching strategies enabling you to adjust to the varying degrees of heterogeneity in your target groups?

### MASTER LEVEL

Do you recognize the opportunities arising from diversity? Have you developed strategies for using it to best advantage in the teaching and learning process? Are you aware of your organizational and personal limitations in dealing with a high level of heterogeneity, and are you seeking constructive solutions extending beyond your immediate teaching scenario (for example, by proposing revisions to academic regulations)?

McKeachie, Svinicki (2011): McKeachie's Teaching Tipps.

Queis (2009): Interkulturelle Kompetenz. Praxis-Ratgeber zum Umgang mit internationalen Studierenden.

## Approaches to learning

In choosing avenues to learning, and in selecting self-study strategies, most students have certain predilections based on their preferred sensory channels (which is why methodologists distinguish between learning by watching, learning by listening, learning by reading and writing, and learning by trial and error, among others) and their primary intellectual approach (such as deductive or inductive reasoning). In addition, the demands posed by the subject matter, the resources available, and the respective learning context will likewise play a role in determining their preferences. The consensus holds that independent study is most effectual if students are free to select the methods and techniques best suited to their favored angle of approach. For this reason, designing your courses such that students have various approaches to choose from will make a huge difference in facilitating their learning process.

### INTRODUCTORY LEVEL

Have you familiarized yourself with a learning model and, using examples, can you elucidate various different approaches to learning?

### ADVANCED LEVEL

Are you making an effort to incorporate and promote a variety of avenues to learning into your teaching practice?

### MASTER LEVEL

Do you introduce your students to a wide range of learning approaches, thereby enabling them to optimize their self-study techniques? Are you helping your students expand their repertoire of learning strategies (which often date back to pre-university schooling)? Do you explain to students that, in today's Information Age, their education will not end with graduation, and that they will stand to benefit throughout their lives from having professionalized their learning processes?

Entwistle (2009): Teaching for Understanding at University. Deep Approaches and Distinctive Ways of Thinking.

Geuenich, Hammelmann, Havas, Mündemann, Novac, Solms (2012): Das große Buch der Lerntechniken.

Hoidn (2010): Lernkompetenzen an Hochschulen fördern.

Learning Styles <http://bit.ly/1sQiDnZ>

Learning Styles Don't Exist <http://bit.ly/1oD6uSS>





# D

Professional teaching competencies

## Developing a teaching plan

A key aspect of academic teaching consists in the conceptual design, planning, and preparation of individual teaching and learning units. In addition to creating self-contained instructional components (such as lectures, exercise course sessions, or seminars), teaching staff must also be capable of defining overarching student learning outcomes and devising comprehensive teaching strategies covering not just classroom instruction but also self-study phases and examinations.

## Conceptualizing learning outcomes

Learning outcomes refer to the knowledge, skills, and related competencies students are expected to have acquired upon completing a teaching unit, course, or module. Identifying these learning outcomes from the outset will assist you in implementing the shift from teaching to learning by prompting you to systematically distill your learning goals from the bulk of your course materials. Moreover, clearly defined and well-communicated learning outcomes will motivate students to assume greater responsibility for their learning processes.

The capacity to formulate desired learning outcomes requires (a) a grasp of outcome-based teaching, (b) a familiarity with learning goal taxonomies, and (c) an understanding of the expectations of your course as stipulated by your degree program profile or module catalog, the prevailing “academic culture” in your field, and the skills required of professionals working in related areas. Most of all, however, it calls for the capacity to assess your target groups with regard to their motivation, prior expertise, and special interests and goals. A strong awareness of learning outcomes will enable you to bring your instructional framework into optimal alignment with your target groups.

### INTRODUCTORY LEVEL

Have you described your expected learning outcomes from your students’ point of view, on the basis of a learning goal taxonomy? Do they adhere to the standard formulations (such as “At the end of this unit, the student will be able to...”)?

### ADVANCED LEVEL

Are you using measurable learning outcomes that will encourage students to take charge of their learning processes? Can these outcomes be characterized as competency-based, i.e., built on the capacity to take competent action (see F3 Competency-based teaching), and is this capability the centerpoint of your instructional approach? Have you provided concise descriptions of these learning outcomes, while also elucidating how they are interrelated? When formulating your learning outcomes, are you keeping your target groups and teaching framework in mind?

### MASTER LEVEL

Do you present learning outcomes from an angle that opens up alternative learning pathways and enables students to gauge their own progress? For example, do you make it clear that students can reach the desired learning outcomes not only by attending lectures, but also by studying supplementary literature and the like?

Anderson, Krathwohl (2001). A Taxonomy for Learning, Teaching, and Assessing. A Revision of Bloom’s Taxonomy of Educational Objectives.

Kenney et.al. (2008): Lernergebnisse in der Praxis. Ein Leitfaden.

Bloom’s Taxonomy and Lesson Planning <http://bit.ly/1sNTmeP>

Learning Outcomes <http://bit.ly/1vxXXWc>

## Crafting a teaching strategy

A module typically comprises classroom sessions, self-study components, and examinations; for teaching strategies to be effective, these elements need to be brought into agreement.

Ideally, your teaching strategy – i.e., the combination of instructional techniques you are utilizing for a specific theme and target group under a specific set of circumstances – will build a royal road to the desired learning outcomes. The capacity to shape on-campus courses, independent study phases, and exams into an effective, coherent whole is a sophisticated skill, however, that typically emerges only after university educators have reached a certain level in their departmental hierarchy.



### INTRODUCTORY LEVEL

Are you defining your learning outcomes in accordance with constructive alignment standards (see F4 Constructive alignment), and applying these principles to your on-campus courses, examinations, and instructional methods?

### ADVANCED LEVEL

Are you integrating off-campus components into your teaching strategy, in order to give direction to students’ self-study efforts? Are you fostering effective independent study techniques as vital to student learning processes? Have you reduced your instructional directives to the requisite minimum, i.e., to providing impetuses, and are you instead positioning yourself as a mentor and learning facilitator?

### MASTER LEVEL

Are you taking advantage of synergistic effects by incorporating elements extending beyond the scope of your course? For example, do you call attention to the interconnections between your subject matter and related fields, do you use videos made at other universities, and do you get students actively involved in the teaching process (“learning by teaching”) by means of tutoring, study groups, or peer correction sessions?

Der Flipped Classroom <http://bit.ly/1mCMriS>

What Lectures Are Good For <http://bit.ly/1uiw1nG>

## Designing on-campus teaching units

In this context, “teaching unit” refers to an on-campus instructional entity (such as a lecture or exercise course session) belonging to a “module” (in the sense of the Bologna Process) and featuring teacher-learner interaction. Well-crafted units provide competency-building stimuli while at the same time motivating students to redouble their self-study efforts – both on- and off-campus.

Effective course design requires the ability to (a) extract the learning outcomes specified for your module and distribute them judiciously among your teaching units; (b) select your teaching methods and media, and organize them logically; (c) establish an instructional rhythm appropriate to your content and strategy; and (d) compile course materials such as slides and exercise sheets. Since the capacity to design coherent teaching units represents one of the cornerstones of academic teaching, we have divided this competency into several subsidiary skills in order to describe it in greater detail.



### D3.1 Choosing course content

#### INTRODUCTORY LEVEL

When compiling course content, do you keep the desired learning outcomes in mind? Do you employ your instructional materials as tools designed to help students reach these learning outcomes?

#### ADVANCED LEVEL

Have you developed strategies to assess your students’ preexisting knowledge and current progress? Do you customize your content accordingly? Do your courses provide a stimulating array of overviews, explanations, examples, and background information?

#### MASTER LEVEL

Have you intentionally minimized your instructional input, to allow students to take independent action in processing information and deepening their understanding? Do you deliberately incorporate examples of fallacious reasoning as well as an element of irritation (see F5 Inducing irritation) where appropriate?

Tipps zur Stoffauswahl anhand von Lernzielen <http://www.prolehre.tum.de/handreichungen>

Tipps zur Stoffreduktion <http://www.prolehre.tum.de/handreichungen>

### D3.2 Drafting teaching unit agendas

#### INTRODUCTORY LEVEL

Are your teaching units clearly organized (see F6 Building rhythm and structure)? Do you make your unit agendas available to students? Do your agendas contain pointers indicating where the current topic fits in with the overall context, as well as inspirational elements and methods for reactivating previously acquired knowledge? Have you planned a well-defined conclusion, such as a summary or a take-home message?

#### ADVANCED LEVEL

Do you build instructional rhythm in ways that intermittently capture students’ attention (see F6 Building rhythm and structure)? Can you strike an appropriate balance between providing stimulating input and enabling students to participate actively and advance to more challenging subject matter?

#### MASTER LEVEL

Have you developed a dramaturgical buildup that activates students’ innate drive to learn, while also allowing for ad hoc adjustments, teacher-learner interaction, and pointers on the connections between your current topic, other courses, and the “real world”?

Waldherr, Walter (2009): Didaktisch und Praktisch. Ideen und Methoden für die Hochschullehre.

Tipps zur Vorlesungsstrukturierung, zum Vorlesungseinstieg und zum Vorlesungsabschluss <http://www.prolehre.tum.de/handreichungen>

### D3.3 Selecting instructional methods and media

#### INTRODUCTORY LEVEL

Have you built a versatile repertoire of instructional presentation techniques and media? Are student learning outcomes a key criterion for your choice of teaching methods?

#### ADVANCED LEVEL

Are you familiar with interactive and dialogue-based teaching approaches, and have you incorporated them into your teaching strategy? Does your choice of methods and media take your target groups into account?

#### MASTER LEVEL

When selecting your methods and media, do you leave room for flexible reactions to varying classroom situations?

Brinker, Schumacher (2014): Befähigen statt belehren. Lehrkit für Hochschuldozierende.

Dallmeier, Hawelka (2000): Methodenreader. Eine Sammlung bewährter Methoden für Seminare, Vorlesungen und Workshops.

Klimsa, Issing (2011): Online-Lernen. Handbuch für Wissenschaft und Praxis.

