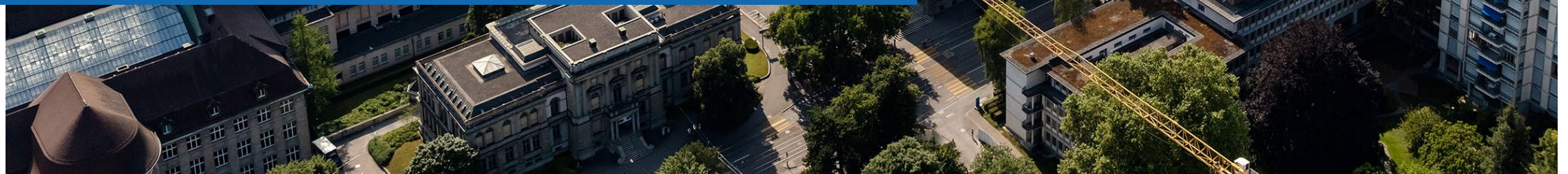


The ETH Competence Framework

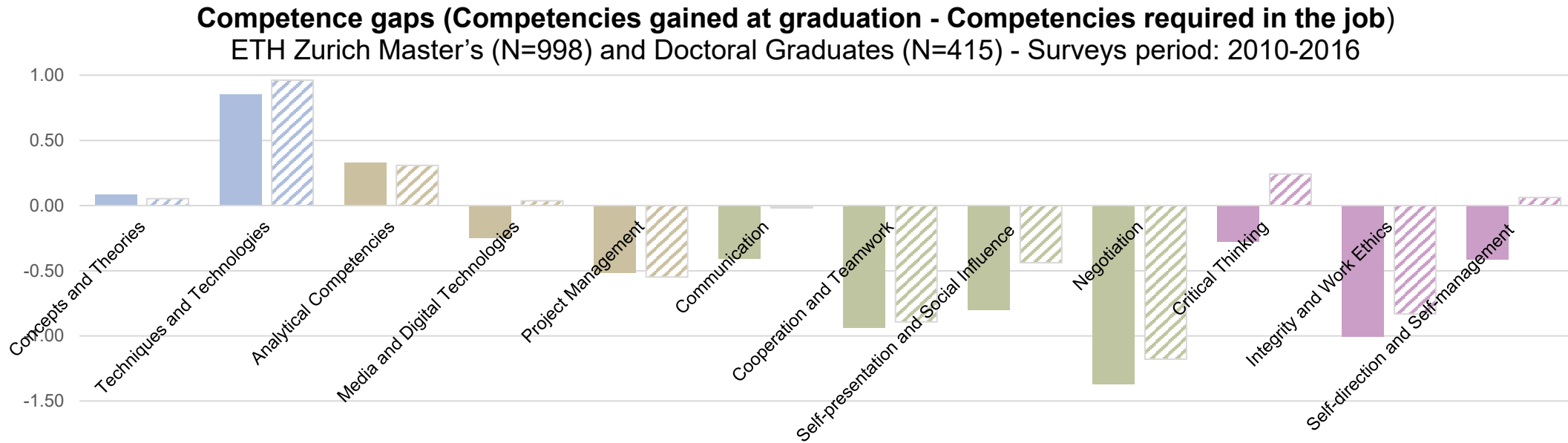
SEL Webinar – October 5, 2023

Dr. Barbara La Cara
Rector's Staff (Strategic Initiatives)

