DIONE
Research Competence Framework

DIONE was an Erasmus+ Strategic Partnership funded under Grant Agreement Number 2020-1-DE01-KA226-HE-005776 based on the call KA226 (Partnerships for Digital Education Readiness) by the European Comission between 2021 and 2023.

Coordinating institution of DIONE:
Humboldt-Universität zu Berlin

Consortium Partners of DIONE:
Université catholique de Louvain
University of Wolverhampton
Univerzitet u Beogradu
Universidad de Granada
Universitet i Oslo
and the NGO Teach.me

Contact:
Dr. Philipp Wasserscheidt
Department of Slavic and Hungarian Studies
Humboldt-Universität zu Berlin
philipp.wasserscheidt@hu-berlin.de

www.dione-edu.eu

Content

Co-funded by the Erasmus+ Programme of the European Union

Introduction

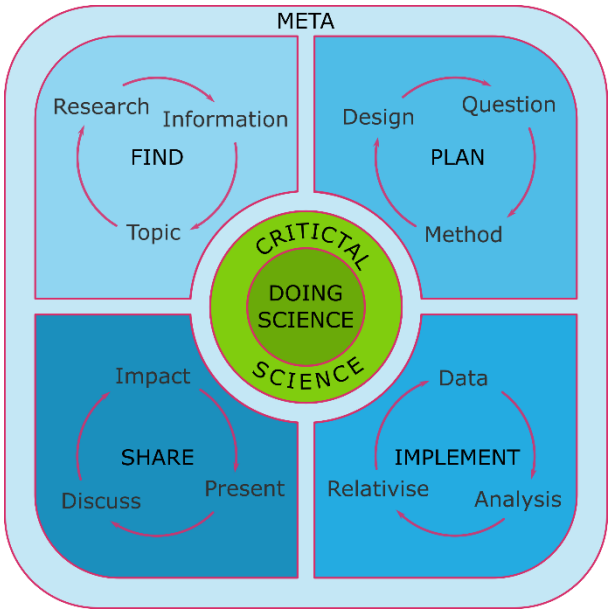
The general research framework is based on the research cycle. We have divided the research cycle into four stages, namely Find, Plan, Implement and Share. The four stages each have sub-steps:

1 Find	2 Plan	3 Implement	4 Share
1.1 Research	2.1 Focused research	3.1 Collect data	4.1 Present
1.2 Read	2.2 Research question	3.2 Collect data digitally	4.2 Write
1.3 Find topics	2.3 Method	3.3 Analyse	4.3 Discuss
	2.4 Research design	3.4 Relate	4.4 Have impact
		3.5 Synthesise	
		3.6 Research Ethics	

We have added three overarching areas of competence that go beyond the actions within science covered in the research cycle. The first is a domain we define as the Meta domain. It deals with the three questions of "*What is knowledge?*", "*What is science?*", and "*Science and society?*".

The second area focuses on Critical competences and includes the sub-areas of *Data*, *Critical Literacy* and the *Role as a Researcher*.

The third area is called "Doing Science" and addresses the competences that are not necessary to carry out a concrete research enterprise, but to participate in the system of science as a whole. For this purpose, we define the sub-areas of *Research Cycle*, *Methods*, *Collaboration* and *Interdisciplinarity*.



The complete list of all competences is thus arranged as follows:

1. Meta
   1.1. What is knowledge
   1.2. What is science
   1.3. Science and society
2. Critical Attitude
   2.1. Data
   2.2. Critical Literacy
   2.3. Role as researcher
3. Doing science
   3.1. Research cycle
   3.2. Methods
   3.3. Collaboration
   3.4. Interdisciplinarity
4. Find
   4.1. Research
   4.2. Read
   4.3. Find Topic
5. Plan
   5.1. Focused Research (sources and literature)
   5.2. Research question
   5.3. Method
   5.4. Design
6. Implement
   6.1. Gather data
   6.2. Digitally gather data
   6.3. Analyse
   6.4. Relativise
   6.5. Synthesise
   6.6. Ethics
7. Share
   7.1. Present
   7.2. Write
   7.3. Discuss
   7.4. Have impact

The architecture of the competence framework corresponds to the competence frameworks as developed by the European Union. That is, we look at different cognitive domains on one axis. In these dimensions, competence growth corresponds to an increase in the complexity of tasks, an increase in the autonomy of the performer and an increase in the amount of knowledge required for a task. The respective competence levels are described in the General Framework.

