Open Science Awareness Project for Central Asian Universities

OLS-7 Cohort

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Intro

- While Open Science is an international trend, the involvement of universities in open science practices may vary from country to country. In connection with this, not all universities may be aware about the open science practices, their value and benefits.

- The development of open science practices might be unique for different regions, countries and universities.

- I personally developed an interest in open science by volunteering in RepliCATS projects by the University of Melbourne and SCORE project by the Open Science Foundation. I have recently graduated from a PhD program in Education from ELTE university, Budapest, Hungary.

Issue

- Existing research shows cases that Central Asian faculty may be overloaded with teaching at the expense of their research activities. In connection with this, teachers might be involved in applied research, and their skills in statistics may be not as advanced (e. g. Yergebekov and Temirbekova, 2012). Furthermore, some researchers may apply statistical methods with the help of their experienced colleagues, who possess advanced statistical skills.

- In connection with this, some universities and faculty might be involved less in the discussion of issues of reproducibility and robustness, which are currently on the agenda of the open science movement.

My experience: theory of localization

- During my PhD research I studied the theory of localization by an International Relations scholar Amitav Acharya. In his work, Acharya proposed a theory of localization, which suggests, using simple words, that while international trends may travel from country to country, they need to adapt to the local context to ensure the sustainability of practices.
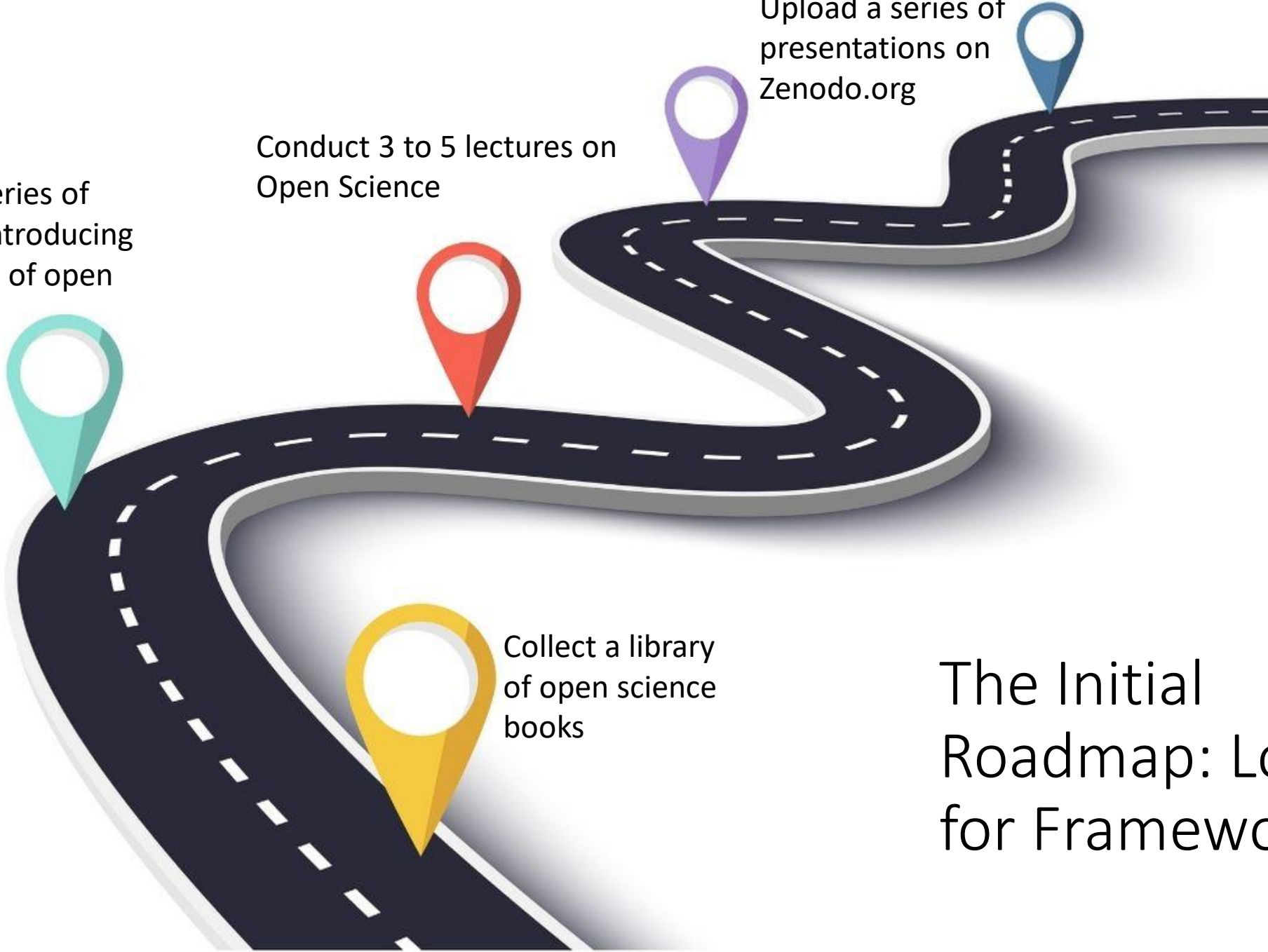
What was planned

