# Guidelines for
# Supervisors and Co-Supervisors of
# Doctoral Students

Directors: EC Kieswetter (President), B Anderson (Vice-President and Chief Executive Officer)
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# 1 *Introduction*

The doctorate degree relies on the successful completion of an **academic research project** to be **reported on in a thesis**. Research can be defined as a systematic process of uncovering and communicating the truth about a phenomenon and/or its relationship to other phenomena.

Doctoral research entails, firstly, proof of research competence, and second, that such research should contribute to the body of working knowledge (including application in the workplace). Research at this level is, amongst other things, characterised by the originality criterion and relevant application.

The postgraduate research journey can often be compared to a visitor (the student) driving a car in an unknown region, and a passenger (the supervisor) from that region with knowledge/experience of the area, the general conditions of the road, local traffic rules and related matters. There rests a responsibility on the Supervisor to guide the student to reach the destination successfully – without disempowering the student as the driver! This document summarises the formal and other guidelines that should assist the Supervisor in adding value to the journey not only for the student but also for the Supervisor.

# 2 *Structure of the Doctorate*

At the Da Vinci Institute, the focus of the Doctorate of Management in Technology and Innovation is on a business management approach. The full doctorate programme provides for 360 credits at exit Level 10 of the National Qualifications Framework (NQF). A student will only be allowed to progress to the development of a thesis upon the successful submission of a Research Proposal.

The doctoral degree is an exercise in independent yet rigorous thought – whereby the elegance of meaningful business solutions is translated into path finding methods and practise supported by theory. Coached, with minimal supervision, the student creates a highly specialised solution that meets the requirements of academic rigour. The research system meets the business system and the two are seamlessly integrated. Boundaries are defined by the student and the solution finding process becomes unique. A sufficient blend of theory and practice results in elegant business solutions that make a meaningful difference. The doctoral research process embraces change and bottom-line results.

## Access to the qualification

| Qualification for which applying | Previous Academic Qualifications | Appropriate Work Experience (years) | | Conditions |
|---|---|---|---|---|
| **Doctorate of Management in Technology and Innovation NQF 10** | Master's Degree **or** other relevant NQF 9 qualification | 10 | General, but detailed assessment by The Institute | |
| | Not equivalent to a Master's degree | 15 | A detailed assessment by The Institute | Conditions:<br>• Demonstrate an understanding at NQF Level 10 (appropriate level descriptors will be used to guide the process). |

The Da Vinci Doctorate of Management in Technology and Innovation framework reflects the requirements for the doctorate qualification as registered, accredited and recorded with South African Qualifications Authority (SAQA), and the Department of Higher Education and Training (DHET).

| **Research** | **Programme Credits** |
|---|---|
| Thesis (incorporating themes related to the management of innovation, technology and people within a systemic context; and the inclusion of a Return on Investment (ROI) discussion.<br>The publishable article is compulsory. | 360 |
| **Total Credits for Qualification/Programme** | **360** |

| **Period of Registration** | |
|---|---|
| **Programme** | **Duration of programme (years to complete)** |
| Doctorate of Management in Technology and Innovation | 3 - 6 |

Failing to finish the qualification/programme within the specified duration of the programme, students must re-register to complete the qualification/programme.

## The Thesis

A thesis shall be submitted in fulfilment of the award of a Doctorate of Management in Technology and Innovation degree. In general, a thesis represents an academic research report involving the application of theory in the field of research to a significant work-related problem and demonstrating clear evidence of structured thought processes.

Essential elements of the thesis include a critical review of relevant literature, a systemic approach to the management of technology, innovation and people in the context of the field of research, research methodology and design, analysis of data/information, interpretation of the results and reporting according to international conventions.

## Themes to be integrated into the thesis

| Module | Purpose and Learning Outcomes |
|---|---|
| **Management of Innovation** | **Management of Innovation** is about developing and creating a sustainable end to end innovation process within the organisation.<br><br>The student should be able to:<br><br>• Demonstrate an understanding of the Management of Innovation and explain the potential thereof on their organisation;<br>• Conceptualise and explain innovation as a key business process;<br>• Access innovation barriers and enablers and develop strategies to overcome and/or enhance these in their organisation;<br>• Develop and describe a strategy to implement and embed an end-to-end innovation process in their organisation;<br>• Design a plan to develop an innovation culture and capture and drive creativity in their organisation; and<br>• Explain the role of tools and technologies such as Information and Communications Technologies in driving and supporting innovation. |
| **Management of Technology** | **Management of Technology** now integrates technology platforms from a technology driver perspective and strategically manages these so that the best value is derived from technology applications.<br><br>The student should be able to:<br><br>• Appreciate the impact of technology on business, society and the processes of change and how it can be best integrated into the pursuit of commercial success;<br>• Assess the technological competence of the business, its competitors and best practice exemplars in relation to both the context of the people and hardware involved;<br>• Identify technology needs in the context of the key business drivers and the means to access such technology through an understanding of the research and development process;<br>• Appreciate the benefits and principles of implementation of multifunctional organisation and team working in the development and integration of technological change; and |

