

3 BASIC RESPONSIBILITIES OF RESEARCH SUPERVISION

3.1 Overview

It has already been noted herein that the supervision of postgraduate research students encompasses far more than just the conduct of systematic programs of investigation. It is ultimately about the development (personal and professional) of human beings, as well as their safety and welfare.

In any institution, there will be numerous rules, procedures and guidelines that need to be considered in relation to supervision, and these include:

- National/regional laws
- Institutional rules/procedures
- Faculty/Departmental rules/procedures
- National/international conventions or codes of conduct for research in particular fields.

The consequences for breaching the formal rules – particularly as they relate to the health, safety and welfare of an individual – or abrogating managerial responsibility in their enforcement, can be severe. In some jurisdictions, at national/regional levels, these can include sanctions such as fines and imprisonment or, at institutional level, termination of employment.

The relationship between a research supervisor and a research student is therefore not just a casual, professional relationship, but one in which the

supervisor needs to assume a range of particular responsibilities – often the same as those that would apply when managing a regular employee of the university.

The specific areas which are covered in the subsequent sections of this chapter are:

- Health/safety
- Personal welfare of the research student
- Confidentiality of the research student and research
- Protection of intellectual property
- Research ethics
- Prevention of discrimination, harassment, bullying
- Personal/professional ethics development
- Personal development
- Selection of research examiners.

3.2 Health/Safety

The most basic requirement for any research supervisor is to ensure the health and safety of the research student. In many jurisdictions, this requirement is not just a moral or institutional issue but one with serious legal ramifications and sanctions.

The World Health Organization (WHO) defines Occupational Safety and Health in the following terms (*WHO.int, 2015a*):

"Occupational health deals with all aspects of health and safety in the workplace and has a strong focus on primary prevention of hazards. The health of the workers has several determinants, including risk factors at the workplace leading to cancers, accidents, musculoskeletal diseases, respiratory diseases, hearing loss, circulatory diseases, stress related disorders and communicable diseases and others."

Further, the WHO defines work related diseases in the following terms (*Who.int, 2015b*):

"An 'occupational disease' is any disease contracted primarily as a result of an exposure to risk factors arising from work activity. 'Work-related diseases' have multiple causes, where factors in the work environment may play a role, together with other risk factors, in the development of such diseases."

For each country, and often regions within that country, there are specific legislative requirements for maintaining the health and safety of employees. Each university, operating under these jurisdictions, therefore creates its own internal policies and procedures in line with local legislative requirements.

Notwithstanding any specific local legislation and university regulations/procedures, it is likely that a research student will need to be treated in the same way as an employee in terms of health and safety. The research supervisor may therefore have significant legal and procedural responsibilities in addition to the self-evident moral ones that pertain to health and safety in supervision.

The levels of risk for the student are clearly dependent on many factors, including:

- The field of research
- The nature of any practical experimentation
- Exposure to (usage of) equipment/machinery, devices, radiation, chemicals, biological materials/agents, etc.
- General university laboratory and office environment.

A research student conducting research in an area such as business or economics will have vastly different health and safety issues to one working in areas such as bioscience, chemistry, physics or engineering. However, in all cases, the supervisor needs to make some assessment of the potential risks to the student operating in his/her environment – this assessment should be over and above any formal processes that the university already has in place.

For low level risks, an informal mental assessment may suffice but as the levels of risk associated with the environment increase, so too does the formality of the risk assessment and mitigation. For example, a student working solely in an office environment, using a computer, may only require basic consideration of seating/ergonomic arrangements associated with the computer workstation. A student working in a chemistry or bioscience laboratory may need to undergo a complete occupational health and safety training program in order to function safely in that environment.

In addition to basic risks associated with the research student's broad program of experimentation, there may be other risks – unforeseen at the beginning of the research program. For example, an engineering research student may spend the bulk of their time doing analysis and modeling on a computer but, at some point, may need to cut metal samples on an electric saw for experimentation purposes.

