

Training of ethical competencies in BSc degree programs – A digital, multi-perspective, and student-centered approach

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Key words: Higher education, young surveyors, ethical awareness, professional association

SUMMARY

Degree programs at universities prepare graduates for successful professional activities in society, science, and economy. Therefore, degree programs are well-designed and offer students opportunities for the acquisition of subject-specific and interdisciplinary competencies. Whereby interdisciplinary competencies are subdivided into methodological, social, and personal competencies. The latter comprise abilities and attitudes; this also includes the individual ethical awareness. Therefore, universities have to ensure that graduates are offered sufficient opportunities to train, realize, reflect, and further develop students' individual ethical awareness. As early as 1998, FIG published the Statement of Ethical Principles and Model Code of Professional Conduct describing the need for ethical standards for professionals (FIG 1998). Teaching ethical competence to students is hence essential.

Caused by the COVID-19 pandemic the digital transformation of higher education competency acquisition processes was accelerated disruptively and externally motivated. In this context, the German-language BSc degree program 'Geodesy and Geoinformatics' at Karlsruhe Institute of Technology (KIT, research university in the Helmholtz Association, Karlsruhe, Germany) uses the resulting opportunities to implement an innovative, digital, multi-perspective, and student-centered teaching/learning concept focusing on ethical awareness. This concept was developed and applied jointly with DVW, the professional German association for Geodesy, Geoinformation and Land Management. In contrast to the pre-COVID-19-era, where competencies related to ethical awareness were trained implicitly within the degree program under research, the recent digital concept ensures individual training in an explicit way.

In the paper, the digital teaching/learning concept as well as the embedding (e.g., guidelines, curriculum) are described and discussed. A special focus is on the cooperation between university and professional association, enabling the students to get in contact with professionals in the introductory phase of their studies. This sharpens the professional profile, supports networking of young professionals, and increases their motivation.

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1. MOTIVATION

Degree programs at universities prepare graduates for successful professional activities in society, science, and economy (KIT 2021). Therefore, degree programs are well-designed and offer students opportunities for the acquisition of subject-specific and interdisciplinary competencies. Competencies integrate knowledge, skills, and attitudes that are applied in order to act successfully (Weinert 2001). For a general review on the ‘construct competency’ see Salman et al. (2020).

Interdisciplinary competencies are subdivided into methodological, social and personal competencies. The latter comprise abilities and attitudes; this also includes the individual ethical competency. Therefore, universities have to ensure that graduates are offered sufficient opportunities to train, realize, reflect, and further develop students’ individual professional ethical awareness. In the disciplines Geodesy and Geoinformatics this need is reinforced by the great importance of ethical competencies in everyday work, for example due to tasks related to automated handling of personal geodata, management of property-related assets, development of autonomous vehicles or AI-based analysis of big data.

Caused by the COVID-19 pandemic the digital transformation of higher education competency acquisition processes was accelerated disruptively and externally motivated. This handling of COVID-19-related consequences of the megatrend 'digitalization' is partly evaluated as a temporary phenomenon (e.g., Emergency Remote Teaching; Hodges et al. 2020). In this context, the German-language BSc degree program 'Geodesy and Geoinformatics' (GaG) at Karlsruhe Institute of Technology (KIT, research university in the Helmholtz Association, Karlsruhe, Germany) used the resulting opportunities to create an innovative, multi-perspective, and student-centered teaching/learning concept focusing on ethical awareness (see, e.g., FIG's Working Group 1.1 'International Ethics Standards'). This online-concept was developed and applied jointly with the state association Baden-Württemberg of DVW, the professional German association for Geodesy, Geoinformation and Land Management (<https://dvw.de/e-v/dvw-introduction>) and is embedded in a lecture of GaG's introductory phase (see sect. 3.2). In contrast to the pre-COVID-19-era, where competencies related to ethical awareness were trained implicitly within GaG, the recent digital concept ensures individual training in an explicit way.