| Module | Purpose and Learning Outcomes |
|---|---|
| | ➢ Appreciate the tools and techniques necessary to identify, assess and deliver technological change at an acceptable risk. |
| **Management of People** | **Management of People** expands the people performance ideas and incorporates organisational transformation as well as entrenches organisational growth and wellness concepts and applications.<br><br>The student should be able to:<br><br>➢ Understand key issues in the behaviour of people in a work situation;<br>➢ Consider various options for designing appropriate organisational structures;<br>➢ Be aware of the people dynamics surrounding specific organisational architecture;<br>➢ Understand the individual behavioural requirements for high performing structures and teams;<br>➢ Integrate organisational wellness strategies operationally; and<br>➢ Distinguish between effective transformational leadership and transactional management roles. |
| **Managing the Systems way** | **Managing the Systems Way** develops full-spectrum systems thinking and causal loop processes such that extremely powerful problem identification processes are developed. Students are able to unpack current and future integrated strategies for organisational renewal.<br><br>The student should be able to:<br><br>➢ Conceptualise and explain the essential components of a system and key attributes with respect to its behaviour;<br>➢ Demonstrate an understanding of systems through an ability to select appropriate models and develop a system's model for their organisation;<br>➢ Interpret the impact of interventions, like new innovations, in the context of understanding the impact on different parts of the system and the system as a whole;<br>➢ Use a systems perspective in analysing problems and failures; and<br>Understand the basic constructs of chaos theory and their applicability in the work environment. |

# 3 *Supervisors, Co-Supervisors and Students*

## 3.1 Appointments

Each student has the support of one Supervisor and Co-Supervisors; namely:

The Supervisor, appointed by the Research Committee, based on the following criteria:

- Hold at least an appropriate a doctorate degree to supervise doctorate students.
- Have particular expertise in the field of the thesis.
- Preferably, has already supervised at least two doctoral students successfully.

- Undertakes to apply the relevant Da Vinci theoretical paradigms, methodological, supervision, thesis and ethical guidelines.
- Have attended the supervisor on-boarding workshop and at least one supervisor training workshop per year for Continuous Professional Development (CPD).

Co-Supervisors are identified and nominated by the student, but approved by the Research Committee, based on the following criteria:

- While not essential, the Co-Supervisor should preferably have a relevant degree at the doctorate level.
- The ability to identify and promote the application of the research and its findings to the work environment and in this way, in effect, facilitating the thesis quality.
- Should have shown significant awareness of the technical and managerial aspects of the project within the context of the work environment, and be in a position to assess the contribution of the student to the project.

## 3.2 Functions and Roles

### 3.2.1 Supervisor

The Supervisor is appointed by the Research Committee and serves as the 'accountable' person with regard to the scientific process and quality of the research and would normally add value to the thesis through the functions listed below:

- Serves as the key communication node with regard to all matters relating to the progress of the student.
- Guide the student in terms of the required technical, project management and academic requirements of the project, without doing the work.
- Liaise with the Co-Supervisors to ensure the project is adequately directed in respect of its academic and industrial quality and relevance.
- Monitor progress, assess effort, competence and comprehension, as well as provide the student with feedback on submitted sections of the draft thesis.
- Co-publish* at least one academic article with the doctorate student.
- Assess the professional relevance of the research.
- Participate in the oral examination in accordance with the guidelines.
- Support the student in writing and publishing a research article in collaboration with the Research Office.
- Read and assess the completed thesis in terms of the Da Vinci guidelines.

- Spend approximately 40 to 60 hours (including face-to-face, e-mail, etc.) per student in the course of the life-cycle of a thesis project.

*In summary, the Supervisor's contribution is normally of such nature that publications (journal articles, conference papers, etc.) resulting from the thesis would acknowledge the Supervisor as the second author.

