

MIDDLESEX UNIVERSITY

RESEARCH & KNOWLEDGE EXCHANGE COMMITTEE

ASSURANCE COMMITTEE

Definition of Research

The QAA UK Quality Code for Higher Education for Research Degrees (2012) refers to two general definitions of research: The Frascati definition of research from the Organisation for Economical Cooperation and Development (OECD) manual (2002)¹, and the Research Excellence Framework (REF-2019-Guidance-on-Submission.Annex C)² definition to which the UK funding councils subscribe.

Middlesex University has adopted the following definitions of research from the Research Excellence Framework and the Frascati Manual.

1. Research Excellence Framework (REF) definition of research

For the purposes of the REF, research is defined as a process of investigation leading to new insights, effectively shared.

It **includes** work of direct relevance to the needs of commerce, industry, culture, society, and to the public and voluntary sectors; scholarship; the invention and generation of ideas, images, performances, artefacts including design, where these lead to new or substantially improved insights; and the use of existing knowledge in experimental development to produce new or substantially improved materials, devices, products and processes, including design and construction. It excludes routine testing and routine analysis of materials, components and processes such as for the maintenance of national standards, as distinct from the development of new analytical techniques. It also **excludes** the development of teaching materials that do not embody original research.

It **includes** research that is published, disseminated or made publicly available in the form of assessable research outputs, and confidential reports (as defined in paragraph 261).

2. Frascati definition of research

Research & Development is found in the social sciences, humanities and the arts as well as in the natural sciences and engineering and requires attention to the boundaries that define what is and what is not Research and Development.

Definition of research and experimental development (R&D)

Research and experimental development (R&D) comprise creative and systematic work undertaken in order to increase the stock of knowledge – including knowledge of humankind, culture and society – and to devise new applications of available knowledge.

A set of common features identifies R&D activities, even if these are carried out by different performers. R&D activities may be aimed at achieving either specific or general objectives. R&D is always aimed at new findings, based on original concepts (and their interpretation) or

¹ http://www.tubitak.gov.tr/tubitak_content_files/BTYPD/kilavuzlar/Frascati.pdf

² https://www.ref.ac.uk/media/1447/ref-2019_01-guidance-on-submissions.pdf

hypotheses. It is largely uncertain about its outcome (or at least about the quantity of time and resources needed to achieve it), it is planned for and budgeted (even when carried out by individuals), and it is aimed at producing results that could be either freely transferred or traded in a marketplace. For an activity to be an R&D activity, it must satisfy five core criteria.

The activity must be:

- Novel
- Creative
- Uncertain
- Systematic
- Transferable and/or reproducible.

All five criteria are to be met, at least in principle, every time an R&D activity is undertaken whether on a continuous or occasional basis.

The term R&D covers three types of activity: basic research, applied research and experimental development.

Basic research is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts, without any application or use in view.

Applied research is original investigation undertaken in order to acquire new knowledge. It is, however, directed primarily towards a specific, practical aim or objective.

Experimental development is systematic work, drawing on knowledge gained from research and practical experience and producing additional knowledge, which is directed to producing new products or processes or to improving existing products or processes.

The order in which the three types of R&D activity appear is not meant to suggest that basic research leads to applied research and then to experimental development. There are many flows of information and knowledge in the R&D system. experimental development can inform basic research, and there is no reason why basic research cannot lead directly to new products or processes.

R&D activities and projects

An “R&D activity” is the sum of actions deliberately undertaken by R&D performers in order to generate new knowledge. In most cases, R&D activities can be grouped to form “R&D projects”. Each R&D project consists of a set of R&D activities, is organised and managed for a specific purpose, and has its own objectives and expected outcomes, even at the lowest level of formal activity. The concept of an R&D project, while useful for understanding how R&D is done, is not likely to be applied in the same way in all the sectors.

2.4. The five criteria for identifying R&D

For an activity to be classified as an R&D activity, five *core* criteria have to be jointly satisfied.

Non-research

The Frascati Manual lists situations where certain activities are to be excluded from R&D except when carried out solely or primarily for the purposes of an R&D project. The following are examples of activities that are not normally classed as research:

- Routine testing and analysis of materials
- Components and processes, (e.g., for the maintenance of national standards, as distinct from the development of new analytical techniques)
- Feasibility studies (where it is not an integral part of an overall research project)
- Routine software development
- General purpose data collection

OECD. (2015) Frascati Manual provides a series of examples and explanations of these criteria and principles.

<https://www.oecd.org/innovation/frascati-manual-2015-9789264239012-en.htm>

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