Tipps zur Foliengestaltung <http://www.prolehre.tum.de/handreichungen>

## “Co-directing” self-study phases

A crucial stage of the student learning process consists in so-called self-study phases taking place outside the classroom. Student-centered teaching (see F2 Learner-centered teaching) makes the most of these phases and integrates them into on-campus course design.

To provide optimal guidance for students through their independent study phases, you will need to (a) incorporate self-study elements (such as home assignments, contests, or accompanying projects); (b) build a solid support structure (which may comprise reference lists, selected books kept on reserve, office hours, online discussion sites, etc.); and (c) develop an incentive system (including bonus points, prizes, interim certificates, and the like).



### INTRODUCTORY LEVEL

What kinds of materials can be used to support students during their self-study phases? Do you make the required information and resources (such as lecture notes, handouts, reference lists, laboratory space, exercise sheets, sample tests, and link collections) available to students for independent study purposes?

### ADVANCED LEVEL

Do you deliberately “co-direct” off-campus learning processes, and are you interlinking on-campus sessions and self-study phases, as an integral part of your course design? Do you provide opportunities and incentives for students to study independently?

### MASTER LEVEL

What are the skills (such as memorization techniques; a knowledge of learning strategies and methods for achieving comprehension; frustration tolerance; and self-discipline) students must acquire in order to be able to study independently? Do you actively foster these competencies as part of your teaching practice?

- Brinker, Schumacher (2014): Befähigen statt belehren. Lehrkit für Hochschuldozierende.
- Klimsa, Issing (2011): Online-Lernen. Handbuch für Wissenschaft und Praxis.
- Waldherr, Walter (2009): Didaktisch und Praktisch. Ideen und Methoden für die Hochschullehre.
- Selbstlernphasen unterstützen <http://www.prolehre.tum.de/handreichungen>
- Encouraging Students to Prepare for Lectures <http://bit.ly/1A7RiRe>

## Compiling course materials

For many students, the course materials provided by teaching staff represent the most important point of departure for their self-study and exam preparation phases. These materials can include recommended reading lists, presentation printouts, or lecture notes, among others; taken together, your instructional materials and classroom sessions will ideally complement each other and constitute a well-calibrated learning system.

Compiling and organizing the available resources (such as books, graphics, statistical overviews, articles, experimentation boxes, molecule modeling kits, etc.) such that students can

comprehend and digest them requires not just specialized expertise but also the ability to (a) cut down on quantity and complexity; (b) create a transparent structure; (c) vary your presentation media; (d) enable various learning approaches (e.g., by using abstract principles in addition to examples and counterexamples); (e) supply references to auxiliary materials (lecture notes need not be all-inclusive; you can call attention to supplementary literature); and – as part of your teaching strategy – (f) include sufficient links to further teaching channels such as lectures, accompanying seminars, or exercise sheets.

### INTRODUCTORY LEVEL

Can you identify the quality criteria for and various purposes of teaching materials (such as presentation slides) and learning materials (such as lecture notes)? Do you provide your students with materials that support their learning processes? Do you tailor your materials to your students' time frame for studying?

### ADVANCED LEVEL

Have you embedded your course materials into your teaching strategy? Do you build links between these materials and other elements of your teaching approach? Can you quickly reuse and customize your materials as required by varying situations and contexts? Have you designed your material in increasingly sophisticated increments (for stronger learners), together with more detailed explanations (for the slower ones)?

### MASTER LEVEL

Do your course materials offer students a choice of learning approaches – for example, by including not just texts and statistics but also graphics, illustrations, and diagrams? Are you utilizing inductive reasoning (as when generalizing on the basis of examples) as well as deductive approaches (as when making inferences from generalizations)?

- Tipps und Argumentationshilfen zum Einsatz von Folienhandout und Skript <http://www.prolehre.tum.de/handreichungen>



# 6 Devising examinations

Examinations reveal the extent to which students have acquired competencies, as well as the areas in which these competencies may still be lacking. Well-designed exams not only serve to monitor learning success and to facilitate end-of-semester screening processes; in large part, they also steer students' learning approach ("If you don't test it, you won't get it"; Resnick & Resnick, 1992), while also monitoring and promoting skill acquisition (Raupach, Brown, Anders, Hasenfuss, & Harendza, 2013).

Effective examination design requires the discernment to choose suitable evaluation formats for competency testing, and to devise questions that are correct and valid in form and content. This in turn presupposes a familiarity with the underlying rationale for examinations (i.e., the principles of quality assessment – in particular, fairness, objectivity, reliability, and validity), as well as the ability to develop formats tailored not only to the specific competencies in question but also to the purpose of the test. Thus, summative (i.e., outcome-based) exams are particularly well suited to screening students and verifying qualifications, whereas formative (i.e., process-based) exams can provide students with frequent indicators of their short-term progress, while also reinforcing their cumulative learning processes. In view of the impact of examination design on students' self-study approaches, we have divided this competency into several subsidiary skills so as to describe it in greater detail.



- Schaper (2013). Umsetzungshilfen für kompetenzorientiertes Prüfen <http://bit.ly/1mCOcfU>
- Dany, Szczyrba, Wildt (2008): Prüfungen auf die Agenda. Hochschuldidaktische Perspektiven auf Reformen im Prüfungswesen.
- McKeachie, Svinicki (2011): McKeachie's Teaching Tipps.
- Werth, Sedlbauer (2011): In Forschung und Lehre professionell agieren.
- Gestaltung von Prüfungen als Lernchance <http://bit.ly/XcZZMw>

## D6.1 Choosing suitable exam formats

### INTRODUCTORY LEVEL

Are you familiar with various exam formats (such as written exams, project reports, portfolios, oral exams, oral presentations, poster presentations, and practical tests)? Using examples, can you explain which formats are best suited to which purpose?

### ADVANCED LEVEL

Are you aware of the regulations governing exam formats, or do you know where to look them up (e.g., in the General or program-specific Academic and Examination Regulations, or in module catalogs)? Do you analyze the strengths, weaknesses, and limitations of your chosen exam types? For example, do you take the anticipated correction time into account, in addition to other factors such as the number of examinees, along with the number of examiners and rooms available?

### MASTER LEVEL

Does your exam format enable students to demonstrate their newly acquired competencies? Have you subdivided the exam in order to check competencies separately, as appropriate?

- Allgemeine Prüfungs- und Studienordnung für Bachelor- und Masterstudiengänge an der Technischen Universität München <http://bit.ly/VfMvNS>
- Leistungsnachweise in modularisierten Studiengängen <http://bit.ly/1mCOx29>

## D6.2 Formulating exam questions

### INTRODUCTORY LEVEL

Do your exam questions meet key formal criteria (such as: no double negatives; no unintentional interdependencies within and among questions; partial solutions permitted as necessary)? Do your questions clearly indicate the level of your expectations? Are you familiar with standard exam quality criteria – in particular, fairness, objectivity, reliability (i.e., accuracy), and validity (i.e., suitability)? When designing exam questions, do you keep these criteria in mind? Do you prepare model solutions together with your questions, and do you specify the number of points awarded for these solutions?

### ADVANCED LEVEL

Do your exam questions comply with applicable regulations (i.e., program-specific examination regulations or module catalog specifications)? Are your questions aimed at varying competency levels and degrees of difficulty? When devising your exam questions, do you take the correction time into account? Have you arranged your questions in logical order (e.g., by thematic area, difficulty, and/or question type)? Taken together, do your questions add up to a coherent evaluation scheme? Do you prepare model solutions together with your questions? Do your model solutions specify the number of points awarded for partially solved problems or partially correct answers? When grading exams, do you readjust your model solutions as necessary, and allow for unusual but correct answers?

### MASTER LEVEL

Do your exam questions provide ample occasion for students to demonstrate their newly acquired competencies? Have you made certain that your exams adhere to the principles of competency-based teaching (see F3 Competency-based teaching) in that they evaluate not only factual knowledge but also – where possible and appropriate – the capacity to take competent action? Have you prepared your exam questions with a view to covering the full range of outcomes to be tested? Have you eliminated factors that could lead to distorted results – such as divergent reading skill levels, cultural differences, or test anxiety? Have you established a scoring system for each solution, including policies for grading answers as entirely correct, partially correct, or incorrect? Have you specified the correct solutions, alternate solutions (if any), half-correct solutions, and typical wrong answers? Do you document changes to your scoring system as they arise during the correction process, for future use in subsequent semesters?

- 📄 Roloff, S. (2012). Schriftliche Prüfungen stellen und auswerten - methodisch, effektiv, objektiv <http://bit.ly/1uiyRcb>  
📄 Schaper (2013). Umsetzungshilfen für kompetenzorientiertes Prüfen <http://bit.ly/1mCOcfU>  
📄 Werth, Sedlbauer (2011): In Forschung und Lehre professionell agieren.

## D6.3 Designing exams from a competency-building angle

### INTRODUCTORY LEVEL

Do you inform students early on of the competencies to be tested? Are you giving students a chance to familiarize themselves with exam formats and question types?

### ADVANCED LEVEL

In accordance with constructive alignment principles (see F4 Constructive alignment), do you design your exams on the basis of learning outcomes? Do you explain to students how your exam questions are related to these outcomes? Do you enable students to gauge their progress in the course of the semester (by means of formative tests such as exercises, quizzes, or mock exams)? Do you make deliberate use of these tools in order to foster student discipline, by interjecting moments of success or failure as necessary to spur their motivation? Do you design your exams so as to promote independent study and a deep learning approach? For example, does the scope of your questions extend beyond mere factual knowledge, by requiring that students apply what they have learned?

### MASTER LEVEL

Do your exams include questions or elements that can potentially provide students with new revelations even as they are working on them?

- 📄 Biggs, Tang (2009): Teaching for Quality Learning at University.  
📄 McKeachie, Svinicki (2011): McKeachie's Teaching Tipps.