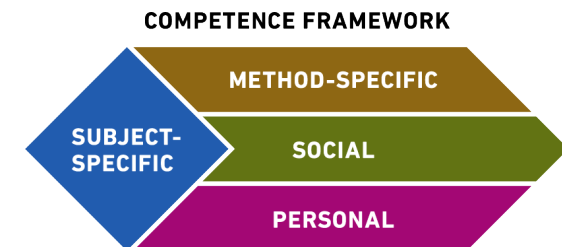


Our motivation

What graduates take away from our degrees

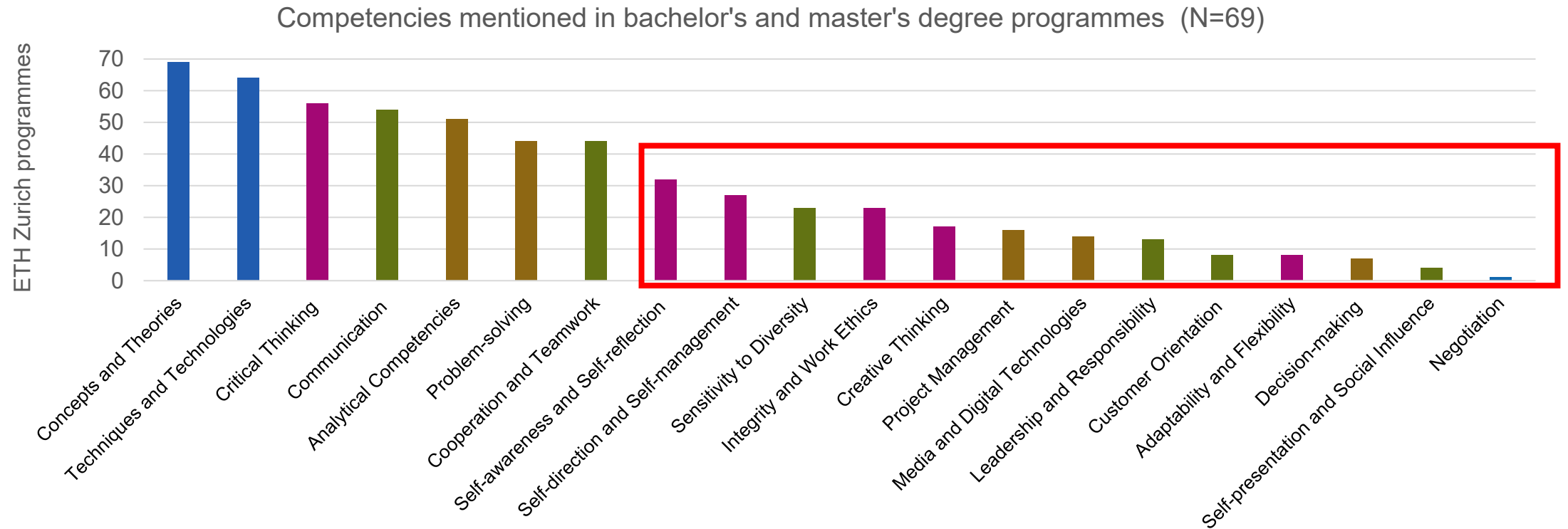


Key: Solid bars (MSc graduates), striped bars (Doctoral graduates).
Source: Graduates Survey by the Swiss Federal Statistical Office (BfS).
Scale: 1-7 (two items per competency).



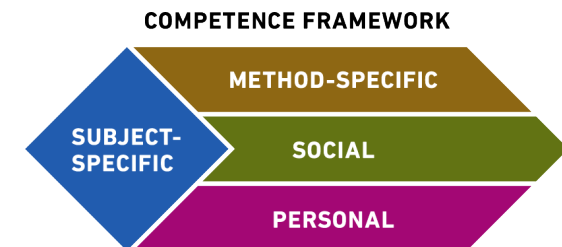
Our motivation

What our degree programmes promote



Source: Qualification profiles of ETH Zurich degree programmes (BSc and MSc levels).

Competencies mentioned in less than 50% of ETH degree programmes



Our motivation

What employers want to find more in future employees

Entry-level competencies:

- Subject-specific knowledge and techniques
- Analytical competencies
- Problem-solving

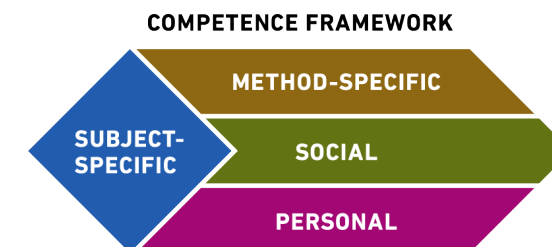
Future competencies:

- **Method-specific:** complex problem-solving.
- **Social:** sensitivity to diversity, customer orientation, communication, teamwork, and leadership.
- **Personal:** adaptability and flexibility, and creative thinking related to the solution of complex problems.

Future competence requirements in more than 62% of sampled organizations



Source: Interviews with 23 employers in Switzerland (October 2018).
8 economic activities (NOGA 2008 General Classification of Economic Activities).



Our motivation

What employers want to find more in future employees

“We search for people who are able to solve simple but also complex problems: they should also be willing to embrace problem solving, not being scared of it.”

