

Path  Integrity

Handbook for Trainers and Lecturers

*Integrity in Research
and Society*

Y-Series



This project receives funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 824488.

Acknowledgement

The authors would like to thank

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Members of ENRIO *European Network of Research Integrity Offices*

Members of ENERI *European Network of Research Ethics and Research Integrity*

Participants at “Wissenschaftliches Arbeiten Lehren und Lernen“

and many students

for constructive feedback and comments

as well as Holly McKelvey for the design.

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List of abbreviations

P2I	Path2Integrity
P2ILC	Path2Integrity learning cards
ECoC	The European Code of Conduct for Research Integrity

The purpose of the Path2Integrity handbook

Do you want to teach researchers how to clarify their own role in research, as well as help them understand how important reliable research is for society? This handbook accompanies the **Path2Integrity learning cards (P2ILC)** on eight topics (<https://www.path2integrity.eu/ri-materials>) and introduces you to an easy and fun learning programme that has been evaluated in over 20 training sessions. The Path2Integrity learning cards Y-series is especially designed for early career and active researchers to learn how responsible research must necessarily be conducted in order to be reliable and in this sense useful for society. Therefore, the Y-series learning cards help researchers find solutions to difficult questions of research integrity

and share experiences in difficult situations while understanding the research landscape and processes within it, and by appreciating the importance of research integrity's criteria for society (cf. Häberlein 2020, 12f.). With the aid of many experienced teachers and lecturers, the authors collected tips in this handbook on how to prepare each card, how to support the researchers' learning curve, and how to overcome the various challenges that might arise as you bring this important topic to your participants.

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).