Professional teaching competencies

## Implementing a teaching plan

Once you have decided on a teaching plan – whether it be self-designed or externally prescribed – a further, equally important competency is the ability to implement it – which requires sparking, steering, and monitoring student learning processes through day-to-day interactions including lectures, explanatory talks, feedback, and instructions for group work.

## Establishing and maintaining contact with students

A lively ongoing exchange between teaching staff and students and a stable teacher-student rapport will support and promote student learning processes: As educators lend their faces and voices to their subject matter, and in their role as mediators of knowledge, they are continually reinforcing the learning effect (Hattie, 2008). Furthermore, constructive teacher-student relationships allow teachers to make the most of student feedback by taking corrective action as necessary, while increased student engagement will heighten the satisfaction and enjoyment educators are deriving from their teaching activities.

The capacity to build and maintain contact with students presumes a strong personal interest in their academic success, as well as an ability to see the world through their eyes, to communicate well, and to convey a deep respect for their individuality. There are numerous ways to establish this contact, and your approach will depend on your personality, teaching style (see F7 Arriving at style and authenticity), target group, and the prevailing “academic culture” in your field. Good rapport does not necessarily require maximum friendliness at all times; the occasional stern word, too, can prove beneficial, as long as students interpret your strictness as a sign of your commitment to their success.

### INTRODUCTORY LEVEL

Are you aware of the ways in which you are lending a face and voice to your subject matter? How important are your students’ learning progress and success to you? Do you make a concerted effort to better understand your students, in order to be able to address their individual requirements and preexisting knowledge?

### ADVANCED LEVEL

Do you take students’ special interests and needs into consideration in your teaching practice, by varying your tempo, for example, or by choosing suitable examples, or making direct references to students’ prior expertise? Do you make a point to demonstrate and express your interest in students’ academic success?

### MASTER LEVEL

Do you strike an effective balance between your personal interests and requirements and those of your students? Do you see your students not as a uniform mass of young people, but as a gathering of highly divergent individual personalities? Are you available to your students outside the lecture hall?

- Böss-Ostendorf, Senft (2010): Einführung in die Hochschul-Lehre.
- Tipps zum Vorlesungseinstieg <http://www.prolehre.tum.de/handreichungen>
- Tipps für einen lebendigen Vortragsstil <http://www.prolehre.tum.de/handreichungen>
- Tipps, um Studierende im Hörsaal zum aktiven Mitdenken zu bewegen <http://www.prolehre.tum.de/handreichungen>
- Engaging University Students <http://bit.ly/Y7Fy3H>
- Eye Contact <http://bit.ly/1q9JtTZ>

## Presenting your material ex cathedra (monologue-style)

A further vital element of university teaching consists in the various methods of presenting academic content. In addition to the standard instructional tools (such as PowerPoint slides, chalkboards, etc.), educators, in and of themselves, serve as an important medium.

To convey subject matter convincingly, teaching staff must be capable of presenting it in a competent, appropriate manner, using terminology suited to their target groups, as well as nonverbal cues

such as gestures, facial expressions, and shifts in posture, for example. This competency also entails the ability to (a) describe complex matters in vivid terms, (b) illustrate concepts visually where necessary, (c) include rhetorical questions that stimulate and promote student learning processes, (d) present arguments in a matter-of-fact but forceful manner, and (e) build and sustain persuasive lines of argument. Taken together, these presentation skills represent an essential competency for which it is particularly important to arrive at a personal style of one’s own.

### INTRODUCTORY LEVEL

Are you capable of presenting your subject matter in an appealing way, employing visual tools as necessary? Do you maintain eye contact with your students? Do you use your voice, facial expressions, and gestures for emphasis and clarity? Do you deliver your content in a manner appropriate to your students’ current level of skill? Do you present arguments calmly but forcefully, and can you establish and adhere to a convincing line of argument?

### ADVANCED LEVEL

Are you aware that, in one way or another, good teaching is always based on a dialogue of some sort, and can you impart a dialogue-style structure even to monologue-based teaching contexts? For example, do you use rhetorical questions in order to encourage students to “think along” actively during your presentations? While you are lecturing, do you consciously turn your antennae to your students – that is, instead of focusing primarily on yourself (“I must be careful to say the right thing and carry myself appropriately”), do you concentrate on your listeners (“I’ve got a thorough command of my topic and presentation style, and am thus free to pick up on the audience’s signals and reactions”)?

### MASTER LEVEL

Can you modify your teaching strategies on an ad hoc basis, depending on the perceptions you have gained from eye contact and observations of student behavior – by adjusting your tempo, for example, or responding to questions and offering further explanations? When you encounter a new rhetorical method, do you determine whether it suits your style, and if it does, do you adapt it to your personal requirements?

- Duarte (2011): slide:ology. Die Kunst, brillante Präsentationen zu entwickeln.
- Werth, Sedlbauer (2011): In Forschung und Lehre professionell agieren.
- Will (2000): Mini-Handbuch Vortrag und Präsentation.



## Explaining your material interactively (*dialogue-style*)

In addition to monologue-style techniques, the ability to explain content by means of an effective dialogue-based approach is a further key competency required for academic teaching. This skill may be essential to certain interactive parts of your lectures, for example, or to question-and-answer sessions, explanatory talks, seminars, tutoring sessions, or office hours.

In explaining a subject interactively, educators must be able to stimulate the learning process by interposing thought-provoking questions, moderating group discussions, or addressing open

issues. Here, it can be wise to refrain from long-winded displays of expertise, and instead to systematically determine how well students have understood the material. This may include switching to your students' perspective, posing exploratory questions, listening closely, asking questions back, explaining or paraphrasing questions, correcting erroneous beliefs, and providing constructive feedback. Of particular importance here is the ability to encourage learners and to spur their learning progress.

### INTRODUCTORY LEVEL

Do you make sure that your explanations pick up where your students' prior knowledge leaves off? When asking questions back, do you use suitable visualization techniques to make your explanations easier to grasp? Do you drive your points home by asking questions in order to double-check students' comprehension?

### ADVANCED LEVEL

When offering explanations, do you make frequent use of clues (such as leading questions), to permit students to find solutions and answers on their own? In addition to explanatory hints, do you provide motivational stimuli (by setting well-defined, challenging goals, and offering praise and encouragement)? Are you continually reacting to students' questions, gestures, and facial expressions, and readjusting your techniques accordingly? Do you provide opportunities for checking whether students have grasped the material, in addition to helping them correct errors or conduct in-depth analyses?

### MASTER LEVEL

Do you give students a chance to compile their own question-and-answer sessions and devise explanatory approaches (in line with the principle "teaching is learning twice")? Do you provide students not just with factual but also with strategic and methodological feedback in order to foster their problem-solving capabilities and use of metastrategies (such as independent research, special learning techniques, plausibility checks, etc.)?

## Leveraging your instructional methods and media

Effective methods and media are among the most important criteria for professional teaching practice – but only when these instruments are put to constructive use can their potential be utilized. In applying the appropriate techniques and tools and adapting them to your teaching contexts, you enable students to benefit maximally from your specialized expertise and the material you are conveying.

Using teaching methods and media to best advantage requires a thorough knowledge of their areas of application and technical prerequisites, as well as their individual pros and cons. Part of this competency includes the ability to assess individual teaching situations in terms of the methods and media to be used, and then to decide case by case whether to employ these instruments as planned, or whether to adapt them to the requirements of a particular educational context.



### INTRODUCTORY LEVEL

Do you have a working knowledge of the teaching methods and media you are planning to employ, as well as their strengths and weaknesses? Do you know how to give instructions to small groups, for example, and how to use a presenter? When writing on chalkboards, do you strive for clarity and legibility?

### ADVANCED LEVEL

Are you sufficiently well-versed in your instructional media to be able to concentrate fully on your subject and your students?

### MASTER LEVEL

Can you react flexibly to unexpected situations (such as technical glitches, or a larger number of students than originally anticipated) by departing from your original strategy, adapting it, or replacing it with more appropriate methods and media?

## Steering group dynamics

Most academic teaching scenarios do not consist in one-on-one instructional sessions; as a rule, university educators are facing a group of students. To get maximum mileage out of student group dynamics, teachers need to be capable of piloting teams in the right direction.

Effective group leadership requires a sound knowledge of the processes that commonly emerge in groups as well as the

procedures and constellations that are conducive to learning; it also entails the ability to (a) recognize and pay attention to your own margin of freedom (for example, in deciding whether to take responsibility for group dynamics, and choosing the role to take on – whether it be as a moderator, group leader, or mentor), and (b) actively steer such processes, by providing constructive feedback or setting down well-defined rules, for example.

### INTRODUCTORY LEVEL

Are you familiar with the most important types of group dynamics (such as students urging each other on, or “social loafing”) and do you recognize them when you see them? Have you acquired a repertoire of interventional measures to steer group processes in the right direction, e.g., by building strong ties to students, moderating these processes, nurturing a constant dialogue, and promoting peer exchange?

### ADVANCED LEVEL

Can you readjust your group leadership and moderation style flexibly as required by your target group, learning outcomes, teaching context, and momentary mood?

### MASTER LEVEL

Are you capable of initiating and supporting cooperative group processes in difficult situations (characterized by a high degree of heterogeneity, belligerence, or passivity on the part of students, for example)? Do you have ways of dealing with classroom disruptions?

Stahl (2007): Dynamik in Gruppen. Handbuch der Gruppenleitung.

Tipps zum Umgang mit Störungen (Classroom Management) <http://www.prolehre.tum.de/handreichungen>

Managing a Discussion in a Large Class <http://bit.ly/1sFfiua>

## Mentoring project groups

Many degree programs provide students with opportunities to work in project groups, hold group presentations, conduct group experiments, or manage entire projects together. As a consequence of the attendant division of labor, students will learn to handle larger, more challenging and motivating tasks; group discussions can be enriched by making room for individual viewpoints; and the social dynamics of smaller groups can have a positive impact on self-directed learning parameters (such as motivation, discipline, learning from peers, and learning by teaching, for example), while at the same time allowing students to develop key competencies such as communication and collaboration skills.

