Teaching Portfolio

Teaching

PHY-765 SS19: Gravitational Lensing

Location:	University of Potsdam, Germany	Period:	Apr. - Jul. 2019
Structure:	15 weeks. 90min lecture + seminar per week	Level:	Master
Role:	Lecturer, class teacher and course coordinator	Impact:	3 ECTS
Language:	English	Class size:	7
Teaching form:	Classroom teaching, lectures and exercises	Examination:	Oral (45min)
Webpage:	https://kasperschmidt.github.io/teaching/SS19_GravLens_UP765		

Full-semester course on the theory and application of gravitational lensing. The seminars focus on "astronomer/researcher skill development" including scientific presentations (poster, talk, outreach), journal clubs and problem solving.

Galaxies and Cosmology

Location:	University of Potsdam, Germany	Period:	Apr. - Jul. 2019
Structure:	15 weeks. 90min lecture + 90min seminar per week	Level:	Master
Role:	Guest lecturer for 1 week	Impact:	6 ECTS
Language:	English	Class size:	$\sim$15
Teaching form:	Lectures	Examination:	Written
Webpage:	https://puls.uni-potsdam.de/qisserver/[...]		

Course with lectures, seminars and exercises about Galaxies and Cosmology part of the mandatory curriculum of the international astrophysics masters program at University of Potsdam. The course was prepared and given by Prof. L. Wisotzki and Prof. C. Pfrommer.

PHY-765 SS18: Gravitational Lensing

Location:	University of Potsdam, Germany	Period:	Apr.-Jul. 2018
Structure:	15 weeks. 90min lecture + seminar per week	Level:	Master
Role:	Lecturer, class teacher and course coordinator	Impact:	3 ECTS
Language:	English	Class size:	5
Teaching form:	Classroom teaching, lectures and exercises	Examination:	Oral (45min)
Webpage:	https://kasperschmidt.github.io/teaching/SS18_GravLens_UP765		

Full-semester course on the theory and application of gravitational lensing. The seminars focus on "astronomer/researcher skill development" including scientific presentation (poster, talk, outreach), journal clubs, problem solving, essay writing, and feedback exercises. This course acted as teaching qualification for the ITP program (see below).

8-10th grade AIP interns

Location:	Leibniz-Institut für Astrophysik Potsdam (AIP), Germany	Period:	2017 - present
Structure:	1-3 weeks intership	Level:	8th-10th grade
Role:	co-supervisor	Impact:	N/A
Language:	English	Class size:	one-on-one
Teaching form:	lectures and exercises	Examination:	N/A
Webpage:	N/A		

AIP has a large request for interns from 8-10th graders who spend 1-3 weeks experiencing the daily life of an astronomer. As part of these programs, I have co-supervised multiple students by developing small exercises and presentations on topics related to high-redshift astronomy and gravitational lensing.

Astro-2: History of the Universe

Location:	University of California Sana Barbara, USA	Period:	May-Jun. 2013
Structure:	10 weeks. 75min lecture per week	Level:	Bachelor
Role:	Guest lecturer for 2 weeks	Impact:	$\sim$6 ECTS
Language:	English	Class size:	$\sim$70
Teaching form:	Lectures	Examination:	N/A
Webpage:	http://web.physics.ucsb.edu/ tt/ASTRO2/		

Lecture series on the history of the Universe and cosmology, taking the students from the Big Bang to present day. The course was prepared and given by Prof. T. Treu.

FP30 - CCD photometry in modern astronomy

Location:	University of Heidelberg, Germany	Period:	Feb.-Mar. 2011
Structure:	Group lap exercises	Level:	Master
Role:	Tutor and course administrator	Impact:	1 ECTS per group
Language:	English	Class size:	$\sim$5 groups of 4 students
Teaching form:	Lab (night observations) and classroom teaching	Examination:	Written report
Webpage:	https://svn.mpia.de/trac/gulli/king/wiki/WikiStart/FP30Doc		

Advanced lab course providing hands-on experience with astronomical observing and data analysis, by collecting and analyzing data on stellar clusters from MPIA's 70cm King telescope.