- To conduct series of lectures, dedicated to the history of open science movement, its mission and its benefit for the universities in countries with developing economies.

- **Hidden Agenda:** I was looking for a framework to adapt the open science practices to Central Asian academic context.

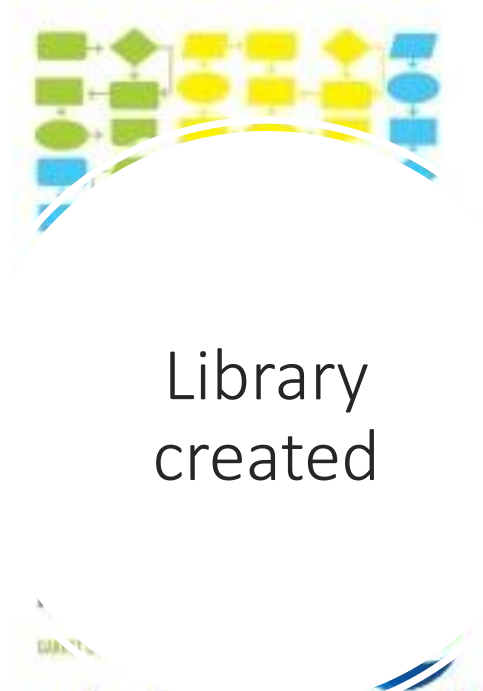Create a series of lectures, introducing the history of open science