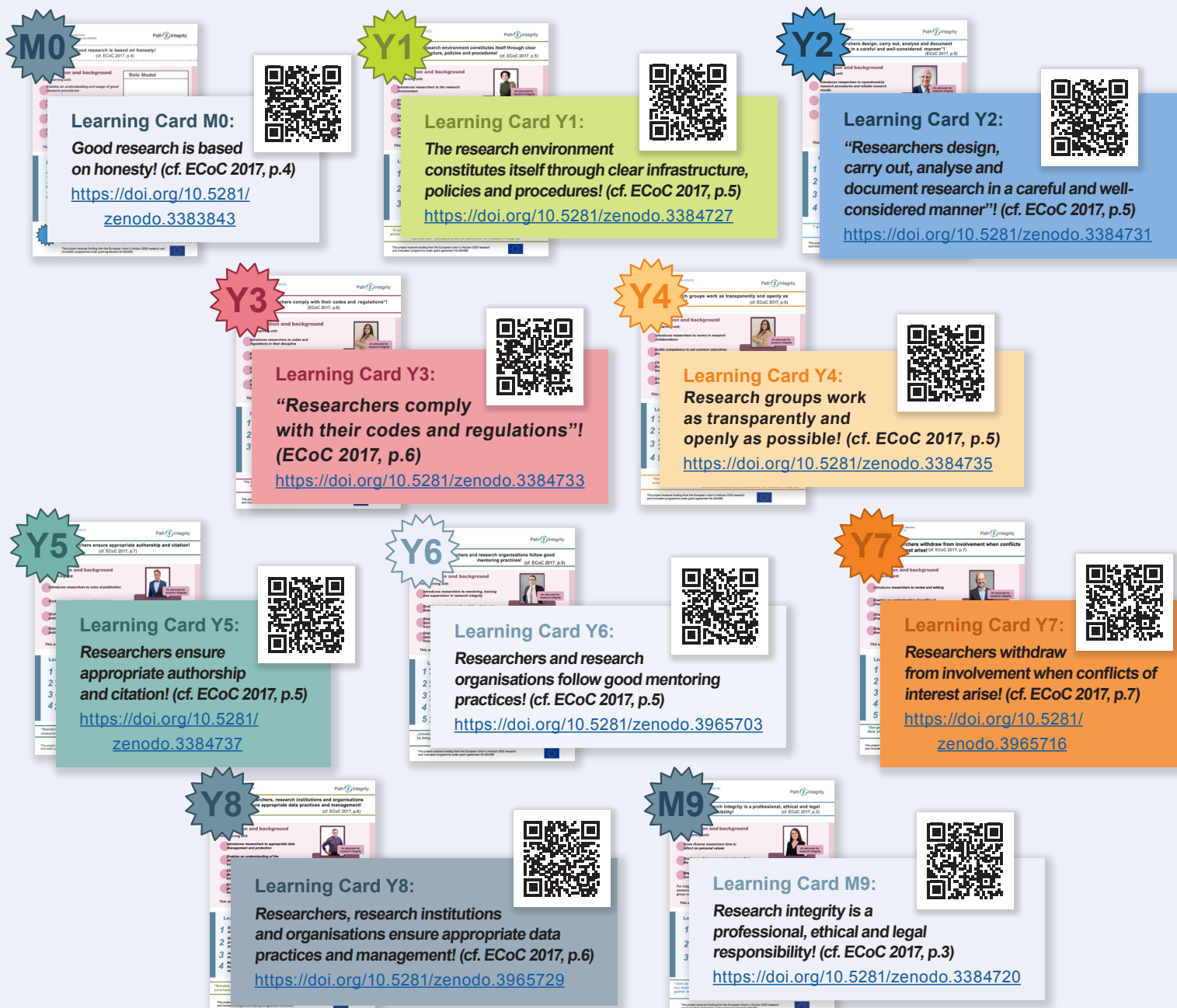


Figure 1: The Path2Integrity Y-series learning cards

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 the course. Furthermore, the length of the exercises and sessions can be adapted to meet the particular needs of your participants; 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).

“ I introduced my participants to the subject of research procedures when I used the cards in a course for doctoral candidates in 2019. As post-graduates they were already experts in their fields of research, and had an understanding of research integrity. They could immediately see the connection in terms of research integrity and their own research activity. We discussed which focus they currently have in their respective research project and which procedures play a role. They realised that they themselves, as part of the research community, follow certain principles that guarantee good research and reliable research results.