Supervison

'The Star Formation Rate, Metallicity and Thermal Pressure in Galaxies at $z = 0.4$'

Student:	Floor van Donkelaar	Period:	Feb.-Jun. 2019
Location:	University college Twente, the Netherlands	Level:	Bachelor
Product:	B.Sc. thesis	Impact:	20 ECTS
Role:	Main supervisor		

'Template Spectra from MUSE-Wide'

Student:	Floor van Donkelaar	Period:	Jan.-Aug. 2017
Location:	University college Twente, the Netherlands	Level:	Bachelor
Product:	'Personal Pursuit' written report	Impact:	6 ECTS
Role:	Main supervisor		

'Quasar variability'

Student:	Matthias Knecht	Period:	Jul.-Nov. 2010
Location:	University of Heidelberg, Germany	Level:	Bachelor
Product:	B.Sc. thesis	Impact:	20 ECTS
Role:	Co-supervisor (with: Prof. H.-W. Rix)		

Training in teaching and learning in higher education

In 2018 I completed the "International Teaching Professionals" (ITP) program offered by the Potsdam graduate school. The ITP program "aims at qualifying early-career researchers from all disciplines in the area of strategic focus, design and implementation of academic teaching". After reviewing of the application materials, the ITP fellows of the ITP program "are selected based on their strong motivation to further develop their teaching skills". The ITP program includes didactic training through a range of dedicated workshops provided by professional trainers, independent planning and implementation of a university-level course, mutual teaching observations of other program participants, subject-specific feedback by a mentor experienced in academic teaching, and feedback on a written reflection to document the learning process in academic training practice.

In the following, I have written a condensed reflection on my teaching. For a more detailed reflection, a description of my gained knowledge of concepts in higher education and specific focus points for my continued learning development, I have included the written reflection from the ITP program from Page 5.

Teaching reflection

In summary, I provide a learning-focused interactive teaching, based on inspirational and encouraging presentations of the applicability of theory to current observations. My teaching is structured to accommodate different learning styles, being aware of the intrinsic heterogeneity of the student body, and aims at developing reflective independent thinking and broadly applicable competences.

My teaching generally has the focus of encouraging and inspiring students to pursue studies and a career in physics or astronomy. I believe that keeping such a focus, also for students that are already convinced that a career in science is attractive, avoids the redundancy of old-fashioned "let us go through this book" lecture series and instead naturally results in fruitful and inspiring learning environments. I attempt to do this through a constructively aligned course design, active learning using an inhale/exhale strategy, diversity of learning methods (incl. group work, oral presentation, reading exercises, written assignments etc.), and focusing on a competence-oriented evaluation. My lectures are illustrative, exemplified and interactive with focus on the broader picture and attempts to link theoretical concepts and ideas with observational constraints and data from current observations. The goal of my teaching, and in particular any exercise/seminar sessions is to keep an open and interactive atmosphere, as I see in-class discussions as benefitting all levels of students, whether they already master the topic, or are new to the content. The "International Teaching Professionals" (ITP) program has allowed me to reflect and re-evaluate my approach to teaching, and the workshops of the ITP program have

already led to considerable improvement in the structuring and overall approach of my teaching (see the ITP reflection attached below further for details) Previously, I often structured individual lectures around separate topics, without focusing too much on the broader picture and the final evaluations. With the introduction to constructive alignment theory in the ITP workshops, my individual lectures now attempt to have a balance between the learning outcomes of the overall class, the learning activities and the task assessments. In this way, I hope that the individual lectures seen in the broader perspective of a full-semester class offer more to the students than just a list of equations that should be known for the exam. Another aspect that I am striving to implement in my teaching, is a move away from old-fashioned receptive lecture-focused teaching to a more active learning. Instead of having an aim of just ”passing on knowledge” via a series of lectures, my teaching is evolving towards a more interactive and applications-centric learning, where the students participate in the lectures and interact with each other while evaluating concepts and aspects from each lecture and/or seminar. Through inhaling (receiving information and following on-class instruction and lecturing) and exhaling (actively participating in assignments or group work and exercises) I establish ideal learning environments for developing developing research skills, scientific competences and reflective independent thinking, rather than just providing a toolbox for solving exercises. Furthermore, I have a strong awareness of the cultural and personality aspect of higher level learning. Previously, I was fairly rigid in my approach to preparing classes, as I was of the impression that any student would be able to follow my introvert lecture-heavy teaching approach. However, the diverse cultural background and personality type of international students often offer complications to ways of communicating and interacting with students. Given these challenges, I believe the main responsibility of the lecturer is to *address diversity with diversity* making an effort in the lecturing approaches to accounting for the fact that different learning styles fit different cultural backgrounds and personalities. Including my awareness of this aspect of higher education in my interaction with the students, I believe reflects positively on my ability to include all students of all backgrounds with any personality type in the topics I teach. This ensures that irrespective of a students preferred learning method and style, they will enhance their initial understanding of the content and their overall competence level during classes I teach. Finally, many of the aspects that have improved my overall for classroom learning, has also helped me strengthen my supervision of individual students. In particular, I focus on balancing a process-oriented support with a product-oriented support. The former helps the supervised student to develop competences and skill sets broadly applicable to research and the latter provides concrete guidance in developing tools and obtaining project-specific results. Through *scaffolding* the student with plenty of support and guidance, I attempt to *fade* away during the supervision, enabling the student to take over the project and continue independently developing new ideas and concepts on their own.