Conduct 3 to 5 lectures on Open Science

Upload a series of presentations on Zenodo.org

Suggest a framework for adapting Open Science trend in Central Asian context

Collect a library of open science books

The Initial Roadmap: Looking for Framework

Library created

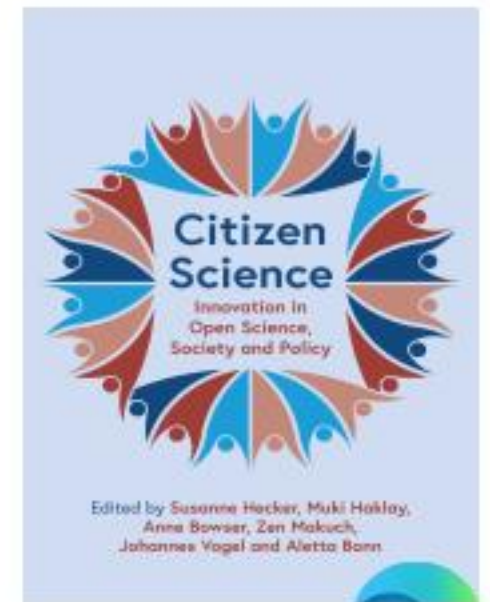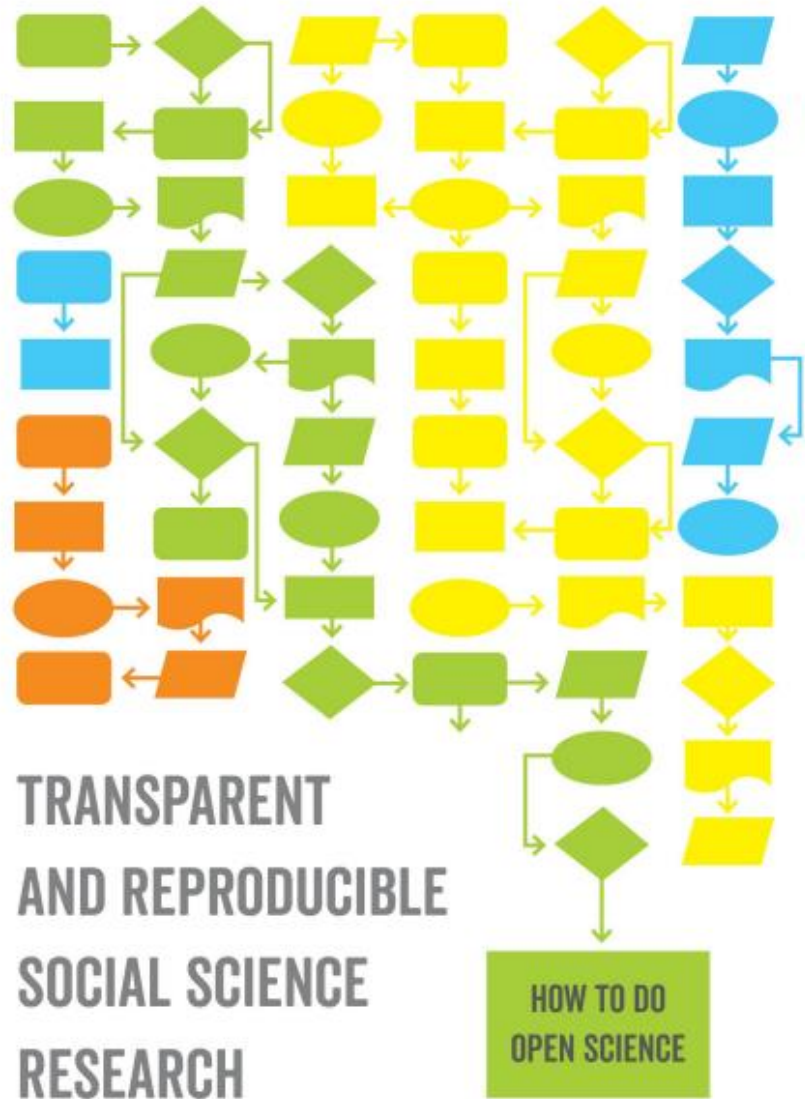Transparent and Reproducible Social Science Research How to Do Open Science.pdf

Radical Solutions and Open Science.pdf

Opening Science The Evolving Guide.pdf

6 items

Started reading

- Christensen, G., Freese, J., & Miguel, E. (2019). Transparent and reproducible social science research: How to do open science. University of California Press.

Idea for a framework

- It was planned to present the history of open science

- While reading, and understanding appeared, while it might be useful to know the history, it is the development of certain COMPETENCES and SKILLS that can support the Open Science Movement in Central Asia.

- As many universities are involved in applied research, not all researchers have advanced knowledge of statistics.

Competence-Based Approach

- The idea of a Competence-Based Approach suggests that knowledge itself is not enough for people to successfully engage in professional practices.

Question

- What skills and competences are required for a Central Asian university faculty member to be able to participate in Open Science movement and contribute to Open Science?

Idea for basic framework of Skills for Open Science:

Specifically, the following competences were identified while reading:

UNDERSTANDING OF statistical concepts like *p-value* and *false positive*;
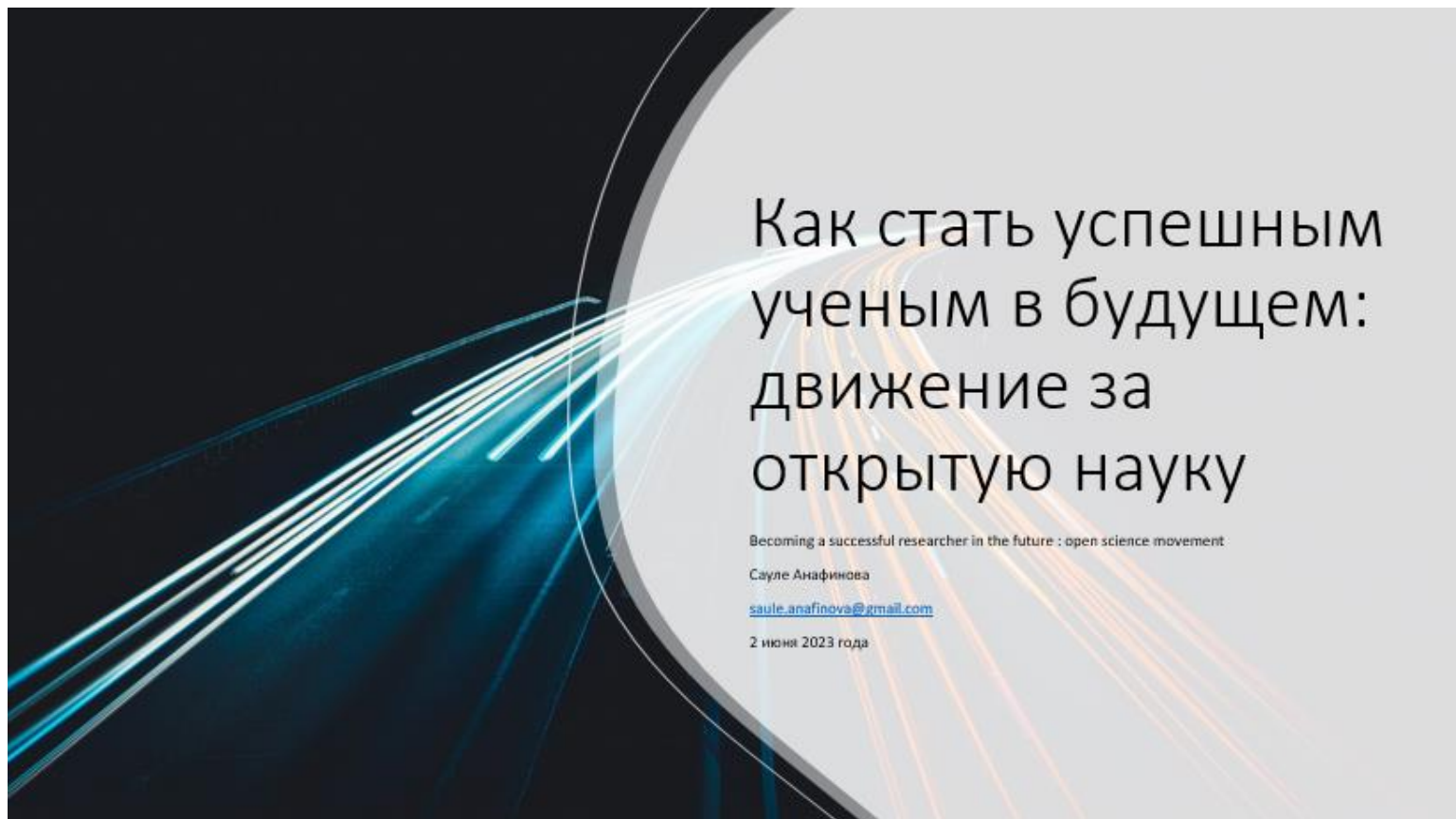
UNDERSTANDING OF such negative trends like *publication bias* and *specification searching*;