### 3.2.2 Co-Supervisors

The Co-Supervisors are responsible for:

- Jointly, with the Supervisor, monitor and support the student.
- Guide the student in terms of technical, managerial, and other general aspects, without doing the work.
- Liaise with the Supervisor to ensure the project is adequately directed with respect to its industrial relevance.
- Monitor progress in order to assess effort, competence and comprehension.
- Facilitate or promote the implementation of the findings of the thesis.
- Read and asses the completed thesis, in terms of the Da Vinci guidelines as provided.
- Participate, with the Supervisor, in the oral examination in accordance with the guidelines.

The above functions will require the following time minimum commitments:

- The initial meeting between the Student and the Supervisor to ensure the research is viable, meets the academic and industrial requirements, and the necessary resources are available – 1 hour.
- Subsequent three-way meetings which would include Co-Supervisors, if necessary – usually only the first is required.
- Student meeting with the Supervisor(s) to discuss his/her ideas, progress, problems – depending on the student –approximately one hour per month.
- Assessment and feedback to the student during the research period – 15 to 20 hours.
- Oral examination – 2 hours.

### 3.2.3 Student

Although it is rather obvious, it is necessary to emphasise that the student is the owner of his research and key role player in the research and innovation journey. It follows that the

main responsibility for student's progress and reaching the qualification of the doctorate degree lies with the student. The following properties normally characterise the functions, role and responsibilities of a postgraduate student:

- Primary responsibility for initiating and completing all phases of the thesis project.
- Commitment to learning, discovery/innovation and productivity.
- Dedication and commitment to the research project, including the theme, design and project management plan.
- Honouring of all agreements with the supervisors.
- Managing work, personal and social life, knowing that sacrifices will be made over the short term!

### 3.2.4 Postgraduate Office

The Postgraduate Office will ensure that the Student and Supervisors have all the necessary guidelines, marking schedules, etc.

### 3.2.5 Research Office

The Research Office will:

- Intervene when and where necessary if challenges are experienced during the research process.
- Act as a link between various parties where and when necessary.

## 3.3 Initiation of the Thesis Process

The thesis process is initiated when the student submits a research proposal. The research proposal is reviewed and assessed by the Institute. If the proposal qualifies, it is forwarded to the Research Committee which approves the proposal, the title of the topic, and allocates Supervisors. The Program Convener of the cohort will, upon the approval of the research proposal, communicate accordingly with both supervisors and student.

The process will be launched by a first meeting between the student and Supervisor following the guidelines below:

- The student should take the initiative to organise the first meeting with the Supervisor.
- The envisaged research and project plan should be acceptable to all parties in terms of its content and relevance; its viability and that resources are available to ensure that the student can carry out the research programme.
- All parties should commit themselves explicitly to the project plan.

Participants at the meeting should spend time clarifying all relevant aspects of the research design, including literature survey, critical review of the management of technology, innovation and people in a systemic way, research methodology, thesis structure and any other aspects, and agree to such outcomes stipulated in the design process.

All parties should agree to a time schedule and how the schedule will be monitored.

## 3.4 Student Progress

The following cryptic notes may be relevant to both the Supervisor and Student, since the student's progress is a key performance area at an institutional and personal level, and obviously needs to be monitored – with the necessary guidance where necessary:

- Students should have designed a research project plan (including a time schedule) for their research period.
- Students who are new to the research process often need guidance in tackling some aspects of the research such as knowing where to start, how to carry out a literature search, etc.

# 4 *The Thesis*

## 4.1 General Guidelines

The Research Office will provide all Doctorate students with detailed guidelines on the conventional requirements for the thesis, including a framework for the Research proposal and writing of the thesis.

Students have between 3 - 6 years to conclude the thesis, including research, analysis of results and making a contribution to the body of knowledge.

**NB**: The Supervisor should explicitly, and in writing, give their approval for the student to submit the thesis for examination and fill out a form in which it is agreed that the thesis complies with the requirements of an academic research report. In instances where there is a deadlock between the Student and the Supervisor, the Research Office (Dean: Research) may intervene to restore the deadlock.

## 4.2 The Thesis: Requirements and Structure

A thesis is a formal academic research report on a well-planned and evaluated research project and flawed research cannot be disguised in an elegant report. However, good research can sometimes be obscured by poor structuring, language and technical editing and a general careless approach.