In sect. 2, the frameworks for the acquisition of ethical competencies in higher education are described in general and with a special focus on KIT's degree program GaG. Therefore, sect. 2.1 focusses on KIT's mission statement, while sect. 2.2 and 2.3 discuss GaG-related aspects (e.g., lecturers teaching perspective). Based on findings of sect. 2, in sect. 3 the joint venture of GaG and DVW is presented, in which GaG students were supported in the explicit reflection on professional ethics. Hereby, a special focus is on effects of the COVID-19

pandemic on higher education. The paper closes in sect. 4 with conclusions and an outlook on future plans to increase the visibility of ethical competencies within KIT's GaG.

2. FRAMEWORKS FOR THE ACQUISITION OF ETHICAL COMPETENCIES IN HIGHER EDUCATION DEGREE PROGRAMS

Based on well-planned teaching concepts, students individually acquire competencies of various dimensions throughout their higher education. As basis for the acquisition of competencies within German-language Geodesy-related degree programs, the discipline-specific qualifications framework 'Geodesy and Geoinformation' FQR_GG (2018) is used. The FQR_GG was developed formally based on the European Qualifications Framework (EQF 2018), the German Qualifications Framework (DQR), and the Qualifications Framework for German Higher Education Degrees (German Rectors' Conference 2005). The FQR_GG distinguishes between

- professional competencies,
- methodological competencies,
- social competencies, and
- self-competencies.

For compiled details on FQR_GG see Mayer et al. (2020).

Besides this fundamental picture on competency acquisition within Europe's resp. German's higher education, at KIT the higher education in the German-language degree program 'Geodesy and Geoinformatics (GaG)' is embedded in KIT guidelines.

From a student's perspective, the two most important guidelines for degree programs at KIT are given by (i) KIT's mission statement (incl. teaching and learning, sect. 2.1; KIT 2021) and the (ii) catalogue of modules of degree programs. These perspectives represent the framework, which can be perceived from outside of KIT, and therefore characterizes prospective employers. In detail, students' competency acquisition is realized within KIT's degree program GaG; the paradigms of teaching and learning as well as the learning aims of each lecture are represented by the catalogue of modules. Therefore, sect. 2.2 analysis this official document regarding competencies related to ethical awareness. To complete the competency acquisition framework, sect. 2.3 focusses on GaG lecturers analyzing their teaching perspectives.

2.1 Guidelines for the education of young surveyors at KIT

The main goal of KIT is to create and to impart knowledge for society and the environment. From teaching and learning resp. fundamental research to applications, KIT is characterized by a wide range of disciplines (e.g., engineering sciences, humanities, social sciences). This enables KIT to make significant contributions to the global challenges of mankind in the fields of energy, mobility, and information.

Focusing on teaching and learning, KIT applies the concept of research-oriented teaching/learning (Healey & Jenkins 2005; Jenkins et al. 2007) in its degree programs. Linking research processes and students' learning processes by means of the paradigms of research-oriented teaching/learning, students perceive during their studies, how the transfer of innovation

efforts based on scientific findings is realized for the benefit of society, economic prosperity, and the preservation of our natural basis of life.

According to KIT's mission statement, collaboration at KIT – e.g., within degree programs – is characterized by respect, cooperation, confidence, and subsidiarity. This creates an environment, in which diversity and multi-perspectivity are the basis for the growth of all KIT members (e.g., students, lecturers, degree programs, departments).

Analyzing the above-described self-understanding of KIT, the competency of 'ethical awareness' has to be taken into fundamental account within students' competency acquisition processes. This qualifies students for responsible positions in society, industry, and science.

2.2 Guidelines for the education of young surveyors within KIT's GaG

While ethical competencies are implicitly represented in KIT's mission statement (see sect. 2.1), the analysis of the catalogues of modules of degree programs provides a more detailed insight into the education of students; in particular, the qualification aims of degree programs and the learning outcomes resp. aims of modules resp. lectures are analyzed in this section.

Within the description of the qualification aims of KIT's GaG degree program, the acquisition of ethical competencies is explicitly described at two text passages using the phrase 'The practical training of the subject-related knowledge takes place with consideration of social, scientific, and ethical aspects' (translated). While other qualification aims are associated to selected lectures, the acquisition of ethical competencies is related to all GaG lectures.