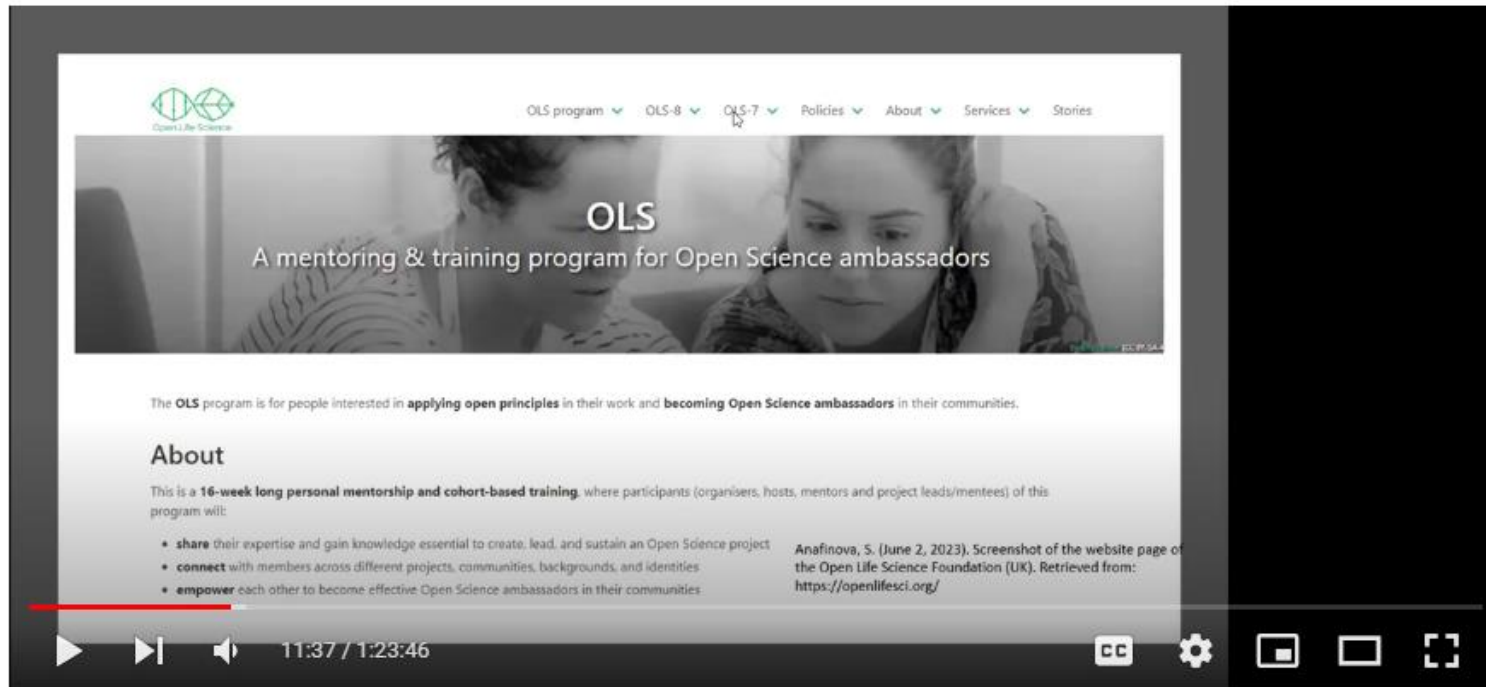UNDERSTANDING OF how these concepts are related with the open science concepts like ROBUSTNESS and REPRODUCIBILITY.

UNDERSTANDING OF & sincere support for scientific values, including *universalism & communality.*

First lecture delivered : *Becoming a successful researcher in the future: open science movement* on June 2, 2023.

Second face-to-face lecture scheduled for August 2023.

Zoom lecture held

- One Zoom lecture held in the closed teacher community, involving teachers from different Central Asian universities from Kazakhstan, Kyrgyzstan and Uzbekistan. Over 30 faculty members attended the lecture.

Lecture methods

Title slides: "The Case of Diederik Stapel", "The Fall"

