

Path  Integrity

# Handbook for Teachers and Trainers

*Integrity in Research  
and Society*

## S-Series



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## Contents

List of figures .....	2
List of abbreviations.....	2
The purpose of the Path2Integrity handbook.....	3
What the Path2Integrity learning card programme offers.....	4
How to prepare your teaching with the Path2Integrity learning cards .....	5
How to help students use the card and adapt it to your teaching .....	6
I. You can flip your classroom.....	6
II. You can introduce Emma's chat: What happened at LONA Science Centre? .....	6
III. You can encourage storytelling .....	7
IV. You can promote role play.....	8
V. Refer to a code of conduct for research integrity.....	9
VI. Evaluating students' knowledge and ability to defend good scientific practice .....	9
How to support a dialogical learning setting .....	9
How to improve the learning curve.....	10
Eleven sessions on integrity in research and society.....	11
References.....	16
Code of Conduct.....	17
List of links .....	17

## List of figures

Figure 1: The Path2Integrity S-series learning cards . . . . .	3
Figure 2: Integrity in research and society . . . . .	4
Figure 3: QR code link to the introductory video of the P2I S-series learning cards . . . . .	5
Figure 4: Path2Integrity learning card first page. . . . .	5
Figure 5: Path2Integrity roadmap . . . . .	6
Figure 6: Emma’s chat: What happened at LONA Science Centre? (graphic and video) . . . . .	6
Figure 7: Storytelling . . . . .	7
Figure 8: Role play . . . . .	8
Figure 9: Pre-test & Post-test evaluations . . . . .	9
Figure 10: Evaluation of learning units . . . . .	9
Figure 11: S0 learning card . . . . .	11
Figure 12: S01 learning card . . . . .	12
Figure 13: S02 learning card . . . . .	12
Figure 14: S04 learning card . . . . .	12
Figure 15: S05 learning card . . . . .	13
Figure 16: S1 learning card . . . . .	13
Figure 17: S2 learning card . . . . .	14
Figure 18: S3 learning card . . . . .	14
Figure 19: S4 learning card . . . . .	15
Figure 20: S5 learning card . . . . .	15
Figure 21: S9 learning card . . . . .	16

### List of abbreviations

<b>P2I</b>	Path2Integrity
<b>P2ILC</b>	Path2Integrity learning cards
<b>ECoc</b>	The European Code of Conduct for Research Integrity

# The purpose of the Path2Integrity handbook

Do you want to teach your students how to do research, as well as help them understand how important reliable research is for society? This handbook accompanies the **Path2Integrity learning cards (P2ILC)** on five topics (<https://www.path2integrity.eu/ri-materials>) and introduces you to an easy and fun learning programme that has been evaluated in over 25 training sessions. The Path2Integrity learning cards S-series is especially designed for secondary school students and undergraduates. Through this series, students learn how research results must be produced in order to be reliable and thus useful for society.

The S-series learning cards help students use research findings responsibly while understanding the research landscape and processes within it, and by appreciating the importance of research integrity's criteria for society (cf. Häberlein 2020, 6f.). With the aid of many experienced teachers and trainers, the authors collected tips in this handbook on how to prepare each card, how to support your students' learning curve, and how to overcome the various challenges that might arise as you bring this important topic to your students.

In the next chapters, this handbook helps you prepare and carry out lessons on what makes for good, reliable research with the following learning cards (Fig. 1).

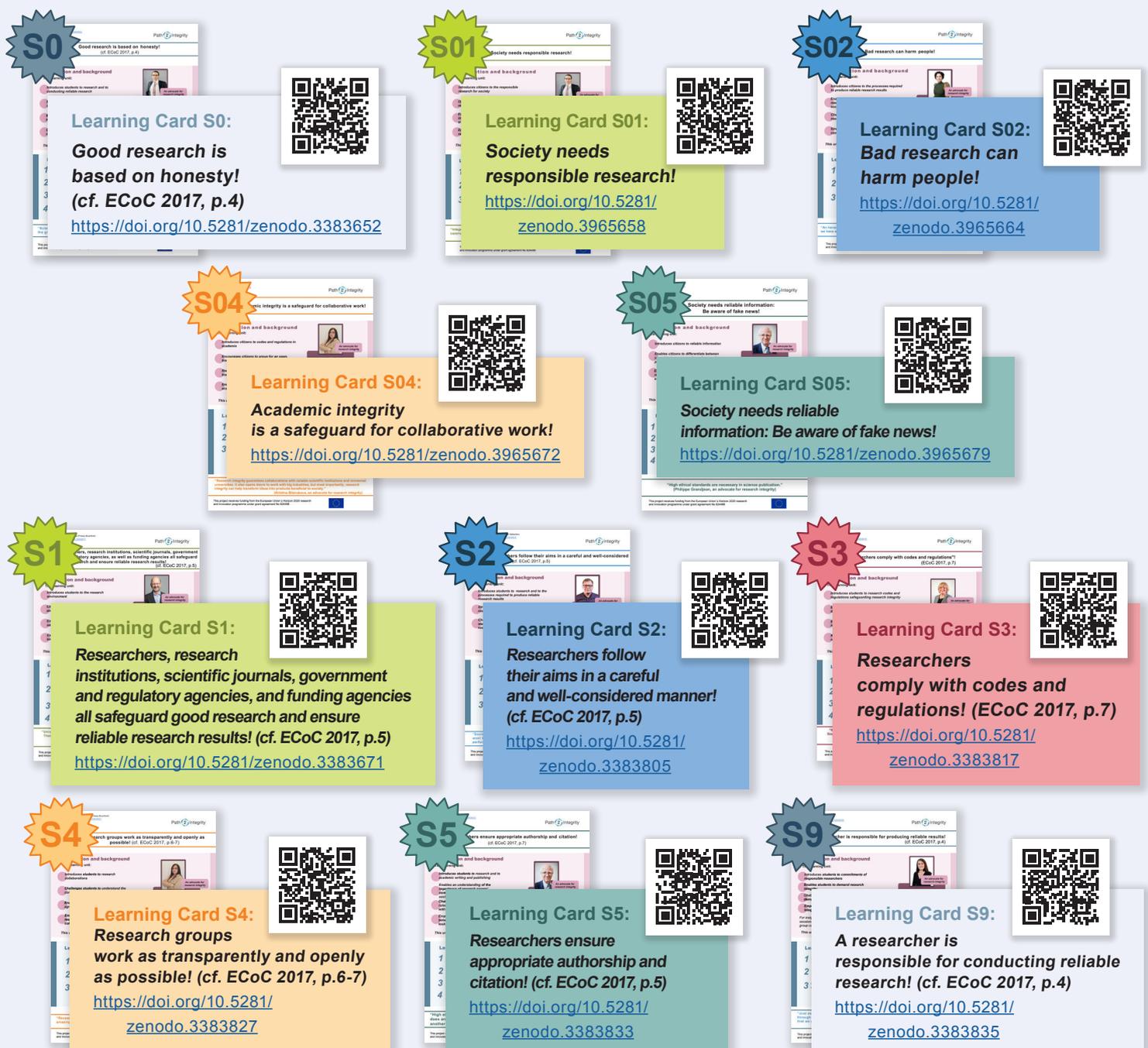


Figure 1: The Path2Integrity S-series learning cards

## What the Path2Integrity learning card programme offers

The Path2Integrity learning card programme empowers people to present and discuss issues in a logical manner and to make evidence-based decisions that follow principles of open, honest, and dependable scientific research themselves. Each card can be used in a session of up to two hours to encourage dialogue, adopt different perspectives and get creative. You can use the cards

as a guide for teaching a lesson or as an exercise sheet in class. Furthermore, the length of the exercises and sessions can be adapted to meet the particular needs of your class; the flexibility of the programme allows you to choose and incorporate individual cards or select exercises from them that you consider suitable for your teaching area (Fig. 2).

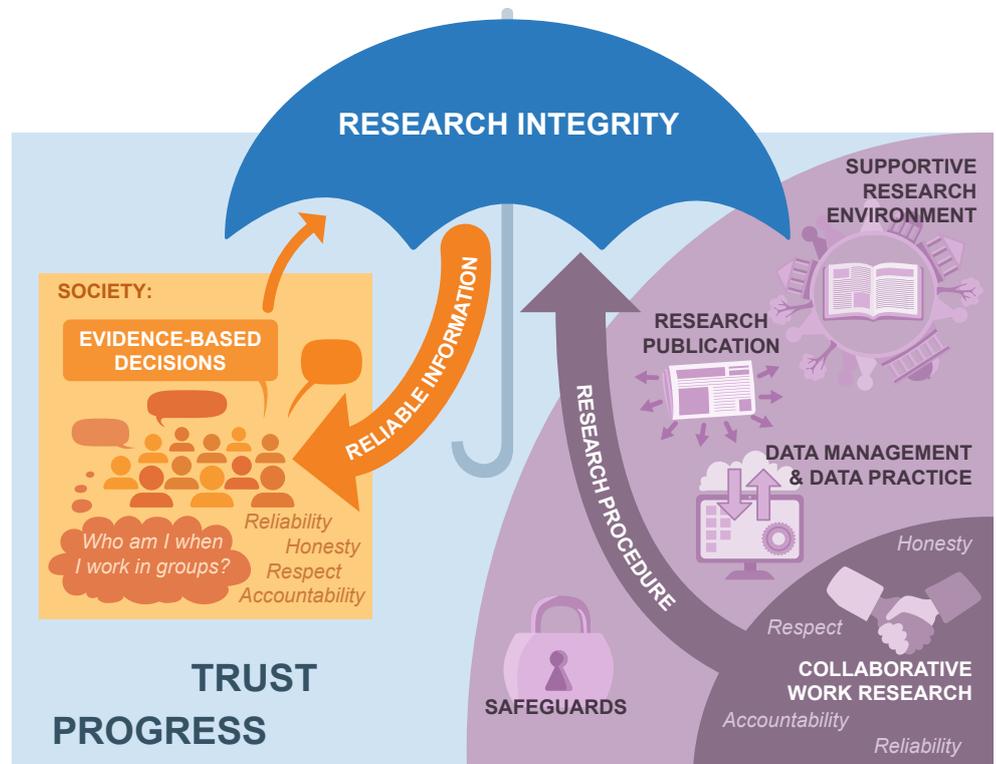


Figure 2: Integrity in research and society

backgrounds. The following chapters show you how to foster your students' understanding of good research practice and its importance to society by using the Path2Integrity learning cards from the S-series. If you are interested in material prepared for graduates or post-graduates, switch to the handbook for the M-series for disciplinary settings or the Y-series for interdisciplinary settings.

“I introduced my students to the topic of good research practice when I used the cards in a course for bachelor students of electronic engineering in 2019. They didn't know anything about responsible research at first. But they immediately understood the connection by looking at our knowledge-based society. I showed them how they themselves rely on the results of research in many ways, both in everyday life as well as in their studies; they realised that we as a society have to demand that the research community follow certain principles that guarantee reliable research results.

The Path2Integrity learning cards highlight student-centred interactions that help participants address challenging questions through role-playing, storytelling and reaching an agreement with one another. By using Path2Integrity learning cards, you enable your students to develop their own standpoint based on sound arguments, and to be able to demand integrity in research and society.

