DIVERSITY & GENDER SENSITIVE RESEARCH PROJECTS – INTRODUCTION

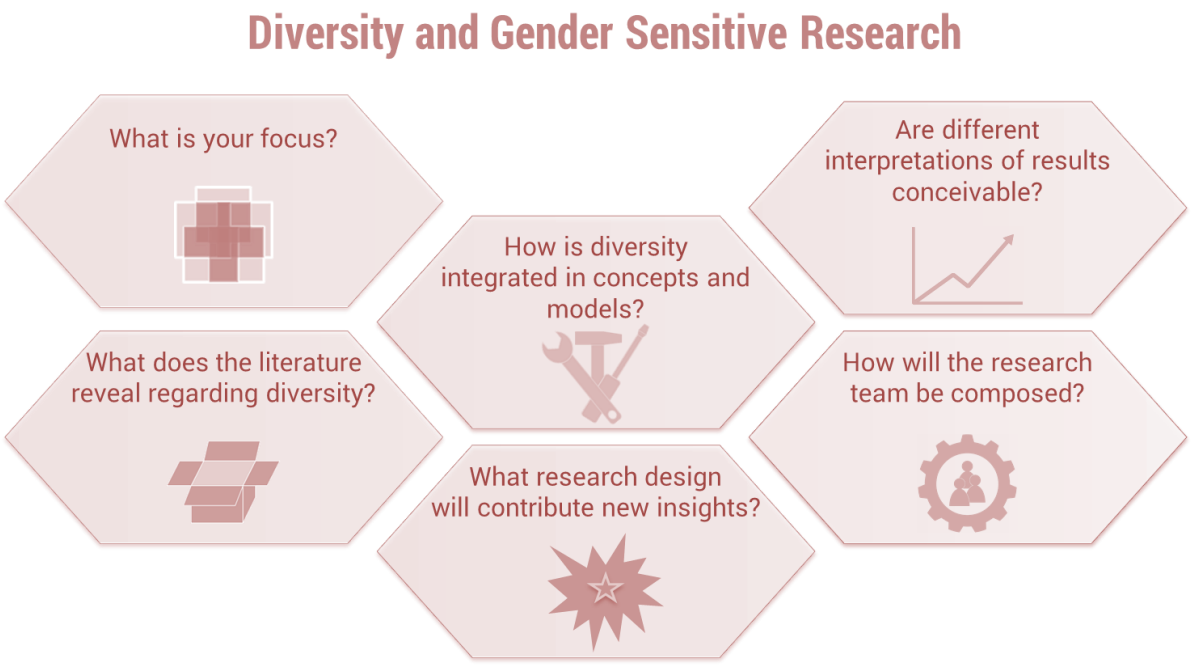
Science and technology **research often includes human beings or living materials as subjects, and research results might be relevant for diverse groups of users**.
Therefore, some funding regimes specifically demand that gender and other diversity perspectives are integrated systematically into research proposals (e.g., HORIZON 2020).

A better understanding of what people have in common and what makes them different leads to great potentials for research outcomes and innovation (Hewlett 2013, European Commission 2013, Schiebinger 2014, Page 2008). To make use of these potentials, relevant diversity and gender aspects need to be identified and integrated into research projects. This might seem like an ambitious endeavor, but it is one that can help to obtain more fruitful outcomes!

This checklist explains the benefits of diversity and gender sensitive research. The list contains useful questions for all stages of the research process regarding diversity and gender dimensions,
both in the content of the research and at the research management level. It provides guidance how to:

- determine whether diversity and gender aspects are relevant for your research, and if yes, which ones;
- integrate diversity and gender into your research project.

The checklist provides guiding questions for your research project in six areas as outlined in the figure below:



Relevant analytic dimensions and definitions as well as further literature: see last page.

Further information and contacts at TU Graz:

R&T House Support for Research Funding: Gerald Pichler, Elke Perl-Vorbach:

Specific questions about Diversity and Gender: Armanda Pilinger

CHECKLIST for Diversity & Gender Sensitive Research Projects

FOCUS: What is the focus of your research project?

Research results might be relevant for different groups of users who have different needs and interests. Hence, considering diversity traits might lead to innovative outcomes.