Падение

«К сожалению, результаты и публикации Стапеля в основном были основаны на поддельных данных. Как рассказывает сам Стапель, он начал незаметно изменять несколько чисел здесь и там в реальных наборах данных, чтобы сделать результаты более интересными. Однако со временем он начал подделывать целые наборы данных. Хотя Стапель, конечно, несет ответственность, мы рассматриваем его способность совершать мошенничество, необнаруженное другими, как обвинение всего процесса научных исследований в социальных науках. Тем не менее, было много предупреждающих сигналов. Стапель никогда не делал доступными свои данные для других, даже для своих собственных аспирантов, предпочитая проводить анализы самостоятельно. Со временем начали накапливаться подозрения относительно таинственных источников его данных и "волшебной" способности Стапеля создавать одну за другой громкую статью со зрелищными открытиями. В конечном итоге, после университетского расследования Стапель признал свою мошенническую деятельность, что привело к его падению: он отозвал как минимум 55 статей (включая известные научные журналы, такие как Science), был вынужден уйти в отставку с должности в Тилбургском университете и лишен ученой степени доктора. Против него были возбуждены уголовные дела (которые в конечном итоге были урегулированы). Отзывы статей также подорвали доверие к работам его студентов и коллег - это побочный ущерб, затронувший десятки других ученых, многие из которых, предположительно, не были в курсе лжи Стапеля.» (Стр. 6)

Image source: https://olgaanischenko.com/chto-dlja-vas-znachit-slovo-padat/

Дело Дидерика Стапеля

«Один из наиболее известных случаев – это дело Дидерика Стапеля, бывшего профессора психологии в Тилбургском университете в Нидерландах. Стапель был академической звездой. Он работал деканом социальных и поведенческих наук, был награжден несколькими карьерными премиями к 40 годам, и опубликовал 150 статей, включая в самых престижных журналах и на социально значимые темы, включая психологию расового предубеждения (Кэри 2011; Бхаттачарджи 2013).» (стр. 5)

Image source:
https://www.nature.com/articles/nature.2014.15859

- Storytelling:

- The story of former professor Diederik Stapel was told in the introduction of the lecture, who was fired from Tilburg University for fabricating and manipulating data.

P = 1

P = 0.1

P-Value

P = 0.01

P = 0.001

P = 0.0001

Weak evidence against the null hypothesis

Increasing evidence against the null hypothesis with decreasing P-value

Strong evidence against the null hypothesis

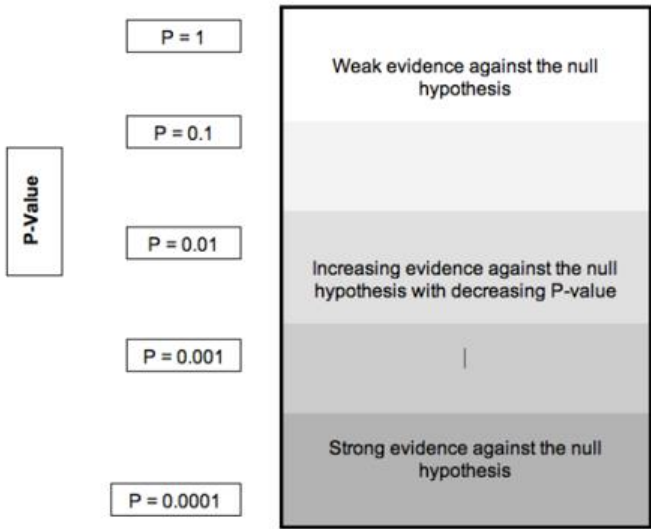Relationship between the size of the P-value and the strength of evidence against the null hypothesis

Image source Shirley.ha. (2013). HBS108 (Topic 8.4 Statistical inference and hypothesis testing: Conf) Mind Map on P-values e.g, created by shirley.ha on 09/16/2013. Retrieved June 2, 2023, from https://www.goconqr.com/mind map/210934/p-values-e-g.

Publication bias

- Publication bias. (n. d.) In Multitran Dictionary. dic.mt/LrZ

publication bias

общ.   предвзятость публикаций (Гера)

клин.исс.л. публикационное смешение (Систематическая ошибка мета-анализа, связанная с погрешностью отбора публ склонности некоторых исследователей, редакторов и других лиц преимущественно публиковать полс значимые) результаты научных исследований, опуская статистически незначимые, неоднозначные или н данные.: Синоним: file drawer problem Natalya Rovina)

мат.   искажённая публикация

мед.   систематическая ошибка, связанная с предпочтительной публикацией положительных результатов ис медицина harser)