ITP Program 2017/2018 Reflection

Introduction

A crucial part of being an academic researcher is having the ability to communicate with and educate new generations of researchers and peers to avoid stagnation and keep an active and innovative environment. Hence, higher level teaching and communication skills should have high priority for any scientist, and a lifelong skill development and strengthening of didactic competence should be as a natural part of basic research. With this is mind, I applied for, and was fortunate enough to be admitted to the *International Teaching Professionals* (ITP) program 2017-2018. According to the ITP announcement the program "is provided for early-stage researchers as a comprehensive framework in which to further develop their university didactic skills" and "provides the participants with didactic and methodological know-how and helps them design student-centered concepts for a course in close connection with their own field of research", which resonates well with the above philosophy of striving for constant improvement and developing of myself as a researcher. During the ITP program, I developed a 15 week full-semester course on the theoretical and observational aspects of gravitational lensing. This class was taught in the 2018 summer semester (April through July) at Potsdam University. Each of the 15 weeks were required by the university to contain 45 minutes of *lecturing* and 45 minutes of *seminar*, where the latter is a broad term for anything from pen and paper exercises, over group discussion, to oral presentations. The course structure allowed me to take full advantage of the skills and competences developed during the ITP workshops. It provided a true learning situation, where a lot of the tools and learning approaches presented in the ITP program could be put into practice. Among the concepts and skills, I have attempted to deploy while preparing and giving the Gravitational Lensing course are, *constructive alignment* course design, *active learning* using an *inhale/exhale* strategy, *diversity of learning methods* (incl. group work, oral presentation, reading exercises, written assignments etc.), and focusing on a *competence-oriented evaluation*. In this written reflection, I will elaborate on these concepts, and list the key insights being an ITP fellow and attending the ITP workshops has provided and helped me develop. On page 11, I will end by reflecting on the aspects of my teaching program, I would like to improve on in my future development as a university lecturer. However, overall I can safely say, that the ITP Program has been the perfect opportunity to relive the excitement of inspiring the next generation to pursue science, and to improve on my didactic and organizational skill set for academic teaching and higher level learning.

Experiences from the ITP Program

In this section, I describe the essential points and concepts from the ITP 2017/2018 program workshops that I have been, and will be, focusing on for current and future learning situations and teaching opportunities. I also conclude on the mutual teaching observations, mentoring and interdisciplinary exchange among the ITP fellows.

Workshop 1: Intercultural Competences in the Context of University Teaching (Aug. 22-23 2017)
A fundamental aspect of University level teaching is culture. Often the students come from different cultural backgrounds and have different initial conditions for entering higher level education. It is crucial to, at the least, be aware of and acknowledge such diversity in the classroom, but ideally to embrace and include this intelligently in the learning process. At this first workshop of the ITP program we used the *Hofstede model* for dimensionalizing cultures and cultural differences to illustrate and conceptualize the different aspects culture contribute to higher level education and learning. In particular, we focused on the complications certain cultural

backgrounds can have on the ability to adapt to new learning styles and approaches. Especially, the *power distance* and the amount of *collectivism* are culture dimensions that differ widely between cultures, and needs to be accommodated in preparing learning goals for multi-cultural/national courses. Another aspect of focus, was communication between lecturer and students (or between colleagues). This communication is also prone to different cultural norms. In particular, the formality and the use of formal pronouns or titles when addressing people in the academic world, differs between cultures. Illustrated by a simple card came, we were made aware of the different ways of adapting to a new situation via integration (adjust and fit in via compromises), assimilation (fit in via simply obaying to existing rules and norms) and dictation (force your norms and values on the new situation and group). In conclusions, apart from mere acknowledgment of the unavoidable cultural differences in higher level education, the main responsibility of the lecturer is to *address diversity with diversity* in the lecturing approaches, accounting for the fact that that different learning styles fit different cultural backgrounds.

