Data collection

Introduction to Data Science

2nd lecture

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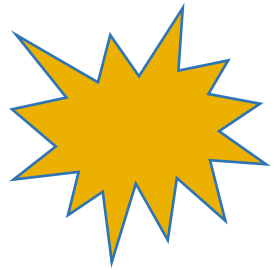
2025/2026

Content



- Data collection methods
- Types of research

Research

- using known scientific methods to investigate a problem or question in detail with the aim of generating new knowledge about that problem or question
- research is useful and valuable only when it is valid, accurate and reliable
- the data must be:

  Valid – grounded, logical, rigorous and unbiased

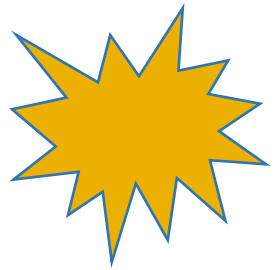
  Accurate – without errors and including the necessary details

  Reliable – other people doing the same research can produce similar results

  Timely – current and collected in the appropriate time frame

  Complete – include all the data you need to support your conclusions

Data collection methods



- Documentary research
- Interview
- Focus group
- Case study
- Ethnography
- Observational research
- Experiment
- Survey

Documentary research (1)

- **written source of data** (can also be visual sources or sounds)
- government publications and official statistics, newspapers and magazines, recordings of meetings (minutes, tracking of transactions and finances), letters and memoirs, diaries, websites and the Internet
- access to data: publicly available, restricted access, classified data
- pay attention to: **authenticity** (true article or fraud), **representativeness** (is the article representative of a typical situation, is it completed, post-edited), **meaning** (clear, unambiguous, hidden meaning, reading between the lines), **credibility** (are there errors, leaning whether on someone's side, who wrote the document, social context)
- images, video, sounds - pay attention to whether they are **authentic** or **created**, they can be used as records for later processing

Documentary research (2)

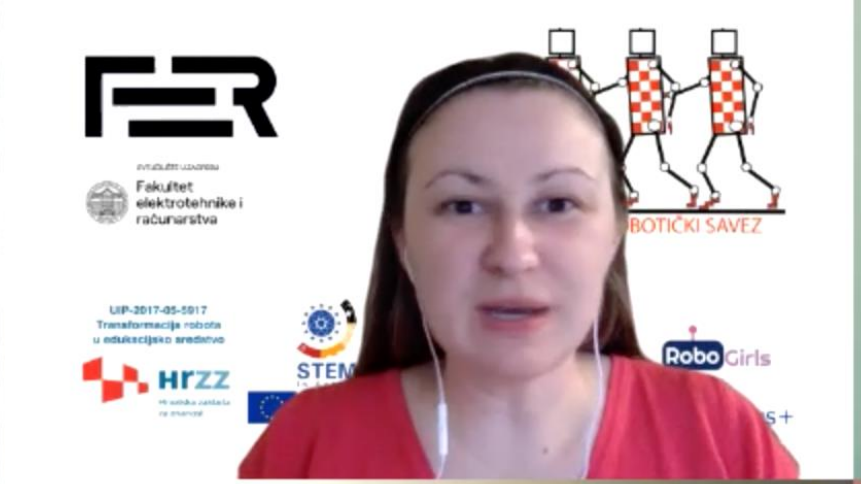
document type	example	access	benefit
publicly available	books, magazines, official statistics, some information about companies	libraries, Internet, State Statistical Office	academic research, consulting jobs
restricted access	medical data, police documents, internal records, personal diaries, tax cards	pregovaranje s vlasnicima, sponzori negotiation with owners, sponsors	academic research, consulting jobs
classified data	minutes of meetings behind closed doors, illegal trade, *other* tax books, corporate plans	participation, knowledge "from the inside"	investigative journalism, undercover work, fraud investigation

Interview

- for smaller samples, over the phone or in person
- personal contact with the respondent - it is possible to know in advance exactly who will be included in the sample
- if necessary, the **questions can be clarified** or the respondent can be asked for **additional information**
- **lack of anonymity** can cause respondents to be less honest and the possibility of bias is greater
- open answer questions

Focus group

- there is a **focus of the conversation** - group discussion is conducted around a subject or experiences about which all participants have similar knowledge
- emphasis is placed on **interaction within the group** to gather information
- **moderator's role**: facilitating group interaction, leading to a specific topic (keeping the focus on the topic), encouraging all participants to participate, ensuring that there is no offense or embarrassment during the conversation
- **ideal group size**: 6-9 people (ensures a fair distribution of opinions and experiences among participants and their inclusion in the discussion), for smaller research - groups of 3-4 participants also an help
- **duration**: 1.5h – 2h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RoboGirls

Case study (1)

- fokus na samo jednom primjeru (ili vrlo malom broju) određenog fenomena s ciljem pružanja detaljnog prikaza događa, odnosa, iskustva ili procesa koji su se dogodili u tom konkretnom slučaju
- focus on only one example (or a very small number) of a particular phenomenon with the aim of providing a detailed account of the event, relationship, experience or process that occurred in that particular case
- insight into an individual case can lead to observations that would not come to light using strategies that cover a large number of cases
- the goal is to reach a **general conclusion by observing individual**
- a natural environment instead of an artificial environment generated specifically for that case
- it is possible to use different research methods: **observation, documents, informal interviews**
- the choice of the case: according to the way of use, practical considerations or when there is no choice

Case study (2)

Way of use

- **typical case** – what is concluded can probably be applied to other cases, i.e. generalised
- **extreme case** – information about the contrast with the normal (eg the organization is significantly larger than usual)
- **relevant to previous theories (testing the theory)** – case selection is such that it possesses key elements of particular importance that researchers think can predict the outcome if the theory is correct
- **the least expected case**

Case study (3)

Practical considerations

- **convenient case**
  - the least trips, costs, the easiest access
  - it should be careful because it can be characterized as weak social research
- **an essentially interesting case**
  - a wider audience will be interested in the results,
  - but for researchers, this is not enough justification, it looks more on journalism than research

Case study (4)

There is no choice

- **unique situation** – the event is not unique, but the possibility of researching such an event can be unique: **the situation cannot be planned or created** (eg war, natural disaster, famine), **unpredictable or rare nature of the event** (strike - the researcher has no choice which cases to observe but will jump into them when they happen)
- **ordered research** – whoever finances determines that the research must be connected, for example, to some organization or activity

Case study - example

- Example of a case study – Tim, a boy who has problems with socialization:

1. dio: https://www.youtube.com/watch?v=tkClqz0weW4
2. dio: https://www.youtube.com/watch?v=E-wGvKlebZo
3. dio: https://www.youtube.com/watch?v=qH3cKmtBPHs

- Example of a case study – Bart Simpson:

https://www.youtube.com/watch?v=6SMdwNa4K4U&list=PL81C8C21394E2A94D

Ethnography (1)

- literally: **a description of people or culture**
- has its roots in early social anthropology whose aim was to gain a detailed insight into the culture and life of small isolated tribes, before the industrialized world had an impact on them or they died out
- how do you imagine such a researcher?