To mentor project groups effectively, you need to be able to (a) maintain continual contact with students; (b) design assignments representing a happy medium between self-study, instruction, and feedback; (c) recognize and reinforce academic and group process-related progress; and (d) reduce impediments to learning. Here, in particular, a vital skill consists in fostering constructive error management – since errors arising in the course of research can often result in useful new insights. Thus, in group contexts, educators should keep to the sidelines, while retaining their important supportive function as task suppliers, coaches, and quality managers.

### INTRODUCTORY LEVEL

Do you provide your students with well-defined tasks? Do you make yourself available for questions?

### ADVANCED LEVEL

Are you striving for insights pertaining not just to outcomes but also to learning processes, technical processes, and group dynamics, and do you offer feedback that is conducive to learning? Are you making an effort to foster constructive error management?

### MASTER LEVEL

When mentoring groups, do you strike the right balance between providing directives and encouraging self-study? Are you leaving enough room for the analysis of technical processes, learning processes, and learning progress?

Stahl (2007): Dynamik in Gruppen. Handbuch der Gruppenleitung.

## Providing academic counseling

*In serving goals extending far beyond the transmission of knowledge, a university education should also be designed to (a) foster advanced independent study competencies and metastrategies (such as alternate learning approaches, frustration tolerance techniques, and methods for achieving a healthy work-life balance); (b) promote constructive attitudes and nurture personal development; and (c) facilitate students' transition into their professional specialties. For this reason, the role of educators is not just to pass on expertise but also to act as academic mentors and counselors.*

In providing academic advising to your students, you need to be able to (a) listen in a target-oriented, yet impartial manner; (b) grasp their underlying concerns and reflect them back; (c) strike a balance between advice, suggestions, and more in-depth questioning; (d) draw upon your own biography or take distance from it as appropriate; and (e) determine the limits of your advisory competencies, so as to be able to refer students elsewhere if necessary.

### INTRODUCTORY LEVEL

Can you create an appropriate setting for a counseling session? Do you sense whether a matter can easily be dealt with in the hallway after a lecture, or whether it should be relegated to your office hours? Are you making enough time for your counseling sessions, and do you prepare for them as necessary?

### ADVANCED LEVEL

Do you give your students a chance to express their concerns at the start of the session, and do you listen attentively? Do you confirm your understanding of what they have told you by paraphrasing it and repeating it back to them? Do you draw a clear distinction between factually based advice and supplementary personal opinions? Do you know where to refer students in cases extending beyond the scope of your competencies? Do you avoid asking leading questions, in favor of open-ended questioning techniques that encourage students to think for themselves?

### MASTER LEVEL

Do you make yourself available to students requiring assistance, while at the same time taking care to leave the responsibility for their decisions solely with them? In addition to repeating students' concerns back to them, do you verbalize your emotional perceptions as they arise during counseling sessions? If students express a degree of anxiety that seems unwarranted, do you take them seriously (i.e., by expressing empathy), while keeping up your professional distance?

## Using feedback to promote learning

*An effective means of helping students achieve particularly challenging learning outcomes is to assign them tasks to perform on their own (such as conducting experiments, programming robots, taking a comprehensive medical history, or defending a draft), and to provide them with constructive feedback on their procedural methods and results. This approach can be equally suited to real-world situations (e.g., bedside teaching, architecture competitions, or joint projects with industry partners) and simulation scenarios (e.g., role playing, mock patients, or case studies). Feedback can also play a key role in numerous additional contexts, including office hours, tutorials, and post-exam reviews.*

For optimal use of feedback as a learning tool, students should be assigned smaller-scale tasks (e.g., exercises, opportunities for earning interim certificates, or quizzes) as well as demanding projects (e.g., real-world or simulation scenarios such as bedside teaching, role playing, or lab courses). Based on your analysis of students' procedural methods, you can then provide impetuses for learning (such as confirming or correcting their course of action) and communicate them in a constructive manner to students (orally and in writing). A further effective feedback method is to request and moderate the opinions of fellow students, as a complement to (or in lieu of) feedback provided by you.

### INTRODUCTORY LEVEL

Do you give students challenging, hands-on assignments they can tackle on their own, and offer feedback on their course of action?

### ADVANCED LEVEL

Do you balance your positive reinforcement (i.e., praise) and corrective impetuses (i.e., criticism, corrections, or suggestions for improvement) in such a way that students are encouraged and challenged by your feedback? Do you make sure that your feedback is specific to the learning task at hand, and not directed at the student as a person ("You're a good student")? The latter provides little information on the student's performance or potentials for improvement, and seldom results in a better performance or increased motivation.

### MASTER LEVEL

When analyzing learning situations and providing feedback, do you use well-defined criteria, in order to minimize the risk of subjective or arbitrary judgments? Do you reinforce the positive impact of your feedback by evaluating the learning strategies and procedural methods employed by students, in addition to the outcomes achieved – i.e., by addressing three levels (namely, the self-regulation, process, and task level; see Hattie & Timperley, 2007)?

## Conducting and scoring examinations

Conducting examinations and grading them are two important tasks often maligned by students and educators alike—especially in the case of summative (i.e., final) examinations. Preventing procedural errors and flawed assessments that can invalidate examination results requires a further set of competencies.

Effective examination delivery and evaluation entails the ability to hold oral and written exams objectively and fairly, to correct and score them, and to inform students of the results. The correction, evaluation, and grade reporting phase should be designed to minimize educators administrative overhead, while providing students with a maximum of informative feedback. In addition, examinations must be carried out in accordance with legal and organizational regulations, regardless of their format. Depending on the examination type, this may require varying sets of competencies. In view of the impact of the manner in which examinations are conducted and scored, we have divided this competency into several subsidiary skills so as to describe it in greater detail.



- Schaper (2013). Umsetzungshilfen für kompetenzorientiertes Prüfen <http://bit.ly/1mCOcFU>
- Brinker, Schumacher (2014): Befähigen statt belehren. Lehrkit für Hochschuldozierende.
- McKeachie, Svinicki (2011): McKeachie's Teaching Tipps.
- Werth, Sedlbauer (2011): In Forschung und Lehre professionell agieren.

## 19.1 Holding oral exams

### ■ INTRODUCTORY LEVEL

When conducting oral exams, are you aware of the external factors that could be impairing your degree of objectivity (such as hunger, fatigue, the time of day, your mood, the preceding exam, or the examinee's eloquence, appearance, or likability)? Do you monitor your subjective perceptions in the course of the exam and correction process, and do you notice when you are running the risk of bias? When posing questions, do you specify the degree of detail expected from examinees' replies?

### ■ ADVANCED LEVEL

What kinds of strategies have you developed in order to conduct and evaluate oral exams as objectively and fairly as possible? For example, do you begin by compiling a list of questions or drafting an examination strategy (i.e., outlining the overall procedure and sequence of questions)? Do you compare your own assessments with the test supervisor's observations? Have you minimized factors that could distort test results (such as cultural differences or test anxiety)?

### ■ MASTER LEVEL

How flexible are you in tailoring your exams to the individual examinees? For example, do you adjust the degree of difficulty of exam questions to varying levels of skill? Does a dialogue emerge between you and your examinees? Have you found ways to accommodate divergent levels of expertise while adhering to comparable examination strategies and content? Do you make sure to include representative questions covering the full spectrum of thematic areas and learning outcomes to be tested? How much feedback do you provide on students' performance? How detailed are the reasons you provide for scores and grades?

- Roloff (2012). Mündliche Prüfungen <http://bit.ly/1AftTsD>
- Werth, Sedlbauer (2011): In Forschung und Lehre professionell agieren.



## 19.2 Holding written exams

### INTRODUCTORY LEVEL

Are you familiar with the instructions you are required to announce at the start of a written exam? Are you careful not to provide any unintentional clues during the test? Do you follow standard procedures when passing out and collecting examination documents, so as not to place any students at a disadvantage? Do you make sure to have your examinations supervised by at least two proctors? Are you familiar with the organizational regulations pertaining to your exams as well as the materials you are required to bring (e.g., attendance lists, a sufficient number of test papers, pens, or a cell phone)? Are you familiar with common cheating practices, and do you take steps to prevent them?

### ADVANCED LEVEL

Are you thoroughly acquainted with the legal regulations governing written exam procedures, and do you know how to deal with absences due to illness, or cheating incidents? Do you make certain to create comparable testing conditions for exams being held simultaneously in several different rooms?

### MASTER LEVEL

Can you handle difficult situations (such as complaints, disruptive behavior on the part of examinees, or sudden onset of acute illness) with poise and self-possession?

- 
- Roloff (2012). Schriftliche Prüfungen stellen und auswerten - methodisch, effektiv, objektiv <http://bit.ly/1uiyRcb>
  - Werth, Sedlbauer (2011): In Forschung und Lehre professionell agieren.

## 19.3 Correcting and grading written exams

### INTRODUCTORY LEVEL

As you are correcting exams, are you aware of the external factors that could be impairing your level of objectivity (such as hunger, fatigue, the time of day, your mood, the preceding exam, or the examinee's handwriting)? Do you monitor your subjective perceptions during the correction process, and do you notice when you are running the risk of bias?

### ADVANCED LEVEL

What kinds of strategies have you developed for correcting and scoring examinations as objectively and fairly as possible? For example, do you correct only one question at a time on all exams, and then shuffle the pile before proceeding to the next question? Do you take regular breaks? Are you familiar with, and do you make sure to observe, the legal regulations pertaining to grades and grading scales? Are you acquainted with various benchmarks (whether they be social, criterion-based, or individual) that can be used for evaluation purposes? Do you take care not to use a social benchmark as the primary basis for your assessment, but rather the degree to which the student has achieved the competency in question?

### MASTER LEVEL

Can you complete your corrections with minimum overhead and maximum efficiency? Are you systematically incorporating your insights from preceding exams into your teaching practice, while also modifying your subsequent exams and learning outcomes, as appropriate? How much feedback do you provide on students' performance? How detailed are the reasons you provide for scores and grades?