Workshop 2: The Basics of Teaching and Learning in Higher Education (Aug. 28-29 2017)
The goal of the workshop on basic teaching skills was two-fold. First it introduced a modern philosophy for higher education. Secondly, it presented a set of tools and concepts for preparing and structuring lectures and full courses with this philosophy in mind. Overall, current teaching methods are advocating a move from the traditional *teaching* to a more suitable *learning* environment. The former represents the traditional transfer of knowledge from the lecturer to the students, considering them to be ”empty vessels” that needs to be loaded. The latter, more modern approach, is to take a student-centered approach, where the lecturer is considered the coaching and moderating learning provider, enabling development of independent and new cognitive processes and relations in and between the students themselves. For such an approach, focus will be on the learning outcomes and competences rather than the ability to recite the course curriculum topic. In other words, the goal should be to move from *receptive learning* to *active learning*. To accommodate such a philosophy *constructive alignment* of the course material and topics is ideal. Constructive alignment boils down to a triangular balance between the learning objectives, the evaluation and the learning activities of a course. The method of *didactic reduction*, describing a set of quantitative steps to cycle through for a course or lecture planning, exemplified the considerations that needs to be taking into account. To ensure receptive learning, guidance using *Bloom's taxonomy* of learning (see ‘Workshop 4’ below) is crucial, as it formalizes the content of learning outcomes as well as activities. And if these are well determined, they simplify the evaluation of the students, completing the constructive alignment. To further optimize individual lectures and establish the most ideal environment for learning, *microdidactic planning* was introduced as a tool to ensure a balance between *inhaling* (e.g., listening, reading, observing) and *exhaling* (e.g., speaking, discussing, playing, drawing, planning) for each lecture. Often complete *learning stops* (Lernstopp), i.e. a small few-minutes intermezzo to break up lecturing or other intensive activities is recommendable. This will allow the students to exhale and reset their ability to concentrate. A microdidactic design approach, will also ensure that a *set induction* and a proper *closure* of the lecture is included. And combined with *concept mapping* of the overall course structure this ensures the availability of an overview of the individual lectures with respect to the overall learning goals and objectives of the course.

Workshop 3: E-Learning and E-Teaching with Web 2.0 Tools (Sep. 25 & 28 2017)
The goal of the electronic learning and teaching workshop was to provide a knowledge base of available tools for further exploration and inclusion in course planning. Focus was put on Moodle, the main electronic course system of Potsdam University, but the workshop also presented a large sample of available tools and methods including, movie editing, rubrics for student evaluation (see ‘Workshop 5’ below), quizzing, voting, shared documents, etc. Common for most of these tools is, that they encourage student co-creation or provide means for students to exhale in othervise dense lectures, as described above. The positive effect on the learning environ-

ment that student co-creation can have, was stressed throughout the workshop. In particular, the concept of *Flipping the classroom*, where the students are first given instructions (guided), and then indulge in interaction (are activated) and later immerse themselves (start playing) in a certain topic, was presented as a fruitful way of ensuring an active learning, with a learning outcome going beyond the traditional receptive learning. Hence, E-learning has the potential of enforcing and simplifying active learning, but for this to work, it is important to know which tools are available, and only use tools when they are suitable for the learning situation or setting. For instance, some tools are suitable for large audience, while others are preferentially applicable to smaller groups of students. The important point, however, is that the application of E-learning and E-Teaching should always adhere to the expression "Ad**a**pt don't ad**o**pt".