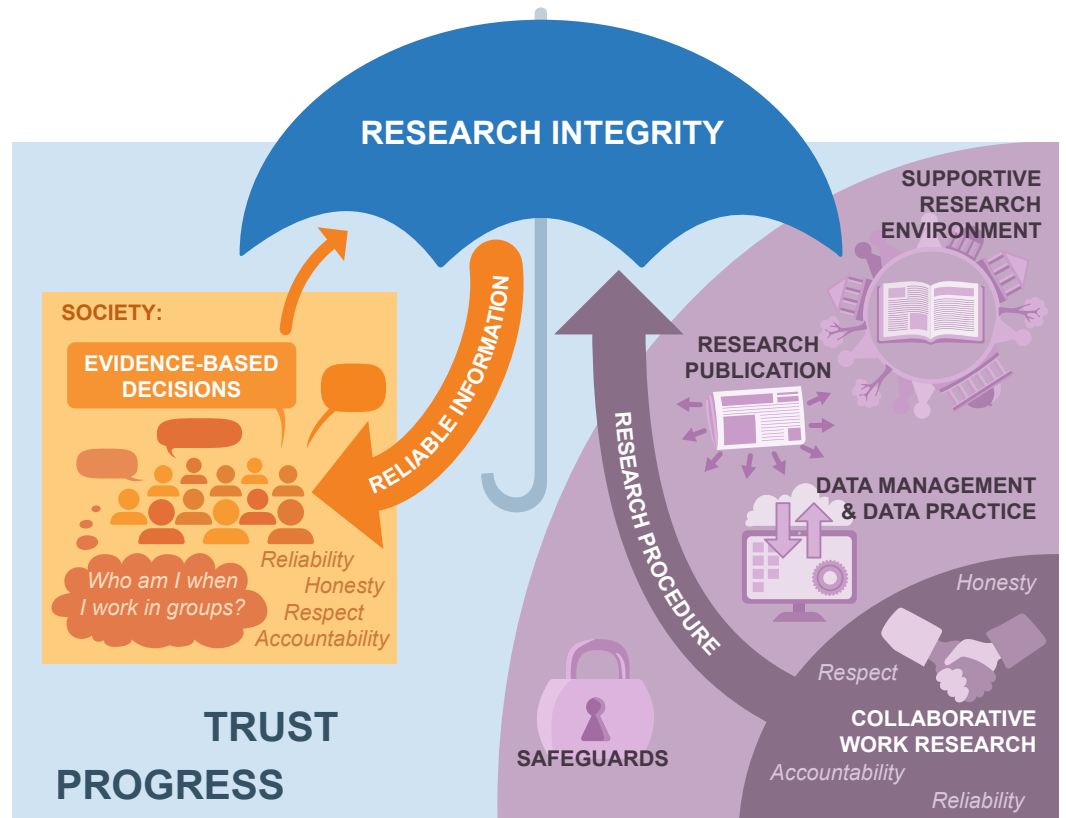


Figure 2: Integrity in research and society

As a cornerstone of the Path2Integrity learning card programme, researchers “[...] learn how to conduct a dialogue on the rejection or acceptance of norms in research integrity”¹; 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 participants’ cultural and religious backgrounds. The following chapters show you how to foster your participants’ understanding of good research practice and its importance to society by using the Path2Integrity learning cards from the Y-series. If you are interested in material prepared for secondary school students and undergraduates or graduates, switch to the handbook for the S-series for pre-disciplinary settings or the M-series for disciplinary settings.

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 researchers to develop their own standpoint based on sound arguments, and to be able to demand integrity in research and society.

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

“The design of the cards and the step-by-step procedure especially motivated participants when I used four learning cards from the Y-series last semester. They also liked the active exercises, and found these exciting and engaging. In the session “Researchers design, carry out, analyse and document research in a careful and well-considered manner”, I outlined the exercises from the sheet in detail and made reference to the researchers’ prior experience in my explanations in order to help them relate to the topic. When we started to do the role-playing, this encouraged people to reconsider their own research practices in detail. It made me realise what professionals they already are. I just supported them whenever questions arose; that has helped a great deal.

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: *Hannah’s protocol – Is there a need for a research integrity policy?*;
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 **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).

What is research integrity?

Lex Bouter, Professor of Methodology and Integrity at Amsterdam University Medical Centers describes research integrity as concerned with the behaviour of individual researchers. It is about research conduct and in this context about behaviour that affects trust in science or trust between scientists.

“Research integrity has obviously some overlap with research ethics and both of these concepts have some overlap with, what we call in Europe, responsible research and innovation, which is the societal relevance. [...] We call that responsible conduct of research. It’s research that’s relevant, that’s valid, that’s reproducible and also efficient”.

Amsterdam Scholarly Summit, 2. July 2019 (<http://editorresources.taylorandfrancis.com/wp-content/uploads/2019/07/What-is-research-integrity-Transcript.pdf>).

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

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

The screenshot shows the first page of a Path2Integrity learning card. At the top, it has the title "The research environment constitutes itself through clear infrastructure, policies and procedures" (cf. ECoc 2017, p.5). Below the title is a "Description and background" section with bullet points: "Introduces researchers to the research environment", "Enables an understanding of the relationship between research environment and good research practices", "Challenges researchers to reflect on roles and responsibilities in the research environment", and "Emphasises the importance of infrastructure, policies and procedures supporting responsible conduct of research". There is a "Keywords" section with terms like "Research Codes and Regulations", "Good Research Practice", "Structural Violence", "Respect", "Openness and Transparency". Below that are "Learning Objectives" (1. Identify and actively use research infrastructure, policies and procedures; 2. Depict roles and responsibilities on an individual, interpersonal and institutional level; 3. Explain and justify important norms from a research environment) and "Learning Stages" (1. Become familiar with the topic; 2. Dive into an interesting story; 3. Do a classroom walk, "out"; 4. Engage in storytelling; 5. Reflect on the research enviro...). A small portrait of Justyna Oliko is shown with the text "As an advocate for research integrity". At the bottom, there is a quote: "A university of which will have... arch centre should offer freedom of research as a basic condition, live effect on the quality, reliability and importance of the research out." (Justyna Oliko, an advocate for research integrity). The footer mentions "This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101019720".

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.

Figure 3: 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 Y-series (<https://www.youtube.com/watch?v=ft-datvhmfo>) 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.

What I like about the programme is the wide range of topics and the flipped-classroom style with reading preparations, in which my learning group was 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 participants, my only task was to inform them what to read. In just three minutes, I had sent my group 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 “The research environment constitutes itself through clear

infrastructure, policies and procedures!” and started to prepare myself with the help of the second page. I worked it through, thought about how I could lead my course through the card’s various exercises and tasks using their specific knowledge and



Figure 4: QR code link to the introductory video of the P2I Y-series learning cards

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

As my participants were rather inhibited in performing the exercises, I supported them by limiting the perspective of the research environment to our institution and decided to start with a joint brainstorming

on our research landscape to ease them into a good working mood. Since they needed a little assistance, I provided examples related to the different roles in exercise three and four so that researchers could identify specific stakeholders. It worked out great and helped get my participants into a creative mood.