Ethnography (2)

- **characteristics**: the researcher lives a significant part of the time with the people he/she studies - shares life with them instead of observing them - explanations of what he/she saw emerge over time
- famous researcher Bronislaw Malinowski (1922)
- today **research on deviant groups**: vagabonds, alcoholics, drug addicts, religious sects, gangs, Wall Street investors, life in a classroom or life inside a building, online culture, online communities, "netnography" or "virtual ethnography"

Observational research (1)

- observing things as they usually happen, and not as they would happen in artificially created conditions (e.g. laboratory experiments)
- it relies on the direct evidence of witnesses to an event
- **direct observation** of what actually happened
- work in the field, in **real situations**
- **natural environment** - situations would happen whether the researcher is there or not, minimize the impact of the researcher
- **the issue of perception** – sensitive to the possibility that the researcher's perception of situations may be influenced by personal factors and that the collected data may be unreliable

Observational research (2)

1. **systematic observation**
   - **observing interactions** in an environment such as a school classroom
   - related to the collection of **quantitative** data and their statistical analysis
2. **participant observation**
   - to **infiltrate in situations**, sometimes as an undercover operation, to understand the culture and processes of the group being investigated
   - associated with **qualitative** data

Observational research – systematic observation (1)

- **quantitative data and researcher's notes**: description of the context, impressions of the circumstances surrounding the event or behavior that was observed
- before the research, it is necessary to prepare an "**observation schedule**":
  - observational framework followed by all researchers: be stimulated by the same activities, look for the same things, record data systematically and thoroughly, produce data that is consistent between researchers (2 or more researchers observing the same event record the same data)
  - goal: minimization or elimination of differences that may arise based on the individual perception of an event or situation by various researchers
- the researcher must pay attention to:
  - **positioning** – unobtrusive, but the entire area of action is visible
  - **avoiding interaction** - "socially invisible", without interaction with research participants
  - **time** - the longer the researcher observes the action, the less noticeable he/she will be (his/her presence is taken for granted) and the presence has less impact on the research

Observational research – systematic observation (2)

Example: the sink in the art classroom

Situation: art class

Purpose: to measure the loss of time that students spend in front of the sink waiting in line to clean brushes

Objective: to collect quantitative objective data that will show how it is necessary to buy another sink for the classroom

It is recorded: the name of the student, the time when she/he got in line, the time when she/he finally reached the sink, the time spent in line is counted

It is also **possible** to measure how many times an individual student goes to the sink or how many students are standing in front of the sink at some point - the choice of what to measure depends on the goal

Observational research – systematic observation (3)

Student	The time she/he got in line for the sink	The time she/he got to the sink	Time spent in line
Ana	10:15	10:15	0
Ivan	10:15	10:18	3
Marija	10:15	10:20	5
Josip	11:16	10:23	7
…			

Observational research – participant observation (1)

- the observer **participates in the life of the people she/he observes**, observing things that happen, listening to what people say, asking questions, for a certain period of time, but **without the observed person knowing that she/he is being observed**
- if no one knows that the person is a researcher, everyone will behave naturally
- as a secret agent – success depends on not being discovered
- **dangers**: **physical danger** (e.g. if drug users are being researched), **health danger** (e.g. if the researcher starts using drugs), **legal persecution** (there is no special immunity for researchers), **impact on "other" life outside the research** (working at night, what a person does when she/he is not with her/his family, nervousness in the family), **psychological danger** (due to a double life)

Observational research – participant observation (2)

- Approach:
  - **total participation** - the role of the researcher remains secret, it is impossible to collect the consent of the research participants
  - **participation in a normal environment** - the role of the researcher may be known to some participants, but it is hidden from the rest, the researcher is close, but again at a distance from the key group she/he observes
  - **participation as an observer** - the identity of the researcher is known, it is possible to obtain the consent of the participant, as a "shadow" to the observed person, witnessing the events firsthand

Experiment (1)

- empirical research under **controlled conditions** designed to investigate the **properties and relationships** between specific factors

Experiment (2)

- **Natural Sciences:**

  isolate individual factors and study them in detail with the aim of discovering new connections or properties related to the material under study or to confirm existing theories

- **Social Sciences:**

  1. identification of causal factors (causes) by introducing or removing some factors
  2. using control by manipulating the main variables
  3. empirical observation and measurement of changes

Experiment (3)

1. identification of causal factors (causes)

- **introducing or removing some factors** from a certain situation allows researchers to determine which factor actually affects the observed result
- **cause and effect** – a change in the independent variable leads to a change in the dependent variable
- **example**: cigarette smoking causes lung cancer: cigarette smoking is the independent variable, lung cancer is the dependent variable (cancer will not make smoking more likely)

Experiment (4)

2. use of control

- the experiment involves **manipulating the main variables**, and it is necessary to identify which factors significantly affect the situation, so that they can be included or excluded during the experiment
- the researcher must be sure that the **independent variable affects the dependent** one, and not some other factors (diet, amount of exercise)
- it is necessary to **control all possible variables** (smoking, diet, exercise) that could affect the dependent variable (cancer) in order to confirm which is actually the cause

Experiment (5)