Browsing the learning outcomes resp. aims documented in the description of modules resp. lectures, no additional information regarding the acquisition of ethical competencies can be found. Based on the paradigm of constructive alignment (Biggs 1996), due to this lack of consideration of ethical competencies in the learning outcomes resp. aims, the acquisition of ethical competencies will have any importance for exams. Therefore, ethical competencies are not in the focus of lecturers' teaching resp. students' learning. In addition, the exam-based measurement of achievement of qualification aims cannot be guaranteed.

Therefore, it can only be assumed, that students have acquired ethical competencies in an implicit way at the end of their study. In addition, there is a need for explicit learning opportunities regarding ethical competencies within KIT's GaG.

2.3 Teaching Perspective Inventory

According to the guidelines of KIT's degree program GaG (see sect. 2.2.), GaG lecturers are responsible to support GaG students to achieve competencies in the field of ethical awareness – in each lecture – in accordance with official KIT guidelines (e.g., sect 2.1). Thus, the lecturers have to create and to apply learning concepts, in which GaG students achieve ethical competencies. This task is context-dependent, and therefore has to take into account – besides the knowledge level of the students and the embedding of the lecture in the curriculum – the teaching perspective of the lecturers.

Pratt (2015) developed a widely accepted empirical model to classify 'good teaching' of adults. The five perspectives on teaching are

- **Transmission:** From this perspective, good lecturers are instructors. Lecturers of this perspective ...
 - ... having mastery of the subject content,
 - ... are primary responsible for the appropriate representation of content guiding students to content mastery,
 - ... are enthusiastic about the content and convey their enthusiasm to students.
- **Apprenticeships:** Good lecturers of this perspective ...
 - ... focus on the process design of socializing students into new behavioral norms and professional ways of working,
 - ... are highly skilled teaching-topic-related practitioners and are recognized for their expertise,
 - ... observe the process of competency acquisition and adjust their role in students' learning process.
- **Developmental:** Within this perspective, good lecturers ...
 - ... plan and conduct lectures from the students' point of view,
 - ... understand and adapt how students think about the content,
 - ... support students in developing increasingly complex and sophisticated content-related cognitive structures.
- **Nurturing:** Good lecturers of this perspective ...
 - ... believe that students become motivated and productive when the standards for achievement are clear and accompanied by a balance of academic and emotional support,
 - ... believe that learning is diminished if the self-concept of the students is threatened,
 - ... create reliable learning conditions, in which students receive feedback and have control over their education process.
- **Social Reform:** Within this perspective, the main goal of teaching is not learning about the world, but changing the world. Therefore, good lecturers ...
 - ... strive to change society in substantive ways (e.g., social norms of society resp. profession),
 - ... focus on discipline-related values and attitudes,
 - ... supports students in deconstructing common practices.

Based on Pratt's model on 'perspectives of good teaching', a teaching perspectives inventory was developed (Pratt & Collins 2000), which supports lecturers to reflect on their attitude and way of teaching (see <http://www.teachingperspectives.com>). Within GaG, the teaching perspectives inventory was used to analyze the perspectives of the teaching staff. Hereby, mindfully chosen (e.g., experience in teaching, gender) lecturers were asked to analyze their individual perspectives on teaching. The results are presented in Fig. 1-4 (from left to right: Transmission/green, Apprenticeship/blue, Development/olive, Nurturing/red, Social Reform/purple). The highest achievable inventory value is 45.

In each figure the result of one GaG lecturer is shown. While Fig. 1 (prominent perspective: Development), Fig. 2 (prominent perspective: Nurturing), and Fig. 4 (comparable characteristics for all perspectives) are not representative for the GaG teaching staff; Fig. 3 shows a representative result for a GaG lecturer. In Fig. 3, ...

- ... the most prominent perspective is Apprenticeship,
- ... the perspectives Transmission and Development are similarly represented (position 2-3),
- ... the perspective Nurturing often takes the fourth position,
- ... the least prominent perspective is Social Reform.