Добавить | Сообщить об ошибке | Короткая ссылка | Способы выбора языков

Lecture methods

- Important open science concepts were introduced, including *publication bias* and *specification searching, p-value, reproducibility and robustness.*
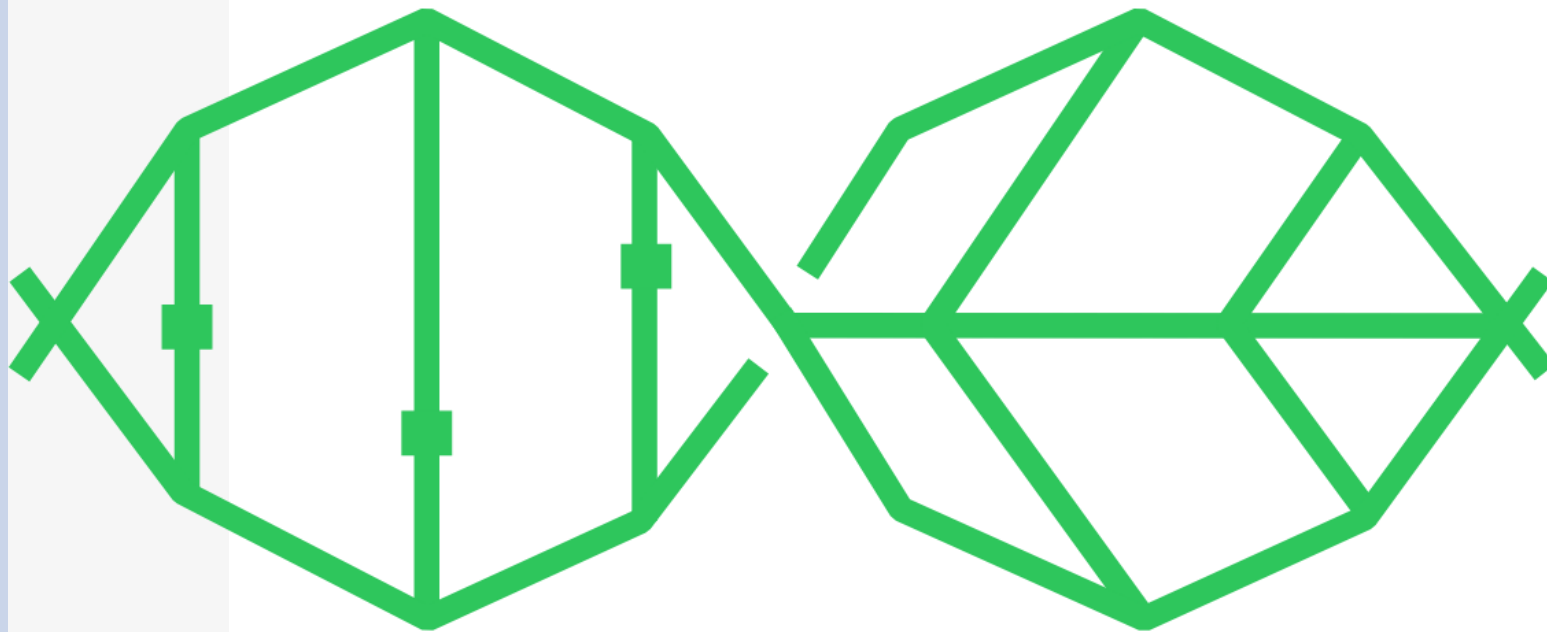
Result

- An understanding of the importance of competences and skills for open science was developed, including understanding of key statistical and open science concepts.

- An idea for framework was tried out on the first lecture and response from the attendants was positive.

- The focus on competences will be applied to promote Open Science in Central Asian universities.

- It is suggested that further focus should also include explaining open science ethics and scientific values of open research, including:

➢ Universalism;

➢ Communality;

➢ Disinterestedness;

➢ Organized skepticism.

References

- Acharya, A. (2004). How ideas spread: Whose norms matter? Norm localization and institutional change in Asian regionalism. International organization, 58(2), 239-275.

- Christensen, G., Freese, J., & Miguel, E. (2019). Transparent and reproducible social science research: How to do open science. University of California Press.

Acknowledgements

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Thank you for attention!