Workshop 4: Deepening Your Teaching Skills (Nov. 29 2017)

It is not only culture, that influences student's preferences and ability to adhere to certain learning situations. Also the personality type of individuals has a strong influence on the learning environment and the outcome of each lecture and class. One of the main personality type indicators, the *Myers-Briggs Type Indicator* (MBTI) was introduced and used to illustrate the diversity of the average mono-cultural classroom, i.e. reflecting the diversity in personality types, only. Again, awareness of these aspects of a student body, is essential to establish a fostering learning environment, that includes all students. Here it also applies that diversity in personality needs to be met with a diversity in teaching methods and approaches, as some students prefer and learn best in an extrovert environment, with a lot of discussion and question-answer sessions, whereas others prefer a more introvert learning style of self-reflection, written assessments and reading assignments. Maybe more important, the personality type of the *lecturer* influences the overall setting and lecture format of a class. Determining our own MBTI personality type, illustrated what teaching format each of us are prone to prefer. That the student body is diverse, is one thing, but the fact that the lecturer has preferences on teaching methods can potentially lead to an unsuitable learning environment for a significant fraction of the students attending. Hence, during course preparation, it is important to account for this as well. The fourth ITP workshop also elaborated on the use of Bloom's taxonomy in the constructive alignment when designing courses. Using the associated learning verbs for structuring, designing and aligning courses and programs, the ITP fellows were tasked with performing the first steps in designing our course for the practical teaching aspect of the ITP program. In my particular case, this exercise gave a good feeling for where I needed to direct my efforts, and what the focus should be, in the continuing preparation and design of the practical teaching.

Workshop 5: Competence-Oriented Examining and Advising Students (Feb. 15-16 2018)

Evaluation and examination of students is one of the three components of the constructive alignment method (the other two being the learning objectives and the learning activities). This workshop focused on establishing evaluation methods routed in a constructively aligned course. The overall goal of the evaluation is to assess whether the learning objectives and goals have been obtained and fulfilled by the individual student. If these, together with the learning activities of the learning situation, are well-defined, they clearly describe what the content of the evaluation should be. To help define the evaluation, the learning objectives and the corresponding learning verbs, from applying Bloom's taxonomy when building the course structure, makes it clear what action a certain learning objective would expect the student to perform for the evaluation. As introduced in the E-learning workshop, Rubrics are schematic overviews quantifying individual steps and levels for evaluations, describing such actions. Hence, a Rubrics clearly state what is required by the student to obtain a certain mark or grade. Again, these should reflect the individual components of the constructive alignment, and through this give clarity to the students *before* the evaluation/examination, about what they are judged upon. However, before establishing the evaluation Rubrics, it is important to realize that it is *not* the acquired competences of the students that is evaluated, as these are by definition not observable. Any evaluation or examination can only

provide a setting for the student to illustrate the competences and skills they have acquired. Hence, it is this performance or illustration that is evaluated, with the hope that it correctly reflects and can be extrapolated to the competences the student has learned and acquired attending the course. An attempt to make every (oral) examination *acting oriented*, encouraging the students to first think (aloud), then apply their line of thought, and afterwards reflect on this line of thought and application should be made. The ideal exam is therefore a setting enabling the student to show what skills and competences was acquired in advance of the examination, reflecting the learning objectives and goals of the constructive alignment. Assuming that such an evaluation has been established, there needs to be an agreement for the actual determination of the outcome. In doing this, a normalization of the evaluation is required. There are three basic normalizations: 1) a criteria-oriented norm, where the final grade depends on a fixed objective of the course curriculum, 2) the social or group-oriented norm, where the overall performance of the student is dependent on or relative to the performance of the rest of the student body, and 3) the individual norm, where the final grade reflects the individual's development from the initial standpoint. Most of the university level natural science courses use the criteria-oriented norm for evaluations, but cases where a group-oriented norm (a certain distribution of grades is required) or and individual norm do exist. Not only were we provided a set of tools for preparing and structuring evaluations and examinations, we also received a basic model for ideal supervision and advising of students referred to as *scaffolding and fading*. Supervision using the scaffolding and fading method is attempting to balance a *process-oriented* support with a *product-oriented* support. Moving from a guidance which is both weak in the process and product-oriented support, to more emphasis on the process, and then the result and overall goals, to end at a product-focused support with a weak process focus, is referred to as scaffolding. Moving in the opposite direction is referred to as fading. Hence, the main goal of this model is to reach, though scaffolding, a level where the student is comfortable with taking over the project or problem and continue independently, so the lecturer can fade away.