“The design of the cards and the step-by-step procedure especially motivated my students when I used four learning cards from the S-series last semester. They also liked the active exercises, and found these exciting and engaging. In the session “Good research is based on honesty!”, however, they found it difficult to relate the scenario to their everyday lives and studies. I realised that they did not yet define themselves as researchers or as decision-makers. To open the door for them to integrity in research and society, I outlined the exercises from the sheet in detail and made reference to the students' prior experience in my explanations in order to help them relate to the topic. I assisted them whenever questions arose; that has helped a great deal.

As a cornerstone of the Path2Integrity learning card programme, students “[...]learn how to conduct a dialogue on the rejection or acceptance of norms in research integrity”<sup>1</sup>; in other words, they learn how to argue in favour of practices and principles that ensure good, reliable research results. To support them in this process, you can adapt the learning cards to your and your students' cultural and religious

1 Prieß-Buchheit et al. 2020, 23, <https://doi.org/10.3897/rio.6.e53921>.

## How to prepare your teaching with the Path2Integrity learning cards

To orientate yourself and to prepare Path2Integrity learning card sessions, the **first page** of each card tells you what the respective learning card is about (Fig. 4). Using the Path2Integrity learning card gives you both structure for your session as well as additional information for composing your lesson individually. With the cards, the time you save preparing your lesson can then be used to adapt the tasks, subfields and phases to your group, allowing them to dive deeper into the topic.

Before you go into a Path2Integrity learning card session you should:

1. be acquainted with the card;
2. know the story: *What happened at LONA Science Centre?*;
3. be familiar with a code of conduct for research integrity; and
4. have a plan how to navigate your group through the card.

The **Heading** outlines the main topic of the session.

The **Description and background** box describes the broader spectrum of the learning content.

Research integrity role models can serve as orientation and identification. Significant statements from advocates for research integrity can be taken up and discussed in the session.

The **Learning Stages** box outlines the different phases of the session, as well as the different classroom interactions they entail.



The **Learning Objectives** box outlines a series of expected skills that should be achieved through the P2ILC sessions; these skills will enable students to engage in dialogue surrounding norms within various subfields of reliable research results (such as research procedures, complying with codes and regulations, and academic writing).

Figure 4: Path2Integrity learning card first page

“When I started using the P2I learning cards in November 2019, I realised that they contained more information and possibilities than I had expected. By reading the **first page** of each card, I encountered various topics surrounding integrity in research and society. I watched the short introductory video for the S-series ([https://www.youtube.com/watch?v=79Z\\_n-z5i5U](https://www.youtube.com/watch?v=79Z_n-z5i5U), Fig 3) and read the backgrounds and learning objectives on each card. With so many cards at hand, I was initially overwhelmed by the variety until I saw that each card had a **heading**, which described the main topic of each session.



Figure 3: QR code link to the introductory video of the P2I S-series learning cards

What I like about the programme is the wide range of topics and the **flipped-classroom** style with reading preparations, in which my students were prompted prior to our session to

acquaint themselves with the upcoming topic. Because each card outlines which articles, videos, cartoons etc. will help me best prepare my students, my only task was to inform them what to read. In just three minutes, I had sent my students the task via email. This gave me time to consider extra material and adjust the card to the needs of my course. For my first try with the P2ILC, I chose the card “Research groups work as transparently and openly as possible!” and started to prepare myself with the help of the second page. I worked it through, thought about how I could lead my students through the card’s various exercises and tasks using their specific knowledge and

habits, and made a copy of the second page for each student.

Because my students often feel inhibited in situations in which they worry they will be laughed at, I concentrated on preparing the second and third tasks of the card. I decided to prepare a sort of bridge to ease them into a good working mood. Using staples and tape, I designed an avantgarde – well, okay, ugly – stick figure, which I showed my students right at the start of task two. It worked! Ms Stick Figure sparked some smiles and helped get my students into a creative mood.

The session was a complete success! In class we introduced ourselves to Emma, Rebecca and Prof Weis at LONA Science Centre, and performed an engaging storytelling exercise about reluctant behaviours that emerge during cooperation. Using the card, we practiced and overcame disagreements and disrespectful accusations by establishing a strong collaborative base. I enjoyed how much fun we had, and continued using the cards in future classes.

After the third session, my students began to anticipate the learning routine, even starting to regulate themselves and creating ideal learning opportunities. I was really able to become a mediator of their learning! In two subsequent sessions, I changed the phases to include longer discussions, after seeing how eager my students were to exchange their thoughts and arguments.

## How to help students use the card and adapt it to your teaching

### I. You can flip your classroom

Each learning card contains a self-paced preparation phase. Thus, you can divide each learning session into two phases:

1. the individual preparation phase; and
2. the classroom training.

“Whenever I asked my students to study learning material at home, I carefully selected and prepared the material to avoid overloading them. I wanted my students to engage with the subject without losing motivation<sup>2</sup>. It’s great that the P2ILC already contain material that I could supplement with guiding questions. I’m lucky that my students are used to doing some learning at home, meaning we had more time for the interactive sessions in class.

If you want, you can change the flipped classroom into a reading session at the beginning of the lesson. **When selecting material, please take into account that each student needs to be able to access it.**

In the description of each learning card, the authors prepared additional material that you can use for the preparation phase (see the section “**Eleven sessions on integrity in research and society**” on page 11 of this handbook). For more information on how to flip your classroom, as well as on how to supplement the learning material, please refer to the Path2Integrity roadmap (<https://www.path2integrity.eu/teaching-RI> Fig. 5).

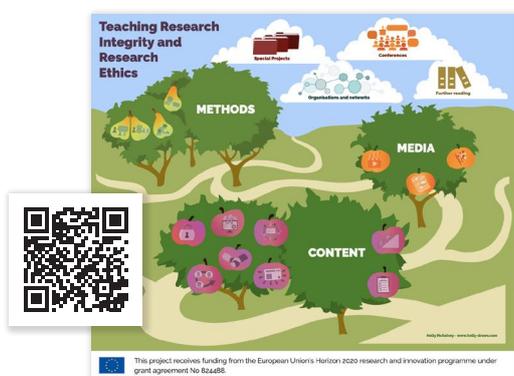


Figure 5: Path2Integrity roadmap

### II. You can introduce Emma’s chat: What happened at LONA Science Centre?

Emma’s chat (*What happened at LONA Science Centre?*) is a narrative from the Path2Integrity learning card programme, in which reliable research results are at stake. The narrative is introduced in S0 and subsequently used in each card while developing in different directions.

“The **story** of Emma, Rebecca and Prof Weis at LONA Science Centre, which is used in many of the cards, fascinated us. From session to session, students identified with the characters and imagined as well as relived their adventures. In particular, my students loved the pink sections of the learning cards, which emphasise taking a dialogical approach to the LONA Science Centre narrative.

With *What happened at LONA Science Centre?*, you can reflect as well as

express different points of view and start a reciprocal learning process. If you want, you can either use the visually appealing graphic (<http://doi.org/10.5281/zenodo.3384744>) or the video (<https://www.youtube.com/watch?v=e4-TbZIMvto>) at the beginning of each session. To ensure that your students understand the narrative, **you can ask them to describe the story in their own words** and to articulate what integrity challenge is being described: namely, a familiar problem of conflicting motivations, in which good scientific practice is weighed against other inclinations and incentives such as obedience, hierarchy, structural forces or more (Fig. 6).



Figure 6: Emma’s chat: What happened at LONA Science Centre? (graphic and video)

2 For further information see Nimmerfroh 2016.

“When we reviewed what Emma’s chat entailed, my students noticed that Emma had overheard an argument in which different motivations are involved. For my students, it was evident that the story displayed a clash between Prof. Weis’ obedience towards the head of the institution and her inclination towards good scientific practice. They understood that the main characters had no fundamental problem in terms of ethical orientation, and that they actually knew what was morally right to do.

Nevertheless, they experienced a situation in which other incentives put research integrity at stake.

When they were asked to engage in story-telling in S4, my students listened to different statements from their peers, outlined their knowledge, and started to discuss power structures in the context of Emma’s chat. They began to develop and rationalise their own arguments for the importance of integrity in research and society.

### III. You can encourage storytelling

Storytelling can increase “sympathetic imagination”<sup>3</sup>, ethical reflection and comprehension of others, as well as vivid, reflective and experiential responses.<sup>4</sup> Through storytelling, students can acquire knowledge, develop solutions to a problem together and build a common language by expressing realities of human experience through the art of narrative.<sup>5</sup>

as a symbol of discord in research cooperation. Learning with storytelling invites students to step away from their own feelings and subjective attitudes and to begin developing a common language by “thinking aloud” and exchanging different points of view.



Figure 7: Storytelling

In the storytelling exercises contained in the P2ILC, students articulate how they interpret concepts like research integrity or how occurrences of e.g. mistrust can influence their point of view. Using their own words and expressing both common and diverse views, they tell short stories e.g. about the importance of citation methods, difficult working conditions that lead to research guidelines being disregarded, or the use of a raised voice

“When I asked my students to write a scene from the script of a screenplay in our S1 session, they got really into it, bringing in reliable research results and facts, as well as opinions and judgements as to how this might compare to real-life conditions<sup>6</sup>. At one point, I intervened and pointed out that ‘What happened at LONA Science Centre?’ is a fictional narrative that can develop in different ways. Students enjoyed looking for alternative solutions and justifying their decisions to one another. Working in small groups, they found themselves at the centre of a process in which both interaction and problem-solving skills were required.

I’m a fan of encouraging discussion in the class-room. Still, I did moderate controversy in the students’ discussions to prevent emotions flaring. I wanted to keep the balance between what Retzmann, an economics education expert, calls “involvement and distance”<sup>7</sup> and decided to provide my students with decision matrixes to help them clarify the advantages, disadvantages and consequences of alternative decision options. It’s great that the learning cards allow you to be so flexible.

3 Nussbaum 1997, 85 and 95.  
 4 cf. Frank and Osbeck 2016; Nussbaum 1990; Nussbaum 1997; Phillips 2010; Zipes 2005.  
 5 cf. Nussbaum 1990, 5.  
 6 cf. Kaiser and Brettschneider 2015, 146f.  
 7 Retzmann 2007, 43 quote Reinhard 1999, 10ff. [translated by Lisa Häberlein].

#### IV. You can promote role play

Role-playing is an exploratory game in which students assume an “as-if character”.<sup>8</sup> Through role play you promote classroom participation, awareness of the complexities of ethics, critical and reflexive thinking, application of concepts, emotional engagement and personal accountability.<sup>9</sup>



Figure 8: Role play

“It is this experience of putting oneself into different roles that helped my students develop a deeper understanding of their own and others’ positions, and to engage questionable research results and possible solutions by taking an active approach. I liked that the role play imparts technical knowledge by directly referencing sources such as ‘*The European Code of Conduct for Research Integrity*’.

One challenge, however, was making sure that my students engaged with the learning content of learning card S3 “Researchers comply with codes and regulations” in a thoughtful manner. Out of shyness towards others or perhaps due to overload, time and again roles were exaggerated or poorly presented. I decided to pause the role play and invite my students to spend some time discussing the screenplay. I asked them to imagine themselves as researchers in a team in which misconduct is suspected. How would they react? What are the consequences? Why would this or that action be good or bad for science and society? We discussed which action should be referred to as good scientific practice or misconduct. This allowed my students to delve into the scenario more deeply. We tried the role play once again and it worked much better.

8 Fürstenau 2015, 106 [translated by Lisa Häberlein].

9 cf. Löfström 2012, 349 in reference to Clarkburn 2002, Sirin et al. 2003, Sparks and Hunt 1998, DeNeve and Heppner 1997; Grose-Fifer 2017; Löfström 2016; McCarthy and Anderson 2000; McWilliams and Nahavandi 2006; Poling and Hupp 2009; Poorman 2002; Rosnow 1990; Strohmets and Skleder 1992.