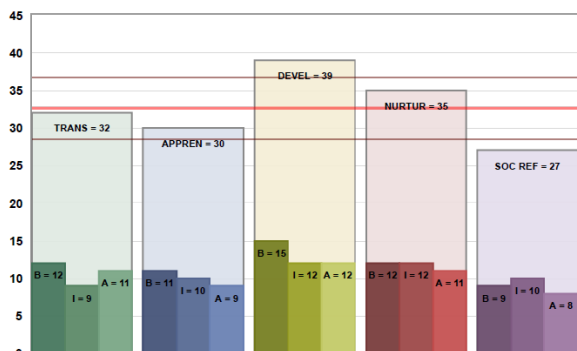


Figure 1: Results of analysis of teaching perspectives; prominent perspective: Development

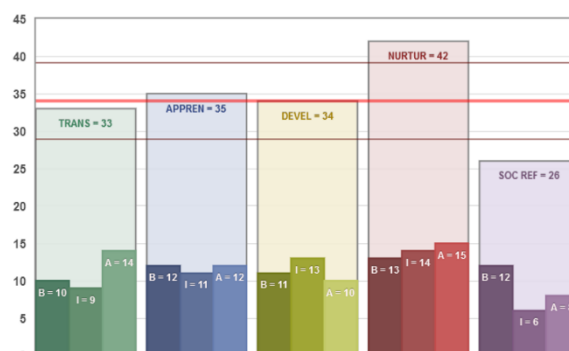


Figure 2: Results of analysis of teaching perspectives; prominent perspective: Nurturing

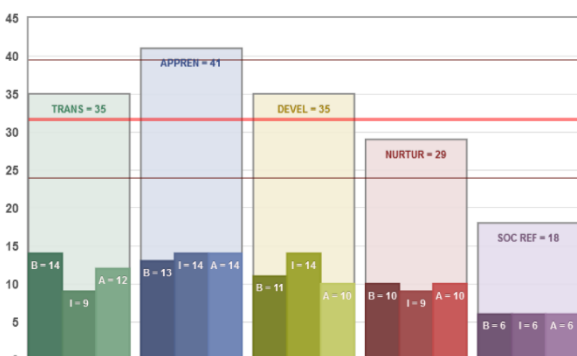


Figure 3: Results of analysis of teaching perspectives; representative result for most GaG lectures

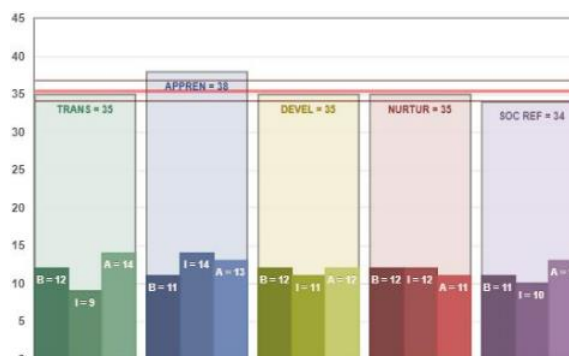


Figure 4: Results of analysis of teaching perspectives; comparable values for all perspectives

In Tab. 1, the mean inventory values (incl. standard deviation) as well as minimum and maximum inventory values regarding the teaching perspectives of all analyzed GaG lecturers are shown. Analyzing inventory mean values, all perspectives but Social Reform are comparably represented. The inventory values of Transmission and Development (ca. ± 1.6) resp. Apprenticeship and Nurturing (ca. ± 3.7) vary in similar ways, while the variation of the Social Reform inventory values is much larger.

Table 1: Mean values and standard deviation (second row), minimum/maximum values (third row) regarding the individual teaching perspectives of all GaG lecturers

Transmission	Apprenticeship	Development	Nurturing	Social Reform
33.4 ± 1.5	36.4 ± 3.4	33.6 ± 1.7	34.1 ± 3.9	23.4 ± 6.3
31/35	30/41	33/39	29/42	14/34

Within each perspective, three sub-categories are provided (see Figs. 1-4). They are focusing on ...

- Actions (A): What do lecturers do when teaching,
- Intentions (I): What lecturers try to accomplish in teaching,
- Beliefs (B): What lecturers believe about teaching.