Does your research involve …
- **… human subjects?** (e.g., as participants or test users)
- **… animals, tissues, cells?** (e.g., differentiating the sex or age of cells has driven new insights)
- **… public policies?** (e.g., health, economic or technology policies)

Who are the beneficiaries and users of your research?
What do the beneficiaries have in **common**? In which ways do the beneficiaries **differ**? (*Commonalities and diversity might refer to skills and capabilities, social and economic background, working and living environment, body composition, physiology, age, etc. – see also below: "Relevant Analytic Dimensions and Definitions")*
What different needs do they have? *(see also below: "Problems to Avoid")*
- Will the variable "sex" sufficiently explain the phenomenon you are interested in?
- Which other aspects might lead to better insights with regard to the different needs that have been identified?

LITERATURE: What does the review of relevant literature reveal regarding diversity?

Studies may include specific diversity aspects and relevant methods. However, studies could also implicate stereotypes or overlook intersectional variables. A thorough review of the existing literature regarding the integration of diversity aspects may reveal research gaps.

Which diversity aspects have been investigated so far and what are the **results**?
- Which **variables** are used, and how are they **defined** in order **to operationalize relevant dimensions?** (*see also below: "Relevant Analytic Dimensions and Definitions")*
- Are there any further terms or variables that might be relevant for your literature review?
- What do the data show? What **assumptions** are underlying the interpretations?
- Have **intersections** of different diversity aspects been investigated?
- Which diversity aspects have been neglected, and could be of interest for further research?

Does the **methodology** used adequately reflect the aspects of diversity that you are interested in?
- Which methodological steps include diversity aspects, and how are these aspects analysed?
- Which methodology would enable a better reflection of the dimensions you are interested in?

What are the most important research gaps?
- Is there a research gap concerning "sex"?
  If yes, you should consider "sex" in your research as one of your priorities.
  If no, focus on intersecting diversity aspects but keep "sex" as an analytical entity.
- What research gaps have you identified regarding other diversity aspects that might be of relevance as intersectional variables?

How do these research gaps relate to the diversity aspects you have identified?

CONCEPTS & MODELS: How is diversity integrated in concepts and theoretical models?

A critical review can reveal implicit or explicit assumptions with regard to diversity, and can indicate whether a framework is suitable for your research or if an adaptation is needed.

Does the theoretical concept or model **explicitly** integrate diversity aspects?

Is it possible that there are **implicit assumptions** regarding diversity and sex in the concepts and theoretical models? (e.g., stereotypes, generalisation, spurious correlations)

In which **contexts** has the framework been developed and used so far?
- Is the concept used by different scientists (male/female/disciplines/context)?
- Do they use the same definitions and terms within the framework?

Considering the questions above, is the framework in question **useful to integrate diversity aspects** into your research topic?
- If no, is it possible to adapt the concept to meet the requirements?
- Which other frameworks can be used that might better fit your requirements?

NEW INSIGHTS: What research design will contribute new, innovative insights?

A well-elaborated methodology ensures that the diversity aspects you are interested in are adequately investigated and interpretable data are collected.

How can you **operationalize** the diversity aspects you are interested in?
(see also below: "Relevant Analytic Dimensions and Definitions")

- Which variables will you use to investigate the diversity traits that you are interested in?
- Are you going to concentrate on a specific group (e.g., one sex, specific age range) or on comparative analyses?

Does the methodology ensure an **adequate database** for your research questions?

- Are questionnaires, surveys, focus groups, etc. designed to consider potential diversity traits?
- Will data analyses consider identified diversity variables and their possible intersections?

How will the different perspectives of the potential users be integrated?

- Does your research team reflect the diversity of your users or study subjects in a way that ensures that their perspectives are considered?
- Do you intend to use participative methods to integrate different users and their perspectives?

How should the **study sample** be adapted to achieve the aimed results?

- What is known about the distribution of diversity traits in the main population?
- Should the study sample reflect the distribution of diversity traits in the main population?

RESULTS: Are different interpretations of results conceivable?

A critical examination is crucial in order to avoid biases and misleading explanations and helps to determine the path for further use of the results.

What insights can you gain from your data? Which hypotheses could not be confirmed?

- What **significant diversity** differences and effects emerge?
  What differences and effects between distinctive groups are **not significant**?
- What do the diverse investigated groups have **in common**?
- Which other diversity traits that **have not been investigated** might contribute to the interpretation of your results?