- **introducing a new variable** (new factor)
  - **all other variables are kept unchanged**, only then a new variable is introduced
  - it is possible to **observe the influence of the new variable**
  - possible **problems**: (1) it is very difficult to ensure that the other variables do not change and (2) the variables are often interrelated
- **elimination of the variable from the experiment** – for example, discovering the connection between hyperactivity and children's diet, **eliminating** artificial colors from food and observing how the child behaves, everything else in his life does not change, and if there is a change in behavior, the artificial color is to blame
- **holding the variable constant**
  - some **variables cannot be changed** (income, height, age) but can be **kept constant**
  - for example, all participants in the experiment are the same age or height - the obtained results can be explained by other variables (other than age or height)

Experiment (6)

3. observation and measurement in conditions that are artificially created to allow greater precision

- detailed **observation and measurement of changes** that occur through the introduction of certain factors
- **the artificial environment of an experiment** can increase subjects' sense of being observed and they may **behave differently than normal** - they may become self-conscious or change their behavior to take into account the purposes of the research - known as the "observer effect" or "Hawthorne effect"
- researchers can observe the subject through a **one-way window** or **hide the real purpose of the research** – both ethically questionable
- researchers can **spend time on site** and become "part of the furniture" and have minimal interaction with the person being observed

Laboratory experiment

- example: Milgram 1974 – shed light on **why ordinary individuals can inflict pain on another person if ordered to do so by authority** (an attempt to shed light on Nazi authority and whether those who carried out torture were different from other people or is it a normal psychological state of people to obey authorities, even and if following the instructions can injure another person)
- https://www.youtube.com/watch?v=3YOox59J0Bk
- https://www.youtube.com/watch?v=xOYLCy5PVgM

  https://www.youtube.com/watch?v=V_faTbLtZ6s
- note: **everything is controlled** in order to be able to measure the desired variable (the respondent is an actor, the keys are artificial), the researcher is in a white clothes to be an authority – it would be impossible to do such an experiment in the field

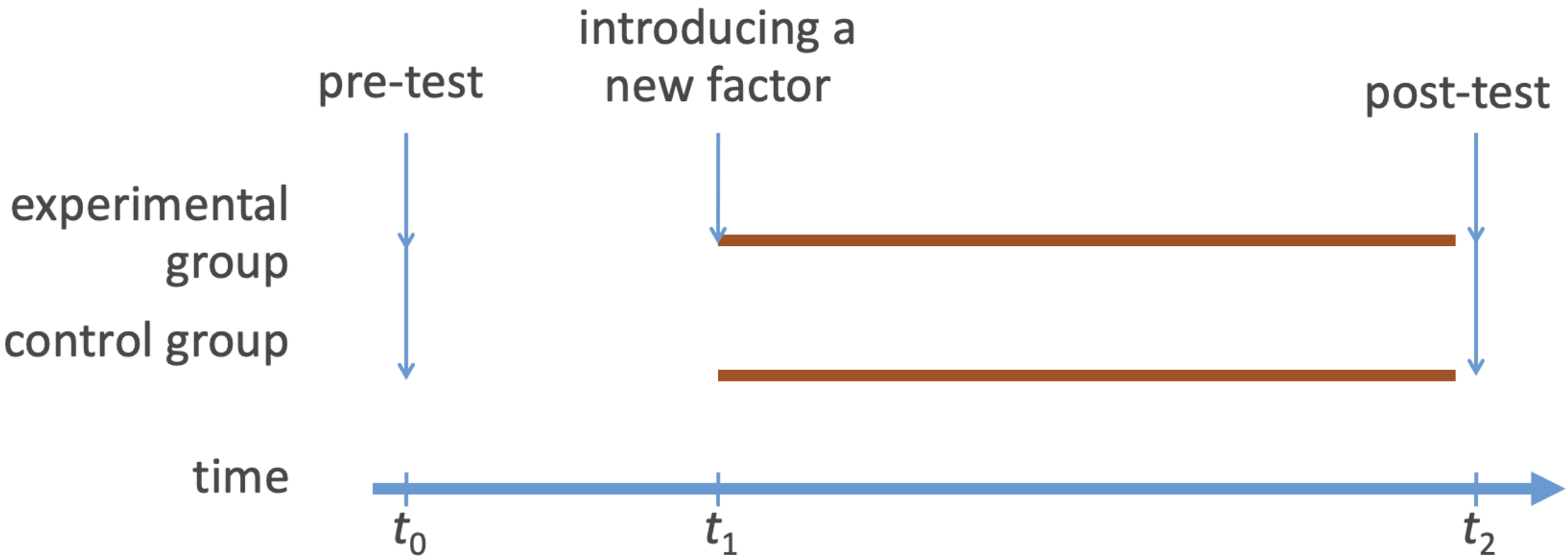
Field experiments

- when it is possible to manipulate the situation and keep control over key variables
- some situations cannot be manipulated (e.g. manipulating adolescent smoking levels, economists cannot generate a recession to investigate its effects, or income levels to investigate poverty) – **it is not feasible or ethical**
- example: does a prison sentence affect earnings after release?
  - independent variable: prison, cannot be manipulated (a fact that existed before and is separate from the research)
  - when a person gets out of prison, her/his income can be compared with the income of people who were not in prison, but in most other respects they are similar
  - it can be concluded that the variable "prison" had an impact on the dependent variable "earnings"

Control group

- it is necessary to identify two groups of people for the experiment: an **experimental and a control group**
- method of division
  - **randomized controlled trials**: large groups of people – **random assignment of groups** – some non-deterministic factors are expected to cancel themselves out – often used in medical research
  - **purposive sampling**: for smaller studies – groups are matched based on **known factors** where a deliberate attempt is made to ensure balance between groups with regard to key criteria (eg age, gender, ethnicity)

Implementation of the experiment



An example of purposive sampling

We want to divide 9 students into 3 groups of 3 students with the same prior knowledge who will participate in the quiz.

The children are: **Marko** (1st grade, traffic school), Iva (1st grade, mathematics gymnasium), **Lara** (2nd grade, technical school), **Josip** (2nd grade, technical school), Marija (2nd grade, general gymnasium), **Tomislav** (2nd grade, mathematics gymnasium), **Leon** (3rd grade, science gymnasium), **Krešo** (3rd grade, technical school), **Luka** (4th grade, mathematics gymnasium)

Conditions:

1. 3rd and 4th grade students are not in the same group.
2. The girls are not in the same group.
3. Students of the same school are not in the same group.
4. 1st grade students are not in the same group.
5. Luka and Lara are not in the same group (because they are brother and sister).