The session was a complete success! In class we introduced ourselves to Hannah, Rory and the various members at the conference, and performed an engaging storytelling exercise about the possibilities of promoting research integrity. Using the card, we got to know our research infrastructure, rules and procedures in detail and were able to identify possible gaps. I enjoyed how much fun we had, and continued using the cards in future courses.

After the third session, participants 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 course was to exchange their thoughts and arguments.

How to help participants use the card and adapt it to your teaching

1. 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 participants to study learning material at home, I carefully selected and prepared the material to avoid overloading them. I wanted my course to engage with the subject without losing motivation². It’s great that the P2ILC already contain material that I could supplement with guiding questions. I’m lucky that the participants of my course 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 participant 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 “**Ten sessions on integrity in research and society**” on page 12 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

2 For further information see Nimmerfroh 2016.

II. You can introduce Hannah's protocol – Is there a need for a research integrity policy?

Hannah's protocol – Is there a need for a research integrity policy? is a narrative from the Path2Integrity learning card programme, in which reliable research results are at stake. The narrative is introduced in M0 and subsequently used in each card while developing in different directions.

“The story of Hannah and Rory at the conference meeting, which is used in many of the cards, fascinated us. From session to session, participants identified with the characters and imagined as well as relived their adventures. In particular, my participants loved the pink sections of the learning cards, which emphasise taking a dialogical approach to Hannah's protocol.

With *Hannah's protocol – Is there a need for a research integrity policy?*, you can reflect as well as express different points of view and start a reciprocal learning process. If you want, you can use the visually appealing graphic (<https://zenodo.org/record/3384746#.XySdZedCSUK>) at the beginning of each session. To ensure that your participants 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).

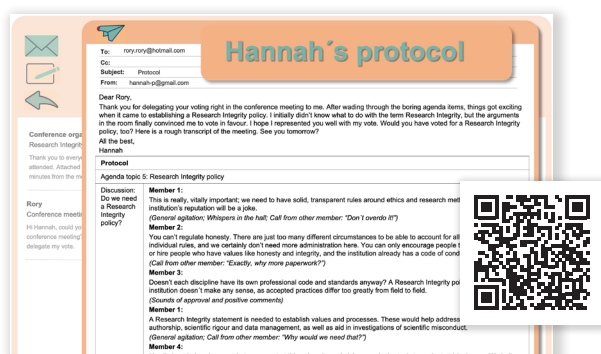


Figure 6: *Hannah's protocol – Is there a need for a research integrity policy?*

III. You can encourage storytelling

Storytelling can increase “sympathetic imagination”³, ethical reflection and comprehension of others, as well as vivid, reflective and experiential responses.⁴ Through storytelling, researchers 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.⁵

In the storytelling exercises contained in the P2ILC, participants 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 different author sequence rules, the possibility of fostering research integrity in the research landscape or appropriate data management and protection.

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

“When we reviewed what Hannah's protocol entailed, the researchers noticed that Hannah had participated in a meeting in which the need for research integrity policies with respect to different motivations was discussed. For my course, it was evident that different parties have taken opposing positions in this matter and were presenting conflicting arguments due to their diverse motivations. 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 Y8, my course listened to different statements from their peers, outlined their knowledge, and started to discuss procedures of data management and protection in the context of Hannah's protocol. They began to develop and rationalise their own arguments for the importance of good data practices in research and society.

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.

“When I asked participants in my course to write a short story about the joint publication of an interdisciplinary research group in our Y5 session, they got really into it, referring to responsibility for the content, sequence of authorship or disclosure of conflicts of interest. Researchers enjoyed taking up specific topics of publication and diving into the story.

At one point, I intervened and pointed out that ‘*Hannah’s protocol - Is there a need for a research integrity policy?*’ and its continuation is a fictional narrative that can develop in different ways, so they put their stories into various contexts. The discussion between peers from different disciplines was enriching and solved some uncertainties! Working in small groups, they found themselves at the centre of a process in which both interaction and problem-solving skills were required.

IV. You can promote role play

Role-playing is an exploratory game in which participants assume an “as-if character”.⁶ 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.⁷



Figure 8: Role play

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

7 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 learning group best.** Get them in the right mood thematically and emotionally. Read the instructions together and help your participants 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.⁸
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 course out of the scenario by allowing them to summarise and evaluate what they have experienced⁹. 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 participants 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.

8 cf. Fürstenau 2015, 96.

9 cf. Fürstenau 2015, 104.