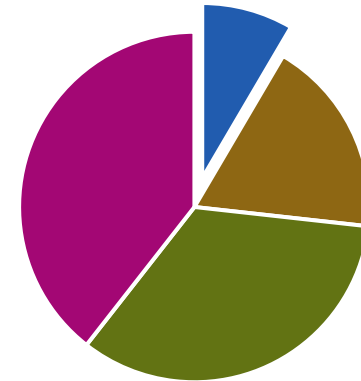
Strategy Head HR – Management consulting sector

“We search for people able to change when needed, who follow up on new people’s input and ideas.”

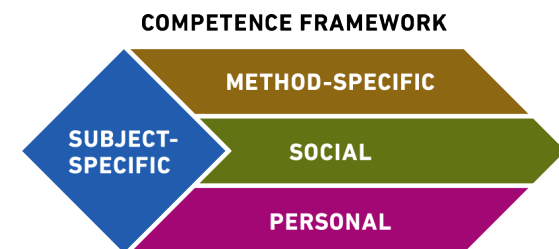
HR manager - Financial and insurance activities sector

“Specialisation matters, but it is pointless if you cannot work with others.”

HR director - Human health and social work activities sector



Source: Interviews with 23 employers in Switzerland (October 2018).
8 economic activities (NOGA 2008 General Classification of Economic Activities).



Selected quotes

COMPETENCE FRAMEWORK



SUBJECT-SPECIFIC COMPETENCIES (to be specified by individual degree programmes)
Knowledge of theories, concepts, and techniques and its application to specific fields

Concepts and Theories Ability to understand and apply the basic concepts and definitions that are relevant for a scientific subject or a field	Techniques and Technologies Ability to understand and apply techniques and technologies in use within a specific scientific subject or field
--	--

METHOD-SPECIFIC COMPETENCIES
Knowledge and application of methods to make sense of, and operate in, any context

Analytical Competencies Ability to break down processes and systems into parts while understanding their interaction	Decision-making Ability to define a decision and a set of alternative actions from which to choose	Media and Digital Technologies Ability to access, evaluate, and use media and digital technology	Problem-solving Ability to define a problem and find solutions for it	Project Management Ability to manage projects and produce results
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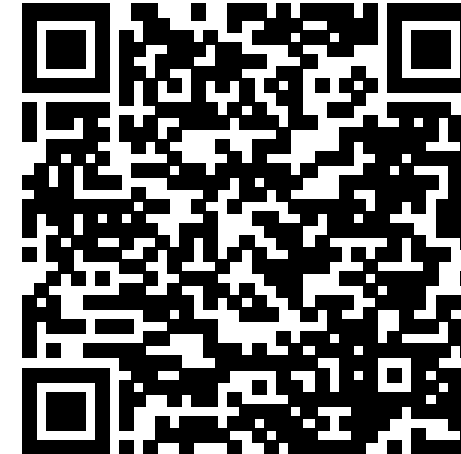
SOCIAL COMPETENCIES
Competencies applied in the interaction with others

Communication Ability to communicate with others in different contexts and forms	Cooperation and Teamwork Ability to build relationships with others to pursue common goals and achieve results in a constructive atmosphere	Customer Orientation Ability to approach relationships with others and society in terms of what you have to offer rather than what you need or want	Leadership and Responsibility Ability to motivate and inspire others and support others' achievements	Self-presentation and Social Influence Ability to present an authentic and professional image of self to others and motivate others to the adoption of a specific behaviour	Sensitivity to Diversity Ability to recognise differences among people and work with them	Negotiation Ability to advocate positions with an open mind and try to synthesise ideas from all viewpoints best
--	---	---	---	---	---	--

PERSONAL COMPETENCIES
Competencies concerning self-management in the context of own work

Adaptability and Flexibility Ability to adjust effectively to a changing environment and deal well with changes	Creative Thinking Ability to produce and implement novel and useful ideas	Critical Thinking Ability to analyse and evaluate situations and recommend courses of action	Integrity and Work Ethics Adherence to moral and ethical principles in the conduct of own work and in the relationship with others	Self-awareness and Self-reflection Ability to understand own strengths and weaknesses and enhance self-development	Self-direction and Self-management Ability to motivate oneself and organise own work in order to achieve results
---	---	--	--	--	--