- 
- Roloff (2012). Schriftliche Prüfungen stellen und auswerten - methodisch, effektiv, objektiv <http://bit.ly/1uiyRcb>
  - Schaper (2013). Umsetzungshilfen für kompetenzorientiertes Prüfen <http://bit.ly/1mCOcfU>
  - McKeachie, Svinicki (2011): McKeachie's Teaching Tipps.
  - Werth, Sedlbauer (2011): In Forschung und Lehre professionell agieren.



# O

## Professional teaching competencies

# Organizing your framework for teaching

Particularly when dealing with large numbers of students, a determined effort to optimize your teaching parameters will go a long way toward establishing an effective academic infrastructure, ensuring successful learning outcomes, and reducing your overhead. Universities are complex systems comprising innumerable rules, services, and contacts; by familiarizing yourself with these aspects and learning to use them to your advantage, you will build an efficient point of departure for your teaching activities – and thereby enhance your long-term professional satisfaction and motivation.

## Shaping the parameters of your teaching tasks

Your academic infrastructure will have a decisive impact on your teaching practice. In addition to various overarching guidelines (such as mission statements on diversity, internationalization, and the quality of teaching), this infrastructure includes (a) the strategic target agreements applicable to individual schools and department; (b) the related degree program documentation (such as examination regulations and module catalogs); (c) the full set of teaching-related resources (such as classrooms, teaching contracts for tutors, course schedules, and time slots); (d) the appropriate administrative contacts; and (e) any applicable rules on the distribution of resources.

To make the most of your academic infrastructure, you will need to familiarize yourself with the related parameters, and to establish professional networks with the relevant administrative contacts and decision-makers. For your teaching practice to succeed (and not turn into an energy-sapping undertaking for you and your students), it must be compatible with these parameters; if it is not, it will be up to you to modify them as necessary. For this reason, the related competency entails the ability to identify those factors that are detracting from your effectiveness as an educator, and to take the initiative in improving the fundamental preconditions for high-quality academic teaching.

### INTRODUCTORY LEVEL

Are you aware that a comprehensive “contextual knowledge base” is a key success factor in academic teaching and administration, and are you working on building yours? For example, are you acquainted with the examination regulations, module catalog, degree program coordinators, and room allocation contacts for your field?

### ADVANCED LEVEL

Do you make use of your contextual knowledge in order to set the stage for your teaching practice? For example, do you know how to organize time slots, rooms, and equipment?

### MASTER LEVEL

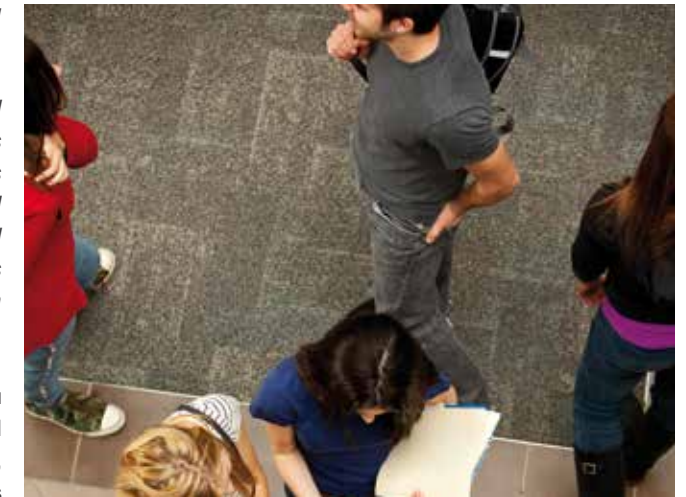
Are you taking advantage of your contextual knowledge and network in order to optimize your teaching parameters? For example, given an unreasonable degree of student heterogeneity in a particular course, can you request revisions to the pertinent academic regulations, or succeed in procuring better equipment?

Arnold (2013): Wie man lehrt, ohne zu belehren. 29 Regeln für eine kluge Lehre.

Werth, Sedlbauer (2011): In Forschung und Lehre professionell agieren.

## Building and maintaining a high-quality infrastructure

Setting the stage for low-stress, student-centered teaching entails an efficient infrastructure, which will need to be set up, readied for operation, and made comprehensible to students. In addition to organizing classrooms, teaching assistants, and time slots (for office hours, exams, exercise sessions, lectures needing to be rescheduled, and the like), the related tasks include keeping overviews of course participants (via e-mail distribution lists, for instance), compiling teaching materials, and providing students with a steady flow of information (by means such as websites, e-learning platforms including Moodle, or an online campus management system).



When establishing and maintaining your infrastructure, you will need to acquaint yourself with the available organizational and technical resources, as well as the configuration, implementation, and maintenance requirements of various infrastructural elements.

### INTRODUCTORY LEVEL

Do you have a clear idea of the kind of infrastructure appropriate to your teaching context, including the educational tools required by students? Do you select the materials and equipment for your courses accordingly? Do you ensure that your infrastructure is comprehensible to students?

### ADVANCED LEVEL

Is your infrastructure designed to support and complement classroom sessions and self-study phases alike?

### MASTER LEVEL

Do you document the details of your infrastructure for later retrieval via checklists and process charts, for example? Do you archive instructions, course descriptions, job postings for student assistants, etc.? Have you looked into your colleagues' infrastructure, and integrated useful elements of theirs into your own?

McKeachie, Svinicki (2011): McKeachie's Teaching Tipps.

Werth, Sedlbauer (2011): In Forschung und Lehre professionell agieren.

## Deploying teaching assistants to best advantage

Teaching assistants can be of invaluable support to university teaching staff by providing a variety of services, such as holding tutorials and office hours, preparing handouts, and so on; in fact, they frequently constitute an important element of the academic infrastructure. A well-configured team of teaching assistants will heighten the effectiveness of your teaching strategies, reduce your workload, and create an inspiring working environment.

To get the most out of your teaching assistants, you will need to attract qualified candidates, which entails the ability to (a)

describe the skill set required for the job; (b) establish an appealing workplace and publicize it, so as to draw first-rate applicants; and (c) approach selected students to determine whether their profile matches your requirements. Once your team is set up, you will need to (a) provide clear directives; (b) assign responsibilities and distribute tasks; (c) maintain an ongoing dialogue with your assistants and promote peer exchange within your team; (d) offer technical and pedagogical support as necessary; (e) mentor your assistants' professional development; (f) motivate them to work independently; and (g) implement quality assurance measures.

### INTRODUCTORY LEVEL

Do you select your teaching assistants on the basis of their academic record, experience, and soft skills? Have you clearly defined and communicated their scope of duties and assigned their tasks accordingly? Do you provide ad hoc support on issues relating to course content as the need arises?

### ADVANCED LEVEL

When choosing your teaching assistants, do you consider not just their academic record, experience, and soft skills, but also their level of instructional skill? Do you support them in matters concerning their teaching strategy? Do you monitor your assistants' work (by observing tutorials, for example, or checking sample solutions and evaluation sheets), and do you provide feedback that can help them do a better job?

### MASTER LEVEL

Do you base your selection criteria not just on individual strengths but also on the likelihood of long-term compatibility with other team members? Do you allow for a certain margin of freedom when your teaching assistants are getting themselves organized, and do you adjust your support and quality management measures accordingly? Do you encourage your assistants to trade notes and exchange feedback?

## Embarking on collaborative teaching projects

Since most courses are embedded in degree programs, their content and strategy – and, in some cases, the instructional methods employed – must be coordinated with other members of teaching staff, in order to identify interconnections between courses, take advantage of the ensuing synergies, reinforce teaching contexts, and reduce the amount of repetition and redundancy within the program. Particularly in collaborative teaching contexts (e.g., lecture series, team teaching, guest speakers, or different sets of teaching staff for lectures and exercise sessions), a solid basis for cooperation is a crucial prerequisite for success.

Effective collaborative teaching entails not just (a) the classic communication and social skills (including mutual tolerance regarding styles of working and thinking; reliability; and a willingness to compromise) but also (b) an awareness of the pros and cons of team teaching, of course overlap, and of diverging viewpoints and approaches to thematic content, as well as (c) the ability to strike a balance between retaining an authentic teaching style of one's own, making the requisite concessions to colleagues, and adhering to the group's overall teaching strategy.

### INTRODUCTORY LEVEL

Are you familiar with the learning outcomes defined for your courses, as well as the applicable guidelines, as documented, e.g., in the relevant examination regulations or module descriptions? Are you aware of the focal points of your course content, as well as those of your colleagues, and do you emphasize them accordingly? Are you conscious of the pros and cons of team teaching? Can you identify interconnections within your field that can result in a variety of useful points of departure? Do you regularly trade notes with colleagues on matters such as group dynamics and overall student progress? Have you reached an agreement with your teaching team on the applicable rules and policies?

### ADVANCED LEVEL

When planning collaborative teaching projects, do you know which administrative contacts need to be informed? In team teaching scenarios, are you capable of taking the back seat and allowing your colleagues to teach as they see fit, while at the same time remaining true to yourself? Do you make the most of disparate teaching styles? Do you take pains to prevent or clear up misunderstandings?

### MASTER LEVEL

Do you join forces with colleagues in order to implement constructive alignment principles (see F4 Constructive alignment)? Do you actively seek collaborative teaching opportunities? Do you make a conscious effort to learn from your colleagues, and to incorporate new ideas you have picked up from team teaching contexts into your own teaching style?





# R

Professional teaching competencies

## Reviewing and refining your teaching competencies

Academic teaching takes place in a highly dynamic environment: The student body is in constant flux (in terms of socialization, background, prior expertise, and professional hopes and goals), as are societal demands on higher education. At the same time, a broader range of instructional tools has become available, including electronic learning aids for use in real-world contexts, such as augmented reality and mobile learning scenarios. Meanwhile, ongoing research continues to advance the gamut of scientific fields and technologies. And last but not least, as a university educator, you, too, are continually evolving – even as, with time, your own intellectual structures and those of your students are inevitably growing apart. To keep up the quality of your teaching and to sustain your motivation, you need to be able to drive your own professional development, while at the same time flexibly adapting your educational strategies to variable student configurations, shifting instructional frameworks, and advances in academic content.