#### To get started with role play in the Path2Integrity learning cards, you can orientate yourself using the following steps:

1. Preparation: **You know your students best.** Get them in the right mood thematically and emotionally. Read the instructions together and help your students identify with their role. Offer them a comprehensive picture of the situation. You can also describe characteristics of the role to be played in detail.<sup>10</sup>
2. Performing: **Provide ample space for the role-playing scenario**, making sure to give your students enough time as well. If necessary, you can also provide a start signal or assign moderators to take over a guiding function in the role play.
3. Reflection: Make sure that you plan in at least as much time to reflect the role play as for the role play itself. Gradually guide your students out of the scenario by allowing them to summarise and evaluate what they have experienced<sup>11</sup>. Follow the instructions from the P2ILC or invite your students to share what they have observed in the play, and how they have judged decisions and interpreted the actions of others. Finally, evaluation of the role play should focus on how your students can apply these concepts in future, and use them to argue in favour of evidence-based decisions and good research practice. If necessary, provoking questions about honesty, accountability, respect and reliability in research can stimulate a reflective analysis of the players’ behaviour and their reasoning for it.

10 cf. Fürstenau 2015, 96.

11 cf. Fürstenau 2015, 104.

## V. Refer to a code of conduct for research integrity

The Path2Integrity project uses *The European Code of Conduct for Research Integrity* (ECoC) as a reference document. It provides clear guidelines and reference points for orientation in the research community. By referring to the ECoC, students are able to recognise standards of good research as such and refer to them in specific cases when they need guidance. This document, like other codes of conduct, serves as a basis for regulating one's own behaviour; this makes it possible to avoid thinking in terms of relativism when evaluating research behaviour through a moral lens. Depending on your cultural and disciplinary requirements, you may refer to the ECoC or choose other national, institutional or disciplinary codes of good research practice within your area of teaching that seem most appropriate for your group.

It is important to remember that the code of conduct you choose to refer to should not be used dogmatically, but rather should serve to orientate students towards basic principles of good research practice.

## VI. Evaluating students' knowledge and ability to defend good scientific practice

Over the lifetime of the project, the Path2Integrity learning card programme additionally includes one card each for pre- and post-testing (S0 and S9). If you prefer to evaluate without the cards, you can use the following two links (Fig. 9):

<p><b>Pre-test:</b> <a href="https://path2integrity.eu/limesurvey/index.php/714871?newtest=Y&amp;lang=en">https://path2integrity.eu/limesurvey/index.php/714871?newtest=Y&amp;lang=en</a></p>	
<p><b>Post-test:</b> <a href="https://path2integrity.eu/limesurvey/index.php/714871?newtest=Y&amp;lang=en">https://path2integrity.eu/limesurvey/index.php/714871?newtest=Y&amp;lang=en</a></p>	

Figure 9: Pre-test & Post-test evaluations

The pre- and post-tests each take approximately 15 minutes. The test evaluates the effectiveness of the learning cards in your class and examines in open and closed questions (1) how to act as a researcher, e.g. how to cite or where to go to report misconduct; and (2) how to argue in favour of good scientific research, e.g. to achieve systematic and accessible knowledge or to make one's work more transparent.

The test examines the students' points of view on what makes for good and reliable research. Comparing results from the pre- and post-tests will illuminate any changes in the students' knowledge and patterns of argument that have emerged during the course of using the learning cards. As indicated in learning card S9, you only need to send an email to [evaluation@path2integrity.uni-kiel.de](mailto:evaluation@path2integrity.uni-kiel.de) to receive your results. The anonymised results are indicators of how your students on average (not at an individual level) argued in favour of good scientific practice both before and after P2I sessions.<sup>12</sup>

The P2I project recommends starting with S0 and ending your teaching with S9 if you intend to use three or more learning cards. As a trainer you can also give feedback on what obstacles you encountered in your sessions or what made you and your students particularly enthusiastic about the learning cards. This feedback will help to identify your trainer-specific needs in the classroom and to develop the programme further. Use this link: <https://path2integrity.eu/limesurvey/index.php/593973?lang=en>

If you would like to find out how the participants' experience was, you can have everyone fill out the smiley face questionnaire at the end of your P2I courses: <https://path2integrity.eu/limesurvey/index.php/553522?lang=en>

## How to support a dialogical learning setting

The Path2Integrity learning cards use dialogical methods to provide an active and sustainable learning environment. The sections marked in pink on the exercise sheets indicate that students will engage in storytelling, role-playing or reaching an agreement. In these sections, students are challenged in various contexts to provide rational arguments, set common goals and norms, request that someone do something, establish preconditions for a dialogue and weigh both pros and cons of different actions. To this end, students need to show a certain amount of tolerance for ambiguity, communicate openly, listen actively and trust one another.

It can sometimes be difficult to create an atmosphere in which dialogical methods can be successfully pursued. Holding the lesson in a room that is large enough for interactive sessions and which allows chairs and desks to be removed can provide a supportive surrounding; as well as letting students sit together (though not in front of one another) and providing everyone with the same materials, e.g. exercise books, pencils etc. It is possible

12 cf. Wilder et al. 2020, 15.

to hold these sessions online. Just use a tool that supports breakout sessions, like for example the online teaching platform of Path2Integrity, which you can find here: <https://learning-p2i.eu/>

If students are not used to actively contributing, trainers can facilitate a smooth transition into the exercise by allowing the students to choose between being an observer or player during the dialogical exercises, thus giving students time to adjust. In such sessions the tasks highlighted in pink on the learning cards are conducted by players, while observers closely watch one or two groups and subsequently write down what they learned from the presentations of others with regard to the key message from the heading of the respective card, e.g. **Researchers ensure appropriate authorship and citation!**

In case you notice shortcomings in the dialogues of groups that are struggling to perform the tasks highlighted in pink, you can discuss all or some of the following rules with your students to take a new direction<sup>13</sup>:

1. Be ready to have a dialogue about accepting or rejecting norms.
2. Make sure that everyone can participate in the dialogue.
3. Acknowledge each contribution to the discussion as a noteworthy argument.
4. Share your prior knowledge when required and be prepared to discuss it.
5. Do not call upon someone's prior knowledge when you have rejected it yourself as unacceptable.

6. Do not stick to an opinion in the face of better information; accept stronger arguments.
7. Do not use an ambiguous argument to convince someone.
8. Remember that your social status does not replace making a good argument.
9. Be ready to provide reasons for your statements if asked to do so.

## How to improve the learning curve

To improve the learning curve, the Path2Integrity project recommends using a **learning journal** after each session. To implement a learning journal in your Path2Integrity teaching, you can follow these steps:

1. Review the learning objectives box on the respective Path2Integrity learning card.
2. Create a writing prompt for your students that requires them to summarise the lesson. Start the prompt with, **“Write between five and ten sentences starting with the words ‘how did you...’”**
3. Then list the objectives of the respective card, e.g. from card S5:
  - a) **understand academic writing procedures;**
  - b) **describe criteria for good academic writing;**
  - c) **explain the importance of citation;**
  - d) **weigh different evaluation criteria you can use when writing academic or non-academic papers such as fiction.**

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13 These are nine out of 14 rules on how to conduct a rational dialogue (cf. Klare and Krope 1977, 124).

## The dialogical approach to teaching students about what is necessary to produce reliable research results and evidence-based decisions in society: a closer look.

According to Lorenz (2005, 189–191), a dialogue is a verbal discussion between two or more people, characterised by speech and counter-speech with the following specifics: question and answer (to clarify terms), claim and counter-claim (to justify decisions), and proof and falsification (to disclose inferences). A dialogue is a high-quality interpersonal relationship (cf. Widdershoven and Solbakk 2019) and seeks to be an ideal speech situation (cf. Habermas 1990, 43–115) in which the other (>you<) is recognised as a person, instrumentalisation is renounced, others' right to differing opinions is taken seriously, and an **I** and **you** role can be clearly defined (cf. Lorenz 2005, 189–191). When impartial, unconstrained and non-persuasive acts are respected, a dialogue can be conducted (cf. Gethmann 2005, 191).

A dialogical approach in teaching and learning builds common language and enables students to answer questions and develop solutions. It can be successful when equal rights and obligations for all parties are ensured and power-driven assertions, threats, deceptions and promises that cannot be fulfilled are eschewed (cf. Janich 2009, 20–21).

## A piece of advice from gender expert Katharina Miller:

One challenge within dialogical learning settings can be the lack of eye-level conversations between different genders. Within the Path2Integrity project, the gender dimension has been observed to play a role in interactive sessions. “Storytelling and role play are often gender-mixed interactions in classrooms, incorporating gender-specific interaction patterns. Because women have less speech percentage and more speech interruptions in gender-mixed discussion groups [...]”<sup>14</sup> P2I suggests teachers be aware of these (usually unconscious) power structures. That is why we recommend that you empower men and women to “[...] unfold their different emotions connected to their experiences”<sup>15</sup> by raising their awareness of existing differences and supporting their individual approaches towards participating in the dialogical discussions. This could be accomplished through an awareness training before the use of the learning cards starts. I am happy to accompany your learning experience. You can send an email to [miller@3ccompliance.com](mailto:miller@3ccompliance.com) and I will provide you with more information.

14 Prieß-Buchheit et al. 2020, 20.

15 Prieß-Buchheit et al. 2020, 20.

4. To conclude the prompt, add “...in our session today? Can you draw any references and links between the actions of the session and theories, findings or methods, you already know? What do you think about when transferring these actions to a broader scale?”
5. Provide your students with the writing prompt at the end of the session and decide when they need to return their response.

## Eleven sessions on integrity in research and society

**S0**



**Learning Card S0:**  
**Good research is based on honesty!** (cf. ECoC 2017, p.4)  
<https://doi.org/10.5281/zenodo.3383652>



**Links from learning card S0:**

**Evaluation of the learning units:** <https://path2integrity.eu/limesurvey/index.php/714871?newtest=Y&lang=en>



This learning card **introduces** learners to how important the responsible conduct of research is for society. The exercises introduce research and how reliable research results are produced, and enable an understanding and usage of research results in our knowledge-based society. In five learning steps, students learn basic values that characterise good research, formulate reasons for honest research by telling stories and find arguments for trustworthy research results for science and society. **This learning card is best used to start the Path2Integrity learning card programme.** Using the pre-test linked on the card, you can test for improvement in your courses. Feel free to use the test as an opportunity to discuss where reliable research results are at stake.

Figure 11: S0 learning card

S01



**Learning Card S01:  
Society needs  
responsible research!**  
[https://doi.org/10.5281/  
zenodo.3965658](https://doi.org/10.5281/zenodo.3965658)



“Students in my course needed precise instructions for the storytelling exercise. They wanted to know, for example, how many words to write for their stories. I supplied them with these details and they were happy to do the task. Sometimes it just takes a little support.”

This learning card challenges citizens to value responsible research results used in society. In five exercises, they learn to accept researcher’s impact for society, acknowledge the importance of reliable research results and request that researchers conduct responsible research.

Figure 12: S01 learning card

S02



**Learning Card S02:  
Bad research can  
harm people!**  
[https://doi.org/10.5281/  
zenodo.3965664](https://doi.org/10.5281/zenodo.3965664)



In this learning card, citizens become storytellers and speak up for responsible research. They describe criteria for bad research, learn how to implement research outputs into our knowledge-based society and argue in favour of the importance of reliable research results for both research and society in four learning steps.