Workshop 6: Feedback on the Concept of the Practical Teaching Project (Mar. 21 2018)
The sixth ITP workshop offered feedback on the concepts of the practical teaching projects in either a group setting, or individually with the instructor. In my case, I presented the one-semester practical teaching program (cf. the 'Introduction') to a group of ITP fellows and the workshop instructor. This presentation included an overview of the requirements from the university and a run-through of the planned course curriculum and the learning objectives, goals and activities anticipated (according to the constructive alignment) for the course. At the time of presentation, it was still unknown if there would be any examination of the students. However, thanks to the constructive alignment preparation, the examination form and extent was already clear, as the purpose for the oral examination, as mentioned above, would be to establish a setting in which the students could illustrate what competences they had acquired during the course. After the presentation, valuable feedback on individual concepts of the course plan and approaches was provided by the ITP fellows present and the workshop instructor. However, as this workshop took place only two weeks before semester start, not all feedback and suggestions could be implemented, as some of them would require approval by university bodies (e.g., changing course description and scope). Apart from receiving feedback on my own practical teaching, also being presented other course plans and structures applying similar philosophies and tools, but on different topics was beneficial. It put my own choices and thoughts about the practical teaching into perspective, and provided further ideas for improvements of the curriculum structure and content.

Workshop 7: Research-based Learning as a Teaching Method (Apr. 9 2018)
This workshop was not officially part of the ITP workshop list, but was offered on a voluntary basis by the Potsdam Graduate School independent of the ITP program. However, as research based-learning and projects is a crucial part of any academic career, attending this workshop turned out to be very useful. The concept

of *research based learning* (RBL) distinguishes itself from other learning schemes, by having the bulk of the program being research, where the students actively shape, experience and reflect on the main phases of the project. Hence, RBL is relevant for larger projects like Bachelor, Master and PhD thesis projects. At the workshop, we were first introduced to the Seagal and Horne *Human Dynamics* learning framework, and the most prominent learning styles emerging from this, which are based on three basic aspects, namely the mental, the emotional and the physical principles. The Human Dynamics provide a complimentary framework to the MBTI categories introduced in 'Workshop 4', to determine the different leaning styles and learning groups present in a teaching environment. Having determined the actual learning scope and environment of a given research project, the organizational RBL model *OPeRA* is often applied. This reflects a sequence of Outline, then Performance of the actual research program, later a Reflection on the outcome, and lastly and Analysis of the results and the project. This process can be accompanied by a second taxonomy for level of abstraction (similar to Bloom's taxonomy mentioned above), where the students in RBL should go through Reporting, Responding, Relating, Reasoning, Reconstruction and (meta)Reflection. It was stressed, that the essential basis of RBL are project management (working packages and milestones) and team development (interactive format including task assignment and feedback loops), which can easily be combined with the scaffolding and fading advising scheme described above, to obtain ideal research conditions and foster the best possible environment for learning.

Workshop 8: Conflict Management in Higher Education (Jul. 6 2018)

Occasional conflicts in both learning situations in higher level education and collaborative efforts require attention and needs to be addressed, to ensure continued progress. This final workshop before the overall reflection, provided an introduction to *non-violent communication* (NVC) for handling such situations. Generally there are four types of conflicts: 1) self-conflict, where you are in a conflict with your inner self, 2) one-way duality, where someone else is having a conflict with you or vice versa, 3) mutual duality, where a conflict goth both ways between two groups and 4) the bystander conflict, where a group of individuals are having a conflict that (indirectly) affects you. In all four situations NVC offers a possibility to come to agreement or in the worst case, realize that no solution is realistic (not all conflicts can be solved!). The NVC approach to conflict management is based on *OFNR*, i.e. Observations, Feelings, Needs, and Requests. This provides a basic flow of NVC, where the facts of the situation is first stated without using subjective statements, after which one should express the feelings these observations result in within oneself. To ease or relieve these feelings some needs have to be fulfilled, which can be done through a requested action from the other part of the conflict. Especially expressing feelings can be challenging, and it is important to avoid so-called ”pseudo-feelings” like attached, rejected, interrupted, and ignored, which expresses ”feelings”, which are relative and express emotions the individual thinks others are inflicting on him or her. Hence, pseudo-feelings are not actually expressing a feeling, but rather an emotional interpretation of the situation. Overall, NVC attempts to focus the conflict management on the required actions to change feelings in individuals. As opposed to being fully objective, this attempts to solve conflicts by appealing to the empathy of the ”opponent” parts in the conflict, as opposed to dictating facts and rules. Also, by focusing on ones own feelings NVC avoids blame, which is likely to complicate the situation.