“It is this experience of putting oneself into different roles that helped my course develop a deeper understanding of their own and others’ positions, and to acknowledge conditions for a research integrity dialogue 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 to ensure that participants thoughtfully addressed the learning content of learning card Y3 “Researchers comply with their codes and regulations”. 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 course to spend some time discussing the screenplay. I asked them to imagine a situation of research misconduct in which they need to switch to help mechanisms. Who can provide help and how? What are the consequences? Why would this or that action be good or bad for science and society? We discussed which rules and regulations ensure good scientific practice. This allowed my participants to delve into the scenario more deeply. We tried the role play once again and it worked much better.

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, researchers 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 participants 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 (M0 and M9). If you prefer to evaluate without the cards, you can use the following two links (Fig. 9):

Pre-test:

<https://path2integrity.eu/limesurvey/index.php/238122?newtest=Y&lang=en>



Post-test:

<https://path2integrity.eu/limesurvey/index.php/238122?newtest=Y&lang=en>



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 course and examines in open and closed questions (1) how to act as a researcher, e.g. how to manage data 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 researchers’ 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 M9, you only need to send an email to 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.¹⁰

The P2I project recommends starting with M0 and ending your teaching with M9 if you intend to use three or more learning cards (cf. Fig. 10). As a trainer you can also give feedback on what obstacles you encountered in your sessions or what made you and your students particularly

10 cf. Wilder et al. 2020, 15.

How to evaluate the P2ILC programme

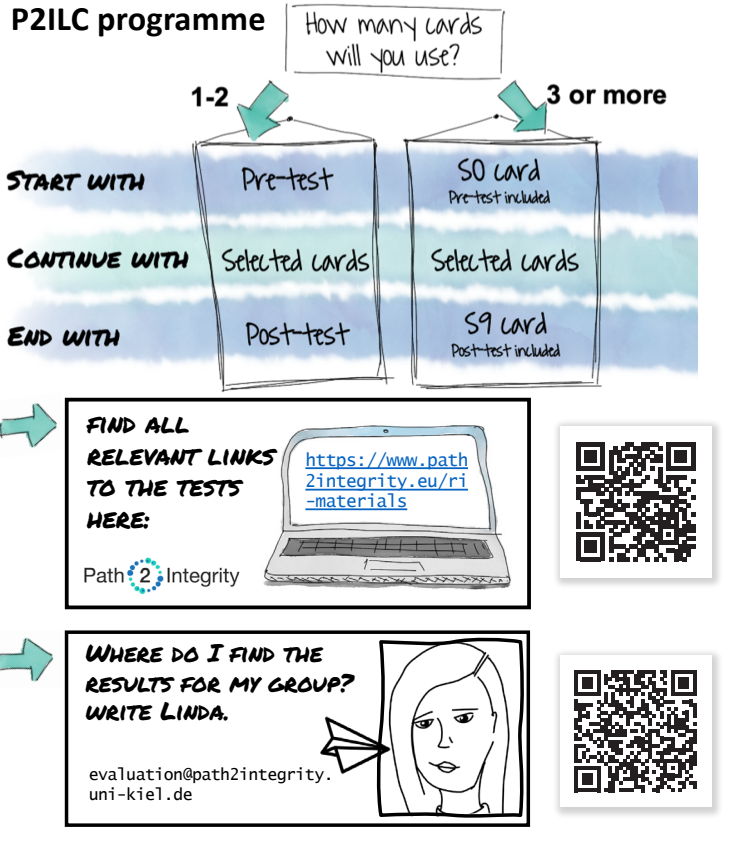


Figure 10: Evaluation of learning units

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 participants will engage in storytelling, role-playing or reaching an agreement. In these sections, researchers 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, participants 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 participants 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 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 participants are not used to actively contributing, trainers can facilitate a smooth transition into the exercise by allowing the researchers to choose between being an observer or player during the dialogical exercises, thus giving participants 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

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 participants 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 [...]”¹² 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”¹³ 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 and I will provide you with more information.

12 Prieß-Buchheit et al. 2020, 20.

13 Prieß-Buchheit et al. 2020, 20.

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 course to take a new direction¹¹:

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

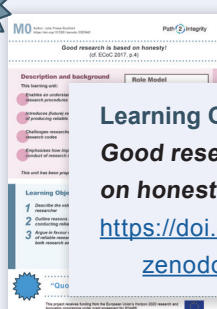
To improve the learning curve, the Path2Integrity project recommends using a **learning journal** after each session. To implement a learning journal in your Path2Integrity teaching, you can follow these steps:

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 Y5:
 - a) **explain the rule of author sequences from your discipline;**
 - b) **compare different rules of author sequences between disciplines;**
 - c) **accept different publication rules;**
 - d) **acknowledge the purpose of publication in research.**
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 course with the writing prompt at the end of the session and decide when they need to return their response.

