

COMPETENCY PROFILE FOR TEACHING AND LEARNING RESEARCH INTEGRITY

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Introduction

Purpose and Background

Acting in accordance with the principles of research integrity is increasingly complex and challenging in contemporary science and research. Therefore, students at all levels of study (Bachelor (BA), Master (MA), and doctoral (PhD)) should develop the ability to do so and become 'streetwise' concerning research integrity. This competency profile provides a set of competencies to enable that.

'Streetwise' means that students are aware of what constitutes good conduct in research by learning how to recognise problematic situations, how to discuss these situations with their fellow students, and how to develop strategies for dealing with them. Doing so requires them to:

1. become competent in identifying problematic issues and dilemmas related to research integrity,
2. become aware of cultural differences related to research integrity among different disciplines, institutions, and countries,
3. learn to reflect on these issues and apply strategies that help them find solutions,
4. take responsibility for their actions and decisions in specific situations,
5. internalise certain values and dispositions, such as mindfulness, responsibility, and courage, that are necessary to meet the standards of honesty and integrity in conducting research.

Methodology

The profile was created via the following procedure. First, a list of possible sources was compiled, including various codes of conduct, policies on research integrity, and similar (see Sources and Resources section). After reviewing the sources, the categories of competencies in the profile were determined. Since most sources identify roughly the same categories with minor differences and subtleties, the goal was to create (collect, merge, or group) a cross-section and unified set of competencies that name all possible aspects of research integrity that one might encounter in various sources and literature. This was then underpinned by a thorough theoretical investigation (see Theoretical Background section). Once the overall structure of the competencies was established (see Model section), the behavioural indicators for them were defined and clustered into a competency rubric (see sections: Values and Principles, Research Practice, Publication and Dissemination, Violations) according to a set of basic assumptions (see Annotations below). As a final point, the extensive list of research integrity competencies was summarised into core learning objectives and outcomes for all study levels (see Objectives and Outcomes section).

Definitions

Competence

A combination of related knowledge, skills, and attitudes (KSA) that correlates with (contributes to or predicts) performance and is criterion-referenced (i.e., behaviourally related and observable so that it can be measured against specific criteria and accepted standards).

Behavioural Indicators

Descriptions of behaviours (Thoughts, Actions, Feelings (TAF) that correlate with Knowledge, Skills, Attitudes (KSA)) that demonstrate in a concrete, verifiable, and observable way that a student has acquired and is able to demonstrate a particular competency.

Competency Profile

A detailed compilation/description of the competencies and behavioural indicators necessary for successful performance related to research integrity.

Competency Rubric

A set of behavioural indicators of competencies divided and clustered by complexity.

Competency Model

A visualisation of the structure of fields and subfields in a competency profile.

Elements

The following elements are provided for each competency in a profile (see sections: Values and Principles, Research Practice, Publication and Dissemination, Violations): a name or label (indicating the competency described), a general definition (a brief description that provides a broad understanding of the type of behaviour expected of a competency), a brief explanation (of the content addressed in a competency), and behavioural indicators (specific TAFs indicating that an individual has acquired the KSA) clustered in competency rubrics by level of complexity, roughly corresponding to levels of study (BA, MA, PhD).

Annotations

When reading through the competency profile, the user must consider some implicit assumptions underlying it. These assumptions are not always explicitly stated in a particular competency/behavioural indicator, so a user of the profile should be implicitly aware of them when assessing the competencies/behavioural indicators:

Levels of Complexity

We speak of levels of complexity rather than levels of study because different educational environments have different expectations for students at different levels of study. For example, what the University of Ljubljana expects from an undergraduate student is not necessarily of the same complexity as what the University of Utrecht expects from its undergraduate students. Therefore, the proposal of levels set in the profile may correspond to study levels for some institutions but not others. The purpose of the profile is that each institution can uniquely 'build' the combination of indicators from different levels of complexity that fits its educational process. Clustering competencies by levels of complexity also suggests that the

behavioural indicators are progressive but not regressive. If an indicator is relevant to the basic level, it is also relevant to the intermediate and advanced levels; however, an indicator relevant to the advanced level may not be relevant to the basic and intermediate levels. Therefore, if an indicator is missing (marked with the symbol '/'), it means that either the competency is not relevant for this level or that an indicator from a previous level still applies.