Similar values of sub-categories represent a good alignment between Actions, Intentions, and Beliefs. For most GaG lecturers, the difference of the sub-categories Actions and Intentions within Transmission shows a systematic behaviour (Intentions-related values are smaller than Actions-related values). For details on the interpretation of inventory results see <http://www.teachingperspectives.com/tpi/>.

3. DIDACTICAL CONCEPT TO SUPPORT STUDENTS TO ACQUIRE ETHICAL COMPETENCIES

At the end of sect. 2.2, it was concluded that there is a need for explicit learning opportunities regarding ethical competencies within KIT's GaG degree program. Furthermore, if the teaching perspectives of the GaG lectures are analyzed (sect. 2.3), Social Reform is the most rudimentarily developed perspective. However, this perspective has an outstanding importance for the acquisition of ethical competencies. These findings support the need for explicit learning events on ethics within GaG. Therefore, in the summer term 2021 KIT's GaG and the professional state association DVW developed and implemented a joint teaching/learning concept, which supported GaG students to reflect on ethical competencies.

In sect. 3.1, the effects of the COVID-19 pandemic on higher education are roughly discussed, because they motivated for new approaches in education. Afterwards, in sect. 3.2, the teaching/learning concept is discussed.

3.1 Effects on higher education based on the COVID-19 pandemic

Caused by the COVID-19 pandemic, the digital transformation of higher education competency acquisition processes was accelerated disruptively and externally motivated. This handling of COVID-19-related consequences of the megatrend 'digitalization' is partly evaluated as a temporary phenomenon (e.g., Emergency Remote Teaching; Hodges et al. 2020).

During the COVID-19 pandemic lecturers and students were forced to make extensive experiences in the context of online teaching/learning resulting in enhanced competencies for digital teaching/learning (e.g., collaboration, process accompaniment). In addition, the framework of teaching and learning was extended based on availability of required hardware (e.g., webcams, microphones), (collaborating) software (e.g., MS teams, zoom), and suitable further training offers for lecturers.

These COVID-19-based experiences are persistent. Compared to the pre-COVID-19-era, they establish a wider opportunity space for teaching/learning concepts further developing teaching and learning into the post-digital era (Knox 2019).

3.2 GaG's and DVW's joint venture supporting students to reflect on ethical competencies

KIT's GaG decided to take advantage of the resulting COVID-19-based opportunities overcoming the deficits in students' acquisition of ethical competencies and implemented an innovative, digital, multi-perspective, and student-centered teaching/learning concept focusing on ethical awareness. This concept was developed and applied jointly with DVW's state association Baden-Württemberg. In contrast to the pre-COVID-19-era, where competencies related to ethical awareness were trained implicitly within the degree program under research, the recent digital concept ensures individual training in an explicit way.

The joint venture was embedded in a lecture of the introductory phase (first-second BSc semester, 3 ECTS; EC 2022) focusing on onboarding GaG students. Besides the training of ethical competencies within the German-language lecture 'Fit for study and career' ...

- ... basic competencies in data analysis,
- ... self-competencies regarding learning, motivation, and reflecting, as well as
- ... scientific presentation and writing competencies

are acquired. In addition, the students' picture of the discipline resp. the job profile is sharpened using presentations of alumni.

Herein the 2021's GaG-DVW joint venture described in this paper is embedded. The general focus of this joint venture varies from year to year (e.g., in 2019 and 2020 students were particularly informed about career opportunities).

3.2.1 On the perspective of the professional association DVW

DVW as an association representing most of the surveying and geodetic professionals in Germany collaborates very efficiently with universities like KIT. DVW has 13 regional state associations i.e. in Baden-Württemberg or Northrhine-Westfalia, who are actively seeking for new talents. Furthermore, several DVW working groups are engaged in technical topics with working group 1 focussing at the profession in all its facets, up to and including ethics. Involvement of persons of DVW's working group 1 'Profession/Education' in teaching and learning gives access to different expert's knowledge. Surveyors have always worked reliably and accurately in their special technical applications (FIG 1998). Ethical principles are well known, recognized and implemented by the surveying profession. These values must not only be carried outward, but also passed on to young graduates through networking with professionals. Digital transformation and new technical requirements (e.g., AI) in particular can be seen as a challenge that may cross ethical boundaries.