Like the European competence models, we have divided the individual competence areas into eight levels. These follow the taxonomy of reminding, understanding, applying, evaluating and producing.

So, for each competence that is part of the research cycle and the overarching areas of competence within science, we have developed descriptions at eight different levels, each with increasing levels of complexity, autonomy and knowledge. Only for two competence areas there are no formulated level descriptions yet: *Critical Literacy* and *Have Impact*.

The competence framework, however, does not begin at university, but assumes that basic competences - which can be assigned to the level "remembering" - have already been acquired at university entrance. We have partly included competences from the German competence framework for school-leaving qualifications. Therefore, the development of competences relevant for higher education begins at level three. We have divided the following levels into an earlier and a late phase of the Bachelor's degree, into the Master's degree, into two areas of the doctoral phase and into a phase that can be assigned to the postdoc phase.

Co-funded by the Erasmus+ Programme of the European Union

General competence framework

Level	1	2	3	4	5	6	7	8
Cognitive Domain	**Remembering**	**Remembering**	**Understanding**	**Understanding**	**Applying**	**Evaluating**	**Creating**	**Creating**
Complexity of tasks	Simple tasks	Simple tasks (use relevant information in order to carry out tasks and to solve routine problems using simple rules and tools)	Well-defined and routine tasks, and straightforward problems (A range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information)	Different tasks, and well-defined and non-routine problems (A range of cognitive and practical skills required to generate solutions to specific problems)	Different tasks and problems (A comprehensive range of cognitive and practical skills required to develop creative solutions to abstract problems)	Most appropriate tasks (as in 5)	Resolve complex problems with limited solutions (Specialised problem-solving skills required in research and/or innovation in order to develop new knowledge and procedures and to integrate knowledge from different fields)	Resolve complex problems with many interacting factors (The most advanced and specialised skills and techniques, including synthesis and evaluation, required to solve critical problems in research and/or innovation and to extend and redefine existing knowledge or professional practice)
Autonomy	With guidance in a structured context	Autonomy and with guidance where needed	On my own. (Take responsibility for completion of tasks in work or study.)	Independent and according to my needs. (Exercise self-management within the guidelines of work or study contexts that are usually predictable, but are subject to change; supervise the routine work of others)	Guiding others (Exercise management and supervision in contexts of work or study activities where there is unpredictable change; review and develop performance of self and others)	Able to adapt to others in a complex context (Manage complex technical or professional activities or projects, taking responsibility for decision-making in unpredictable work or study contexts)	Integrate to contribute to the professional practice and to guide others (Manage and transform study contexts that are complex, unpredictable and require new strategic approaches)	Propose new ideas and processes to the field (Demonstrate substantial authority, innovation, autonomy, scholarly and professional integrity and sustained commitment to the development of new ideas or processes at the forefront of research)
Knowledge	Basic general knowledge	Basic factual knowledge of a field	Knowledge of facts, principles, processes and general concepts	Factual and theoretical knowledge in broad contexts	Comprehensive, specialised, factual and theoretical knowledge and an awareness of the boundaries of that knowledge	Advanced knowledge, involving a critical understanding of theories and principles	Highly specialised knowledge, some of which is at the forefront of knowledge in a field, as the basis for original thinking and/or research Critical awareness of knowledge issues and at the interface between different fields	Knowledge at the most advanced frontier and at the interface between fields

The general competence framework is identical to the European Qualifications Framework