Arrange the students into groups.

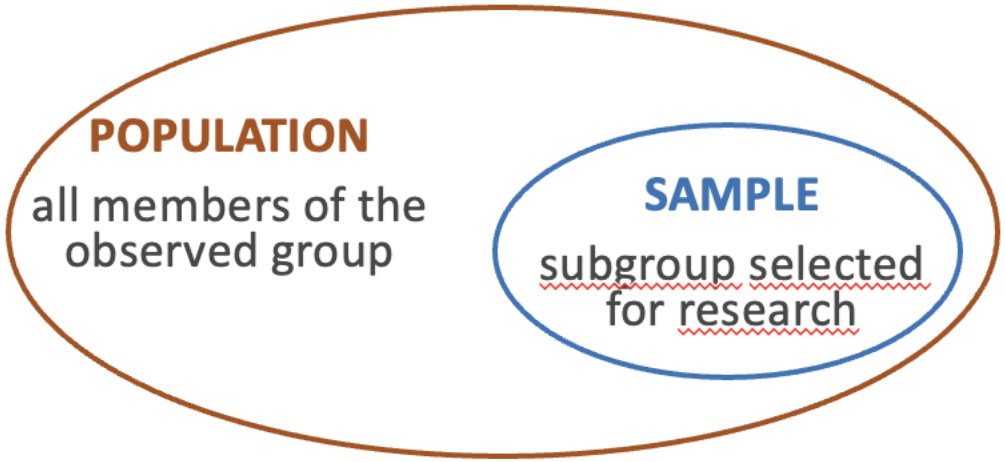
The difference between observational research and experiment

https://www.youtube.com/watch?v=Nh3ByyM2rzE

https://www.youtube.com/watch?v=2OnduwEujlk

Questionnaire

- a list of questions used to gather information from respondents about their attitudes, experiences, or opinions
- before carrying out the research, it is necessary to determine the research questions and who the target population is
- **target population** – a specific group of people about whom one wants to learn more (e.g. the population of Croatia, FER students, second generation immigrants to Germany, Facebook users under 30)
- **sample** – It is impossible for the entire population to complete the questionnaire
- the results should be generalizable to the entire population
- **sample size** – depends on the size of the population, it must be representative of the entire population

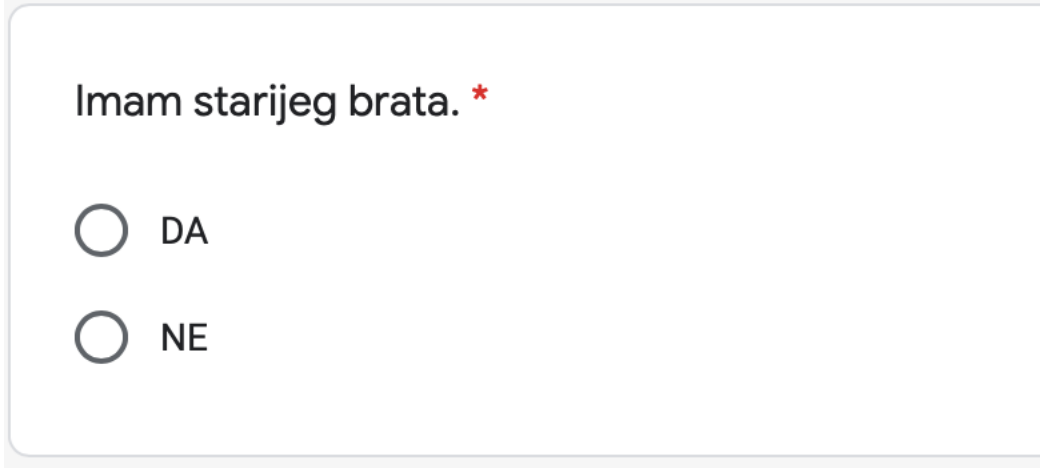


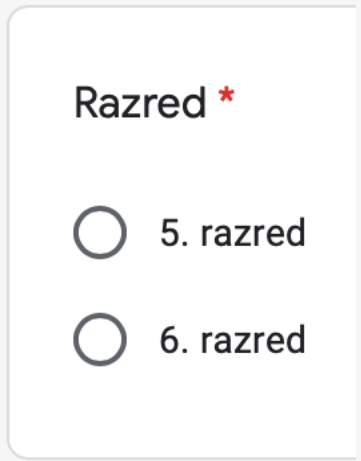
Questionnaire – conducting research

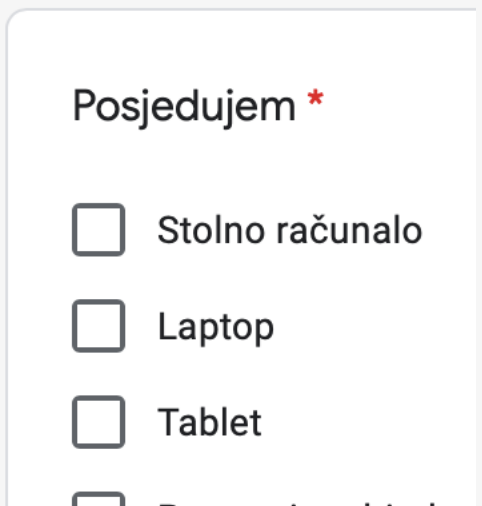
	mail	online	in person
pro	easy access to a large sample	easily access a large sample without time or location constraints	collection of time and space specific data
pro	the researcher has some control over choosing who will be included in the sample	easy data processing and analysis	possible control over respondents so that only the target population is included in the sample
against	potential participants rarely respond	less control over respondents (due to anonymity and high availability of online surveys)	small sample