**Links from learning card S02:**

**The European Code of Conduct for Research Integrity:** <https://www.alllea.org/wp-content/uploads/2017/05/ALLEA-European-Code-of-Conduct-for-Research-Integrity-2017.pdf>



Figure 13: S02 learning card

S04



**Learning Card S04:  
Academic integrity  
is a safeguard for collaborative work!**  
<https://doi.org/10.5281/zenodo.3965672>



**Links from learning card S04:**

**Building a foundation:** [https://www.path2integrity.eu/teaching-RI/content/collaborative\\_work](https://www.path2integrity.eu/teaching-RI/content/collaborative_work)

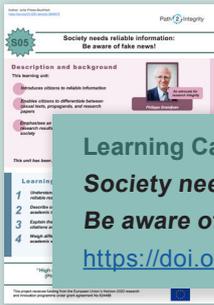


This learning unit introduces citizens to codes and regulations in academia which are important for group work. In rotatory role play they establish an open, transparent, logical and reasonable dialogue and acknowledge that aggressive behaviour hinders academic integrity.

“International students reported that they actually experience similar situations in their everyday life as addressed in the learning card S04, so we chose one of these examples for discussing academic integrity in collaborations; it was great and has allowed for the exchange of experience and knowledge!”

Figure 14: S04 learning card

S05



**Learning Card S05:**  
**Society needs reliable information:  
Be aware of fake news!**  
<https://doi.org/10.5281/zenodo.3965679>

This learning card introduces citizens to reliable information in our knowledge-based society. In storytelling, they understand the importance of reliable research results and describe criteria for reliable academic information. In five learning steps, participants explain the importance of correct citations and reliable sources and weigh different criteria for academic writing.

Figure 15: S05 learning card

S1



**Learning Card S1:**  
**Researchers, research institutions, scientific journals, government and regulatory agencies, and funding agencies all safeguard good research and ensure reliable research results! (cf. ECoC 2017, p.5)**  
<https://doi.org/10.5281/zenodo.3383671>

**Links from learning card S1:**

The European Code of Conduct for Research Integrity: <https://www.allea.org/wp-content/uploads/2017/05/ALLEA-European-Code-of-Conduct-for-Research-Integrity-2017.pdf>



If it works for your class, you can also use the following additional material:

The Research Integrity Office (ORI) provides an infographic on "The research community safeguards" addressing the responsibility of the research community in promoting research integrity: [https://ori.hhs.gov/sites/default/files/2018-04/3\\_Should\\_You\\_Trust\\_Science.pdf](https://ori.hhs.gov/sites/default/files/2018-04/3_Should_You_Trust_Science.pdf)



This learning card draws learners' attention to the research environment that ensures reliable research results for society. The exercise sheet enables participants to acknowledge safekeepers in research and challenges them to value and request good and reliable research for society. In five steps the learners engage in storytelling and reflect on how to require researchers to adhere to the norms of honest research.

“ Before I assigned students to do the preparation task from S1, I introduced them to the terms ‘ethics commission’, ‘ombuds-person’ and ‘data management officer’ using the definitions in the yellow highlighted box from the learning card. This was a good move, because my students were not yet familiar with the idea of a ‘research environment’. For example, they had no idea that a noteworthy regulatory institution exists that contributes to securing reliable research.

Figure 16: S1 learning card

S2



**Learning Card S2:**  
**Researchers follow their aims in a careful and well-considered manner! (cf. ECoC 2017, p.5)**  
<https://doi.org/10.5281/zenodo.3383805>



This learning card introduces learners to research procedures that are necessary for careful and well-considered research and for producing reliable results. The exercises stress how important the responsible conduct of research is for society. In four learning steps, students describe the criteria of responsible research and, when telling stories, argue in favour of the importance of reliable research results for both science and society.

“When I asked my students to continue the story of the LONA Science Centre and give advice to Prof. Weis in my S2 session, we took another look at the norms and values mentioned in the ECoC. Where they could only think of one solution at a time, the document provided us with alternative arguments. Heterogeneity really improved multidimensional thinking in my class.

Figure 17: S2 learning card

**Links from learning card S2:**

**The European Code of Conduct for Research Integrity:** <https://www.allea.org/wp-content/uploads/2017/05/ALLEA-European-Code-of-Conduct-for-Research-Integrity-2017.pdf>



If it works for your class, you can also use the following additional material:

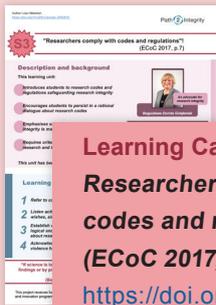
**The science comic from digital architect Patrick Hochstenbach “Anatomy of scientific bias” illustrates clear messages regarding norms in research procedures.** [https://hochstenbach.files.wordpress.com/2017/02/scientific\\_bias\\_600dpi\\_rgb.jpg?w=710](https://hochstenbach.files.wordpress.com/2017/02/scientific_bias_600dpi_rgb.jpg?w=710)



**“What is scientific research?” is a 3-minute video that gives students a brief introduction to research procedures. You can ask students to watch the video and take notes: Which procedures might follow George’s experiment before he actually gets to the final product?** <https://www.youtube.com/watch?v=RyLsKM3lkrA>



S3



**Learning Card S3:**  
**Researchers comply with codes and regulations! (ECoC 2017, p.7)**  
<https://doi.org/10.5281/zenodo.3383817>



This learning card introduces learners to guidelines safeguarding research integrity and requires them to learn criteria for promoting good research and engaging in dialogue surrounding it. In five learning steps, role players are asked to take account of regulations that help maintain good research, to enable reliable research results by establishing an open, transparent, logical and reasonable dialogue and to acknowledge that structural aggression hinders good research.

“When I used learning card S3, I changed the lesson plan and introduced my students to German rules and regulations safeguarding good research practice first. Before we started role-playing, I pointed out what it means to be tolerant in the case of ambiguity, to communicate openly, to listen actively and to trust one another. Together we practiced how to provide rational arguments and how to weigh the pros and cons of different actions. That was a good idea, because my students had initially not known anything about the German code of conduct or about how to conduct a dialogue.

**Links from learning card S3:**

**The European Code of Conduct for Research Integrity:** <https://www.allea.org/wp-content/uploads/2017/05/ALLEA-European-Code-of-Conduct-for-Research-Integrity-2017.pdf>



Figure 18: S3 learning card

S4



**Learning Card S4:**  
**Research groups work as transparently and openly as possible!**  
 (cf. ECoC 2017, p.6-7)  
<https://doi.org/10.5281/zenodo.3383827>



This learning card introduces learners to research collaborations and corresponding principles. In five learning steps, students learn what collaborations are and why it's necessary to be able to reach an agreement. Students act as if they are researchers, express their wishes and needs through storytelling and practice mutual understanding and respect in a dialogue.

**Links from learning card S4:**

**The European Code of Conduct for Research Integrity:** <https://www.allea.org/wp-content/uploads/2017/05/ALLEA-European-Code-of-Conduct-for-Research-Integrity-2017.pdf>

**Collaborative Research Solutions:** <https://www.youtube.com/watch?v=NTtAeiWKGDs>

**Building a Foundation:** [https://www.path2integrity.eu/teaching-RI/content/collaborative\\_work](https://www.path2integrity.eu/teaching-RI/content/collaborative_work)



“I explained research agreements by linking them to open and transparent communication. That went well, because my students overcame their initial assumption that group work is just talking to one another. They started to think about group work from a new angle and discovered that transparency and openness are preconditions for good research collaborations.”

Figure 19: S4 learning card

S5



**Learning Card S5:**  
**Researchers ensure appropriate authorship and citation!**  
 (cf. ECoC 2017, p.7)  
<https://doi.org/10.5281/zenodo.3383833>



“When we worked on the S5 card together, focusing on correct authorship and citation, my students started to ask questions about their seminar papers and final theses. So, I took this opportunity to encourage individual questions on scientific writing.”

**Links from the learning card S5:**

**The three minute video “Refairence” on correct citation for the prevention of plagiarism:** [https://www.kim.uni-konstanz.de/typo3temp/secure\\_downloads/68748/0/d217e531e6405cdc07605d5f264c03a7addc0a4f/film\\_zitieren\\_engl.mp4](https://www.kim.uni-konstanz.de/typo3temp/secure_downloads/68748/0/d217e531e6405cdc07605d5f264c03a7addc0a4f/film_zitieren_engl.mp4)



This learning card covers the topic of scientific writing and authorship and introduces learners to the rules of academic papers in five learning steps. Through storytelling, students develop an understanding of which processes have to be taken into account when writing academic papers, and learn to name various criteria for good scientific writing as well as explain the importance of citing sources. They also learn to be able to distinguish academic papers from non-academic papers.

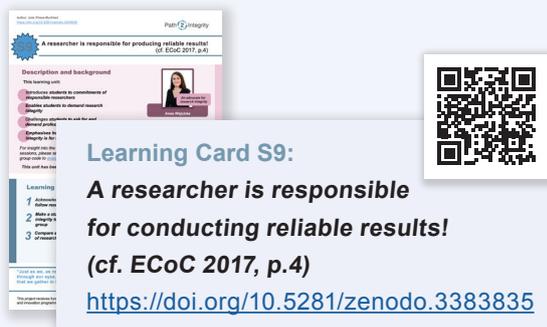
If it works for your class, you can also use the following additional material:

**The science comic from the digital architect Patrick Hochstenbach “Plagiarism” illustrates clear messages regarding research values in scientific writing:** [https://hochstenbach.files.wordpress.com/2017/02/plagiarism\\_600dpi\\_rgb.jpg?w=710](https://hochstenbach.files.wordpress.com/2017/02/plagiarism_600dpi_rgb.jpg?w=710)



Figure 20: S5 learning card

S9



### Links from learning card S9:

**Evaluation of the learning units:**  
[https://path2integrity.eu/lime\\_survey/index.php/714871?newtest=Y&lang=en](https://path2integrity.eu/lime_survey/index.php/714871?newtest=Y&lang=en)



“ It was great to do the test again at the end of the course with four of the P2ILC and to hear from the students themselves that they felt much more confident in their answers on research integrity questions.

With this learning card, students reflect on the importance of reliable research results for science and society. In four learning steps, they recognise codes and regulations as an obligation to good scientific practice, require researchers to commit themselves to the such and create their own declarations in favour of honest research. This learning card should be used to conclude your teachings with the Path2Integrity learning cards from the S-series. With the post-test and the request in learning card S9 to send an email to [evaluation@path2integrity.uni-kiel.de](mailto:evaluation@path2integrity.uni-kiel.de), you will be able to gain insight into your students' improvement.

Figure 21: S9 learning card

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## Code of Conduct

European Code of Conduct for Research Integrity (2017) Revised Edition. [https://ec.europa.eu/research/participants/data/ref/h2020/other/hi/h2020-ethics\\_code-of-conduct\\_en.pdf](https://ec.europa.eu/research/participants/data/ref/h2020/other/hi/h2020-ethics_code-of-conduct_en.pdf), May 5th 2020.