Research Competence Framework

		1 School	2 School	3 B.A.	4 B.A.	5 M.A.	6 PhD	7 PhD	8 PostDoc
1 Meta	1.1 What is knowledge	I know that there are different types of knowledge.	I understand the difference between scientific knowledge on one hand, and anecdotal information, religious beliefs and traditional interpretations based on cognitive cultural models of a particular society or community, on the other hand.	I understand the basic concept of scientific knowledge whitin an academic discipline of choice.	I understand how knowledge is generated and maintained within my discipline.	I can explain how knowledge is generated, maintained and defended in my discipline and related disciplines.	I question scientific knowledge by identifying and critically examining sources, data and methods.	I can lead others in reviewing scientific knowledge. I peer-reviewed other scientific knowledge.	I propose new methods and concepts to create, verify and share knowledge.
	1.2 What is science	I know there is science, and people who are into science.	I understand the value of scientific evidence.	I understand how science works, who is involved and how scientific knowledge is generated.	I understand the limits of research. I understand different perspectives in science depending on the given academic field.	I can put the scientific insights of my field into perspective and defend them against criticism.	I have a clear vision of resarch limitations and perspectives for improvement and expansion of knowledge.	I can overcome research limitations in my field and generate new knowledge. I can teach others how science works.	I can open up new fields of research and help position it science. I have a clear understanding of the limits and possibilities of science in principle and explain these to the broader society.
	1.3 Science and society		I know that our modern society has been decisively shaped by science.	I know the ways in which my discipline has shaped our society as it is today.	I understand how my and related disciplines interact with society.	I myself try to relate my research activities to society. I reflect on the interaction of my discipline with society.	I know that the scientific enterprise and society interact with each other. I understand how others use their academic skills for social engagement.	I understand how the scientific enterprise and society influence each other. I understand the possibilities of social engagement by using my academic competencies.	I reflect on the interaction between science and society and propose new interfaces. I engage socially beyond academia by using my expert competencies.
		1 School	2 School	3 B.A.	4 B.A.	5 M.A.	6 PhD	7 PhD	8 PostDoc
2 Critical Attitude	2.1 Data		I know that data is generated by people and must be interpreted carefully.	I have an insight into the richness of data studied in science. I understand that scientific analysis works with selected data.	I understand the richness of data in my discipline and which methods are used to generate and present which data.	I can assess which methods of analysis and presentation produce which data and, with guidance, make judgements about their validity.	I independently assess how to evaluate the data of my research and the data of others in my field of research.	I fully understand the complex nature of scientific data and can assess the provenance and validity of given data in my discipline and related fields.	I propose new methods for data creation, data synthesis and the validation of data across different data structures.
	2.2 Critical Literacy								
	2.3 Role as researcher		I can identify verbal, paraverbal and non-verbal signals for power and dominance relationships.	I understand that scientists have a special role in the process of knowledge creation and can describe this for my discipline.	I understand the position of scientists and their subjectivity, power relations and censorship within scientific discourses.	I know which methods can be used to objectify the positionality of scientists. I understand what role scientists as science practitioners have for society.	I question my own role as a researcher and try to build countermeasures to non-objective mechanisms into my research.	I regularly use methods to reflect on my research and performance.	I define and justify my position as a researcher and lead others to question and methodically reflect on their own role.

		1 School	2 School	3 B.A.	4 B.A.	5 M.A.	6 PhD	7 PhD	8 PostDoc
3 Doing science	3.1 Research cycle		I understand that science is always re-examining things and making new hypotheses.	I understand the concept of empirical research. I know the reserach cycle.	I can evaluate empirical research. I can explain the research cycle to others.	I can plan and conduct my own simple investigation using the research circle.	I can plan and carry out a complex investigation using the research cycle, and can involve others in my work.	I can plan complex research with others, defend my planning and carry out the research in a structured way.	I can coordinate teams to conduct research using the research cycle and guide others in their research.
	3.2 Methods		I understand the basic distinction between quantitative and qualitative approach / research.	I understand the basic research knowledge of numerical (quantitative) and interpretative (qualitative) dimensions of evidence-based academic research.	I know the advantages and disadvantages of qualitative and quantitative work and how they can complement each other.	I know the methods from my field in one of the two areas and understand how I could complement them with methods from the other area.	I can plan a simple triangulation for a research project and combine qualitative and quantitative approaches with support.	I can apply different qualitative and quantitative methods in my research field and combine them for knowledge gain.	I develop new qualitative or quantitative methods and devise innovative approaches to combining the two.
	3.3 Collaboration		I understand that science is a collective enterprise of many.	I know that and how new knowledge in science is generated collaboratively.	I understand that new knowledge and methods in science are jointly generated and maintained and have an understanding of how I can participate in this.	I understand the need for additive, integrative and collaborative knowledge construction.	I participate in joint and integrative knowledge construction with others.	I collaborate horizontally and vertically with other researchers at different levels of academic expertise.	I collaborate horizontally and vertically with colleagues from different fields and scientific areas, as well as with representatives of society.
	3.4 Interdisciplinarity		I know that there are scientific fields and disciplines	I understand the basic disciplinary division of my subject and can assess the role of the individual fields of study.	I understand that exploring a complex research phenomenon requires the integration of different academic perspectives.	I can critically reflect on my own subject and the disciplinary division of the same. I have interest and courage to overcome my own individual disciplinary boundaries and can do so under guidance.	I am willing to integrate and synthesise concepts from different disciplines into an interactive and collaborative research activity. I seek contact with other researchers from other disciplines to achieve this.	I have the confidence and self-awareness to reflect on my own discipline and overcome its limitations through collaboration with directly or indirectly related fields of research.	I understand scientific disciplines as possibilities, but not as defining or limiting conditions. In search of epistemological innovations, I develop new connections between research fields.
		1 School	2 School	3 B.A.	4 B.A.	5 M.A.	6 PhD	7 PhD	8 PostDoc
4 Find	4.1 Research		I independently conduct research in different sources and extract knowledge from them for my own synthesis.	I understand the difference between primary and secondary sources. I can do a guided multilingual literature research in the virtual environment and library search	I research a limited topic in at least two languages using digital tools. I work with a clear search concept. I can assess the relevance and quality of my sources.	I research multilingually within my entire discipline. I use different digital tools for searching and managing search results.	I do multilingual and interdisciplinary research in new research areas. I can manage complex and large searchers digitally. I independently research hard-to-access datasets.	I conduct research in multilingual resources of various kinds in the entire range of my discipline and in related disciplines. I conduct research efficiently and in a goal-oriented manner.	I research the full range of human data generation. I guide others to conduct and manage efficient research.
	4.2 Read		I can understand scientific texts linguistically and extract the most important information from them.	I am able to distinguish between types of scientific literature, I understand the basic structure of schientific paper	I navigate freely through different types of scientific texts and use their internal structure for efficient information retrieval.	I read and extract research-relevant information from all text types used in my discipline. I also make limited use of textual sources from other languages	I filter all research-relevant information as well as meta-information about the scientific community from all types of texts in my discipline and related disciplines. I use sources in different languages and a wide variety of publication formats.	I use a variety of text types in different languages and of different ages across the range of my research interests. I understand that texts also follow certain academic discourses.	I read and analyse all kinds of texts and identify the underlying academic discourses and positioning.
	4.3 Find Topic		I independently choose a topic from a limited number of thematic areas.	I independently select a topic from a larger number of topics and define a research question with the aid of a researcher.	I define my own topic within my discipline and formulate my own research question with assistance.	I independently formulate a research question within my discipline and according to my methodological competences.	I independently formulate an innovative research question within my discipline, which can also go to the limits of my previous competences.	I formulate innovative research questions in my discipline, including related disciplines, that can open up new fields of research within my discipline.	I formulate challenging, innovative research questions that can establish new areas of research.