Workshop 9: Reflection on the ITP Program and Teaching. (Jul. 20 2018)

The last workshop of the ITP program, had us reflect on the program as a whole and on our individual experiences with teaching. Most of it is summarized in the sections above, but a few key observations did come out of this reflection. First, if not already described above, a key point of improving any learning situation is awareness. Both in terms of intercultural awareness, awareness about how personality type affects the learning effectiveness, and how conflicts are and can be handled. They are all the first step on the way to understanding and accommodating such diversity and challenges into the classroom. For conflict management, cultural and

personality-related challenges, as well as many other aspects of higher level teaching, it is important to make it clear that, ”simple does not mean easy”. Being aware of this fact, can in many situations relieve some of the self-inflicted pressure and expectations, that one is trying to live up to. Also, as should be clear from the above summary of the individual workshops, for a constructively aligned course design, the evaluation of the student's acquired competences becomes fairly straight forward, as the learning goals, and hence the foundation for the evaluation, has already been defined in the course development phase. Hence, a good constructive alignment of the course is essential. Despite good preparation, conflicts are hard to avoid. Such conflicts are likely solved most gracefully by non-violent communication, where focus is put on objective observations, what they make one feel, and how this feeling (being the cause of the conflict) can be relieved. If subjective observations assuming a common reference points, which might not exist, and pseudo-feelings can be avoided, this approach avoids further escalation of the conflict by not putting blames or over-interpreting the situation. A final important aspect of the ITP program, has been to realize, that as lecturers, we all carry a backpack of acquired skills, cultural norms, personality type and preferred learning style. This set of initial conditions will always be reflected in our teaching approaches and applied learning styles. Students also carry around this kind of luggage. As a lecturer it is therefore important, and in many cases essential, to be aware of, acknowledge and accommodate such diversity through a diverse teaching with a variation of learning approaches and methods.

Mutual Teaching Observations of ITP Fellows

For this part of the ITP program, I was fortunate enough to have had five observers (including my ITP program mentor) attending four different lectures of the full-semester course I gave. Prior to my own lecturing, I attended one lecture on linguistics and during the semester one lecture on image segmentation methods.

The observation visits during the course lectures and the corresponding feedback sessions, were extremely useful. Getting insights on the teaching, lecture, and seminar format I applied throughout the course, was particularly useful. Both individuals from a non-physics background, as well as observers familiar with the topic and customs of astrophysics, had insightful comments and ideas on how to improve both the presentation of individual topics, but also suggestions on how to involve the students on aspects, that I otherwise deemed only useful for 'lecture-presentation'.

The visits and observations of lectures given by other ITP fellows, also provided new ideas and concepts, that helped form part of the lecture series I was giving. In particular, the ability to actively include students via interactive exercises solved via a laptop connected to a projector, is something I see directly translatable to an astrophysics lecture setting.

Overall, the mutual teaching observations provided a fruitful environment for discussing and reflecting on teaching and learning approaches, putting my own concepts and ideas into perspective.

Mentoring Throughout the ITP Program

Throughout the ITP program, I was mentored by Prof. Dr. Lutz Wisotzki. He was very supportive about my course design, and he let me take charge and put many of the aspects and concepts from the ITP workshops to the test, through the lectures and seminar sessions of the 15 week semester course, making sure that the students wouldn't feel like guinea pigs. On multiple occasions Prof. Wisotzki willingly shared tools, methods, approaches and suggested improvements based on his more than two decade long experience with teaching at the university level. These discussions and meetings were crucial for the development of a course compliant with the level and scope of Potsdam University's astrophysics masters program. In particular, the input and suggestions after observing one of my lectures (commenting on both content and student interactions), was very useful, and will undoubtedly improve future lectures and course designs of mine. Also, while preparing for the final exam, availability of Prof. Wisotzki's mentorship was invaluable and much appreciated.

Interdisciplinary Exchange Among the ITP Fellows

The diversity of cultural backgrounds, teaching approaches, education system experiences, and academic reference points of the ITP fellows, has throughout the ITP program been an enlightening encounter. The fact that direct parallels between the ITP fellows and the multi-cultural classroom could be drawn and build upon, improved the understanding and appreciation of the diverse aspects of building a learning framework for students, putting the theoretical concepts and learning approaches presented in the ITP workshops into perspective. I could easily imagine that an ITP program provided to a more uniform selection of fellows, both in terms of cultural background and education, would have a harder time spurring the reflection, acknowledgement and appreciation of the diverse aspects of teaching, that I think the 2017/2018 ITP fellows have had.