## List of links

<https://www.path2integrity.eu/ri-materials> All Path2Integrity learning cards and accompanying material

<https://doi.org/10.5281/zenodo.3383652> learning card S0

<https://doi.org/10.5281/zenodo.3965658> learning card S01

<https://doi.org/10.5281/zenodo.3965664> learning card S02

<https://doi.org/10.5281/zenodo.3965672> learning card S04

<https://doi.org/10.5281/zenodo.3965679> learning card S05

<https://doi.org/10.5281/zenodo.3383671> learning card S1

<https://doi.org/10.5281/zenodo.3383805> learning card S2

<https://doi.org/10.5281/zenodo.3383817> learning card S3

<https://doi.org/10.5281/zenodo.3383827> learning card S4

<https://doi.org/10.5281/zenodo.3383833> learning card S5

<https://doi.org/10.5281/zenodo.3383835> learning card S9

<https://www.path2integrity.eu/> Path2Integrity homepage

[https://www.youtube.com/watch?v=79Z\\_n-z5i5U](https://www.youtube.com/watch?v=79Z_n-z5i5U) An introduction video for the use of the Path2Integrity S-series learning cards

<https://www.path2integrity.eu/teaching-RI> The Path2Integrity roadmap, a categorised collection of existing innovative and traditional educational material on research integrity and research ethics

<http://doi.org/10.5281/zenodo.3384744> Graphic: Emma's Chat: What happened at LONA Science Centre?

<https://www.youtube.com/watch?v=e4-TbZIMvto> Video: Emma's Chat: What happened at LONA Science Centre?

<https://path2integrity.eu/limesurvey/index.php/714871?newtest=Y&lang=en> Pre-test to evaluate learning units

<https://path2integrity.eu/limesurvey/index.php/714871?newtest=Y&lang=en> Post-test to evaluate learning units

[evaluation@path2integrity.uni-kiel.de](mailto:evaluation@path2integrity.uni-kiel.de) email address of a P2I member to contact after evaluation

<https://path2integrity.eu/limesurvey/index.php/593973?lang=en> Assessing the trainers' perspective

<https://path2integrity.eu/limesurvey/index.php/553522?lang=en> Assessing the participants' experience

<https://learning-p2i.eu/> P2I online teaching platform

<https://www.allea.org/wp-content/uploads/2017/05/ALLEA-European-Code-of-Conduct-for-Research-Integrity-2017.pdf>

The European Code of Conduct for Research Integrity

[https://ori.hhs.gov/sites/default/files/2018-04/3\\_Should\\_You\\_Trust\\_Science.pdf](https://ori.hhs.gov/sites/default/files/2018-04/3_Should_You_Trust_Science.pdf) Infographic on "The research community safeguards"

[https://hochstenbach.files.wordpress.com/2017/02/scientific\\_bias\\_600dpi\\_rgb.jpg?w=710](https://hochstenbach.files.wordpress.com/2017/02/scientific_bias_600dpi_rgb.jpg?w=710) Science comic: "Anatomy of scientific bias"

<https://www.youtube.com/watch?v=RyLsKM3lkrA> Video: "What is scientific research?"

<https://www.youtube.com/watch?v=NTtAeiWKgDs> Video: „Collaborative Research Solutions“

[https://www.path2integrity.eu/teaching-RI/content/collaborative\\_work](https://www.path2integrity.eu/teaching-RI/content/collaborative_work) P2I comic: "Building a Foundation"

[https://www.kim.uni-konstanz.de/typo3temp/secure\\_downloads/68748/0/d217e531e64405cdc07605d5f264c03a7addc0a4f/film\\_zitieren\\_engl.mp4](https://www.kim.uni-konstanz.de/typo3temp/secure_downloads/68748/0/d217e531e64405cdc07605d5f264c03a7addc0a4f/film_zitieren_engl.mp4) Video: "Refairence"

[https://hochstenbach.files.wordpress.com/2017/02/plagiarism\\_600dpi\\_rgb.jpg?w=710](https://hochstenbach.files.wordpress.com/2017/02/plagiarism_600dpi_rgb.jpg?w=710) Science comic: "Plagiarism"





## Good research is based on honesty! (cf. ECoC 2017, p. 4)

### Description and background

This learning unit:

- Introduces students to research and to conducting research reliably*
- Emphasises how important responsible conduct of research is for society*
- Stresses the importance of reliable research results in our knowledge-based society*
- Challenges students to demand compliance in research principles*

**Please ensure to obtain informed parental consent and informed assent from participants if required in your country or in your institution.**

*This unit has been prepared for non-disciplinary learning groups.*



*An advocate for research integrity*

Alexander Gerber

### Keywords

*Good research practice; reliable research results; research integrity; honesty; reliability; accountability; respect in research*

### Learning objectives

- 1** *Describe the values of a researcher*
- 2** *Outline reasons for conducting responsible research*
- 3** *Realise consequences of research*
- 4** *Argue in favour of the importance of reliable research results for both research and society*

### Learning stages

- 1** *Become familiar with the topic*
- 2** *Collect your experience*
- 3** *Dive into an interesting story*
- 4** *Connect the example to your life*
- 5** *Engage in storytelling*
- 6** *Reflect on reasons for reliable research in society*

**“Science has received a mandate from society to produce knowledge and thus address the grand challenges of our time.”**  
**(Alexander Gerber, an advocate for research integrity)**



## S0 Path Integrity



### 1 Become familiar with the topic:

*Homework (before the unit starts) or reading session*

**Fill out the survey to evaluate the learning units.**

Use this link: <https://path2integrity.eu/limesurvey/index.php/714871?newtest=Y&lang=en>

A two-digit group code is required to link relevant data in an anonymised manner. Before you begin, define this code together with the group and use it in the questionnaire. Keep a note of the code for later use. Note any interesting or challenging cases as well as any unknown words and bring these notes to your class.

### 2 Collect your experience:

As a class, discuss how sure and unsure you were in your survey answers. In what way(s) do you think the cases from the survey can be of importance to you? After this questionnaire, what is your first idea of good research? Have a brainstorming session together.

### 3 Dive into an interesting story:

Learn more about good research practice and look up the story from LONA Science Centre (video or text). What happened in this story? What went wrong?

### 4 Connect the example to your life:

Take a minute for yourselves to think about someone in your environment who used research results to argue in favour of something. Write down a description of that person and what they argued for.

#### Research principles are:

“Reliability in ensuring the quality of research, reflected in the design, the methodology, the analysis and the use of resources.

Honesty in developing, undertaking, reviewing, reporting and communicating research in a transparent, fair, full and unbiased way.

Respect for colleagues, research participants, society, ecosystems, cultural heritage and the environment.

Accountability for the research from idea to publication, for its management and organisation, for training, supervision and mentoring, and for its wider impacts.” (ECoC 2017, p. 4)



## 5 Engage in storytelling:

**Introduce your character.** In pairs, introduce your character to your partner. In favour of what did your characters argue and how did they use research results to strengthen their arguments? Explain whether this person is a researcher or whether they work in some other area of society.

**Imagine the worst.** In a co-creative process with your partner, choose one of your characters and imagine a story in which the research results turn out to be fraudulent because the researcher who produced them had cheated. The story should include both the cheating researcher and your character. Include a person and/or a part of society that gets hurt due to the fraudulent results. Write down your storyline in bullet points.

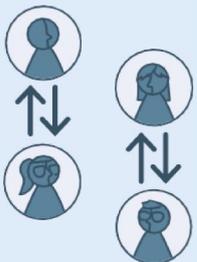
**Turn it to the best.** Now rewrite your story! Together, imagine that another researcher has stopped the cheating. Describe in detail what values this reliable researcher has and how your character is now able to use these reliable research results for their argument. Write down a short story in which a person and/or a group is able to advance because of the reliable results and the argument in favour of it.

**Read some of these stories aloud!**

## 6 Reflect on reasons for reliable research in society:

**As a class, collect reasons to conduct reliable research on a chalk board or flip chart. Discuss why it is important that researchers follow rules such as that good research is based on honesty.**

Mark four significant reasons from your collection as to why researchers need to follow these principles. Write them in your notebook.



**S01**

## Society needs responsible research!

### Description and background

This learning unit:

- Introduces citizens to responsible research*
- Challenges citizens to value responsible research results used in society*
- Enables citizens to realise how important good research and reliable results are*
- Emphasises that research integrity safeguards research for society*



*An advocate for research integrity*

Alexander Gerber

### Keywords

*Research and society; responsible research; reliable research results; research principles; researchers' impact*

*This unit has been prepared for non-disciplinary learning groups.*

### Learning objectives

- 1 Identify and accept researchers' impact on society*
- 2 Realise the importance of responsible research*
- 3 Request that researchers conduct responsible research*

### Learning stages

- 1 Become familiar with the topic*
- 2 Dive into an interesting story*
- 3 Engage in storytelling*
- 4 Put the pieces together*
- 5 Reflect on rules for researchers*

**“Scientists with integrity reflect on why they actually do science – be it in medicine or mechanics, in communication or cultural studies.”**

**(Alexander Gerber, an advocate for research integrity)**





## 1 Become familiar with the topic:

### *Homework (before the unit starts)*

Learn more about how research affects your everyday life. Identify three examples of how research findings affect your life and prepare to present them in class.



## 2 Dive into an interesting story:

### **Review or look up the story from LONA Science Centre (video or text).**

Briefly repeat the story and flesh out who is attentive, respectful, open, responsible, motivated, impartial etc.

## 3 Engage in storytelling:

Come together in groups of three to four persons. Write a scene of a play in which Emma, David and Rebecca meet their mayor and the head of the fire brigade one day after their visit to the LONA Science Centre.

### **Discuss the following topics before you start writing:**

1. Who are the actors in your play?
2. What do they think about bad research, and why?
3. Who could request the researchers from LONA Science Centre to conduct research responsibly? How could s/he do that?

Your scene should include a dialogue about good research. By putting honesty, respect, reliability and accountability first, your actors should link their dialogue to the happenings at LONA Science Centre. Write your scene.

### **Read all of your stories aloud!**



### **Society needs researchers with research integrity**

Researchers with research integrity are able to explain step by step how they arrived at their research results. Society can rely on their developments and results.

“It is of crucial importance that researchers master the knowledge, methodologies and ethical practices associated with their field. Failing to follow good research practices violates professional responsibilities. It damages the research processes, degrades relationships among researchers, undermines trust in and the credibility of research, wastes resources and may expose research subjects, users, society or the environment to unnecessary harm.”

(ECoC 2017, p. 8)

## 4 Put the pieces together:

### **Come together in class.**

Collect why citizens should request responsible research from academia. Decide together how citizens can request researchers to conduct responsible research and write it into your notebook.

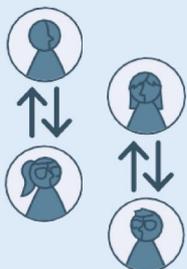
## 5 Reflect on rules for researchers:

Return to your stories with the groups you were working in earlier. Imagine that other students will watch your scene. Decide together which actions your fellow students should learn through your scene.

For society, researchers should \_\_\_\_\_.

For society, researchers should \_\_\_\_\_.

Citizens should request \_\_\_\_\_.





## Bad research can harm people!

### Description and background

This learning unit:

*Introduces citizens to the processes required to produce reliable research results*

*Enables an understanding and usage of research results in our knowledge-based society*

*Challenges citizens to speak up for responsible research*

*Stresses how important the responsible conduct of research is for society*



*An advocate for research integrity*

*Justyna Olko*

### Keywords

*Research processes; reliable research results; bad research; progress in society; research output*

*This unit has been prepared for non-disciplinary learning groups.*

### Learning objectives

- 1** *Describe criteria for bad research*
- 2** *Listen actively to how research outputs can be implemented in society*
- 3** *Argue in favour of the importance of reliable research results for both research and society*

### Learning stages

- 1** *Become familiar with the topic*
- 2** *Dive into an interesting story*
- 3** *Engage in storytelling*
- 4** *Collect arguments in favour of responsible research*

**“We as researchers have the responsibility towards society to conduct research in an honest and ethical way.”  
(Justyna Olko, an advocate for research integrity)**





## 1 Become familiar with the topic:

### *Homework (before the unit starts) or reading session*

Look up three stories about research fraud. Bring them to class.