		1 School	2 School	3 B.A.	4 B.A.	5 M.A.	6 PhD	7 PhD	8 PostDoc
5 Plan	5.1 Focused Research (sources and literature)	n.a.	Select relevant information from self-researched sources and prepare it in a suitable form. Derive appropriate reading objectives from demanding tasks and use them for text reception.	I understand the concept of information needs and can identify them with guidance on a given topic. I know digital tools in academic research and are ready to use them with guidance.	I can identify my information needs and, with guidance, access secondary and selected primary sources with support using an appropriate research strategy.	I formulate my research objective independently and access secondary sources and selected primary sources.	I conduct interdisciplinary research on my research question. I research different data sources.	I research the full range of data in my discipline. I guide others in research-oriented searches.	I research the full range of data in different disciplines for complex questions and with the help of advanced digital tools.
	5.2 Research question	I distinguish scientifically answerable from non-answerable questions.	I formulate scientifically answerable questions myself .	I can formulate simple scientific questions with help, which I can answer myself with secondary literature.	I can formulate relevant, simple questions with help, which I can answer empirically myself.	I independently formulate relevant and innovative questions that I can answer empirically myself.	I formulate innovative complex questions and guide others to find simple ones.	I formulate innovative, complex questions that can be answered using mixed methods or interdisciplinary approaches. I guide others to find questions.	I formulate research questions that challenge disciplines and science and require new methods and theories.
	5.3 Method		I know that science uses specific methods to gain knowledge.	I know selected methods and can apply some under guidance.	I know a limited number of qualitative and quantitative methods. I can apply some methods independently.	I know the most important methods in my subject. I can identify an appropriate research method, select research methods, digital tools and languages in basic academic research with support and guidance.	I select and use suitable, reliable and comprehensive research techniques independently.	I understand the concept of triangulation in research data interpretation.	I design new common methodologies which lead to the collective creation of new knowledge.
	5.4 Design		I have knowledge of different methods and can apply them under guidance with given tasks.	I know how to combine methods, data and questions. I understand basic problems in research methods (bias, observer paradox, representativeness).	I can tackle known problems with known methods. I know which steps are necessary for implementation. I understand that the implementation has to follow the design and the two are in correlation. I know some complex problems in research methods (positionality, power relations). I can work around simple problems with help.	I can approach new questions under guidance with known methods. I can plan the implementation myself under guidance. I strictly follow my design in implementation and understand that implementation can be a cycle. I can work around complex research problems under guidance.	I can approach new, innovative questions with familiar methods and, under guidance, with new methods. I plan the implementation myself and pay attention to complex research problems. I strictly orient the implementation to my design and develop acquisition, analysis and synthesis in one cycle.	I design multi-method and interdicsciplinary research.	I plan academic research designed with an objective to achieve coherence in identification, description, understanding and interpretation of the researched phenomenon.