## Reflecting on your skills and designing innovative approaches

As a university educator, your duties include conducting periodic reviews of your teaching practice in light of the quality standards discussed, defined, analyzed, and advanced by your peer group – which generally consists of a specialized community of researchers, practitioners (often belonging to professional organizations and umbrella associations), and other academic teaching professionals (who may be members of the German Association for the Advancement of Higher Education, or may also include education experts and quality management officials). In the midst of this dynamic environment, your long-term ability to sustain a high level of professionalism in your teaching activities will hinge on your preparedness to engage in continuous self-reflection to assure continual development of your pedagogical expertise.

Reviewing your educational strategies and constantly seeking fresh new approaches is a further competency requiring a concerted effort to shape the parameters of your teaching tasks. Self-reflection entails the ability to (a) familiarize yourself with the commonly accepted quality standards for good teaching; (b) generate your own quality criteria on the basis of these standards; (c) analyze your teaching practice with regard to these criteria; (d) integrate new ideas gathered from discussions with students, colleagues, and education experts into your instructional approach; (e) manage errors constructively by making the most of critical feedback; and (e) identify and build on your strengths.

### INTRODUCTORY LEVEL

Are you acquainted with the established quality standards for teaching, and have you applied them to your own teaching practice? For example, have you compiled evaluation criteria, and are you measuring your success on the basis of these criteria? Have you developed your own teaching philosophy, and perhaps even documented it?

### ADVANCED LEVEL

Do you take advantage of opportunities for feedback, e.g., via evaluation surveys or discussions with students and colleagues? Are you incorporating this feedback into your teaching practice? Do you trade notes with colleagues, and do you integrate their input into your own teaching approach? Are you capable of understanding, acknowledging, and analyzing a variety of pedagogical philosophies? When designing your courses, do you adhere to your own teaching philosophy? Have you documented your thoughts on good teaching – e.g., in a teaching portfolio? Are you making an effort to extend this portfolio?

### MASTER LEVEL

Do you drive the advancement of your teaching expertise by seeking new challenges and sources of inspiration, not just via additional training in your specialty but also by observing your colleagues or attending teacher training seminars? Do you read specialized literature, e.g., education journals, and apply the insights you have gleaned to your teaching strategies? Do you perhaps even regularly evaluate your teaching practice on the basis of recent findings in higher education pedagogy? Have you identified areas for improvement, and are you taking follow-up measures? Have you developed constructive error management strategies?

Arnold (2013): Wie man lehrt, ohne zu belehren. 29 Regeln für eine kluge Lehre.

Böss-Ostendorf, Senft (2010): Einführung in die Hochschullehre.

## Requesting feedback and handling it constructively

When pinpointing areas for improvement in your own teaching practice, it is essential to be able to balance your self-perceptions with feedback from external sources, and to actively seek criticism from your colleagues and students, as well as from education experts.

To handle feedback effectively, you will need to (a) acquaint yourself with the various avenues for gathering feedback; (b) be aware of the inherent value as well as the pros and cons of feedback in general; (c) seek criticism actively and accept it nondefensively; and (d) define and implement the appropriate optimization measures for your current teaching contexts.

### INTRODUCTORY LEVEL

Are you familiar with various methods for collecting feedback? Are you aware of the importance of feedback, and does feedback motivate you to take corrective action? Are you aware of the discrepancies between self-perception and feedback from external sources, as well as the pros and cons of feedback in general? Do you draw the necessary consequences from the feedback you have received?

### ADVANCED LEVEL

Are you actively seeking feedback? Do you catalogue the feedback you have obtained, in order to review it systematically? Do you engage in critical self-reflection? Can you distinguish between feedback at the interpersonal and factual levels? Are you aware of the difference between feedback, evaluation, and instructional directives?

### MASTER LEVEL

Can you handle criticism nondefensively? Do you review feedback independently of its source? Do you verify the validity of feedback by analyzing the respective teaching contexts? Do you inform feedback providers of corrective measures implemented in response to their feedback? Do you view feedback as a continuous, ongoing cycle? Can you accept feedback without getting caught up in self-doubt or abandoning your personal teaching style?

Beywl, Bestvater, Friedrich (2011): Selbstevaluation in der Lehre. Ein Wegweiser für sichtbares Lernen und besseres Lernen.

Brinker, Schumacher (2014): Befähigen statt belehren. Lehrkit für Hochschuldozierende.

Umgang mit Ergebnissen der Lehrveranstaltungsbeurteilung <http://bit.ly/1sXZFg3>

## Integrating your teaching tasks into your scope of duties

Although central to the university system in all its complexities, academic teaching represents only one of numerous responsibilities of university educators, which may also include research, administrative, management, and leadership tasks. To be able to pace yourself and to sustain your motivation on a long-term basis, you will need to put your teaching duties into overall perspective, and to find sensible ways of integrating your instructional activities into your spectrum of responsibilities.

An effective way of embedding your teaching commitments into your job profile is to take advantage of synergies with other tasks and fields of activity. By integrating your current research results into your course content, for instance, you can incorporate

student feedback into forthcoming publications (e.g., via graphics, explanations, and the like). Well-designed courses can motivate students to submit highly focused theses and dissertations, which can constitute contributions to scientific research in their own right. Thus, it makes eminent sense to align your teaching strategy with your research goals, and to use your courses as a means of generating publicity for your work, whose advancement will benefit yourself and your students alike. Furthermore, by reviewing the overhead associated with your teaching activities, you can reorganize your tasks so as to cut down on unnecessary perfectionism or needlessly redundant safety measures.

### INTRODUCTORY LEVEL

Have you taken inventory of your tasks and responsibilities, and budgeted your time and resources accordingly? Do you make an effort to design your teaching activities in ways conducive to your own personal growth and enjoyment?

### ADVANCED LEVEL

Do you see your teaching practice not just as a burden, but also as a source of enrichment? Do you draw maximum benefit from your teaching activities, not only as a means of advancing your expertise but also of promoting your personal development?

### MASTER LEVEL

Are you systematically building synergies between your teaching tasks and further responsibilities? Can you deal with day-to-day stress as well as particularly demanding teaching situations? Do you discuss exceptional challenges with your colleagues? Do you regularly check the efficiency of your teaching practice – for example, by determining whether certain tasks are unnecessary, or whether they can be delegated?

Martens, Kuhl (2011): Die Kunst der Selbstmotivierung. Neue Erkenntnisse der Motivationsforschung praktisch nutzen.

## Handling slip-ups and thorny classroom situations

Teaching situations can be affected by innumerable factors, and even with careful preparation, there is no fail-safe way of preventing disruptions – whether caused by infrastructural issues (such as double-booked rooms, misplaced or defective equipment, or delayed public transportation), student inattention (resulting from a high degree of heterogeneity, troublemakers in the audience, or general fatigue), or mix-ups on the part of teaching staff (such as faulty or forgotten materials, or inadequate explanations of subject matter). In challenging situations such as these, the ability to react with poise will be the key to saving the day. In an effort to control their teaching situations and to safeguard against blunders, novice instructors will often go to

great lengths in planning their classes. Obviously, meticulous preparation can go a long way toward building self-assurance; in the long run, however, you will need to develop additional strategies for dealing with unexpected incidents.

To cope with difficult classroom situations effectively, you need to be aware of the factors that can potentially disrupt your agenda, and to take preventive or corrective action as appropriate. By bracing yourself for malfunctions, mistakes, and other letdowns, and being prepared to learn from them, you will handle unforeseen events with aplomb.

### INTRODUCTORY LEVEL

Are you aware of the disruptions that can occur in teaching situations, and have you considered what you can do to prevent them? When preparing your classes, do you take measures to reduce the likelihood of mishaps?

### ADVANCED LEVEL

Have you developed strategies for extricating yourself from thorny situations? Can you deal constructively with glitches such as equipment failure – by devising workarounds, for example, or by delegating tasks and setting boundaries as appropriate? Can you react flexibly and creatively to classroom disruptions?

### MASTER LEVEL

Have you reconciled yourself to the fact that, regardless of how many steps you have thought ahead, something can always go wrong – and that a dynamic teaching context will inevitably entail an element of unpredictability? Can you manage a thoroughly bungled teaching situation with equanimity, and make the best of it by recognizing your mistakes as opportunities for improvement, i.e., by “coughing up the ashes” and moving on?

Schulze-Seeger (2013): Schwarzer Gürtel für Trainer.

Schumacher (2011): Schwierige Situationen in der Lehre.



Using this  
competency model  
to best advantage



To make the most of this competency model, you can use it as a reference point for further discussions with your colleagues, and regularly avail yourself of related opportunities for peer exchange. In addition, you can take advantage of this model to assess your own level of teaching competency and to obtain further impetuses for the advancement of your academic teaching expertise.

Designed as a practical guide for navigating the complexities of university teaching practice, our competency model is based on the current discourse between educational practitioners and theorists, which we view as the central point of departure for all measures aiming to professionalize higher education.