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

Ten sessions on integrity in research and society

M0



Learning Card M0:
Good research is based on honesty! (cf. ECoC 2017, p.4)
<https://doi.org/10.5281/zenodo.3383843>



Links from learning card M0:

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



This learning card **introduces** future researchers 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 six learning steps, participants learn basic values that characterise good research, formulate reasons for reliable research by telling stories and find arguments for trustworthy research results for science and society. **This learning card is best used to start the P2ILC 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: M0 learning card

Y1



Learning Card Y1:
The research environment constitutes itself through clear infrastructure, policies and procedures!! (cf. ECoC 2017, p.5)
<https://doi.org/10.5281/zenodo.3384727>



Links from learning card Y1:

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 course, you can also use the following additional material:

The Research Integrity Office (ORI) provides an infographic on a “publish or perish” case study that highlights different levels of responsibility in the research environment: https://ori.hhs.gov/sites/default/files/2018-04/1_Everyone_Plays_a_Role.pdf

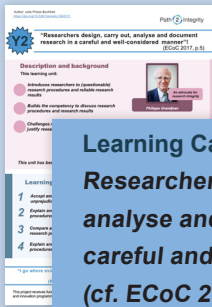


This learning card familiarises researchers with their institutional infrastructure and enables an understanding of the relationship between research environment and good research practices. In five learning steps, participants explain and justify important norms from their research environment, depict roles and responsibilities and use research infrastructure, policies and procedures in storytelling.

“During my Path2Integrity session with early career researchers who are currently doing their doctorates, I noticed that they already perceive themselves as part of the research community and know the structures of the research landscape quite well. We therefore focused on examining their own needs in the lab or other research settings.

Figure 12: Y1 learning card

Y2



Learning Card Y2:
Researchers design, carry out, analyse and document research in a careful and well-considered manner!
(cf. ECoC 2017, p.5)
<https://doi.org/10.5281/zenodo.3384731>

This learning card introduces researchers to research procedures that are necessary for careful and well-considered research and for producing reliable results. In five learning steps, participants explain and justify the criteria of responsible research. In role play they compare research processes in different fields that are important from idea to publication in order to ensure research integrity. They are able to endure other points of view and adapt their own positions while they evaluate different arguments, face dissent and achieve consensus.

Figure 13: Y2 learning card

Links from learning card Y2:

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>



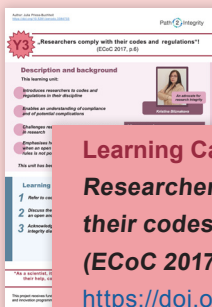
If it works for your course, you can also use the following additional material:

The Economic and Social Research Council (ESRC) helps researchers consider ethics issues throughout the complete life cycle of a project. Case studies, listed under a specific ethics issues category, aim to raise awareness of some of the ethics issues that can arise in research. <https://esrc.ukri.org/funding/guidance-for-applicants/research-ethics/ethics-case-studies/>



“ The speed-dating in the Y2 learning card was just great! It was so much fun and encouraged discussion and self-reflection of one’s own research.

Y3



Learning Card Y3:
Researchers comply with their codes and regulations!
(ECoC 2017, p.6)
<https://doi.org/10.5281/zenodo.3384733>

This learning card introduces learners to guidelines of research integrity and requires criteria for the promotion of good research and the dialogue on it. In four learning steps, participants are asked to take account of the rules by which good research is maintained, switch to help mechanisms to ensure research integrity and establish an open, transparent, logical and reasonable dialogue. In rotatory role play, they recognise that structural violence hinders good research.

Figure 14: Y3 learning card

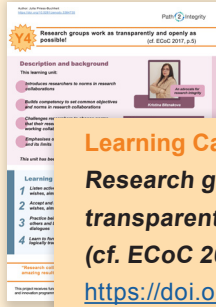
“ My course was already well familiar with the guidelines for good research practice that are relevant to them. There was great interest in focusing on specific points in the respective documents that concern their own research practice and raise questions in their current research process. I think we have already helped to promote a culture of research integrity by highlighting deficiencies in the regulations, which my participants experienced themselves.