Read chapters 1 and 3.1 of “The European Code of Conduct for Research Integrity”.

Discuss what is written in the document and the meanings of any unknown words.

**European Code  
of Conduct for  
Research Integrity:**



## 2 Dive into an interesting story:

Review or look up the story from LONA Science Centre (video or text).

Briefly flesh out what characteristics the students (Emma, Rebecca and David) and two researchers (Prof. Weis and her colleague) have.



## 3 Engage in storytelling:

Now imagine the story continues as follows. Let one read aloud:

“No!”, Prof. Weis cried out. “This couldn’t be true.” According to the newspaper article in her hand two firefighters died in a storm the day before. The head of the fire brigade stated that three more were severely injured because they overlooked the retreat signals, which were implemented in their trainings due to the results of a study she co-authored last year. Prof. Weis could not ignore it any longer. The past caught up with her. She had falsified data in the study about reaction times in stressful situations.

Build groups of three to four persons and write a story about Prof. Weis committing fraud and its impact to society. Fill the story with sentences that argue in favour of good research procedures and underline them in colour.



### What is research for society?

Progress is often driven by research. Think of space travel, penicillin, de-escalation strategies, smart homes etc.

Research is a quest for knowledge that is conducted in a way that is systematic, well-considered, well planned, thought out in advance etc.

Tax money is used to fund research and foster scientific innovations in order to improve life.

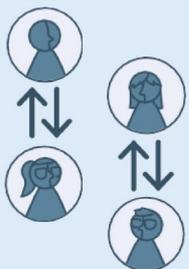
## 4 Collect arguments in favour of responsible research:

**Come together in pairs and ask each other the following questions:**

1. Why is it important that researchers, such as Prof. Weis, publish honest research results?
2. How can the head of the fire brigade argue that research should be taken seriously?

**Collect the answers on a chalk board.**

Tell your partner a story in which Prof. Weis this time follows values and norms of careful and well-considered research.



**S04**

## Academic integrity is a safeguard for collaborative work!

### Description and background

This learning unit:

*Introduces citizens to codes and regulations in academia*

*Encourages citizens to argue for an open, transparent, logical and reasonable dialogue*

*Requires citizens to persist in an open, transparent, logical and reasonable dialogue*

*Emphasises that aggressive behaviour hinders academic integrity*



*An advocate for research integrity*

*Kristina Bliznakova*

### Keywords

*Academic integrity; implicit and explicit codes and regulations; reliability in group work*

*This unit has been prepared for non-disciplinary learning groups.*

### Learning objectives

- 1** *Refer to implicit and explicit codes and regulations*
- 2** *Realise that fraudulent behaviour hinders academic work*
- 3** *Establish an open, transparent, logical and reasonable dialogue*

### Learning stages

- 1** *Become familiar with the topic*
- 2** *Dive into an interesting story*
- 3** *Engage in rotatory role play*
- 4** *Discuss academic integrity*
- 5** *Establish guidelines for future work groups*

**“Research integrity guarantees collaborations with notable scientific institutions and renowned universities. It also opens doors to work with big industries, but most importantly, research integrity can help transform ideas into products beneficial to society.”**

**(Kristina Bliznakova, an advocate for research integrity)**





## 1 Become familiar with the topic:

*Homework (before the unit starts) or reading session*

Look up the comic "Building a Foundation".

Building a  
Foundation  
(Path2Integrity):



## 2 Dive into an interesting story:

Review or look up the story from LONA Science Centre (video or text).

In your opinion, how do Emma, David and Rebecca assess the work between Prof. Weis and her colleague?

What challenges does Prof. Weis have in her team?

## 3 Engage in rotatory role play:

### Build groups of three people.

Put all the tables and chairs aside and spread out in the room. Now expand a dialogue between the following three characters.

### Character descriptions:

Emma: open and transparent, persists in excellence

David: distracted, tries to find his way

Rebecca: self-confident, works as little as possible

### Situation:

Emma, David and Rebecca are back in school working on a group assignment for another class to conduct their own research. Emma can feel that their meeting is going south and that she faces similar challenges as Prof. Weis at LONA Science Centre. Think about what Emma, David and Rebecca talk to each other, and embellish the dialogue with details.

### Play round 1:

Start your freestyle dialogue. Emma (1) steps in last.

### Play round 2:

Switch roles. Start your dialogue again. Emma (2) steps in last referring to implicit and explicit codes and regulations for collaborative group work.

### Play round 3:

Switch roles. Start your dialogue again. Emma (3) steps in last using the words "open", "transparent", "logical" and "reasonable".

## 4 Discuss academic integrity:

Put all the tables and chairs back in place. Discuss in class:

- What hinders collaborative work, and why?
- What are your experiences with collaborative work?
- How can somebody ask for and establish academic integrity in collaborations?

## 5 Establish guidelines for future work groups:

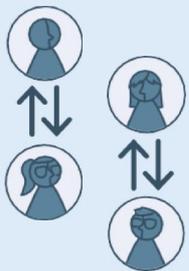
To learn how research is done and how to gain knowledge collaboratively, students should

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

Write these guidelines into your notebook.



Academic integrity means "[c]ompliance with ethical and professional principles, standards and practices by individuals or institutions in education, research and scholarship". (Tauginienè, L. et al. (2018) Glossary for Academic Integrity. ENAI Report 3G, online.)



**S05**

## Society needs reliable information: Be aware of fake news!

### Description and background

This learning unit:

- Introduces citizens to reliable information*
- Enables citizens to differentiate between casual texts, propaganda and research papers*
- Emphasises an understanding of reliable research results in our knowledge-based society*



*An advocate for research integrity*

*Philippe Grandjean*

### Keywords

*Disinformation and misinformation; reliable sources; references; citations*

*This unit has been prepared for non-disciplinary learning groups.*

### Learning objectives

- 1 Understand the importance of reliable research results*
- 2 Describe criteria for reliable academic information*
- 3 Explain the importance of correct citations and reliable sources*
- 4 Weigh different criteria for academic writing*

### Learning stages

- 1 Become familiar with the topic*
- 2 Dive into an interesting story*
- 3 Discuss the importance of reliable sources and correct citation*
- 4 Engage in storytelling*
- 5 Reflect on rules for academic writing*

**“High ethical standards are necessary in science publication.”  
(Philippe Grandjean, an advocate for research integrity)**





## 1 Become familiar with the topic:

Read your school's or department's guidelines on citation and academic writing, if they exist.

## 2 Dive into an interesting story:

Review or look up the story from LONA Science Centre (video or text).

Briefly summarise the story.

Choose one who reads aloud in front of the class:

Imagine that Prof. Weis decided not to manipulate the results, and that she continued to conduct research. Today Prof. Weis meets with the mayor and the head of the fire brigade to discuss how to improve trainings for firefighters. With strength Prof. Weis squeezes the papers in her hands, which contain results from her, several other credible, trustworthy and objective references such as 'Surinares, K. (2019) Helping firefighters to survive extreme wildfires, Journal of Scientific Research, 56(4), 55–59.'

which argue to alter the trainings routine.



### Assess reliability

- Check how scholarly the paper is. To inform not to persuade should be the main purpose.
- Check how accurate, complete and unbiased the information of the paper is. Compare the content to other sources.
- Check if the paper has taken status quo and existing evidence into account. Look at the paper's references and compare them with other sources.
- Check the expertise of authors and publishing organisations. Consider their education, experience and standing in the scientific community.
- Check how up to date the paper is. Search for more recent findings, and/or if these papers state the original argument. The original (older) source is more valuable than secondary sources.

## 3 Discuss the importance of reliable sources and correct citation:

As a class, share what you know about the following terms:

- What is a reliable source?
- What is a scientific source?
- What does it mean to cite?

## 4 Engage in storytelling:

Come together in small groups (three to four people) and write down a short story about Prof. Weis defending her findings to be reliable against the mayor and the head of fire brigade.

Insert in your story criteria for reliable academic information and underline them.

Read some of your stories aloud.

### To ensure reliability academic writing contains



#### 1. Direct quotes

Authors use someone's text (or image, chart, table etc.) word-for-word, stating the source and original author. They indicate where the original text starts and ends by enclosing the quoted section in quotation marks. They add a reference at the end of the quote.

#### 2. Paraphrases

Authors take a statement, idea or text of somebody else and tell it in their own words. They acknowledge the original source by using a reference at the end of the paraphrased session.

#### 3. Summaries

Authors describe the basic idea of a piece of work in their own words. They state the original source of the summarised ideas.

(This section was prepared by Lisa Häberlein.)

## 5 Reflect on rules for academic writing:

**Come together as a class.**

Collect the criteria you have underlined on a chalk board and turn them together into rules for academic writing. Write them into your notebook.

In which situations do rules from the chalk board contradict each other? Which rules are important when?



**Researchers, research institutions, scientific journals, government and regulatory agencies as well as funding agencies all safeguard good research and ensure reliable research results!** (cf. ECoC 2017, p. 5)

## Description and background

This learning unit:

*Introduces students to the research environment*

*Challenges students to value good research and reliable research results*

*Enables students to realise guardians in research*

*Emphasises that research is embedded in a broader research environment*



*An advocate for research integrity*

*Albrecht Beutelspacher*

## Keywords

*Research integrity; codes and regulations; research environment; guardians; ombudsperson; data management officer; research ethics committee*

*This unit has been prepared for non-disciplinary learning groups.*

## Learning objectives

- 1** *Identify, accept and actively use research rules*
- 2** *Realise the existence of research codes and regulations within research institutions and organisations*
- 3** *Review rules from clear research codes and regulations*
- 4** *Request that researchers follow research rules*

## Learning stages

- 1** *Become familiar with the topic*
- 2** *Dive into an interesting story*
- 3** *Engage in storytelling*
- 4** *Put the pieces together*
- 5** *Reflect on rules for researchers*

**“Universities and research institutions can promote research integrity at various levels. There are codes of good scientific practice and there are appropriate committees that monitor compliance in case of conflict.”** (Albrecht Beutelspacher, an advocate for research integrity)





## 1 Become familiar with the topic:

Find out who in your region observes and helps in situations that jeopardise research. Search for the following words: ombudsperson (ombudsman), data management officer in research or research ethics committee. Find out what they do, their contact information for your region and if possible their task description. Bring this information to your class.

## 2 Dive into an interesting story:

**Review or look up the story from LONA Science Centre (video or text).** Briefly flesh out what characteristics the students (Emma, Rebecca and David) and two researchers (Prof. Weis and her colleague) have. Imagine the story continues as follows:

Mr. Liebling, the class teacher, starts a project week with his students called "Research integrity" to analyse what happened at the research institution that some of his students had visited. He wants his students to understand why such incidents do not conform to the guidelines of good research.



Researchers with research integrity generate results that society can rely on. They are able to explain step by step how they arrived at their research results. Furthermore, the results should be reproducible by others. Researchers with research integrity use the standards of their research discipline as a guideline from the first idea for new research to the end of the research process.