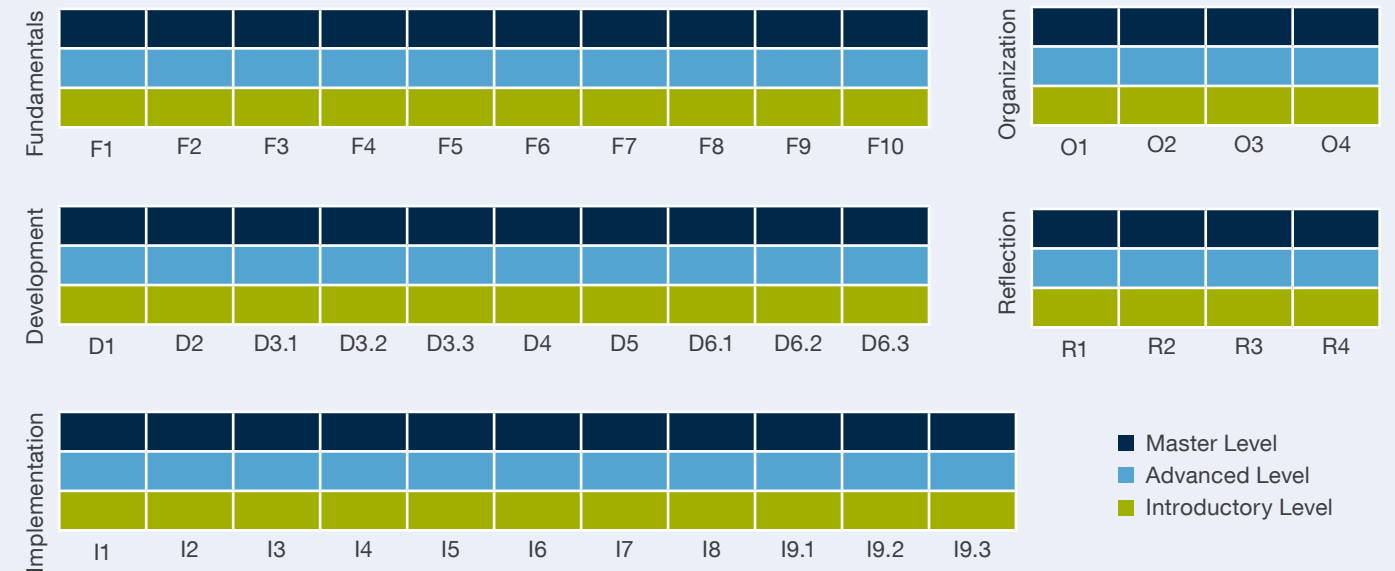
Depending on your academic field and level of expertise, the competencies required for various kinds of academic teaching are bound to differ widely; thus, the highest level of proficiency for these skills need not represent the yardstick of success for every university educator: As a case in point, the competencies required of a tutor demonstrating mathematical exercises will differ from those required of an associate lecturer holding a lab course, a research associate advising students on their master's theses, or a professor preparing a new lecture. For this

reason, a first step in implementing this model could consist in taking stock of your own teaching activities and tailoring these guidelines to your present situation, i.e., identifying the competencies that apply to your current teaching contexts.

Our competency model is not meant to serve as a catalogue of requirements, all of which must be met for a university educator to be considered professionally capable; this would certainly be far from our intention! It will not be necessary, or even possible, to achieve an advanced level of proficiency in all of the competencies listed; rather, the key to success will be to develop an effective profile of your own by balancing your strengths and weaknesses, and by integrating them into your personal teaching style.

Once you have tailored the applicable competencies to your teaching activities, you can conduct a baseline appraisal of your current overall level of competency, by means such as self-evaluations, consultations with mentors or education experts, or discussions with your colleagues (which could include feedback from collaborative teaching projects, for example). The delta between your current status and your target state will point the way to the measures you can take toward advancing

## Competency profile checklist



### Legend

#### FUNDAMENTALS

- F1 "Co-constructing" knowledge
- F2 Learner-centered teaching
- F3 Competency-based teaching
- F4 Constructive alignment
- F5 Inducing irritation
- F6 Rhythm and structure
- F7 Style and authenticity
- F8 The teacher-student relationship
- F9 Target group heterogeneity
- F10 Approaches to learning

#### DEVELOPMENT

- D1 Conceptualizing learning outcomes
- D2 Crafting a teaching strategy
- D3 Designing on-campus teaching units
- D3.1 Choosing course content
- D3.2 Drafting teaching unit agendas

- D3.3 Selecting methods and media
- D4 "Co-directing" self-study phases
- D5 Compiling course materials
- D6 Devising examinations
- D6.1 Exam formats
- D6.2 Exam questions
- D6.3 Exam design from a competency-building angle

#### IMPLEMENTATION

- I1 Establishing contact with students
- I2 Presenting ex cathedra (monologue-style)
- I3 Explaining interactively (dialogue-style)
- I4 Leveraging your methods and media
- I5 Steering group dynamics
- I6 Mentoring project groups
- I7 Providing academic counseling
- I8 Using feedback to promote learning

- I9 Conduction and scoring examinations
- I9.1 Holding oral exams
- I9.2 Holding written exams
- I9.3 Correcting and grading written exams

#### ORGANIZATION

- O1 Shaping your teaching parameters
- O2 Optimizing your infrastructure
- O3 Teaching assistants
- O4 Collaborative teaching projects

#### REFLECTION

- R1 Self-reflection and ensuing innovation
- R2 Handling feedback
- R3 Integrating teaching tasks into your job profile
- R4 Classroom management

### In this context, further debate could be sparked by questions such as the following:

- The three levels of proficiency described here are characteristic of the development processes seen in many, but not all educators. When reviewing your own teaching history, would you say that, in terms of skills and experience, your own development occurred along similar lines, or did your competencies emerge in a different order?
- Of the competencies and fields of activity that play a key role in your teaching practice, have any been overlooked or not covered in sufficient detail by our model?
- This competency model is tailored to the core subjects taught at Technische Universität München, i.e., engineering and the natural sciences. Which of the competencies and requirements mentioned here could apply to your own specialty or to the university where you are teaching?

your personal development – and in this way, our competency model can guide you to the academic teaching competency training best suited to your requirements. Ways of enhancing your competencies can include engaging in self-reflection, performing exercises, requesting feedback, consulting the professional literature, and attending courses:

#### **BOOKS AND ARTICLES**

Has an item on an education-related topic caught your eye? Why not share it on Facebook or Twitter? ProLehre runs news tickers ([www.facebook.com/prolehre](http://www.facebook.com/prolehre) and [www.twitter.com/prolehre](http://www.twitter.com/prolehre)) on every facet of academic teaching. Is there a specific topic that interests you? Our small reference library ([www.prolehre.tum.de/bibliothek](http://www.prolehre.tum.de/bibliothek)) is stocked with material on a variety of education subjects, from the psychology of learning to instructional methodology guidebooks.

#### **SELF-REFLECTION AND PEER EXCHANGE**

Would you like to reflect on a certain topic in depth, perhaps bundling your thoughts in a mind map, an article, or a teaching portfolio? Is there a particular issue you need to clarify with colleagues? At Technische Universität München, an annual conference entitled “Forum der Lehre” gives teaching staff a chance to meet for informal talks on the latest trends in higher education. Or, for a change of pace (and a breather from your field or specialty), you can engage in debate with your colleagues and other staff members on selected excerpts from the scholarly literature on pedagogy. Finally, a number of supraregional networks and conferences provide regular opportunities for peer exchange.

#### **AD HOC SEMINARS**

Are you considering some academic teaching competency training? ProLehre offers a broad range of seminars, and the German Association of University Professors and Lecturers [Deutscher Hochschulverband; DHV] holds intermittent workshops, as do numerous other organizations. Most of these courses are offered in conjunction with certification programs enabling you to document the advancement of your professional teaching competencies, which can prove

advantageous in various application contexts. It can be advisable to confirm that these programs meet DHV quality standards.

#### **ONE-ON-ONE COACHING**

ProLehre offers free consultation sessions to all teaching staff at Technische Universität München. We also conduct course audits, and will be glad to provide feedback on your strengths, as well as pointers on attaining your instructional potential.

#### **SCHOLARSHIP OF TEACHING AND LEARNING (SOTL)**

Have you considered publishing the observations you have gathered as a university educator? ProLehre can assist you in creating a strong empirical and theoretical basis for a scientifically sound publication; by partnering with an education expert, you can combine forces to crystallize your findings into a useful practical synopsis. Particularly in fields such as engineering and the natural sciences, these interdisciplinary publication projects can represent a valuable complement to research focusing solely on education topics, and can yield stimulating, mutually enriching results.

#### **FULL-FLEDGED TEACHING COMPETENCY DEVELOPMENT PROGRAMS**

Many universities are now offering comprehensive academic teacher training programs (such as the Master of Higher Education in Hamburg, the Master of Medical Education in Heidelberg, and the 2-year Intensivkurs at Technische Universität München). Held in fixed groups of colleagues and usually lasting approximately two years, these programs enable you to systematically polish your instructional competencies and personal teaching style by means of a broad spectrum of methods and tools, including courses, consultations, coaching sessions, and projects.





Next steps



**Our Competency Model for Higher Education aims to launch a university-wide discussion providing teaching staff at Technische Universität München with opportunities to contribute ideas and observations of their own. This ongoing effort to enhance the quality of teaching and learning will continue to involve academic education experts, and will soon introduce further debates on various recent developments in higher education, including gamification, massive open online courses (MOOCs), and mobile learning.**

We cordially invite you to support us in advancing this competency model by sharing your thoughts on any topics relating to academic teaching at [www.prolehre.tum.de/lehrkompetenz](http://www.prolehre.tum.de/lehrkompetenz). From October 2014 onward, we will be collecting your input on the following points:

- Can you think of ways to improve this model? Are there any aspects we have missed? Feel free to send us descriptions of effective or unsuccessful teaching situations, or examples of teaching scenarios which, in your opinion, require more extensive coverage.
- In a forthcoming edition of this brochure, we are planning to illustrate each competency by means of examples from specialized instructional contexts. We will gladly incorporate anything you may want to contribute in the way of personal accounts or pointers exemplifying individual skills in action; in fact, if you are so inclined, you are welcome to join us as a coauthor of our next brochure!
- In many disciplines, professional teaching competencies are subject to highly specialized requirements. For this reason, future versions of this brochure will examine these competencies from the various perspectives of each school and department at Technische Universität München. We will be glad to support you and your departmental colleagues in compiling a competency profile tailored to your field or specialty.
- Have you encountered a book or an article on education-related topics you found particularly inspiring or helpful to your teaching practice? We welcome any suggestions

you may want to share! Our recommended reading list will continue to be updated on an ongoing basis.