The here described exemplary concept within GaG offers a good starting point to learn ethical basics at a young age. DVW and especially its working group 1 have been attending to the issue of the lack of new talents for a long time. The cooperation with KIT is a good example for a goal-oriented education including ethical responsibility of young professional and is very valuable for the surveying industry and DVW. The increasing number of young women professionals could additionally provide an expanded view towards ethical principles. Not only young engineers should be familiar with ethics, but also experienced professionals should deal with them in continuing education. DVW offers corresponding further training courses getting

experienced surveyors to become lifelong learners. This issue is of great importance not only at the national level, but also at the international level, as can be seen from the current FIG work plan of Commission 1 (Sellars 2020).

3.2.2 Course of the project

Based on mindful planning jointly carried out by GaG and DVW and various feedback loops (e.g., within teaching-related KIT working groups, DVW's Working Group 1 'Profession/Education'), the kick-off took place mid of May 2021, when the DVW-representee Susanne Krüger gave an online lecture on ethical awareness. The main focus was on the definition of ethical awareness. This enabled the students to reflect on and generate individual open questions in this context.

In order to discuss the collected questions based on interviews with representatives of professional practice, the individual questions of all students were analyzed and a representative set of questions was found as follows:

- Define briefly (1-2 sentences) 'professional ethics'.
- Assuming you are in a decision-making situation: What makes you aware of the need to pay attention to professional ethics?
- Where has it been particularly important to have your personal professional ethics principles available or to adhere to them?
- How often do you make decisions in your everyday professional life, in which you consciously pay attention to professional ethics?
- How do you clarify critical professional ethics issues in your workplace? What perspectives are considered?
- What is being done in your work environment to implement guidelines/measures in the context of professional ethics?
- How do you act if you fear that persons in your work environment have made decisions that are questionable in terms of professional ethics?
- What advice would you give to young surveyors in the context of professional ethics?

These questions were communicated to the interviewees via email in the forefront of the interview to support elaborated contributions and process transparency. The gender-diverse interviewees represented ...

- ... young and experienced professionals,
- ... professionals in charge of managerial responsibility, and
- ... various modes of employment (e.g., freelance business, research institutions, teaching, civil service).

They could particularly be found based on DVW's and GaG's professional network and supported the students to further develop their individual professional network.

The interviews (duration 30-45 minutes) were carried out online via Zoom in teams of two students to synergetically compartmentalize both tasks asking questions and documentation. In the beginning of each interview, a GaG lecturer or a DVW-representee assisted in ice-breaking and gave technical support if needed. After a few minutes the responsibility for the interviewing process was fully handed over to the students, when GaG resp. DVW assistance left the online

meeting. After the interview, the interviewees were asked via email about the most important individual benefit, which was generated during the interview. The interviewees highlighted in particular the ...

- reflecting and conscious examination of personal and professional ethics,
- broadening of perspectives,
- sharpening of individual values,
- increasing of ethical awareness,
- confirmation of individual resp. company's track regarding professional ethics.

The students were supported to discuss the findings of each interview online in order to find similarities and differences. In addition, the students reflected on their benefits. They highlighted in particular ...

- awareness/sensitization to the topic of professional ethics early in studies,
- insights in different perspectives in the context of professional ethics,
- insights into different fields of work,
- experience cultural peculiarities,
- networking,
- confidence for individual career path way.

One month after the kick-off of the joint venture, the German-language geodetic community (approx. 50 participants, duration: approx. 90 minutes) was informed about the findings and the process of the joint venture during the Geodetic Colloquium of KIT. This event was conducted online via Zoom, therefore, unlike face-to-face events, participants from far away could easily contribute (biggest distance: ca. 600 km). In addition, a live interview was carried out, in which the active member of DVW working group 1- Uwe Ehrhorn (ehrhorn vermessung; Achim/Germany) presented in particular his perspective on professional ethics and the participants were asked to discuss their definitions on professional ethics in small groups.

