Presentation Outline

01 Share our experience on the process of learning outcomes design for a new study programme (qualification)

02 Illustrate the process of learning outcomes comparison

03 Describe the process of Curriculum Mapping

04 Share some observations about comparing Learning Outcomes

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Biostatistics: statistical processes and methods applied to the collection, analysis, and interpretation of biological data and especially data relating to human biology, health, and medicine.
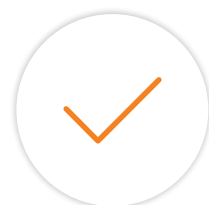
Merriam-Webster Dictionary

Master's level study programme (EQF level 7)
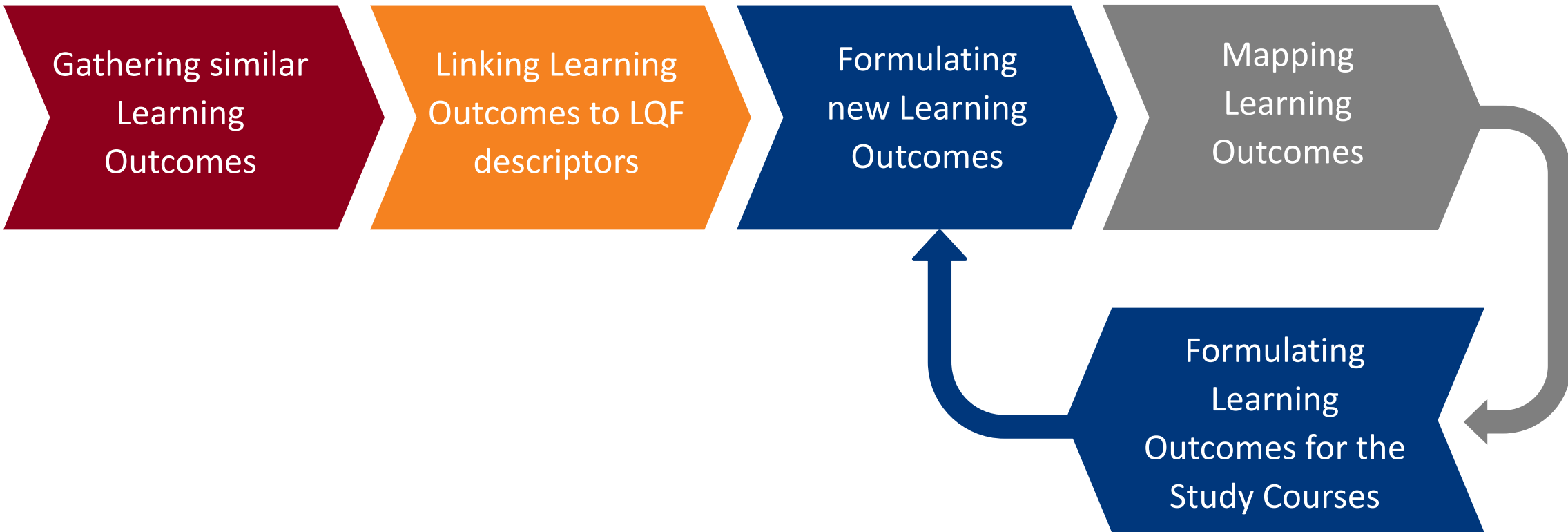
In development since 2018

Expected to be licenced in 2020

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Sources for Comparison

Process of Learning Outcomes Design

Gathering similar Learning Outcomes → Linking Learning Outcomes to LQF descriptors → Formulating new Learning Outcomes → Mapping Learning Outcomes → Formulating Learning Outcomes for the Study Courses

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Linking LOs to LQF descriptors

Learning Outcome	Descriptor
Address health problems by appropriate problem definition, study design, data collection, data management, statistical analysis, and interpretation of results	Able to use independently theory, methods and problem solving skills to perform research or artistic activities, or highly qualified professional functions

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Linking LOs to LQF descriptors

Learning Outcome	Descriptor
Demonstrate mastery of the theory underlying statistical methods	Able to use independently theory, methods and problem solving skills to perform research or artistic activities, or highly qualified professional functions

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Linking LOs to LQF descriptors

Learning Outcome	Descriptor
Apply research design principles to problems in public health	Able to use independently theory, methods and problem solving skills to perform research or artistic activities, or highly qualified professional functions

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Linking LOs to LQF descriptors

Learning Outcome	Descriptor
Communicate biostatistical analyses to individuals with varying degrees of statistical knowledge	Able to provide arguments when explaining or discussing complex or systemic aspects of the concrete branch of science or professional field both to specialists and non-specialists

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Linking LOs to LQF descriptors

Learning Outcome	Descriptor
Recognize strengths and weaknesses of approaches, including alternative designs, data sources, and analytic methods	Able to define independently and critically analyse complex scientific and professional problems, substantiate decisions and, if necessary, carry out additional analysis

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Linking LOs to LQF descriptors

Learning Outcome	Descriptor
Determine the data best suited to address public health issues, program planning, and program evaluation	Able to integrate knowledge of various fields, contribute to the creation of new knowledge, research or the development of new professional working methods

Formulating LOs aligned with LQF

Able to define independently and critically analyse complex scientific and professional problems, substantiate decisions and, if necessary, carry out additional analysis.

- Interpret results of advanced statistical analyses and use these results to make relevant inferences from data.

- Disseminating new knowledge in a research discipline through the preparation of written reports of biostatistical analyses, comparison of different statistical methodologies, and oral presentation of results.

- Recognize strengths and weaknesses of approaches, including alternative designs, data sources, and analytic methods

- Develop written and oral presentations based on statistical analyses for both public health professionals and educated lay audiences.