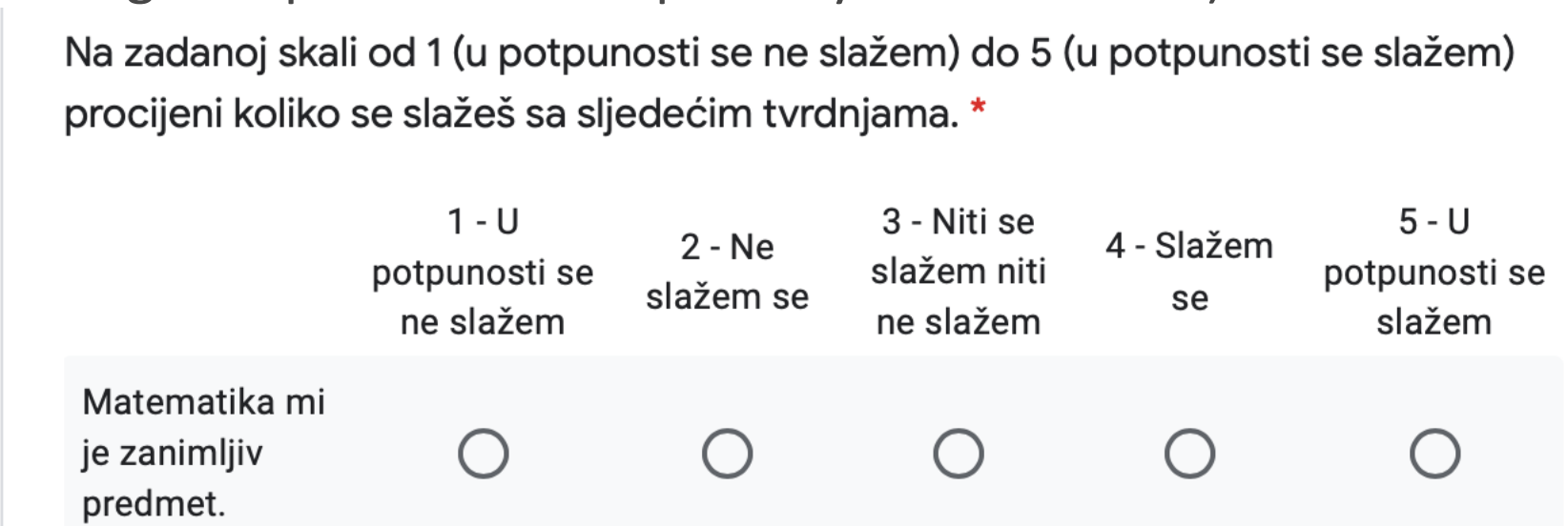
Question type in the questionnaire (1)

- **closed-ended** (**quantitative questions**):
  - **binary** (yes/no)
  - **scale** (Likert scale – grades 1-5)
  - a list of options with **one possible answer**
  - a list of options with **several possible answers** (the "other" option is also possible with the answer entry to include options that the researcher did not remember when creating the questionnaire - partially closed-ended)





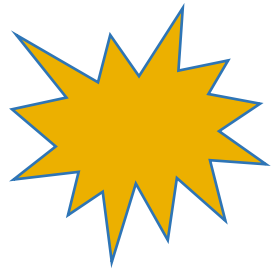




Question type in the questionnaire (2)

- **open-ended** (**qualitative questions**):
  - write the **answer in your own words**
  - problems:
    - respondents take **more time** to answer the questions and therefore **may not complete the questionnaire** or answer the questions completely
    - a lot of **time and resources to analyze** and understand the answers
    - need to develop a special **method of coding responses** and/or involve other researchers to increase reliability

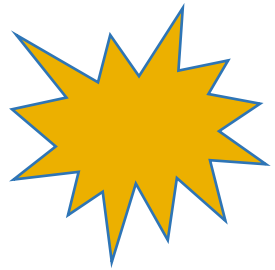
Think!



How do students' sleeping habits affect exam results?

- Documentary research
- Interview
- Focus group
- A case study
- Ethnography
- Observational research
- Experiment
- Questionnaire

Types of research



Types of research according to purpose (1)

1. Theoretical research – pure or basic research (theoretical, pure, basic)

- focused on generating knowledge, independent of their practical application
- data are used to generate new general concepts for a better understanding of a particular branch of science or to answer a theoretical question
- methods: documentary analysis, development of mathematical formulas, high-level researcher reflection
- example: research in philosophy – generates a new approach, independent of implementation in practice

Types of research according to purpose (2)

2. Applied research

- it relies on theory to create practical scientific knowledge
- often used in STEM: engineering, computing, medicine
- example: market research to discover consumption patterns and develop new product development strategies

- Often, applied research is based on theoretical research

Types of research according to the source of information (1)

1. Primary research

- the data is collected directly from the source – it consists of first-hand primary information
- it is used when a new problem is researched

2. Secondary research

- the information is generally based on scientific literature and other documents compiled by another researcher
- it is used when one wants to synthesize existing knowledge, analyze historical trends, identify patterns on a larger scale

Types of research according to the source of information (2)

	pro	against
primary	– corresponds to its own specific research question – control over data sampling and measurement methods	– expensive and time-consuming – requires training on data collection methods
secondary	– simpler and faster – it is possible to collect data that are on a longer time scale or at different spatial locations	– there is no control over how the data is collected – additional processing is needed to make sure that the data meets research

Types of research according to the type of used data (1)

1. Qualitative research

- it is often used in the social sciences to collect, compare, and interpret information
- questions about ideas, experience and meaning or about topics that cannot be described by numbers
- using **conversational methods** with "open-ended" questions: one-on-one interview, focus group, ethnography, text analysis, case study
- collected data is usually not numerical → must be numerically evaluated in order to perform statistical methods
- it **helps to understand what the research participant thinks and why** she/he thinks that way
- for extracting meaning from events or phenomena rather than causes
- **example**: examining the effects of sleep deprivation on mood

Types of research according to the type of used dana (2)

2. Quantitative research

- investigates the phenomenon by **collecting quantitative data and using mathematical, statistical and computer-aided tools to measure it**
- uses measurable variables to explain, predict, or control a phenomenon
- it is used when the research involves hypothesis testing
- **methods**: survey, descriptive research, correlational research
- **example**: conducting a computer simulation of the impact of a vehicle in order to collect quantitative data

Types of research according to the type of used dana (3)

	pro	against
Qualitative	– flexible – it is possible to adjust the method during data collection – small number of participants	– cannot be statistically analyzed or generalized to the wider population – difficult to standardize research
Quantitative	– generates reproducible knowledge: it is possible to repeat the research and confirm the results – for the systematic description of a large group of data	– it is necessary to know statistics for data analysis – requires more data

Types of research according to the time of implementation (1)