It should communicate effectively with the relevant research, innovation, professional and employer communities. The structure would comply with standard conventions and it should be concise. It is important that the thesis must be professionally edited – language and technical aspects – and comply with Da Vinci guidelines as summarised below:

- Cover, title page and other front matter should comply with Da Vinci specifications.
- Abstract/Summary: This gives the reader a brief summary of the academic research report: on research objectives, research methodology, results, and conclusions/recommendations – not more than 350 words, or one page. No sources are cited.
- Table of Contents: Properly structured, clearly shows section sequence and logical flow of the thesis. Its importance often underestimated, the Table of Contents clearly indicates the structure of the thesis.

- Chapter 1 – Introduction: Rationale for the study; general statement of the problem; the aim of the study; key research question/objectives stated explicitly; introduction to research methodology; the structure of the rest of the thesis.
- Chapter 2 – Conceptual framework and literature review: Definition of key concepts (variables, factors, and drivers) and their relationship to each other (= theoretical framework); critical review of the relevant and recent literature. The management of technology, innovation and people in a systemic context should explicitly be integrated into the discussion.
- Chapter 3 - Research design: Operationalisation of concepts and research questions (also motivation for above); design (e.g. survey, case study, etc.); sources of data/information (e.g. people, documents); measures/instruments for data collection (e.g. questionnaire, interview, focus group, content analysis); statistical and other methods used for analysis of the data/information.
- Chapter 4 – Results: Presentation of results in explicit, transparent and systematic form and aligned to the description and hypotheses in the previous chapter; results should preferably not be interpreted and comprehensively discussed here – leave the reader to assess the results on his/her own.
- Chapter 5 – Summary: Evaluation and discussion of the results within the context or rationale of the study, the conceptual framework, design and methods used; an assessment of the extent to which the objectives of the study have been attained, research questions been answered or hypotheses been proved. New perspectives can emerge in this chapter but not new information that should have been covered in earlier chapters. No new material should be added in Summary discussion chapter – which means: no sources should be cited.
- Chapter 6 – Implementation: Guidelines or a framework on how the findings (could be in the form of hard/soft technology and innovation) should be implemented for maximum impact. A Doctorate thesis should clearly show the contribution of new knowledge to the world of knowledge and application in the world of work.
- References - Use the Harvard referencing style. (If a literature source provides any information, it should be cited in the text and listed in the list of references.)
- Appendices: All relevant material that would not assist the reader to follow the text of the thesis should be included in the appendix/ces. These normally include questionnaires and measuring instruments, short transcriptions (especially in the case of qualitative research approaches), preliminary illustrative material and data sets.

## 4.3 Submission of the Thesis

The thesis should be submitted according to the dates and guidelines provided by the Research Office, prior to the end of the student's registration.

## 4.4 Examination

The specific guidelines and differential weights of the individual components are available from the Research Office, but the following summary offers an overview of the elements of the examination process.

The Examiner must recommend a final mark for the thesis using the following assessment guidelines:

| |
|---|
| Pass **without** revision |
| Pass after **minor revision:**<br>Re-submission to the examiner is not necessary, and the changes are to be effected under the guidance of the Supervisor |
| **Major revision** and re-submission<br>The thesis needs major revisions before it can be re-examined |
| Fail: **Re-submission** and re-examination<br>The thesis does not meet the minimum criteria, but if it is reworked and substantially re-written, it may be submitted for examination |
| Fail: **Not eligible for re-submission:**<br>The thesis is highly flawed and the quality of the work is totally unacceptable for a doctoral thesis |

The Examiner is required to submit a report (narrative) on the thesis based on the following criteria:

- Title / Background / Aim / Objectives / Rationale
- Literature Review
- Research Design and Methodology
- Technical Aspects: Structure, Data, Writing Style, Referencing
- Research Findings, Conclusions and Recommendations
- Integration of the Business Leadership Framework

After the examination reports on the thesis are been received from the Examiners, the Research Office will organise an oral defense of the thesis, to be attended by the Supervisors, as well as an audience of approximately five persons who are familiar with the topic, and/or its relevance. Guidelines for the oral defense of a thesis will be made available by the Research Office.

The oral defense takes the form of a professional presentation by the student, followed by a question and answer session. The total length of the oral defense will be 2 hours. The oral defense is based on the research work carried out by the student.

Should the student not pass, he/she will be given one opportunity to improve the thesis to meet the minimum standards. All students are given three months from notification to complete the corrections.