The key point about health and safety is that the supervisor cannot make assumptions about what a research student knows or doesn't know about the environment and risks. It is the supervisor's role to determine the risks and formally ensure that the student is aware of them.

In most universities, there are a range of procedures and regulations relating to health and safety of staff and students. These include elements that are:

- Legislated under national/regional law
- Global to the entire university (e.g., ergonomic seating posture for use of computers)
- Specific to a faculty
- Specific to a department
- Specific to a research center.

Additionally, even within a small research grouping, there may be supplemental rules and procedures that a research student needs to understand. For example, in an Electrical Engineering department, an electrical power laboratory group may stipulate that no individual is permitted to work on high power circuits without the presence of another

person trained in Cardio-Pulmonary-Resuscitation (CPR). Within the same department, people working in another research group with low-power battery-driven devices may not require the same level of safety scrutiny and training.

In some cases, educational institutions are given special exemptions from various national/regional laws in relation to the operations of their laboratories. This is because, sometimes, generic legislation would completely preclude any experimentation. For example, legislation may state that workers other than electricians must not be exposed to any *live* electrical terminals or wires – this may be relaxed in the case of an electrical laboratory training students.

In addition to procedures and regulations, any well-operated university should have in place training and induction programs that facilitate execution of those procedures/regulations – particularly for research students. A research supervisor needs to be aware of which training and induction programs will pertain to his/her research students as they operate in their specific environments of research.

In the absence of any formal training/induction programs, or specific procedures/regulations, a research supervisor still needs to take a moral and proactive responsibility for the health and safety of research students. The creation of a detailed risk assessment and risk control form for every conceivable type of activity is an onerous task, often undertaken by specialists in the field of health and safety. However, as a bare minimum, from a supervisory perspective, a practical starting point can be to create a simple checklist for each research student – considering risks and mitigating strategies as they pertain to the specific field of research. An example is shown in Table 3.1.

| <i>Activity</i> | <i>Risks to Health/Safety</i> | <i>Preventative Actions / Training / Induction</i> |
|-------------------------------------|---|---|
| Computer work | Posture / Back injury | Ergonomic workstation |
| Use of milling machine | Cuts, entanglement, eye injury, amputation | Formal training/oversight by laboratory technician First-aid/safety training |
| Transfer of test samples to furnace | Back strain/injury, burns, eye injury from sparks | Training on furnace use; training on lifting procedures |
| : | | |
| : | | |

Table 3.1 – Developing a Health/Safety Risk Assessment Checklist for Research Students

In addition to physical health and safety issues, a supervisor also needs to consider the issue of stress. Specifically, is the supervisor's behavior, or the behavior of other staff/students in the area likely to cause a postgraduate student stress? This requires careful consideration because many small things which may, on the surface, appear inconsequential to the supervisor might create serious emotional issues for the student. For example, consider the following situations:

- An introverted, international research student is placed in a office environment full of boisterous, local research students
- A timid research student with English as a second language is asked to present research in a public gathering of staff
- A research student who, unknown to the supervisor, is working long hours; has additional family responsibilities, or has to do outside paid work to make ends meet, is told that he is not working hard enough.

These are all things which can cause enormous stress for a student – and potentially related health problems as well. These issues are covered further in Section 3.3.

The key point that needs to be taken from all these discussions is that the novice research supervisor cannot assume that the issues of health and safety relating to the research student are automatically covered by the university. It is often the supervisor's role to formally interface the research student to university health and safety procedures. In some cases, the

supervisor may also need to formally intervene to ensure that the interests of the research student are fully considered.

Prior to allowing any research student to commence his/her studies, it may be useful for a supervisor to consider the following course of action:

- (i) Ensure personal familiarity with university regulations and procedures as they pertain to health and safety of staff and students
- (ii) Determine the training and induction programs available within the university for various aspects of health and safety
- (iii) Identify faculty, departmental, center, institute, laboratory or research grouping related safety procedures and induction programs
- (iv) In cognizance of the suite of training and induction programs at relevant levels, ensure that the research student participates in relevant activities
- (v) Develop a simple risk assessment/mitigation template for each student as an *aide de memoire* and a possible action plan for the specific research program
- (vi) Consider the individuals, the environment and the supervisor in the context of the stress that they may impose upon a research student – the supervisor should put himself/herself in the research student's shoes to try and identify potential sources of stress and to avoid subjecting the student to them.