Links from learning card Y3:

Seven Reasons to Care about Integrity in Research: https://www.scienceeurope.org/media/42sphgqt/20150617_seven-reasons_web2_final.pdf



Y4



Learning Card Y4:
Research groups work as transparently and openly as possible!
 (cf. ECoC 2017, p.5)
<https://doi.org/10.5281/zenodo.3384735>



“ I started the exercise on interdisciplinary research collaboration by linking research agreements to open and transparent communication. My participants were really motivated. They came up with great research projects and dived deeply into their field of expertise.

This learning card introduces learners to research collaborations and corresponding principles. In five learning steps, future researchers learn what collaborations are and why it's necessary to be able to reach an agreement. Participants relate to their own field of research, express their wishes and needs and practice mutual understanding and respect in a dialogue.

Links from learning card Y4:

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>



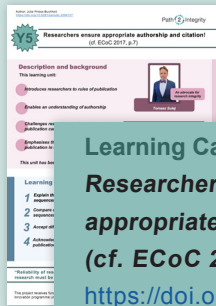
If it works for your course, you can also use the following additional material:

The University of Sheffield provides information on acceptable practices in research collaborations and innovation <https://www.sheffield.ac.uk/rs/>



Figure 15: Y4 learning card

Y5



Learning Card Y5:
Researchers ensure appropriate authorship and citation!
 (cf. ECoC 2017, p.7)
<https://doi.org/10.5281/zenodo.3384737>



This learning card covers the topic of scientific writing and authorship and introduces learners to the rules of research publication in five learning steps. In storytelling, participants explain guidelines of their own discipline and, for example, compare rules of correct authorship within various other disciplines. They accept different guidelines for publication and recognise the purpose of research publications.

Links from the learning card Y5:

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>

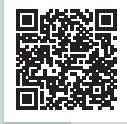


If it works for your course, you can also use the following additional material:

The Research Integrity Office (ORI) provides an infographic on “Authorship practices to avoid conflicts” providing suggestions that may help to avoid authorship disputes. https://ori.hhs.gov/sites/default/files/2018-09/Authorship%20Practices%20to%20Avoid%20Conflicts_Rasterized.pdf



The Research Integrity Office (ORI) provides a module on the prevention of plagiarism to help students, as well as professionals, identify and prevent questionable practices and to develop an awareness of ethical writing. <https://ori.hhs.gov/sites/default/files/plagiarism.pdf>



The document “Why do we even give sources?” presents a list of reasons why we give sources. The reasons can be collected by participants. <https://www.academicintegrity.eu/wp/materials/why-do-we-even-give-sources-a-list-of-reasons-for-good-practice-maintaining-integrity/>



“ With participants from a variety of disciplines, I was in a position to take myself back from advice as a lecturer. Participants themselves, of course, knew best the rules of publication in their discipline. It was exciting to discuss the various practices.

Figure 16: Y5 learning card

Y6



Learning Card Y6:

“Researchers and research organisations follow good mentoring practices” (cf. ECoC 2017, p.5)

<https://doi.org/10.5281/zenodo.3965703>

This learning card introduces researchers to mentoring, training and supervision in research integrity and enables an understanding of the relationship between mentoring and good research practice. In five learning steps, researchers learn to ask for an open, transparent

and trustworthy mentor-mentee relationship and depict differences between relationships of trust such as mentoring, friendship or therapy. They depict roles and responsibilities and develop a mentoring agreement of research integrity.

Links from the learning card Y8:

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>

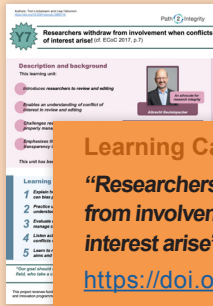


5 Qualities of Good Research Mentors: <https://ori.hhs.gov/sites/default/files/2018-09/5%20Qualities%20of%20Good%20Research%20Mentors.pdf>



Figure 17: Y6 learning card

Y7



Learning Card Y7:

“Researchers withdraw from involvement when conflicts of interest arise”! (cf. ECoC 2017, p.6)

<https://doi.org/10.5281/zenodo.3965716>

This learning card addresses review and editing and stresses that researchers withdraw from involvement when conflicts of interest arise while emphasising the importance of transparency in research. In five learning steps, researchers learn how to properly manage conflicts of interest that can bias peer review and editing and practice understanding and being understood in a dialogue to reach an agreement.