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Formulating LOs aligned with LQF

Able to define independently and critically analyse complex scientific and professional problems, substantiate decisions and, if necessary, carry out additional analysis.

- Interpret inferential findings within Bayesian thinking (e.g. credible intervals, hypothesis testing).Conduct inference via posterior simulation and simulations tool.

- Carry out a large independent research project involving innovative application of existing statistical methods or development of new methods, and report the methods and findings orally and in writing (e.g., a thesis or research paper).

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Formulating LOs aligned with LQF

Existing Learning Outcome (Harvard University):

- Disseminating new knowledge in a research discipline through the preparation of written reports of biostatistical analyses, comparison of different statistical methodologies, and oral presentation of results.

New Learning Outcome:

- Disseminate new knowledge in health-related studies through the preparation of written and oral presentations based on advanced biostatistical analyses and use these results to make relevant inferences from data.

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Curriculum Mapping

The process of determining how the learning outcomes (LO) of a study programme are supported by the study courses.
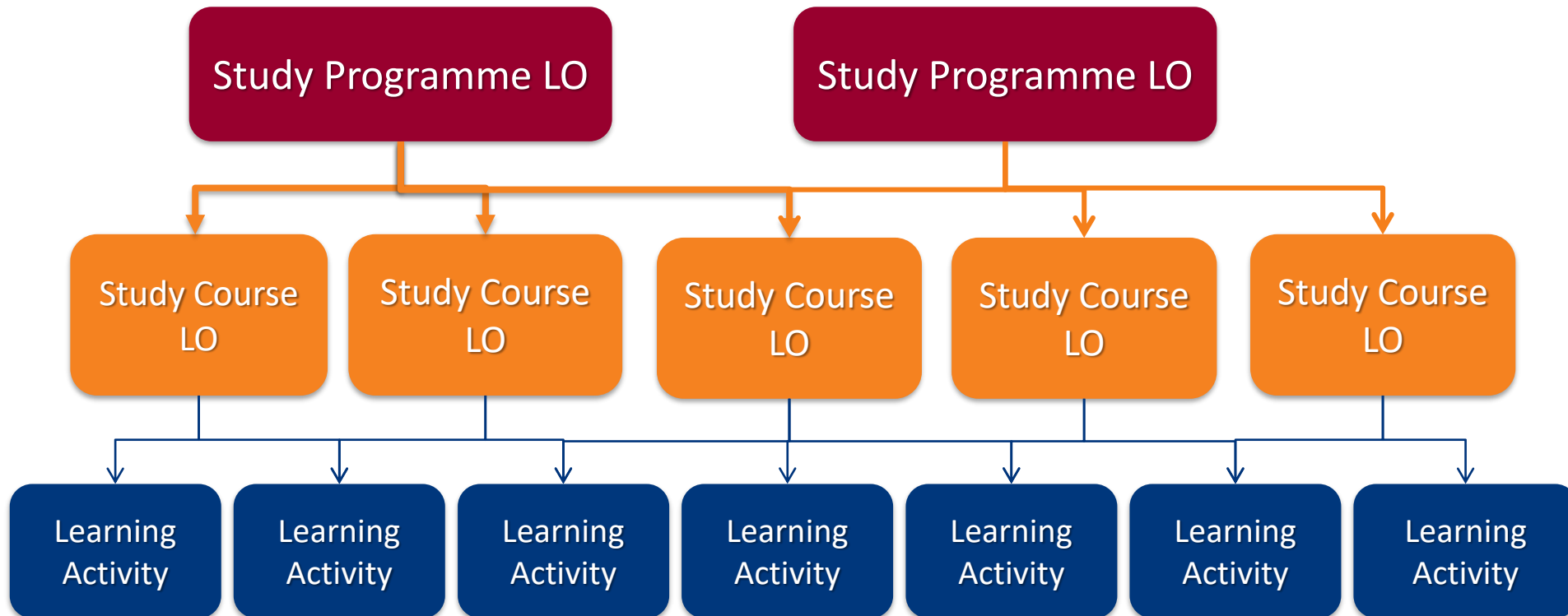
Mapped Learning Outcomes Examples

Disseminate new knowledge in health-related studies through the preparation of written and oral presentations based on advanced biostatistical analyses and use these results to make relevant inferences from data.

- Communicates statistical concepts and methods (and misuse of them) with clients of different backgrounds.

- Develops the final report and presentation using R Markdown functionality.

- Prepares interactive R application to communicate results using R Shiny.

- Writes and interprets mixed models for different study designs.

- Independently develops a correct statistical model, critically interprets and presents the obtained results.

- Generates hypothesis and makes analysis based decisions related to multivariate data.

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Mapped Learning Outcomes Examples

Disseminate new knowledge in health-related studies through the preparation of written and oral presentations based on advanced biostatistical analyses and use these results to make relevant inferences from data.

- Reflects on the choice of methods for economic evaluation of health care programmes.

- Formulates Bayesian solutions to real-data problems, including forming hypotheses, collecting and analysing data, and reaching appropriate conclusions.

- Presents a statistical analysis in a technical report.

- Independently develops a correct statistical model, critically interprets and presents the obtained results.

- Student will be competent to plan and execute data analysis with categorical data.

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Observations

- Learning Outcomes are formulated very differently in each Programme;

- Common reference points facilitate Learning Outcome comparison;

- Different Programmes have different focuses (bayesian/frequentist approaches, focus on public health/genetics, different software tools);

- Some Programmes have unique features;

- Complex Learning Outcomes are hard to compare without breaking them down.

Thank you for your attention!

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