Researchers are both supported by and observed within their research environment. Some people specialise in observing and advising to keep research reliable and trustworthy. Their tasks are outlined in research ethics committee policies, codes for good scientific practice, task descriptions of ombudspersons, declarations of data protection etc.

## 3 Engage in storytelling:

**Build groups of three to four persons.** Imagine you are Mr. Liebling's students. You plan to write one scene of a play telling Emma's, Rebecca's and David's story.

**Discuss the following topics before you start writing:**

1. Who are the actors in your play?
2. Should Emma contact guardians of research integrity (such as an ombudsperson, a data management officer in research or a research ethics committee)?
3. Which research policies exist in your region and can be used in the play? Are there institutional regulations your actors can refer to? Or national regulations? What about European regulations? Search for relevant documents and refer to them.

**Your scene should include a dialogue about good research.** By putting honesty, respect, reliability and accountability first, your actors should emerge from the conflict and stand up for research integrity. Write your scene.

**Read some of your stories aloud!**

[European Code of Conduct for Research Integrity](#)



## 4 Put the pieces together:

**Take a short break from your stories.** Come back together as a class. Collect your information about your research environment by showing your material on ombudspersons, research ethics committees and data officers. Decide together what information is important for your region, and write it down in your notebook.

## 5 Reflect on rules for researchers:

**Return to your stories with the groups you were working in earlier.** Imagine that other students will watch your scene. Decide together which rules of research behaviour your fellow students should learn through your scene.

- Researchers should \_\_\_\_\_.
- Researchers should \_\_\_\_\_.
- Researchers should \_\_\_\_\_.
- Researchers should \_\_\_\_\_.

### What do ombudspersons do?

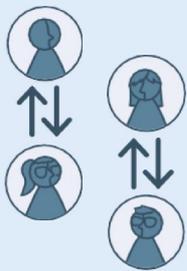
They can be called to enforce the rules of good research practice in the event of suspicion of misconduct. All enquiries and procedures will be treated confidentially and impartially. The support includes advice, assessment and recommendation (first advice also by telephone or email).

### What are data management officers in research?

They ensure and monitor compliance with the research data management policy and provide technical support.

### What are the tasks of a research ethics committee?

Research ethics committees assess ethical issues in research projects, provide information and advice in compliance with legal requirements, professional rules and research standards. The support includes advice, assessment and recommendation.





## Researchers follow their aims in a careful and well-considered manner! (cf. ECoC 2017, p. 5)

### Description and background

This learning unit:

*Introduces students to research and to the processes required to produce reliable research results*

*Stresses the importance of reliable research results in our knowledge-based society*

*Challenges students to listen and speak up as well as to explain and be able to justify research norms*



*An advocate for research integrity*

Tymon Zieliński

### Keywords

*Good research practice; reliable research results; research integrity; research procedures; research misconduct*

*This unit has been prepared for non-disciplinary learning groups.*

### Learning objectives

- 1** *Describe criteria for research procedures*
- 2** *Listen actively about how to do research*
- 3** *Argue in favour of well-considered research for the benefit of science and society*

### Learning stages

- 1** *Become familiar with the topic*
- 2** *Dive into an interesting story*
- 3** *Engage in storytelling*
- 4** *Collect arguments for responsible research conduct*

**“Scientific research is a critical building block of modern societies. So if societies are to properly grow and flourish, it is imperative that research be conducted with impeccable procedures and methods.”**  
(Tymon Zieliński, an advocate for research integrity)





## 1 Become familiar with the topic:

*Homework (before the unit starts) or reading session*

Read the paragraph on research procedure in “The European Code of Conduct for Research Integrity”

Take notes and discuss the meanings of any unknown words.

[European Code of Conduct for Research Integrity:](#)



## 2 Dive into an interesting story:

Review or look up the story from LONA Science Centre (video or text). In pairs, consider what kind of research fits best into the story: experiments, surveys, observation, literature reviews or others? Justify your answer.

## 3 Engage in storytelling:

**What would you advise Prof. Weis to do?** Discuss with the person sitting next to you.

**Collect your advice to Prof. Weis on a chalk board or flip chart.** Do your advices promote good research practice? If yes, why?

Now imagine the story continues as follows: “No!”, Prof. Weis thought, “the test results weren’t worth it. I won’t give up my career for that.” She quickly walked down the hall into her office, grabbed the top pile of paper and tore it up before she even thought about it. “That’s it. I’ve really done it.” Now, she would enter the results that her colleague wanted. “I want to stay at this institution.”, she told herself. That was her justification.

**Build groups of three to four persons and continue the story,** this time following basic values and norms of conduct that speak in favour of careful and well-considered research. Fill the story with sentences that argue in favour of good research procedures. Also include the advices to Prof. Weis you have previously collected.

**Read some of your stories aloud.**

### What is research?

Research is a quest for knowledge that is conducted in a way that is systematic, calculated, considered, well planned, thought out in advance etc. Researchers...

- ...discover and design things along the way as they work;
- ...plan their research thoughtfully;
- ...gather information and analyse it to better understand it;
- ...publish their results and disseminate their knowledge.

Progress in society is often driven by research. Think of space travel, penicillin, de-escalation strategies, smart homes etc.

## 4 Collect arguments for responsible research conduct:

**Come together in pairs and ask each other the following questions:**

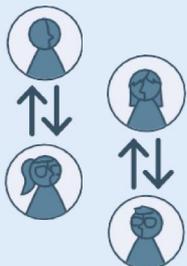
1. What could happen if the falsified results are published?
2. What might happen if Prof. Weis publishes the real results?
3. Do you think it is important for society that Prof. Weis publishes honest research results? Explain why (or why not).
4. How can Prof. Weis argue that research should be taken seriously?

**Collect the answers on a chalk board or flipchart.**

**Compare the story in which Prof. Weis destroys the original test results and plans to enter falsified results with the ones you wrote.**

Which of those stories stands for careful and well-considered research, and why?

What does it take for researchers to conduct research in a careful and well-considered way?



**S3**

## “Researchers comply with codes and regulations” (ECoC 2017, p. 7)

### Description and background

This learning unit:

- Introduces students to research codes and regulations safeguarding research integrity*
- Encourages students to persist in an open and transparent, logical and reasonable rational dialogue about research codes*
- Emphasises safeguards by which research integrity is maintained*
- Requires criteria for the promotion of good research and the dialogue on it*



*An advocate for research integrity*

*Bogusława Dorota Gołębnik*

### Keywords

*Research codes and regulations; good research practice; structural violence; respect; openness and transparency*

*This unit has been prepared for non-disciplinary learning groups.*

### Learning objectives

- 1 Refer to codes and regulations*
- 2 Listen actively and present own wishes, aims and goals*
- 3 Establish an open and transparent, logical and reasonable dialogue about research codes and regulations*
- 4 Realise that structural violence hinders good research*

### Learning stages

- 1 Become familiar with the topic*
- 2 Dive into an interesting story*
- 3 Invent characters*
- 4 Engage in rotatory role play*
- 5 Identify criteria for good research*

**“If science is to serve society – whether by providing applications resulting from research findings or by providing knowledge that facilitates understanding of the processes in which we find ourselves – research results must be reliable knowledge.”  
(Bogusława Dorota Gołębnik, an advocate for research integrity)**





## 1 Become familiar with the topic:

*Homework (before the unit starts) or reading session*

Read the paragraph on safeguards in “The European Code of Conduct for Research Integrity” and discuss the meanings of any unknown words.

Now, think about protective measures that play an active role at your institution.

**European Code  
of Conduct  
for Research  
Integrity:**



## 2 Dive into an interesting story:

Review or look up the story from LONA Science Centre (video or text). Together, discuss which research integrity safeguards are at risk here. Try to answer the following questions by telling different endings of the story:

- Do researchers follow their codes for research integrity?
- Do researchers respect their research subjects?
- Do researchers respect the welfare and safety of the community?
- Do researchers consider possible risks?
- Do researchers realise significant differences in their protocols?

## 3 Invent characters:

**Put yourself in the situation in which Prof. Weis and her colleague are in conflict.** How does Prof. Weis experience the problem? What is her colleague’s position? What is on their minds and what could they say?

**Draw the counterparts on a piece of paper and add speech or thought bubbles to the sketches.** Pass your sheets through the class and read the other figures’ speech bubbles carefully.

**Collect all the sheets and put them on the wall.** Meet in front of the wall as a class and read some of the speech bubbles out loud!

## 4 Engage in rotatory role play:

**Now come together in pairs and do a role play.**

Put all the tables and chairs aside and spread out in the room. Play a dialogue between Prof. Weis and her colleague, in which both present their thoughts, concerns, wishes and goals. **Carefully listen to your counterpart.**

In the role of Prof. Weis, demand an open, transparent, logical and reasonable dialogue on the acceptance or rejection of research codes and regulations. Request your colleague not to force anyone to agree to ambiguous arguments but to justify their statements. In the role of the colleague, do not stick to your opinion even though you know better, but accept better arguments and remember that the power of your social status cannot replace good arguments.

**Switch roles.**

What makes a good argument for maintaining research integrity? Collect basic characteristics, objectives and possible obstacles to argumentation on a chalk board or flipchart.

## 5 Identify criteria for good research:

Put all the tables and chairs back in place. Discuss the following questions with the person sitting next to you:

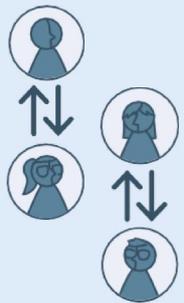
- What arguments for compliance with principles of research integrity are most convincing?
- How can you resolve the conflict of interest or end the conflict situation?

Each of you should write down one rule (expanding the collection from the yellow box) using the following phrase: *To enable an open and transparent dialogue at eye level about research codes and regulations, researchers should...*



### Researchers should...

1. express interest and remain unprejudiced;
2. be able to communicate and justify their argument;
3. be ready to explain where their argument comes from;
4. reason logically and in a way that is easy to understand.



**S4**

**Research groups work as transparently and openly as possible!**  
(cf. ECoC 2017, pp. 6–7)

## Description and background

This learning unit:

*Introduces students to research collaborations*

*Challenges students to understand the conditions of good collaborative research*

*Enables students to understand research agreements*

*Emphasises the recognition of roles and responsibilities in research collaborations*



*An advocate for research integrity*

*Kristina Bliznakova*

## Keywords

*Reliable working relationships; mistrust; agreement; research roles and responsibilities; openness; transparency; respect*

*This unit has been prepared for non-disciplinary learning groups.*

## Learning objectives

- 1** *Listen actively and present aims and wishes in research groups*
- 2** *Learn to respect and accept the aims and wishes of others in research groups*
- 3** *Practice understanding and being understood in a dialogue*

## Learning stages

- 1** *Become familiar with the topic*
- 2** *Dive into an interesting story*
- 3** *Engage in role play and come to an agreement*
- 4** *Reflect on collaborative research*

**“Research collaborations open doors for joint scientific activities that can provide amazing results that benefit our society.”**  
**(Kristina Bliznakova, an advocate for research integrity)**





# 1 Become familiar with the topic:

*Homework (before the unit starts) or reading session*

For basic explanations of collaborative work, you can watch the short video “Collaborative Research Solutions” by Graham Sustainability Institute. In your own words, what is research collaboration?

Read the paragraph on collaborative working in “The European Code of Conduct for Research Integrity” and discuss the meanings of any unknown words.

Look up Path2Integrity’s comic about collaborative work, “Building a Foundation”. What can you see? Which principles play a role?