In addition to all these factors, a research supervisor also needs to consider the health and safety of research students who specifically need to work outside the university – for example,

- In an affiliated university research facility (e.g., teaching hospital)
- At the premises of a commercial partner organization
- In an external setting while conducting surveys.

In these cases, a research student may need to adhere to more than one set of regulations and procedures – that is, those of the university and those of the external environment provider.

3.3 Personal Welfare of the Research Student

In addition to the physical health and safety of a research student, a research supervisor – as a mentor acting in a one-to-one professional relationship – also *de facto* assumes some degree of responsibility for the personal welfare of the student. The level of responsibility obviously depends upon:

- The environment
- The specific nature of the research student
- The level of moral responsibility that a supervisor wishes to assume.

The specific areas of personal welfare that need to be considered include:

- Psychological welfare (stress, emotional wellbeing, etc.)
- Personal issues (living arrangements, financial problems, relationship and family problems, etc.)
- Environmental issues (research environment and colleagues).

Clearly, some of these areas will be outside the purview of the supervisor and, in any case, the supervisor may have no capacity to resolve the underlying causes. Importantly, most supervisors are not trained to deal with, or provide, psychological counseling to students, and this is a task that should be left to experts. However, a supervisor may need to be astute enough to recognize problems and symptoms in order to refer a student for expert support before a crisis occurs.

Universities in general have a broad range of support mechanisms and staff to assist students with personal problems. The difficulty is often getting the student to acknowledge that he/she has a problem in the first instance – especially given that the supervisor is unlikely to be an expert in even assessing this. It is often also the case that the supervisor is the root cause of a student's problems or angst, and is therefore blind to the problems that exist.

If a supervisor suspects that a research student is experiencing personal problems – or has indeed been approached for support by the student experiencing them, then there are some basic things that can be done as a starting point. The following list may be helpful, based upon the conduct of informal discussions with the student:

- Without being too demanding or prescriptive, see if it is possible to get the student to elucidate on his/her problems

- Determine whether the student is able to identify specific causes of the problems – for example, an argument with other staff or students
- Determine whether the student is able to put forward his/her own preferred solutions to the problem – and best possible resolution mechanisms
- If the resolution mechanisms are within the jurisdiction of the supervisor, and are reasonable and readily achievable, then enact resolution measures – otherwise, ask the student for time to consult with others and organize another meeting with the student
- Consult with colleagues in the research group, center, institute, faculty – as appropriate. If the response is inadequate, contact the appropriate university level support staff associated with student counseling and seek guidance
- If university level support/counseling staff see the matter as urgent, then contact the student as soon as practical to organize meetings with counseling experts.

In the final analysis, despite the best intentions and efforts of a supervisor, a research student may refuse to seek formal help from professional university support/counseling staff. A supervisor has no practical mechanism to coerce a student to do so. However, depending upon the relationship that the supervisor and student have with other members inside the institution, it may be possible to broach the matter judiciously with the student's colleagues in order to elicit more informal support – keeping in mind the strict requirement not to breach the student's confidentiality.