4. SUMMARY AND OUTLOOK

In this paper, the successful, synergetic, and extra-curricular cooperation between the professional association German Association of Surveying – Society for Geodesy, Geoinformation and Land Management ([DVW](#); state association Baden-Württemberg) and the KIT – research university in the Helmholtz Association is presented. The main focus of this cooperation is on the acquisition of ethical competencies in KIT's higher education BSc degree program GaG based on a student-centered teaching/learning concept, which consists of (i) reflection on ethical aspects in Geodesy resp. Geoinformatics, (ii) conduction and analysis of interviews (interviewee: Geodesists with relevant professional experiences), and (iii) presentation of findings to fellow-students and geodetic community. In addition, students were supported in networking (e.g., getting in contact with the community of surveyors) in the introductory phase of their degree program. From the perspective of the professional association DVW, the developed and implemented teaching/learning concept opened up the chance to get in contact with young surveyors and to present their guiding principle.

In 2022, the focus of the cooperation between DVW and KIT will be on diversity, when students, lecturers, and professionals are going to reflect and discuss on the chances and challenges of working in diverse teams from the perspective of the generation Z (McGrindle & Fell 2019; McGrindle 2018).

In addition, it is planned to establish a cooperation between KIT's GaG and KIT's Academy for Responsible Research, Teaching, and Innovation ([ARRTI](#)). ARRTI addresses the increasing social need for ethical reflection of engineering and scientific practices. Therefore, ARRTI aims at the promotion of critical attitude of students, scientists, and engineers. First planned steps are ...

- ... joint teaching units in appropriate Geodesy-related lectures and
- ... the integration of ARRTI-specific topics in seminars, in which students act as peer-teachers (Stigmar 2016).

This will contribute to an increased visibility of ethical competencies within KIT's GaG.

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BIOGRAPHICAL NOTES

Dr.-Ing. Michael Mayer received his doctoral degree in 2005 from the Karlsruhe University (TH), when he was researching the appropriate GNSS modeling of the deformation network Antarctic Peninsula. As senior scientist at KIT’s (Karlsruhe Institute of Technology) Geodetic Institute he is responsible for education and research in the field of Earth observation. In addition, he is responsible for the further development of the teaching and learning system of the geodetic study programs and within KIT’s Department of Civil Engineering, Geo and Environmental Sciences. He is active member of DVW’s Working Group 1 ‘Profession/Education’ and FIG’s Commission 2 ‘Professional Education’.

Dipl.-Ing. Monika Przybilla received her university Degree in Geodesy based on studies at RWTH Aachen and Bonn University. She is project manager ‘Geoinformation Systems’ at the Regional Association Ruhr (RVR) and a long-term active member of the DVW Working Group 1 ‘Profession/Education’; since 2015 she is chair of this working group.

M.Sc. Bettina Kamm received her university degrees in geodesy based on the double diploma studies at KIT (Karlsruhe Institute of Technology) and INSA Strasbourg and the degree in geophysics at KIT. She is currently working as research associate at KIT's Institute of Photogrammetry and Remote Sensing (IPF), researching atmospheric water vapor using radar satellites. She is also active in teaching and involved in the further development of a research-oriented lecture.

Dipl.-Ing. Susanne Krüger received her university Degree in Geodesy based on studies at Karlsruhe University (TH). She is a specialist for land consolidation at the State Office for Spatial Information and Land Development (LGL) and an executive member of the DVW Baden-Württemberg focusing of the young talent promotion.

M.Sc. Jan Rabold received his university Degree in Geodesy based on studies at Karlsruhe Institute of Technology – KIT back in 2016. Since then he is research associate at KIT's Geodetic Institute focusing on geodetic monitoring of critical infrastructure as well as the development of teaching and learning through all Geodesy-related degree programs at KIT. Since 2021 he is executive member of the DVW Baden-Württemberg.

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Training of Ethical Competencies in Bsc Degree Programs – a Digital, Multi-Perspective, and Student-Centered Approach (11637)

Michael Mayer, Monika Przybilla, Kamm Bettina, Susanne Krüger and Jan Rabold (Germany)

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