A compilation of competencies that ETH Zurich aims to foster.



www.ethz.ch/comp-teachingstaff

COMPETENCE FRAMEWORK



SUBJECT-SPECIFIC COMPETENCIES (to be specified by individual degree programmes)
Knowledge of theories, concepts, and techniques and its application to specific fields

Concepts and Theories

Ability to understand and apply the basic concepts and definitions that are relevant for a scientific subject or a field

Techniques and Technologies

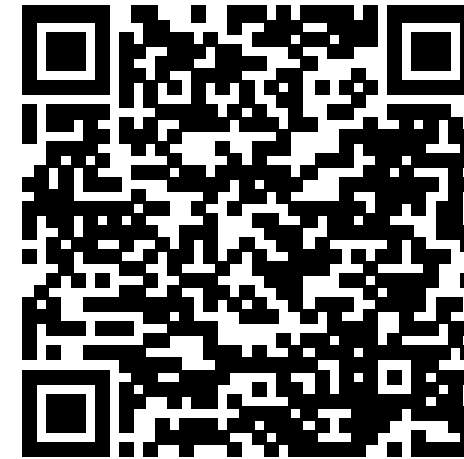
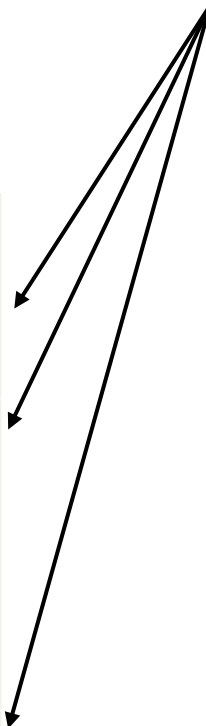
Ability to understand and apply techniques and technologies in use within a specific scientific subject or field

METHOD-SPECIFIC COMPETENCIES

Knowledge and application of methods to make sense of, and operate in, any context

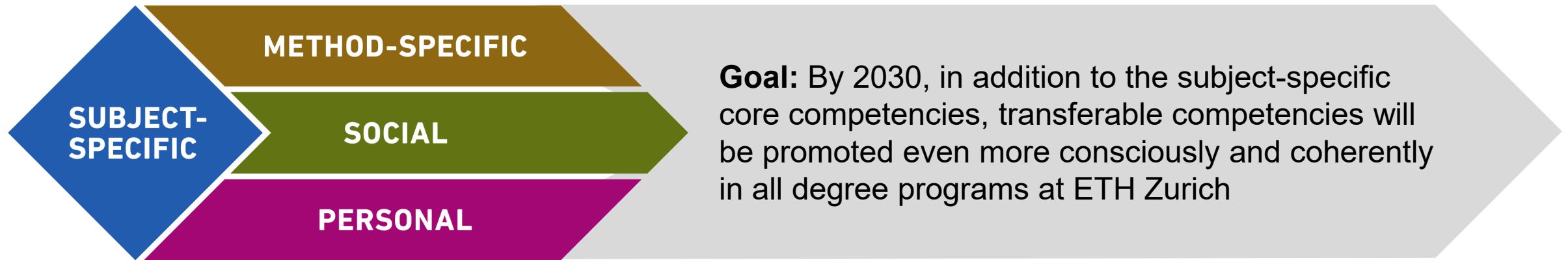
Analytical Competencies	Decision-making	Media and Digital Technologies	Problem-solving	Project Management
Ability to break down processes and systems into parts while understanding their interaction	Ability to define a decision and a set of alternative actions from which to choose	Ability to access, evaluate, and use media and digital technology	Ability to define a problem and find solutions for it	Ability to manage projects and produce results
<p>Knowledge:</p> <ul style="list-style-type: none"> Knowledge of processes of data collection as well as of data analysis Information literacy and numeracy 	<p>Knowledge:</p> <ul style="list-style-type: none"> Knowledge about decision-making processes and tools Knowledge of bias, risks, and evaluation techniques in decision-making 	<p>Knowledge:</p> <ul style="list-style-type: none"> Media and digital technology literacy Understanding how media and digital technologies can influence beliefs and behaviours Knowledge of ethical and legal aspects surrounding the access and use of media and digital technology 	<p>Knowledge:</p> <ul style="list-style-type: none"> Knowledge of techniques and processes to tackle problems Knowledge of elements of both ill- and well-defined problems Understanding of how diverse views can affect the problem-solving process 	<p>Knowledge:</p> <ul style="list-style-type: none"> Knowledge of processes, techniques and tools for effective and efficient project management
<p>Skills:</p> <ul style="list-style-type: none"> Ability to gather information or data to understand a problem Ability to distinguish relevant from irrelevant information Ability to break down a problem into basic elements Ability to identify critical connections and patterns in verbal and numerical data Ability to make inferences to fill gaps in information in order to continue analysis Ability to draw sound conclusions based on analysis and experience 	<p>Skills:</p> <ul style="list-style-type: none"> Ability to recognise a decision-making problem as such Ability to phrase alternatives Ability to evaluate alternatives and choose among them Ability to make a decision also in case of incomplete information 	<p>Skills:</p> <ul style="list-style-type: none"> Ability to apply digital technologies to research and work safely and appropriately Ability to evaluate risks associated with media and digital technologies 	<p>Skills:</p> <ul style="list-style-type: none"> Ability to define a problem Ability to use resources and techniques to solve a problem Ability to delineate possible solutions to a problem Ability to evaluate solutions and choose from among them Ability to implement solutions to resolve problems 	<p>Skills:</p> <ul style="list-style-type: none"> Ability to plan milestones and activities Ability to prioritise among goals and activities Ability to align a project with the requirements and values of own institution Ability to produce results Ability to choose between traditional and agile project management models and apply them appropriately
<p>Attitudes:</p> <ul style="list-style-type: none"> Be aware of limitations of own arguments and analyses and apply critical judgment in evaluating them 	<p>Attitudes:</p> <ul style="list-style-type: none"> Minimise bias, risks and uncertainties when making decisions Be aware of the way emotions can affect the evaluation of alternatives 	<p>Attitudes:</p> <ul style="list-style-type: none"> Be aware of how media and digital technologies can influence beliefs and behaviours Minimise risks associate with the use of media and digital technologies 	<p>Attitudes:</p> <ul style="list-style-type: none"> Recognise the critical role of persistence and be comfortable with adopting a 'can do' approach when tackling problems Be comfortable with solving non-familiar problems 	<p>Attitudes:</p> <ul style="list-style-type: none"> Be forward thinking when planning projects, milestones, and tasks Be accountable for the use of resources, actions, and results Think economically when developing projects