1. Cross-sectional study or synchronous research

- it is used to observe phenomena, an individual or a group of research subjects **at a certain time**

2. Longitudinal research

- following the same event, individual or group over a period of time
- the goal is to track changes in a number of variables and see **how they evolve over time**
- **example**: analysis of changes in a certain autochthonous population over a period of 15 years

2

Types of research according to the time of implementation (2)

cross-sectional study	longitudinal study
one point in time	multiple points in time
different samples	the same pattern
cheaper	more expensive
simple statistical methods	advanced statistical methods
minimal possibility of missing data	possibility of missing data
it is not possible to gain insight into causes and consequences	it is possible to gain insight into causes and consequences

Types of research according to the method of data collection

1. Documentary research

- a systematic review of existing sources of information on a specific topic
- usually used in a literature review or case study

2. Field research

- direct collection of information at the place where the observed phenomenon occurs

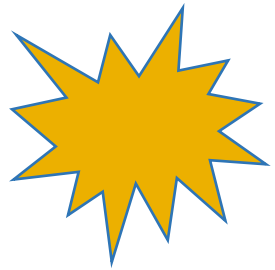
3. Laboratory research

- in a controlled environment in order to isolate the dependent variable and establish its relationship with other variables using scientific methods

4. Mixed research

- results from secondary (documentary) sources and primary sources through field or laboratory research are combined

Think!



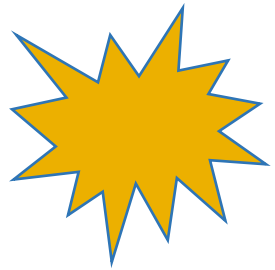
How do students' sleeping habits affect exam results?

method	primary or secondary	qualitatively/ quantitatively	when it is used	how data are collected
literature review	secondary	both	for placing one's own research in existing research or for assessing trends within the research topic	access to articles and documents from libraries and Internet databases
archival research	secondary	both	to understand current or past events, conditions or practices	access to manuscripts, documents or recordings from libraries, archives or from the Internet
secondary data collection	secondary	both	for analyzing data about a population that you cannot access directly	by finding existing databases that have already been collected, from sources such as agencies or research organizations

method	primary or secondary	qualitatively/ quantitatively	when it is used	how data are collected
interview one-on-one	primary	qualitatively	for a deeper understanding of the topic	orally asking questions that require a longer answer
focus group	primary	qualitatively	for a deeper understanding of the topic	orally asking questions that require a longer answer
case study	both	both	for a deeper understanding of a specific group or context, or when you do not have the resources for bigger research	the natural environment of the respondents with the use of different research methods (observation, documents, informal interviews)

method	primary or secondary	qualitatively/ quantitatively	when it is used	how data are collected
etnography	primary	qualitatively	to study the culture of a community, group or organization first hand	by joining and participating in the community and recording observations and reflections
opservational	primary	both	for understanding how something is formed in the natural environment	by measuring or surveying the sample without directly affecting it
experiment	primary	quantitatively	to test the cause and effect relationship	manipulating variables and measuring their impact on others
survey	primary	both	to understand the general characteristics or opinions of the population	by asking a series of questions to a sample of people online, live or over the phone

Data analysis methods (1)



1. Qualitative analysis

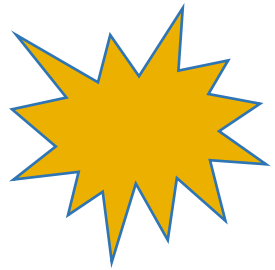
- for understanding words, ideas and experiences
- used to interpret data collected from **open-ended** survey and interview questions, literature reviews, case studies, and other text-based sources
- flexible and **relies on the judgment of the researcher**, so one should be careful with the choice and assumptions
- methods:
  - **thematic analysis** – to understand general themes in the data
  - **content analysis** – for analyzing a large amount of textual or visual data (e.g. word meaning)

Data analysis methods (2)

2. Quantitative analysis

- uses **numbers and statistics** to understand frequencies, means, and correlations or cause-and-effect relationships
- the results can be **easily standardized** and shared among researchers
- method: **statistical analysis** – for the analysis of data collected in a statistically valid way (e.g. **from an experiment, survey, observation**)

Before the research



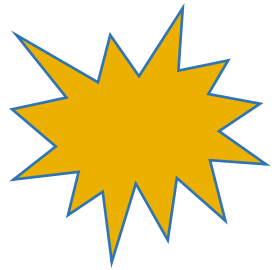
It is necessary **to decide on the type of research**, because it depends on how the data will be collected:

- **qualitative** or **quantitative**: Do you want the data to be in the form of words or numbers?
- **primary** or **secondary**: Do you want to collect the original data yourself or will you use data collected by someone else?
- **descriptive** or **experimental**: Are you going to measure something as it is or are you going to conduct an experiment?

Data analysis methods should also be decided:

- for quantitative data it is possible to use **statistical methods**
- for qualitative data, it is possible to use **thematic analysis** to interpret the patterns and meaning of the data

Research ethics (1)



- no one should suffer harm as a result of participating in the research
- the emphasis is on the possibility of harm of any kind and the probability that it will occur, so it should be very careful
- researchers are expected to behave professionally and with integrity, according to the codes of research ethics for a particular research discipline or profession:
  - researchers must act in **accordance with the law**
  - while working with participants, they are expected to be **open and honest** and not engage in fraud
  - in their relationships with colleagues and the research community, they are expected to uphold good scientific standards and **not manipulate results**
  - in collecting data, they are expected to take **personal security issues** seriously and not expose themselves or associates to unacceptable risk in the pursuit of data

Research ethics (2)

Minimizing the risk of harm in social research usually includes:

- **participants are protected from physical or psychological harm** (including loss of dignity, loss of autonomy and loss of self-esteem)
- participants will remain **anonymous**
- information will be treated as **confidential**
- **participants understand the nature of the research** and how they will be involved (the nature, duration and purpose of the experiment, the method and means by which it will be conducted, the expected inconveniences and dangers, and the effects on health or the person as a result of the research)
- participants **voluntarily agree to participate** (for children, consent is given by parents or guardians, but older children must also give their own consent)