Teaching Aspects to Pursue Further

As already mentioned in the Introduction, the ITP program has offered a unique opportunity for me, as an early-stage researcher, to acquire and develop crucial didactic and organizational skills, for higher level learning and university teaching. Having had the opportunity to build a full course from scratch, has provided a great deal of insight, in both the learning processes, but also the acquired consideration and care that needs to be taken to design a streamlined, self-consistent and appealing program. In the broader picture, and based on the mutual teaching observations feedback, I believe the ITP program enabled me to generate such a course. I am fully convinced, that the quality of the course was greatly increased by having attended the ITP training and having received direct mentoring as part of the program. That being said, there are still concepts and situations where I foresee improvements and changes. I have tried to list and elaborate on these in the following, as a reflection of the ITP program and the practical teaching, where the acquired know-how was put into practice.

- **Evaluation**: The first aspect of the practical teaching, that I was not fully satisfied with, was the structuring of the evaluation of the individual task and assignments given to the students throughout the course. The fact that grades were only given at the final exam, lowered the need for Rubrics evaluation. However, as an exercise, and to make sure each exercise was reflecting the learning objectives of the course, a Rubrics approach should have been employed.

- **Microdidactic planning**: Despite good intentions, time pressure caused a lack of microdidactic planning throughout the preparation of the practical teaching. I had a broad idea of the duration of each component of the 90 minute lecture+seminar blocks each weak, but without the microdidacic training the balance of each week's class varied greatly between sessions. This could have added to the confusion about structure and duration among the students, and left myself unsatisfied with the timing of lecture components on multiple occasions. The feedback from the ITP fellows from the mutual observations, did however not reflect this, but I am confident that more attention to the microdidactic planning will make the course more coherent in the future.

- **Lecture structure**: Overall, I think I managed to create a structured lecture/seminar combination, with fixed weekly elements giving the students a sense of overall course structure and reference points. However, there are still aspects of the weekly lectures that could be improved. For instance, many of the lectures lacked an actual set induction to start the class. I used a summary of last week's lecture to start each class, but variations of this, and using other approaches to opening and closing the lectures, I believe would strengthen the class. Also, I used an online course overview to relate each week to the broader topic, but an actual concept map, that could be shown throughout the course, was not available. I believe that such a map will help guide the students through the course, so I will strive to improve on this aspect in the future. All of this, might very well relate to the lack of microdidactic planning of each lecture

mentioned above. Hopefully, improving this, will improve the amount and balance of familiar components and repetitive learning tools in the course.

- **Exhaling**: Throughout the course, I attempted to accommodate ”exhaling” in the sometimes dense 45-50 minute lectures. However, as was also commented by my mentor, the attachment to the slide-based lecturing was on many occasions too high. The improved planning of each individual lecture and seminar session described above, would also improve this aspect, but even without this, a larger focus on learning stops and exhaling exercises and intermezzos should be a main focus point when developing courses in the future.

- **Lecture-seminar balance**: Throughout the course, the boundary between lecture (using mainly slides) and seminar was fairly rigid, and on multiple occasions indicated by a small break for the students. Ideally, I would like to make this distinction more fluid. Combining the lecture and seminar aspects would accommodate and partially solve my dissatisfaction with parts of the class structuring and the lack of exhaling mentioned above. Furthermore, a reluctance from the students to perform the prepared exercises could be relieved by involving these more in the lecturing.

- **Conflict management:** I only experienced a few (minor) conflicts throughout the course. The introduction to non-violent communication for conflict management (even though this workshop did not happen before early July), was on these occasions very useful. Especially on one occasion, regarding exam scheduling and preparation time, making neutral observations, identifying the feelings and the needs causing the conflict, helped us come to a common agreement. Previously, I would probably have been more strict and fact-based in my approach to solve such a conflict, but being aware that one of the central aspects of non-violent communication is identifying the feelings, provided a smoother less rigid handling of the conflict. Focusing on feelings in a (professional) conflict is generally in contrast with my preconceptions of how to deal with potential conflicts and students. In agreement with my determined MBTI personality type, I overall prefer freedom from emotionality when making decisions in a professional context. But on this occasion, attempting the opposite actually seemed useful. This is an area, I would certainly like to improve. Shifting my conflict management skills from a fact-based to a non-violent communication approach would likely improve both my own and future student’s impression of how conflicts are handled and addressed.