Three competence development levels



www.ethz.ch/comp-teachingstaff

Competence-oriented education at ETH Zurich



Objective 1

Facilitation of a discussion and reflection on the fostering of a holistic set of competencies.

Objective 2

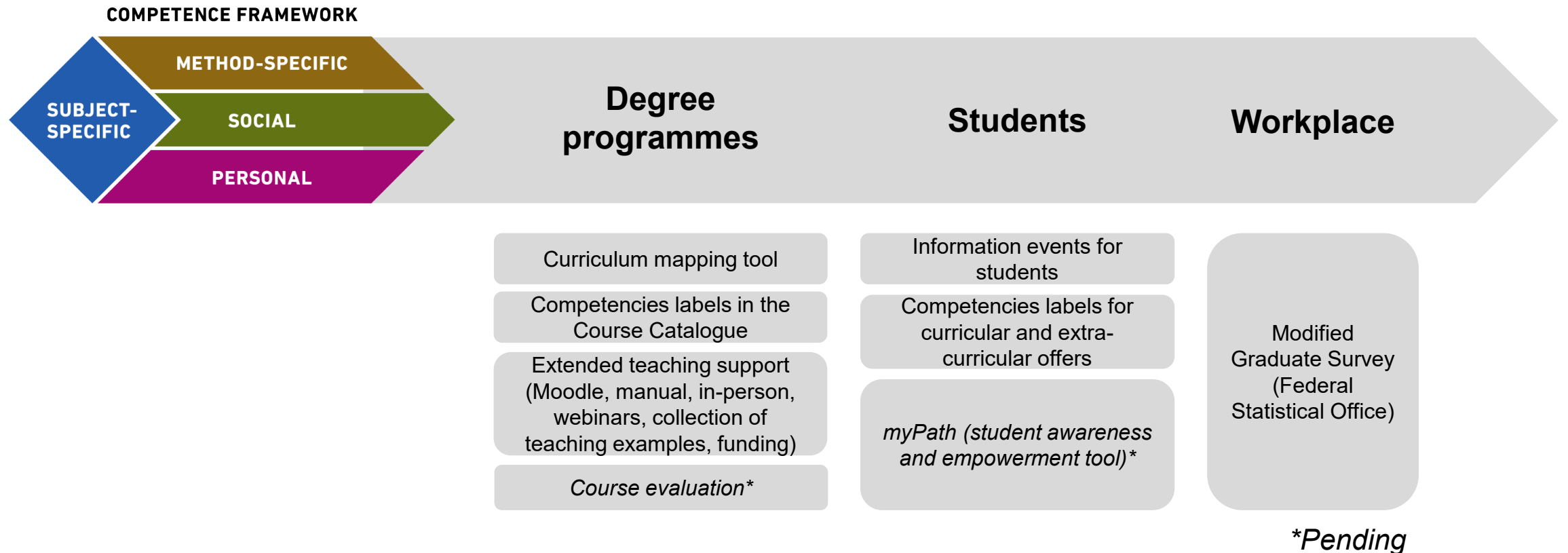
Selection, documentation and promotion of core competencies across all competence domains.