What different conclusions are conceivable?

- In which way might the results and their further applications have different **implications for specific groups** (e.g., women and men, age groups …)?

What conclusions **regarding diversity & gender aspects** can be drawn **for further research**?

TEAM: How will the research team be composed?

To achieve excellent results you will need team members with a variety of different competences, bodies of knowledge and work preferences who cooperate effectively. Supportive working conditions and processes encourage excellent performance on the individual and collective levels.

Have you identified the **expertise** required to cover the diversity aspects of your research?

- Will your team members or partners provide the needed expertise?
- If no, who might be a diversity and gender specialist?
  (e.g., persons known through publications, recommendations by team members and partners, …)
  In which way will the specialist(s) transfer knowledge and expertise to the project?

Does the **gender balance** in your team correspond with the potential diversity in your research field?

What processes and structures promote individual motivation and sustainable results?

- Are processes designed to enable **learning**, and **sharing** and **integration** of different expertise?
- How do **decision making** processes take into consideration different roles and expertise?
- Are resources provided for **individual career development**, regardless of gender, age, culture, etc.?

Relevant Analytic Dimensions and Definitions

The term **diversity** comprises the manifold traits, characteristics and differences of human subjects based on various dimensions. Some of these traits are inherent (e.g., sex, ethnicity, sexual orientation, body composition), some are acquired (e.g., skills, knowledge, technological literacy) and others are context related (e.g., different mobility needs in private and working context). The European Union acts to prevent discrimination on grounds of racial or ethnic origin, religion or belief, disability, age or sexual orientation and sex (see also http://ec.europa.eu/justice/discrimination/).

Sex refers to the **biological differentiation** between "men" and "women", determined by chromosomes, genes, hormones, and anatomy. However, the idea of two discrete sexes is very simplistic. The concept of "intersex" refers to a variety of conditions, in which the combination of sexual, anatomical and physiological factors does not fit to the typical definition of male and female (Ainsworth 2015, ISNA 2015). While sex is a powerful analytical and explanatory variable, there might be other diversity traits of higher explanatory significance that **intersect** or correlate with the variable "sex" (e.g., age, body height or weight, hormone status …).

The term **gender** refers to the '**social construction of women and men**': societies and cultures associate competences, behaviors and attitudes with a person's biological sex. Expectations and ascribed roles lead to further differences in women's and men's paths through life, for instance by influencing the perception of talent, occupational choices, income, or experiences with technologies. Therefore, gender is not a variable per se but rather a combination of diverse aspects which change over time.

When introducing diversity, sex or gender **variables need to be defined and operationalized. Operationalization** transforms roughly described terminologies and variables into measurable factors. For instance, "sex" might be differentiated by identifying "men" and "women" as defined in their passport. Income could be defined as payment for work after taxes or as "living standard based on all goods and services a person receives" (see also the World Bank Living Standards Measurement Study). The operationalization of the variable "technological literacy" is more challenging and might be a combination of different indicators.

Problems to Avoid: (http://genderedinnovations.stanford.edu/terms/sex.html)

- All women or all men are the same (e.g., regarding attitudes, preferences, needs, knowledge).
- Women and men are totally different from each other.
- Observed differences between women and men are solely biological in origin.
- Observed differences between women and men hold across cultures or different socio economic realities.

Further Information

Ainsworth 2015: Sex redefined; Nature http://www.nature.com/news/sex-redefined-1.16943 (obtained: 17.7.2015)

European Commission 2013: Gendered Innovations – How Gender Analysis Contributes to Research;

Hewlett, Marshall, Sherbin 2013: How Diversity Can Drive Innovation, Harvard Business Review, December 2013; https://hbr.org/2013/12/how-diversity-can-drive-innovation (obtained: 17.7.2015)

ISNA 2015: Intersex Society of North America; http://www.isna.org/ (obtained: 17.7.2015)

Page 2008: The Difference: How the Power of Diversity Creates Better Groups, Firms, Schools & Society, Princeton University Press

Schiebinger 2014: Gendered innovations: harnessing the creative power of sex and gender analysis to discover new ideas and develop new technologies; Triple Helix 2014, 1:9 http://link.springer.com/article/10.1186/s40604-014-0009-7 (obtained: 17.7.2015)