Grey Areas

One of the most important aspects of becoming 'streetwise' is the ability to respond to situations that are not black and white (corresponding to blatant misconduct vs appropriate behaviour) but 'grey' (corresponding to questionable research practises). Various codes of conduct can guide students and researchers about blatant misconduct, particularly in relation to legally sanctioned practices such as fabrication, falsification, and plagiarism (FFP). However, there is a large grey area between right and wrong where things can be altered to suit different perspectives and where it is difficult to give unconditional answers; this is the area known as questionable research practises (QRP). Research integrity policies (national, institutional, etc.) set out principles and rules to distinguish appropriate conduct from blatant misconduct and to determine in a straightforward way what is (legally) permissible and what is not. In reality, however, researchers usually find themselves in 'grey' situations in which it is not immediately clear what is right or wrong, and in which they have to decide whether there is a risk of questionable research practises and determine how to avoid them - practises that, although not legally prohibited, may nevertheless undermine responsible conduct of research. Thus, researchers need to understand such 'grey' situations and acquire the ability to make integrity-enhancing decisions within them. They need to be able to recognise such situations, discuss them with their colleagues, and develop strategies for dealing with them. The profile incorporates the idea of 'grey areas' in two ways: first, by mentioning questionable research practises (QRP) in more detail in the profile (see Violations section); second, by also understanding the idea of levels of complexity as representing a progression from black and white situations to increasingly complex situations in which students are confronted with 'grey areas'. Although students may encounter 'grey areas' in their research practice at the BA level, they become increasingly important at the MA and PhD levels. Therefore, students should gradually develop, roughly in line with progression through the study levels, the ability to navigate 'grey areas' and make decisions when confronted with dilemmas in complex real-life situations.

From One's Domain to Other Domains

Research integrity practices vary among different academic fields, research disciplines, nations, cultures, and institutions. The competency profile takes this diversity into account in such a way that students develop competencies at the BA and MA levels in relation to their national, institutional, and professional environment and scholarly field, and gradually gain the ability to engage with practices from different environments and fields at the PhD level. Doctoral-level research often requires interaction with institutions and researchers from other research environments (including internationally), so PhD students need to understand possible differences in research practices.

From Knowledge to Actions

Each competency is defined by a triad of knowledge, skill, and attitude (KSA) and a triad of corresponding behavioural indicators (Thoughts, Feelings, Actions (TAF)). However, the gradual transition from black and white situations to 'grey areas' goes hand in hand with a progression from the acquisition of knowledge to the development of the ability to act and display the right attitude. Whereas black and white situations in research integrity require mainly knowledge (students need to know the rules, the do's and don'ts of research), grey zones require an attitude and a corresponding ability to act in difficult situations in which it is not enough to decide on the basis of rules. This situation also roughly corresponds to the progression within Bloom's taxonomy through six levels, divided into three groups: Knowledge and Understanding, Application and Analysis, Synthesis and Evaluation. To become 'streetwise' in terms of research integrity is to build self-confidence in behaving responsibly in research. To do this, a student must acquire the appropriate knowledge, skills, and attitudes. Since not all BA students will go on to the MA level and not all MA students will become PhD students, it is important to note that competency at any level of study requires the integration of all three elements (KSA); this is emphasised in a competency definition. Nevertheless, we can assume that the behavioural indicators for each competency progress from knowledge-based to attitudinal and skill-based competency indicators across levels of study, including on the basis of students' personal growth. Therefore, the competency rubric emphasises knowledge at the basic level and attitude and skill at the intermediate and advanced levels.

From Mentorship, Supervision to Autonomy and Independence

Progressing through the levels of complexity also requires a student to gradually develop the ability to act autonomously and independently in terms of research integrity in any given real-world situation. Acting autonomously means that a student is able to stand behind his or her values/actions and make free and uninfluenced ethical choices, and take responsibility for them. Acting independently on the other hand suggests that a student is able to solve an issue and work on his/her own, without mentorship and supervision. Therefore, when 'reading through' competencies across levels, one must keep in mind that at the basic and intermediate levels, competencies are acquired and tested under mentorship and supervision, and at the advanced level, students should eventually develop an ability to act autonomously and independently. This is not to say that when students become independent researchers, they should not consult others and discuss difficult questions, but, at the most advanced level, they should be able to take full responsibility for their actions and solve issues independently.

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