Objective 3

Provision of feedback and guidance on the fostering of a holistic set of competencies.

Source: ETH Talent Initiative, www.ethz.ch/talent-project

How it looks in practice



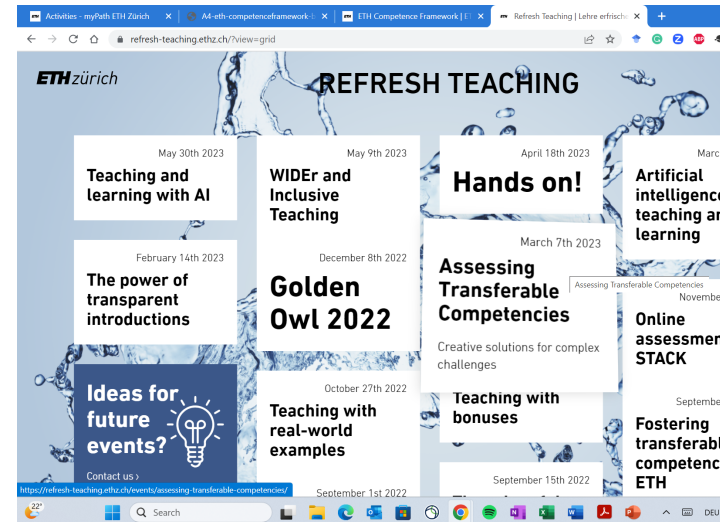
Sources:

ETH Talent Initiative, www.ethz.ch/talent-project

La Cara et al. (2023), <https://doi.org/10.16906/lt-eth.v4i1.223>

Examples of teaching support

		Not fostered	Fostered	Assessed
Subject-specific Competencies				
Knowledge of theories, concepts, and techniques and its application to specific fields	Concepts and Theories	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
	Techniques and Technologies	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Method-specific Competencies				
Knowledge and application of methods to make sense of, and operate in, any context	Analytical Competencies	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Decision-making	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Media and Digital Technologies	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Problem-solving	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
	Project Management	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Social Competencies				
Competencies applied in the interaction with others	Communication	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
	Cooperation and Teamwork	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
	Customer Orientation	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Leadership and Responsibility	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Self-presentation and Social Influence	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Sensitivity to Diversity	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Negotiation	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>



Sources:

Competencies Table in eDoz/Course Catalogue of ETH Zurich
 Refresh Teaching webinar series, www.refresh-teaching.ethz.ch
 Competence View, www.competenceview-ethz.ch

Examples of information events for students

Introducing students to the learning culture at ETH Zurich



Können Sie die notwendigen Kompetenzen zu den Situationen zuordnen?
Was bringen Sie schon alles mit?

A. Als ich mich über verschiedene Studiengänge informiert habe und mich für das Studium an der ETH Zürich entschieden habe.

B. Wenn ich mich auf myStudies und der ETH Website zurecht finde.

C. Wenn ich weiss, wie ich einen Lernplan erstelle und ihn umsetzen kann.

D. Wenn ich neuen Lernstoff mit bereits mir bekannten Inhalten verknüpfen kann.

E. Wenn ich nicht weiter komme und mich an das Team Beratung & Coaching wende, um meine persönliche Situation zu reflektieren.