The seriousness of personal problems must not be underestimated and, self-evidently, if these become seemingly insurmountable from the perspective of the student then a supervisor needs to face the reality that there may be a risk of suicide. Each university should have its own processes/procedures for dealing with the issue of possible suicide, however the University of Cambridge (UK) Counseling Service describes well why a student may attempt to commit suicide in the following terms, using a list of ten possible causes (*Counselling.cam.ac.uk, 2015*):

"For some students suicide will follow a period of depression while for others it is likely to be an impulsive act, perhaps triggered by a traumatic experience, for example the death of a loved one, or by a relatively insignificant event which may be seen as the 'final straw'. The following is a list of some of the feelings and experiences that may contribute to someone feeling suicidal:

1. *Loneliness - developing into the all-consuming feeling that there is no-one there and that no-one really cares or will notice whether they live or die. The suicidal person can feel totally alone and isolated.*
2. *Feelings of hopelessness and helplessness - where the student feels that no matter what s/he does, nothing seems to get better, and that no-one is able to help.*
3. *Feelings of worthlessness, of being 'a waste of space' - s/he will never amount to anything, and that any care, interest, or encouragement shown would be unjustified or based on a false premise. Convinced they are not worth caring about, such people are likely to have very low self-esteem, and to not readily accept compliments or praise.*
4. *Depression - in those who are clinically depressed, their perceptions of themselves, others and their situation are usually unduly negative. Many of the above feelings are not only common but are also felt to be unquestionably true. Although observers may be clearly aware of the depressed person's talents, achievements, and of others who care deeply about them, it is their internal perceptions that need to be taken into account.*
5. *Plans falling through - especially where the goals have considerable personal importance - e.g. not settling well at university, the break-up of an important relationship, or a student not achieving her/his academic goals. As a result the student can feel inadequate, a failure, ashamed, unlovable...*
6. *Inappropriately high levels of stress - of the kind experienced by those with exceptionally or unrealistically high personal or academic expectations. Students can easily come to feel stressed by academic demands and for some there will be times when the level of stress becomes unbearable. Those who have been high achievers, in particular, can feel that their academic success is crucial to their personal identity, and if the former is under perceived or real threat, their identity is also endangered. To such people, the idea of not getting a 1st can be felt as an utter and unbearable humiliation. The Oxford study... on student suicide quoted above found that of those who had committed suicide "two-thirds of the students had been worried about academic achievement or their courses". However, the Collins study... at Cambridge did not find an increase in suicides around examination times.*
7. *Anger - suicide can sometimes be seen as the act of someone who is very angry, perhaps even as an act of revenge, (for example after the ending of a relationship).*
8. *Alcohol and drugs - for some a suicide attempt may be an impulsive act when under the influence of alcohol or drugs. In this state a person may seriously underestimate the risks of their actions, and be more vulnerable to the above feelings.*

9. *A history of mental or physical illness.*
10. *Feeling overwhelmed - when problems in a number of areas of life occur at the same time - for example academic problems, a family crisis, and the ending of a relationship - the sense of pain may be overwhelming.”*

Note especially how the factor listed under Paragraph 6 pertains specifically to issues and personality traits of postgraduate research students.

A supervisor should make himself/herself aware of the possible warning signs – either from the list above, or from more specific information at his/her institution, to ensure that crises and tragedies do not arise because of a lack of information or action within the institution.

It is good institutional practice for universities to ensure that students have staff other than the supervisor to whom they can turn in the event of problems – particularly because it is often the case that the supervisor is – either knowingly or unknowingly – the root cause of the problems. Some institutions insist on a minimum of two supervisors in order to provide pressure relief – others have supervisory oversight committees. If these sorts of mechanisms are not available, then it would be beneficial for a supervisor to create his/her own by, perhaps, providing either an unofficial second supervisor or mentor/advocate for the student.

3.4 Confidentiality of the Research Student and Research

A research supervisor needs to be able to deal with a range of confidentiality issues, specifically those that relate to:

- Personal discussions with the research student
- Assessments and appraisals of the research student's work
- Departmental/faculty/university level discussions and correspondence in relation to the research student
- Intellectual property (IP) arising as a result of the research
- Negotiations with external collaborators.

In cases that relate to personal details/discussions/correspondence with or about the research student, the notion of confidentiality will generally be based upon the subjective, professional judgment of the supervisor – sometimes supplemented with university procedures or conventions.

The obvious question may then be,

"How does one develop subjective, professional judgment?"