		1 School	2 School	3 B.A.	4 B.A.	5 M.A.	6 PhD	7 PhD	8 PostDoc
6 Implement	6.1 Gather data		n.a.	I collect simple empirical data in a consistent manner under guidance. I know the problems of bias and observer paradox.	I collect empirical data consistently with digital tools. I know how to work around bias and observer paradox and do so with guidance.	I collect data of various kinds strictly according to the research design under guidance and observe ethical considerations. I independently avoid bias and observer paradox.	I independently collect different types of data according to research design using digital means. I avoid ethical and research-inherent problems.	I collect novel and interdisciplinary types of data. I share my data with the research community.	I develop new survey methods.
	6.2 Digitally gather data		n.a.	understanding the concept of the availability of digital tools in academic research and readiness to use them with guidance from more advanced researchers.	I use simple digital methods to collect data within my discipline.	I independently use simple digital tools to collect and manage data.	I independently use different digital tools for data processing.	I use different, advanced forms of digital tools to collect different data formats and guide others in doing so.	I develop my own digital tools for processing and storing data from my field of research.
	6.3 Analyse		n.a.	I analyse given simple data of selected data types according to given simple patterns under guidance.	I independently analyse my own simple data of selected data types according to given patterns, observing the research design.	I analyse my own more complex data of different data types according to self-selected strategies according to my research design.	I analyse own, complex data of different types according to existing and own strategies.	I analyse interdisciplinary data from different methods according to different strategies. I evaluate existing strategies and their theoretical foundations.	I analyse data of different origins, complexity and ages using the most advanced methods and develop new approaches to analysis myself.
	6.4 Relativise		I determine and interpret location and dispersion measures of a sample. I determine and interpret the expected value and standard deviation of discrete random variables. I infer the totality in simple cases on the basis of samples.	I understand that concept of scientific sampling and its relevance to analysis. I understand that analyses are based on comparisons.	I understand the concept of statistical significance and can determine it with guidance.	I determine the statistical significance of corellations and draw simple conclusions.	I know different measures of significance and their statistical implications. I know and use different statistical methods of analysis under guidance.	I use different methods of analysis according to my data. I can assess the way in which different methods are relativised.	I develop and adapt new statistical analysis methods. I participate in the discourse of the necessity and limitation of relativising scientific data.
	6.5 Synthesise		n.a.	I draw conclusions from the empirical work of others.	I draw conclusions from my analysis within the framework of the given theory under guidance.	I independently draw conclusions from my analysis within the framework of a self-selected theory.	I draw conclusions from a complex set of data and compare them with existing explanations in different theories.	I synthesise analyses from different data sources and offer new explanations.	I summarise research findings from across the field as well as interdisciplinary and offer new explanations.
	6.6 Ethics		I know that science and scientific knowledge can be discussed from an ethical point of view.	I know the ethical problem areas of my discipline.	I understand the relevance and scope of ethical concerns within my discipline and in comparable scientific fields.	I discuss the ethical framework of my research and that of other researchers within my discipline with guidance and know what approaches exist in this area.	I implement ethical considerations in my research planning and, with guidance, apply methods to meet them.	I consistently integrate ethical concerns into my research planning and implement them in practice.	I identify new and disregarded ethical issues and guide others to address them.