F. Wenn ich mich in der neuen Umgebung rasch zurecht finde und mich gut orientieren kann.

G. Wenn ich mich in meinem Fachverein engagiere.

1. Selbststeuerung und Selbstmanagement

2. Anpassung und Flexibilität

3. Entscheidungsfindung

4. Konzepte und Theorien

5. Medien und digitale Technologien

6. Kooperation und Teamarbeit

7. Selbstbewusstsein und Selbstreflexion

Source: Images from the Prestudy Event (Bachelor's students).

Examples of extra-curricular activities for students



[Activities](#) [About](#)

myPath

myPath is a catalogue for extracurricular activities and initiatives at ETH Zurich. It offers you the opportunity to support your studies or work at ETH. Use the filters or the search engine below to find the activities and initiatives that suit you best!

Negotiation x ▼ Explore by activity ▼ Master students x ▼ Autumn Semester 2023 x ▼
 Doctoral students x ▼
 Explore by language ▼ Explore by location ▼ Explore by sizes ▼ Search 🔍

📍 Online 🇬🇧 English

51-150 people Workshops

Resolving conflicts in a constructive way
Autumn Semester 2023



📍 Online 🇬🇧 English

21-50 people Workshops

Lateral Leadership Influencing others without having a leadership position (Online)
Autumn Semester 2023



📍 ETH Zentrum... 🇬🇧 English

51-150 people Seminars, Lectur...

Career Skills - The Salary Discussion (Industry)
Autumn Semester 2023



1 — ANALYSIS 2 — EXPLORATION 3 — FOCUSING 4 — APPLICATION

Listed in the table below are some key transferable skills that are part of the ETH competency framework (see page 34) and that hiring companies often seek.

Transferable skills	Me				Friend				Family			
	1	2	3	4	1	2	3	4	1	2	3	4
Method-specific Competencies												
Analytical Competencies												
Decision-making												
Media and Digital Technologies												
Problem solving												
Project Management												
Social Competencies												
Communication												
Cooperation and Teamwork												

Take a minute to read through the listed competencies and refer to their definitions by visiting the ETH Competency Framework website. Then rank yourself for each competency on a scale from 1 (I hardly ever exhibit this competency) to 4 (I often exhibit this competency).

Be as honest with yourself as you can – the goal is not to attain a 4 for every ability, but to have an objective reflection of your transferable competencies.

Then give the list to evaluate you for

4 — APPLICATION 3 — FOCUSING 2 — EXPLORATION 1 — ANALYSIS

40

Transferable skills	Me				Friend				Family			
	1	2	3	4	1	2	3	4	1	2	3	4
Personal Competencies												
Adaptability and Flexibility												
Creative Thinking												
Critical Thinking												
Integrity and Work Ethics												
Self-awareness and Self-reflection												
Self-direction and Self-management												

How does your assessment compare to others' assessment? Do they match? Or are there hidden strengths (e.g. abilities where others gave you a higher score than you gave yourself)? Or are there blind spots (e.g. abilities where you ranked yourself higher than others did)? List them here:

Transferable skills		
Confirmed strengths	Hidden strengths	Blind spots
<i>(My assessment agrees with that of others)</i>	<i>(Others' assessment was higher than mine)</i>	<i>(My assessment was higher than others')</i>

Sources:

myPath www.myPath.ethz.ch

[ETH Application Guide](#) (ETH Career Center)

More strategic initiatives...

Fundamentals based on research + Systemic thinking

“ETH Zurich should keep fostering the passion for study, research, and high-level professionalism and instil an appetite for experimentation – promoting a possibility for the students to try out new things, play and see how they can function in different contexts.”

Head liaison with University – Financial and insurance activities sector

“ETH students tend to think outside the box already, but they cannot anticipate the customers’ needs or have hands-on experience yet. Maybe education can help them with role-playing, understanding society's directions, and how to shape its needs.”

Talent Programme Manager – Information and communication sector

“Students also need to have a practical understanding of the world about the most relevant issues within an industry.”

Member of the Board of Directors, Manufacturing sector

Source: Interviews with 23 employers in Switzerland (October 2018) – Selected quotes.

Dr. Barbara La Cara

Project Manager ETH Talent

Project Manager Impact of Education

barbara.lacara@sl.ethz.ch

ETH Zurich

Rector's Staff (Strategic Initiatives)