“The Y7 learning card on review and editing allowed my participants to use their expertise to support each other in open questions and problems they encounter and to strengthen their position as researchers.

Links from the learning card Y7:

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>

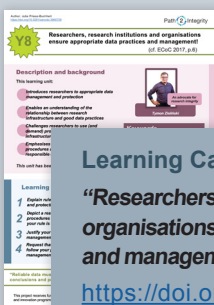


COPE’s ethical guidelines for peer reviewers: <https://publicationethics.org/node/19886>



Figure 18: Y7 learning card

Y8



Learning Card Y8:

“Researchers, research institutions and organisations ensure appropriate data practices and management”! (cf. ECoC 2017, p.6)

<https://doi.org/10.5281/zenodo.3965729>

This learning card introduces researchers to appropriate data management and protection and challenges them to use and demand proper institutional infrastructure on data practices. In five learning steps, storytellers justify their procedure of data management and protection. They reflect on appropriate data practices, use data management and protection guidelines and explain procedures and infrastructure in which their rule is embedded.

“ I did several P2I sessions, but this learning card really caught the eye of my audience. Participants had a lot of open questions about data storage that they needed to resolve in order to continue working on their research. I noticed that things started to get emotional and allowed for open discussion. It was great to help solving problems using the learning card!

Links from the learning card Y8:

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

The UK Data Service provides researchers from all sectors with information on their data needs, such as tips on data management and deposit. <https://www.ukdataservice.ac.uk/>



The Data Management Expert Guide helps social science researchers dealing with research data, from planning, organising and storing data, to protecting and publishing research data. <https://www.cessda.eu/Training/Training-Resources/Library/Data-Management-Expert-Guide>



Figure 19: Y8 learning card

M9



Learning Card M9:

Research integrity is a professional, ethical and legal responsibility! (cf. ECoC 2017, p.4)

<https://doi.org/10.5281/zenodo.3384720>

With this learning card, participants reflect on the professional, legal and ethical importance of research integrity in science and society. In four learning steps, they become aware of their own research integrity, outline values for their research 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 M-series. With the post-test and the request in learning card M9 to send an email to evaluation@path2integrity.uni-kiel.de, you will be able to gain insight into your students' improvement.

“ 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.

Links from learning card M9:

Evaluation of the learning units: <https://path2integrity.eu/lime-survey/index.php/238122?newtest=Y&lang=en>



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

“On being a scientist” is an approximately 60 minute long fictional film that takes up some important topics of questionable research practices. After you have given participants a deeper insight into the topic of research integrity, this film can be used to reflect once again on what has been learned. <https://www.youtube.com/watch?v=tCgZSjoxF7c&feature=youtu.be>



Figure 20: M9 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, 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.3383843> Learning Card M0

<https://doi.org/10.5281/zenodo.3384727> Learning Card Y1

<https://doi.org/10.5281/zenodo.3384731> Learning Card Y2

<https://doi.org/10.5281/zenodo.3384733> Learning Card Y3

<https://doi.org/10.5281/zenodo.3384735> Learning Card Y4

<https://doi.org/10.5281/zenodo.3384737> Learning Card Y5

<https://doi.org/10.5281/zenodo.3965703> Learning Card Y6

<https://doi.org/10.5281/zenodo.3965716> Learning Card Y7

<https://doi.org/10.5281/zenodo.3965729> Learning Card Y8

<https://doi.org/10.5281/zenodo.3384720> Learning Card M9

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

<https://www.youtube.com/watch?v=ft-datvhmfo> An introduction video for the use of the Path2Integrity Y-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

<https://doi.org/10.5281/zenodo.3384746> Graphic: Hannah's protocol - Is there a need for a research integrity policy?

<https://path2integrity.eu/limesurvey/index.php/238122?newtest=Y&lang=en> Pre-test to evaluate learning units

<https://path2integrity.eu/limesurvey/index.php/238122?newtest=Y&lang=en> Post-test to evaluate learning units

evaluation@path2integrity.uni-kiel.de email address of a P2I member to contact after evaluation

<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://www.scienceeurope.org/media/42sphgqt/20150617_seven-reasons_web2_final.pdf Seven Reasons to Care about Research Integrity

<https://ori.hhs.gov/sites/default/files/2018-09/5%20Qualities%20of%20Good%20Research%20Mentors.pdf> 5 Qualities of Good Research Mentors

<https://publicationethics.org/node/19886> COPE's ethical guidelines for peer reviewers