[Collaborative Research Solutions \(Graham Sust. Institute\):](#)



[European Code of Conduct for Research Integrity:](#)



[Building a Foundation \(Path2Integrity\):](#)



# 2 Dive into an interesting story:

**Review or look up the story from LONA Science Centre (video or text).** The research the students are talking about is a collaborative research project studying how people react in stressful situations. The results will be used to adapt professional training programmes for firefighters, police and rescue crews.

**Sketch the different roles within this research project by drawing stick figures for each of the following four collaborative players on your classroom chalk board or flip chart:**

<p><b>Prof. Weis’ team</b></p> <p>LONA Science Centre</p> <p>conducting the research</p>	<p><b>Police &amp; fire brigade</b></p> <p>funding the research</p>	<p><b>Prof. Surinares</b></p> <p>Pakistan</p> <p>collecting additional data</p>	<p><b>Education agency</b></p> <p>developing evidence-based training courses for fire fighters and police officers</p>
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**Embellish the stick figures with representative heads and coat buttons.**

# 3 Engage in role play and come to an agreement:

**Be open and transparent so that the research can flourish.**

**In groups of three or four, imagine that each of you is one player in this collaborative research project.** You are all reluctant to cooperate because in your last collaborations you experienced disagreements and disrespectful accusations. But this research project is too important to fail. Future fire fighters and police officers, as well as the people who rely on them, are depending on your results being reliable. That is why you want to establish a strong base from the beginning.

**Allocate a stick figure to each person and take on that role.** Prof. Weis’ team fears overly protective partners. The police and fire brigade fear communication problems. Prof. Surinares fears unequal contributions from the different participants and getting insufficient recognition. The education agency needs clarification about roles and responsibilities in this undertaking.

**Ask your partners what they expect from your cooperation.** Make sure that you all understand each other correctly. Each of you should use the following phrase at least twice:  
*Do I understand you right that you want me to...*

**Leave your group and consider the wishes you heard from your project partners.** To avoid jeopardising the research project, draft a contract in which you pay attention to fulfilling your partners’ wishes.

**Come back together in your group and compare your drafts.** Discuss if differences appear and alter the texts until all partners agree.

## Research collaborations

Research collaborations can help increase the likelihood of finding answers to challenging questions. At the beginning of a collaboration, in order to be successful, all collaborators agree on

- taking on “[...] responsibility for the integrity of the research”;
- “[...] the goals and [...] the process for communicating”;
- the “[...] expectations and standards [that will apply]”;
- the “[...] procedures for handling conflicts and possible cases of misconduct”;
- being “[...] properly informed and consulted about submissions for publication of the research results.”

(ECoC 2017, pp. 6–7)

# 4 Reflect on collaborative research:

**Come together as a class and discuss:**

- What advantages does collaborative research have?
- What pitfalls exist in research collaborations and how can they be overcome?

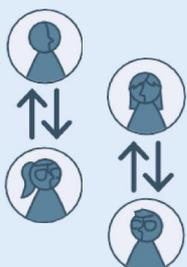


Research / espionage

Shared knowledge / secret information

Openness / mistrust

Transparency / disguise



**S5**

## Researchers ensure appropriate authorship and citation! (cf. ECoC 2017, p. 7)

### Description and background

This learning unit:

- Introduces students to research and to academic writing and publishing*
- Enables an understanding of the importance of research papers' contribution in our knowledge-based society*
- Challenges students to learn common rules in academic writing and to comply with these rules*
- Emphasises the difference in writing style between casual texts and research papers by looking at the criteria for both*



*An advocate for research integrity*

*Philippe Grandjean*

### Keywords

*Academic writing; author; editor; citation rules; writing procedures*

*This unit has been prepared for non-disciplinary learning groups.*

### Learning objectives

- 1 Understand academic writing procedures*
- 2 Describe criteria for good academic writing*
- 3 Explain the importance of citation*
- 4 Weigh different evaluation criteria you can use when writing academic or non-academic papers such as fiction*

### Learning stages

- 1 Become familiar with the topic*
- 2 Dive into an interesting story*
- 3 Understand academic writing procedures*
- 4 Engage in storytelling*
- 5 Reflect on rules for citation*

**“High ethical standards are necessary in science publication. However, what does an editor do when identifying a possible breach of ethical standards in another journal?”**  
**(Philippe Grandjean, an advocate for research integrity)**





## 1 Become familiar with the topic:

### Homework (before the unit starts) or reading session

Read your school's or department's guidelines on citation and academic writing, if they exist.

Watch the video "Refairance" from the University of Konstanz.

Discuss the meanings of any unknown words.

["Refairance"](#)  
[\(University of Konstanz\)](#)



## 2 Dive into an interesting story:

Review or look up the story from LONA Science Centre (video or text). Briefly flesh out what characteristics the students (Emma, Rebecca and David) and the two researchers (Prof. Weis and her colleague) have. Imagine that Prof. Weis decided not to manipulate the results, and that she now works at a university. Together, please read aloud:

Two years ago, Prof. Weis read a remarkable research paper that had just been published. In it, the author praised Prof. Weis' work. The paper discussed the results of several researchers working in the same field. By including the latest findings from a Pakistani researcher named Kim Surinares, the paper opened up a new way of thinking about the topic and received a lot of attention. "Those were exciting times!", Prof. Weis remembers.

Now, two years later, Prof. Weis is in contact with Surinares, and some of her graduate students have begun to study his findings in depth. Developing his ideas further led to completely new insights. Gratefully, Prof. Weis runs her finger along the reference that started her on this new line of investigation: "Surinares, K. (2019) Helping firefighters to survive extreme wildfires, *Journal of Scientific Research*, 56(4), 55–59."

## 3 Understand academic writing procedures:

Copy the reference of Kim Surinares' paper into your notebook. Carefully check whether you copied every character. Exchange notebooks with a partner and check one another's references, giving feedback and, using another colour, making necessary corrections.

As a class, share what you know about the following terms:

- Author
- Editor
- Citation
- Scientific journal or book
- Article

## 4 Engage in storytelling:

Come together in small groups (three or four people) and write down a short story about Emma writing an academic paper citing Prof. Weis' article: Weis, L. (2012) Firefighters in Action, *Journal of Social Reaction*, 12(1), 114–121, in which she had published the results of the study from LONA Science Centre. Write the story in your notebook.

Insert and underline in your story why Emma is citing this article.

Read some of your stories aloud!



### Citation rules for a journal article (APA style):

Author surname, initials. (Year) Article title. Journal title, volume number (issue or part number), page numbers.

Surinares, K. (2019) Helping firefighters to survive extreme wildfires. *Journal of Scientific Research*, 56(4), 55–59.

### Citation rules for a chapter in an edited book:

Author surname, initials. (Year) Chapter title. In: Editor surname, initials (Ed.). Book title (page numbers). Location: Publisher.

Weis, L. (2017) Firefighters Actions under Pressure. In: Surinares, K. (Ed.). *About Reaction Times* (34–49). Berlin, London, Budapest: Xuna Publication.

## 5 Reflect on rules for citation:

Collect your underlined arguments on a chalk board or flip chart. Discuss why it is important to use citations in research.

What is the purpose of ...

What is the difference between ...

A creative story that tells us about a hero who uses approach A to rescue victims from a fire

vs

An academic paper that outlines approach A from another researcher on how to rescue fire victims



S9

## A researcher is responsible for reliable conduct and trustworthy results!

### Description and background

This learning unit:

*Introduces students to commitments of responsible researchers*

*Enables students to demand research integrity*

*Challenges students to ask for and demand professional commitments*

*Emphasises how important research integrity is for science and society*

*Please ensure to obtain informed parental consent and informed assent from participants if required in your country or in your institution.*

*For insight into the learning progress after Path2Integrity sessions, please send an email with your two-letter group code to [evaluation@path2integrity.uni-kiel.de](mailto:evaluation@path2integrity.uni-kiel.de).*

*This unit has been prepared for non-disciplinary learning groups.*



*An advocate for research integrity*

*Anna Wójcicka*

### Keywords

*Professional commitment; responsible research; research integrity; self-declaration; reliability*

### Learning objectives

- 1** *Realise self-declarations to follow research integrity*
- 2** *Make a students' pledge of research integrity together with the dialogue group*
- 3** *Compare and prioritise solutions of research integrity issues*

### Learning stages

- 1** *Reflect on what you have learned*
- 2** *Dive into an interesting story*
- 3** *Connect to your own life*
- 4** *Commit to academic integrity*

**“Just as we, as researchers, introduce people to the world, they will see this world through our eyes. And it is crucial that we base everything we present on solid evidence that we gather in the course of our scientific work.”**  
(Anna Wójcicka, an advocate for research integrity)





## 1 Reflect on what you have learned:

Together with the rest of your class, go online and answer the questionnaire to evaluate the learning units, with everyone starting at the same time.

<https://path2integrity.eu/limesurvey/index.php/714871?newtest=Y&lang=en>

Your two-digit group code is required to link relevant data in an anonymised manner. Before you begin, repeat the group code you created earlier and use it in the questionnaire. How sure or unsure were you in answering this time? Discuss any interesting cases in class.

## 2 Dive into an interesting story:

Recall or read Emma's chat and then continue with the following story about Prof. Weis:

Prof. Weis' hands were sweating, but her thoughts were clear. After she had quit her job at LONA Science Centre and transferred to another university, she had felt a huge relief. In leaving her colleague and the research project, she had upheld her research principles.

Her back ached in this uncomfortable chair. She was sitting in the audience at a conference, and her former colleague was standing at the podium explaining the significant results that he claimed to have made in his research.

Prof. Weis waited tensely until his talk was over. Then she stood up and asked in front of the attentive research community: "Can you confirm that you followed good research practice for the duration of the project, and that all of the research results you have presented are reproducible and thus reliable?"

**Discuss different endings of this story. What do the terms reproducible and reliable mean and what significance do they have for science and society? In which cases would you request such a self-declaration from a researcher?**



### An example of a researcher's pledge:

"By accepting my Doctor of Philosophy degree, I earnestly assert that I will apply my scientific skills and principles to benefit society; I will continue to practice and support a scientific process that is based on logic, intellectual rigor, personal integrity, and an uncompromising respect for truth; I will treat my colleagues' work with respect and objectivity; I will convey these scientific principles in my chosen profession, in Mentoring [sic], and in public debate; I will seek to increase public understanding of the principles of science and its humanitarian goals. These things I do promise." (Ravid, K., & Wolozin, B. (2013). The Scientist's Pledge. *Academic Medicine*, Vol. 88|6, p. 743.)

## 3 Connect to your own life:

In pairs, read and consider the following:

At school as well as in your studies you learn about research procedures and even do some research in class or as homework. You have probably already written a paper or conducted an experiment. Are you familiar with the standards of such research work? Maybe you are acquainted with a school policy or you already had to attach a signed self-declaration to a paper? However, you may still feel insecure about various research practices. Don't worry. You will succeed!

But even if you are familiar with good research practices, there may always be situations where certain incentives might open the door to fraud or misconduct. To succeed in the field of research, it is not only necessary to know how to do it, but also to understand and comply with the values of good research practice.

**Draft a declaration in which you as a student can pledge to confirm your commitment to good research practice in your lives, for example when writing a thesis, conducting an experiment, making an interview, observing the work of others etc.**

## 4 Commit to academic integrity:

Get back to class and read your pledges out loud. Decide which pledge best suits your class and write it in your notebooks. Conclude this session by reading the pledge out loud together.