In addition to our interest in your feedback, we would like to reiterate our offer of support and assistance as you begin to apply the principles described in this model (see Chapter 3: Using this competency model to best advantage).

And finally, we would like to point out that, in identifying the competencies essential to academic teaching, we have not, by any means, covered the full range of factors affecting the overall quality of higher education. Accordingly, we are not suggesting that professional teaching competencies are the be-all and end-all of instructional success; rather, academic teaching is a context-sensitive process that can only achieve its potential when educators, students, and learning goals are optimally aligned within a specific teaching context. Much as educators' efforts to professionalize their teaching practice are to be commended, we must not lose sight of the fact that the other stakeholders involved in higher education need to be pulling their weight – including the political and higher education policy makers responsible for establishing and maintaining the university infrastructure (such as curricula, personnel, and funding); the secondary schools laying the groundwork for academic studies (by imparting a sound general education and instilling effective learning techniques); and last but not least, the students themselves, who must be prepared to take on responsibility for their own academic success.







# Bibliography

This chapter provides an overview of the professional literature corroborating the key precepts of our competency model; it also lists the most important references from the preceding sections.

## Recommended reading

In the previous chapters, we have provided references for every competency described. You may have noticed that certain references kept reappearing; these are the books we recommend most highly because of their exceptional breadth and pragmatic approach. *For the German-language books listed below, please note that the English titles represent an approximate translation.*



**Rolf Arnold (2013): *Wie man lehrt, ohne zu belehren. 29 Regeln für eine kluge Lehre.***

[How to teach without talking down to your students: 29 rules for effective teaching.] A superbly practical guide to the learner-centered paradigm shift that has become pivotal to higher education today. In this pleasingly concise volume, professor of pedagogy Rolf Arnold summarizes 29 principles of learner-centered teaching, using guidelines supplemented by checklists and planning grids.



**Franz Waldherr, Claudia Walter (2009): *Didaktisch und Praktisch. Ideen und Methoden für die Hochschullehre.***

[Academic teaching: A practical approach.] The authors discuss various instructional methods from a refreshingly down-to-earth point of view, illustrating them with well-tryed tips from academic teaching practice. The appendix provides a brief introduction to the underlying learning theories and the current state of the art in educational research.



**Ken Bain (2004): *What the best college teachers do.***

In this engaging and entertaining guidebook, education researcher Ken Bain examines the essential characteristics that all great teachers have in common. A standard reference work for young university educators in the U.S., this book has been gaining increasing popularity in Germany as well.



**Lioba Werth, Klaus Sedlbauer (2011): *In Forschung und Lehre professionell agieren.***

[Academic teaching and research: The definitive guide for professors.] Published by the German Association of University Professors and Lecturers (DHV), this 800-page compendium covers a professor's full spectrum of tasks – from chairing departments, conducting research, and holding lectures and seminars, to presenting their work externally. A standard guide for novice professors.



**Tobina Brinker, Eva-Maria Schumacher (2014): *Befähigen statt belehren. Lehrkit für Hochschuldozierende.***

[Empowering your students instead of indoctrinating them: A toolkit for university educators.] Compiled by two education experts, this succinct guide to the gamut of education-related topics provides sound practical advice on subjects ranging from learning theories and multimedia tools to examinations, evaluations, and choosing and paring down course content. A further asset is its overview of the teaching methods suited to various contexts.



**Wilbert McKeachie, Marilla Svinicki (2011): *McKeachie's Teaching Tipps. Strategies, Research, and Theory.***

Coauthored by two seasoned practitioners, this book testifies to longstanding teaching expertise on every page. Providing useful pointers on every aspect of day-to-day teaching practice in a U.S. context, the advice it contains will nonetheless need to be adapted to comparable teaching scenarios in Germany.

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## Alternate approaches to competency modeling in higher education

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**For more detailed descriptions of the competency profiles used in higher education, and for an overview of alternate competency modeling approaches, we recommend the following:**

Brendel, S., Eggensperger P. & Glathe, A. (2006): Das Kompetenzprofil von HochschullehrerInnen - Eine Analyse des Bedarfs aus Sicht von Lehrenden und Veranstaltenden. Zeitschrift für Hochschulentwicklung, ZHE, Heft 2.

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Trautwein, C. & Merkt, M. (2012). Zur Lehre befähigt? - Akademische Lehrkompetenz darstellen und einschätzen. In R. Egger & M. Merkt (Hrsg.), Lernwelt "Universität": Entwicklung von Lehrkompetenz in der Hochschullehre (2012. Aufl.). VS Verlag für Sozialwissenschaften.



# Authors

## Die Autorinnen und Autoren

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**Dr. Andreas Fleischmann**

*ProLehre*

Andreas Fleischmann is in charge of developing and implementing university-wide strategies as well as program-specific measures for improving and enhancing the quality of academic teaching and learning.

[andreas.fleischmann@prolehre.tum.de](mailto:andreas.fleischmann@prolehre.tum.de)



**Christine Jäger, M.A.**

*ProLehre*

Christine Jäger is our contact person at the Department of Physics; she also supports and mentors teaching staff who have shown exceptional dedication to their teaching activities.

[christine.jaeger@prolehre.tum.de](mailto:christine.jaeger@prolehre.tum.de)



**Dr. Alexandra Strasser**

*ProLehre*

Alexandra Strasser is developing higher education resources for professors; she is also our contact person at the Department of Electrical Engineering and Information Technology.

[alexandra.strasser@prolehre.tum.de](mailto:alexandra.strasser@prolehre.tum.de)





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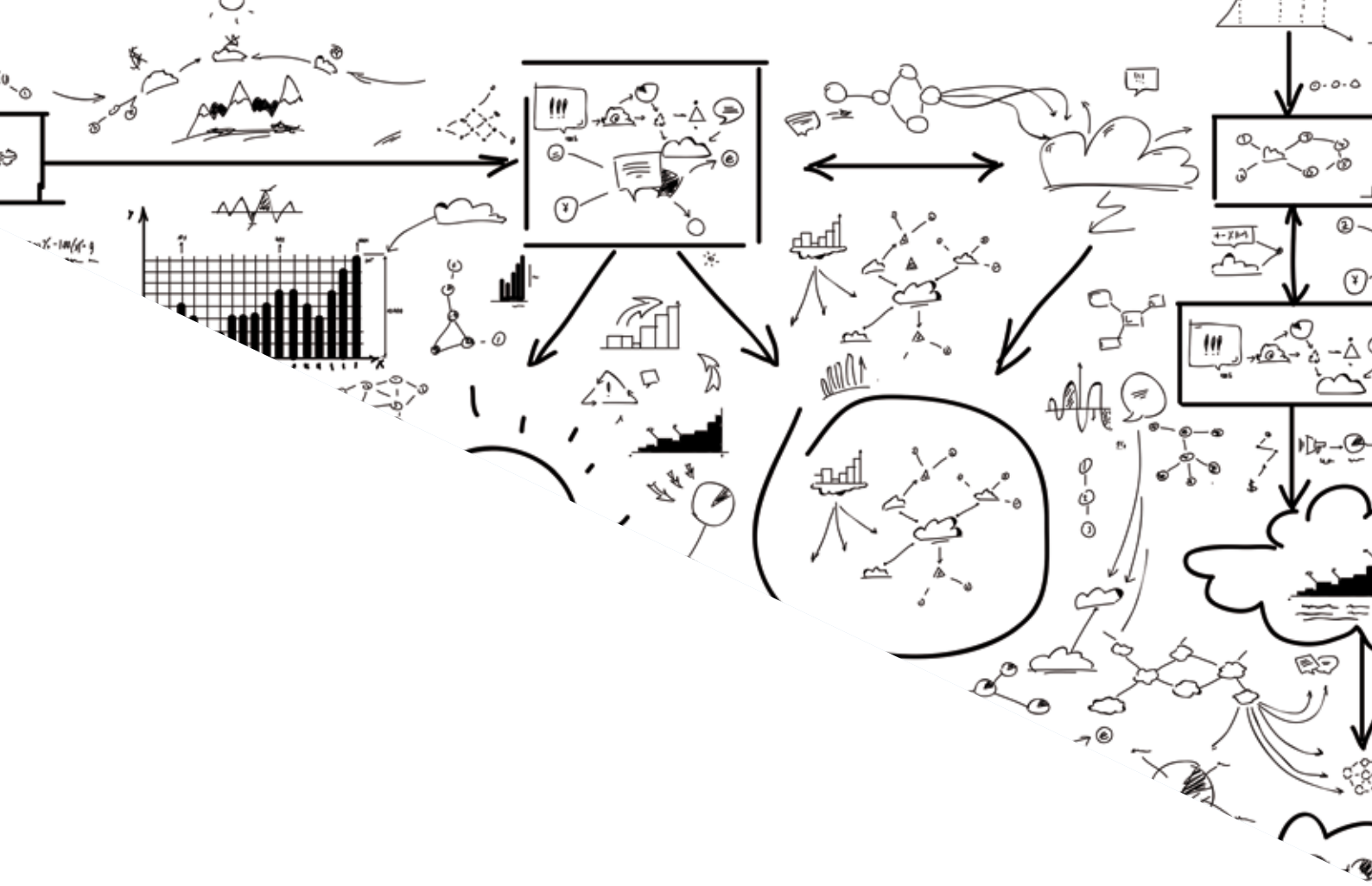
Technische Universität München  
Munich Center for Technology in Society  
Augustenstraße 44  
80333 München

info@prolehre.tum.de  
www.prolehre.tum.de  
www.facebook.com/prolehre

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**Translation:** Katherine Totten



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Technische Universität München  
Munich Center for Technology in Society  
Augustenstraße 44  
80333 München

[info@prolehre.tum.de](mailto:info@prolehre.tum.de)  
[www.prolehre.tum.de](http://www.prolehre.tum.de)  
[www.facebook.com/prolehre](https://www.facebook.com/prolehre)