Ethics committee of FER

- https://www.fer.unizg.hr/eticko_povjerenstvo
- if **people are involved in the research** – the recommendations of the Declaration of Helsinki and its revisions must be followed (World Medical Association Declaration of Helsinki, https://www.wma.net/policies-post/wma-declaration-of-helsinki-ethical-principles-for-medical-research-involving-human-subjects/)
- if research is carried out **on animals** - it is necessary to comply with the Regulations on the Protection of Animals Used for Scientific Purposes (OG 55/13 and OG 116/2019)
- it is necessary to work in accordance with the **Code of Ethics of the University of Zagreb**
- if data on or with humans or animals conducted by **another institution is used**, attention should be paid to whether **that research has the approval of the ethics committee**
- if **publicly available databases** are used - it is necessary to carefully study the way in which the data or recordings were collected and the **conditions of their use**, in order to protect against possible violations of ethical principles
- subjects must give **written consent to consent to participate in the research** (for children, consent is given by parents or guardians) and **can withdraw from the study at any time**

Code of Ethics of the University of Zagreb

„Students are obliged to refrain from copying, regardless of the form of evaluation of student work“

http://www.unizg.hr/fileadmin/rektorat/O_Sveucilistu/Dokumenti_javnost/Propisi/Pravilnici/Eticki_kodeks.pdf

ČL 16. Korištenje ljudi i životinja u znanstvenom istraživanju i umjetničkom radu

1. Nije dopušteno istraživanje koje može rezultirati nerazboritim rizikom ili fizičkim i psihičkim povredama ljudi, povredama životinja ili okoline koje je moguće izbjeći, kao ni podržavanje, poticanje ili tajenje takvih djelatnosti koje provode drugi članovi akademske zajednice.

2. U znanstvenom istraživanju i umjetničkom radu potrebno je primjenjivati načelo svjesnog pristanka na temelju odgovarajuće obaviještenosti sudionika. Prava i dostojanstvo svih koji sudjeluju kao ispitanici i drugi sudionici u znanstvenom istraživanju i umjetničkom radu treba na odgovarajući način štititi.

3. Ako u aktivnostima iz st. 2. sudjeluju djeca i maloljetnici, valja osigurati poštovanje njihovih prava u skladu s mjerodavnim pravilima i standardima.

4. Sa životinjama koje se koriste u eksperimentalne svrhe treba postupati u skladu s mjerodavnim etičkim i stručnim standardima.

ČL 17. Izmišljanje rezultata

1. U znanstvenom i istraživačkom radu nije prihvatljivo izmišljanje (fabrikacija) rezultata.

2. Smatra se da je izmišljanje svako namjerno predstavljanje, širenje i objavljivanje navodnih rezultata znanstvenog i istraživačkog rada unatoč znanja o tome da znanstveni rad i istraživanje na koje se poziva u stvarnosti nije bilo provedeno.

ČL 18. Krivotvorenje

1. U znanstvenom i istraživačkom radu neprihvatljivo je svako krivotvorenje (falsifikacija).

2. Krivotvorenje uključuje svako djelovanje kojim se suprotno načelima znanstvenog poštenja manipulira objektom, opremom ili procesom istraživanja sa svrhom da se namjerno podese ili tendenciozno protumače rezultati znanstvenog istraživanja.

Čl 19. Plagiranje

1. Svaki oblik plagiranja radova i ideja smatra se povredom Etičkoga kodeksa.

2. Svi članovi akademske zajednice koji sudjeluju u znanstvenoistraživačkom i umjetničkom radu moraju jamčiti za izvornost objavljenih znanstvenih radova i umjetničkih djela autorstvo kojih im se pripisuje te točnost i poštenje u prikazivanju i navođenju informacija o porijeklu ideja i navoda kojima su se u radu koristili.

Written consent

Written consent usually contains:

- **who** conducts the research and for **what pur**pose, and **what is required of the participants**
- infor**mation about the researcher and the institution**, who can be contacted if they have problems and questions about the research
- **information about all the risks** that the participant could take by participating in the research
- **the rights of participants** in the research process, the right to review the material and the right to withdraw from the research
- whether **participants' names,** other names or pseudonyms will be used
- **where the results will be published** and whether the participants can benefit in any way (eg financially) from participating in the research
- participants are **free to participate or not participate** in the research without being influenced
- for children, the consent is **signed by the parent or guardian**
- consent should be written **in the second person** (e.g. "You have the right to...") and in **easy-to-understand language**

Ana Sović Kržić
Sveučilište u Zagrebu
Fakultet elektrotehnike i računarstva
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ana.sovic.krzic@fer.hr
098/380-665

Hrvatska zaklada za znanost

Projekt: Transformacija robota u edukacijsko sredstvo

UIP-2017-05-5917

Zagreb, 7. srpnja 2021.

Poštovani roditelji,

obraćam Vam se kao voditeljica projekta Hrvatske zaklade za znanost UIP-2017-05-5917 „Transformacija robota u edukacijsko sredstvo“, a s molbom da odobrite sudjelovanje Vašeg djeteta u istraživanju vezanom uz navedeni projekt. Docentica sam na Fakultetu elektrotehnike i računarstva Sveučilišta u Zagrebu u čijoj nadležnosti se projekt i provodi.

Cilj projekta je modernizacija nastave u smislu istraživanja mogućnosti uporabe robota u osnovnoškolskoj nastavi. Osobito nas zanima prihvaćenost ovakvog pristupa kod učenika. Korist ovoga projekta višestruka je jer, uz očit praktičan doprinos u smislu unaprjeđenja i modernizacije nastave, otvara nove znanstveno-istraživačke mogućnosti u akademskoj zajednici.

U okviru Ljetnog robotičkog kampa Petica polaznici će se upoznati s nekoliko vrsta edukacijskih robota dizajniranih upravo za njih. Ono što nas zanima je povratna informacija od djece o zadovoljstvu korištenja robota i njihova viđenja o primjeni robota u nastavi. Tijekom radionica bismo prikupljali mišljenja učenika, odnosno njihove reakcije na korištenje robota. Metode prikupljanja učeničkih osvrta bile bi upitnik i intervju prilagođen njihovoj dobi te snimanje i fotografiranje rada s robotom. Rezultati bi u izvještajima bili u potpunosti anonimizirani te bi se tako zaštitio identitet učenika. Ne očekujem nikakve negativne učinke na učenike, dapače, očekujem da će uživati u aktivnostima koje je moj tim za njih pripremio.