		1 School	2 School	3 B.A.	4 B.A.	5 M.A.	6 PhD	7 PhD	8 PostDoc
7 Share	7.1 Present		I can present demanding subject content in a way that promotes understanding.	I can present scientific correlations in a comprehensible way and defend the selection of my data and examples.	I can present my own research results as well as those of others among my peers and engage in a topic-related discussion.	I can address a larger academic audience, and design my presentation with regard to the audience	I can address international specialist audiences (in English) and present my research plans and results in a consistent manner.	I can convincingly present new research findings to different audiences and defend my work.	I can give keynotes and present overviews of entire fields of research in different languages.
	7.2 Write		I can plan, structure, write and revise scientific texts, for example subject or seminar papers. I revise my papers. I quote or paraphrase foreign thoughts and sources correctly.	I can plan, structure and write short scientific texts under guidance and revise them according to feedback.	I can write longer scientific texts independently and structure my scientific argumentation clearly.	I can present my own research and the related background on a larger scale in a clearly structured way and defend my argumentation.	I can present my own research in at least two languages in a clearly structured way and defend it convincingly. I adapt myself to the target group.	I present my research in international journals.	I present the results of my research, overviews of research fields and methodological innovations in renowned international journals.
	7.3 Discuss		I can develop differentiated arguments on controversial subject matters and texts, unfold them in a structured way and reflect on the premises of their arguments.	I can explain simple facts using scientific terms and simple definitions and make my point.	I can explain simple facts correctly in terms of terminology and with further knowledge and defend my point of view.	I can explain complex issues, explain and defend my point of view on them and reflect on the theoretical premises of my argumentation.	I can discuss contentious issues and explain and defend my point of view in a methodologically and theoretically comprehensive way.	I fully and critically (auto)reflect with self-confidence and readiness to face challenges and defend proposed points of view.	I discuss on an international level in a self-reflective way with the awareness of the disciplinary and personal limits of my knowledge.
	7.4 Have impact								

Research cycle

Meta:

What is knowledge

What is science

Science and Society

Critical Attitude:

Data

Critical Literacy

Role as researcher

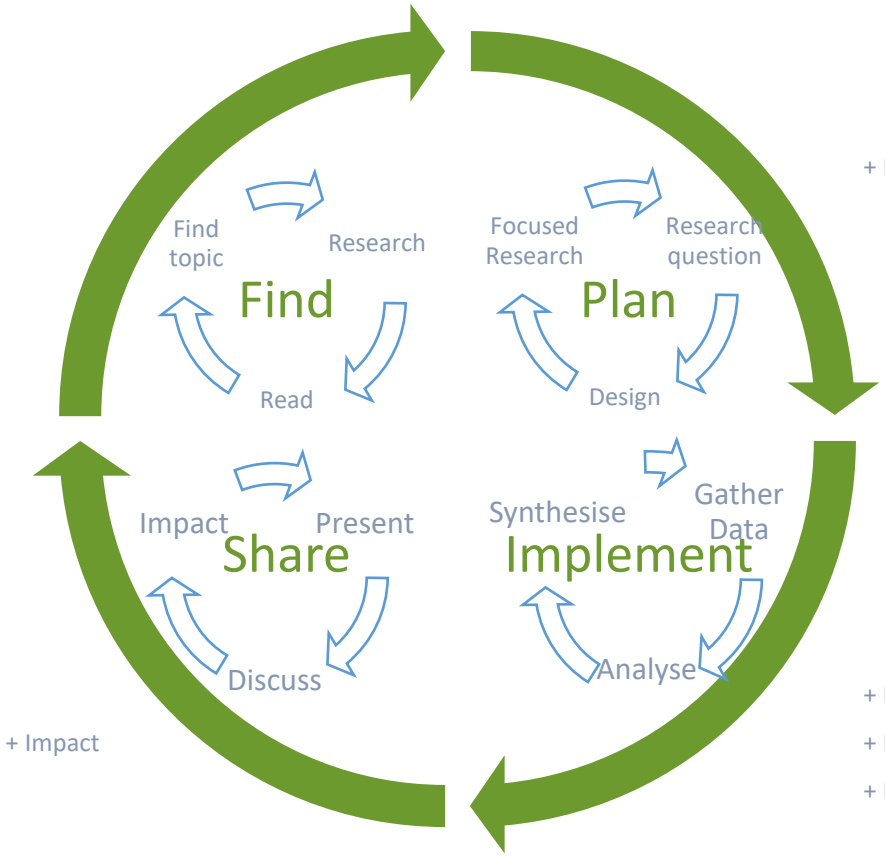
Doing Science:

Research cycle

Methods

Collaboration

Interdisciplinarity



+ Method

+ Digital

+ Relativise

+ Ethics

+ Impact

Co-funded by the
Erasmus+ Programme
of the European Union


HUMBOLDT-UNIVERSITÄT
ZU BERLIN


UCLouvain
Université


UNIVERSITY OF
BELGRADE


UiO
University of Oslo


Circle U.
European University Alliance


NAUCI·ME


ugr
Universidad
de Granada


UNIVERSITY OF
WOLVERHAMPTON