Napominjem da će istraživanje biti provedeno u skladu sa svim etičkim normama i načelima, odnosno u skladu s Etičkim kodeksom istraživanja s djecom.

Ukoliko biste imali kakvih pitanja, molim Vas da me budete slobodni kontaktirati na e-mail: ana.sovic.krzic@fer.hr ili broj mobitela: 098/380-665.

Unaprijed Vam zahvaljujem na Vašem vremenu.

S poštovanjem,

Ana Sović Kržić

Doc. dr. sc. Ana Sović Kržić

Suglasan sam da moje dijete _____
(prezime i ime)
sudjeluje u istraživanju u okviru projekata „Transformacija robota u edukacijsko sredstvo“.

Potpis roditelja: _____ Datum: _____

European Commission
Research & Innovation - Participant Portal

Proposal Submission Forms

Proposal ID	

Declarations

1) The coordinator declares to have the explicit consent of all applicants on their participation and on the content of this proposal.	☒
2) The information contained in this proposal is correct and complete.	☒
3) This proposal complies with ethical principles (including the highest standards of research integrity — as set out, for instance, in the European Code of Conduct for Research Integrity — and including, in particular, avoiding fabrication, falsification, plagiarism or other research misconduct).	☒

4) The coordinator confirms:

- to have carried out the self-check of the financial capacity of the organisation on http://ec.europa.eu/research/participants/portal/desktop/en/organisations/lfv.html or to be covered by a financial viability check in an EU project for the last closed financial year. Where the result was "weak" or "insufficient", the coordinator confirms being aware of the measures that may be imposed in accordance with the H2020 Grants Manual (Chapter on Financial capacity check); or	○
- is exempt from the financial capacity check being a public body including international organisations, higher or secondary education establishment or a legal entity, whose viability is guaranteed by a Member State or associated country, as defined in the H2020 Grants Manual (Chapter on Financial capacity check); or	◉
- as sole participant in the proposal is exempt from the financial capacity check.	○

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Proposal Submission Forms

Proposal ID

4 - Ethics issues table

1. HUMAN EMBRYOS/FOETUSES		Page
Does your research involve Human Embryonic Stem Cells (hESCs)?	○ Yes ◉ No	
Does your research involve the use of human embryos?	○ Yes ◉ No	
Does your research involve the use of human foetal tissues / cells?	○ Yes ◉ No	
2. HUMANS		**Page**
Does your research involve human participants?	○ Yes ◉ No	
Does your research involve physical interventions on the study participants?	○ Yes ◉ No	
3. HUMAN CELLS / TISSUES		**Page**
Does your research involve human cells or tissues (other than from Human Embryos/ Foetuses, i.e. section 1)?	○ Yes ◉ No	
4. PERSONAL DATA		**Page**
Does your research involve personal data collection and/or processing?	○ Yes ◉ No	
Does your research involve further processing of previously collected personal data (secondary use)?	○ Yes ◉ No	
5. ANIMALS		**Page**
Does your research involve animals?	○ Yes ◉ No	
6. THIRD COUNTRIES		**Page**
In case non-EU countries are involved, do the research related activities undertaken in these countries raise potential ethics issues?	○ Yes ◉ No	
Do you plan to use local resources (e.g. animal and/or human tissue samples, genetic material, live animals, human remains, materials of historical value, endangered fauna or flora samples, etc.)?	○ Yes ◉ No	
Do you plan to import any material - including personal data - from non-EU countries into the EU?	○ Yes ◉ No	
Do you plan to export any material - including personal data - from the EU to non-EU countries?	○ Yes ◉ No	
In case your research involves low and/or lower middle income countries, are any benefits-sharing actions planned?	○ Yes ◉ No	
Could the situation in the country put the individuals taking part in the research at risk?	○ Yes ◉ No	

European Commission
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Proposal ID

7. ENVIRONMENT & HEALTH and SAFETY		Page
Does your research involve the use of elements that may cause harm to the environment, to animals or plants?	○ Yes ◉ No	
Does your research deal with endangered fauna and/or flora and/or protected areas?	○ Yes ◉ No	
Does your research involve the use of elements that may cause harm to humans, including research staff?	○ Yes ◉ No	
8. DUAL USE		**Page**
Does your research involve dual-use items in the sense of Regulation 428/2009, or other items for which an authorisation is required?	○ Yes ◉ No	
9. EXCLUSIVE FOCUS ON CIVIL APPLICATIONS		**Page**
Could your research raise concerns regarding the exclusive focus on civil applications?	○ Yes ◉ No	
10. MISUSE		**Page**
Does your research have the potential for misuse of research results?	○ Yes ◉ No	
11. OTHER ETHICS ISSUES		**Page**
Are there any other ethics issues that should be taken into consideration? Please specify	○ Yes ◉ No	

I confirm that I have taken into account all ethics issues described above and that, if any ethics issues apply, I will complete the ethics self-assessment and attach the required documents. ☒

Internet research

- adhere to all principles and ethical principles as for any research
- problem with obtaining **signed consent**:
  - at the beginning of the survey, in an e-mail or on the website, **inform the participant** about the research
  - the form should contain a "box" in which the participant will **mark his desire to participate** in the research (it is not equivalent to written consent, but it still signals to the researcher that the participant is willing to participate in the research)
  - **send the consents to the par**ticipants, which they will print and sign and return by regular mail
  - for children - **parental consent required** - difficult to check on the Internet

Before conducting research, check current ethical regulations and rights!

Examples of unethical research :

- https://www.youtube.com/watch?v=zZ3l1jgmYrY
- https://www.youtube.com/watch?v=9oECr-dtaeI
- https://www.youtube.com/watch?v=Z7brxo3QfKg
- https://www.youtube.com/watch?v=NGHFEdfdUHM

Reference

Martyn Denscombe. The Good Research Guide for small-scale social research projects. Open University Press. 4. izdanje 2010.

https://researchbasics.education.uconn.edu/ethics-and-informed-consent/

https://www.discoverphds.com/blog/types-of-research

https://www.questionpro.com/blog/what-is-research/

https://www.scribbr.com/category/methodology/

https://www.surveymonkey.com/mp/sample-size-calculator/