The answer to this question is in fact relatively straightforward and that is, when in doubt, as a starting point, always err on the side of confidentiality. As one develops supervisory and management skills, one also develops a greater capacity to determine what is or is not appropriate in terms of confidentiality. Often, one will develop a greater degree of latitude as one matures.

A good rule-of-thumb is to assume that everything which is spoken or written in the context of professional duties relating to the student should pass the *public domain test*. That is, anything which would be deemed unacceptable if it was to reach *the public domain* should neither be articulated nor written in the context of private discussions or correspondence.

In cases related to IP and negotiations with external parties, the mechanisms for dealing with confidentiality are normally set out in research contracts and are generally straightforward. However, supervisors need to get advice on how these can impact on the conduct of a postgraduate research program. For example, an IP agreement can sign away the rights of a supervisor and research student to publish research papers – or even to publish the thesis – or even to allow external examiners to assess the thesis. Before signing any confidentiality arrangements in relation to IP or external research collaborations, a research supervisor needs to take advice from university legal representatives.

In cases where a research student is required to sign a confidentiality agreement, as a result of participating in a collaborative research program which is the subject of a legal agreement, the research supervisor has an obligation to advise the student to take his/her own professional advice on the matter before signing or agreeing to anything.

It is important for the supervisor to explain to the student that, in negotiating any collaborative agreements, the university's legal representatives act to protect the university's interests – not necessarily those of the research student. The research student may therefore need to take external counsel before signing any documents pertaining to an agreement between the university and an external partner.

In between the hard copy contractual law confidentiality and the judgment-based confidentiality of professional relationships there are also intermediary issues. For example, a research supervisor may have it in mind to commercialize research work emanating from a postgraduate research project. The research student performing that project may have it in mind to publish as much as possible about the work, with the intention of moving on to another area or career, regardless of the commercial potential of the research.

In these instances, it is the research supervisor's responsibility to discuss possible research commercialization plans with the research student during the formative stages of the project. Both parties need to agree on the pathway that will be taken and, if there is an agreement on project commercialization, then any confidentiality arrangements may need to be determined – preferably in writing or by formal contract – at the outset of the program to avoid future dispute.

3.5 Protection of Intellectual Property (IP)

A postgraduate research supervisor may be required to act on behalf of the university in negotiating and protecting IP arising from a project undertaken by a research student. There are a range of possible scenarios, including:

- The postgraduate research project is part of a larger program of research activities for which the university is developing a suite of IP
- The research student is working in a collaborative research program which has been generated by the university with an external partner
- The research student is a full-time employee of a company and has elected to use the research and development being undertaken in the company as the basis of a postgraduate research degree within the university
- The research supervisor can see long-term commercial potential in the postgraduate research outcomes, and wishes to secure IP for possible commercialization.

In all these cases, the protection of IP only has significant merit if the researchers and the institution have the resources and willpower to:

- Monitor usage of IP
- Litigate against unauthorized breaches.

In many instances, the cost of litigation can far outweigh the value of the IP and hence the benefits of protection are a moot point.

In order to understand the benefits and limitations of IP protection in the context of a university, one has to have some insight into the role of research within the commercialization process. The often quoted *rule of thumb* for commercialization is the so-called *1:10:100 Ratio*. That is, for every dollar expended on research, ten dollars need to be expended on development and a hundred on commercialization. In some areas, such as pharmaceuticals, the ratio may be considerably higher.

In the best case scenario, therefore, a university research outcome will generally merit less than one per cent of net commercialized income – and that is assuming that the research contributes to the entire commercialized product or service. In most cases, university research may only contribute to a small part of a larger product or suite of services, and so the potential income will be accordingly smaller.

The key issue that the research supervisor needs to consider prior to expending university resources on the protection of IP is whether there is enough potential income to even mitigate against the cost of protection, much less make a net profit.

There may be alternatives to attempting to gain directly from the IP arising from research – that is, more efficacious mechanisms than the traditional patent protection and royalties. One approach may be to consider that there are benefits from collaborative research with industry and, in a research partnership, it may be worthwhile signing over IP in exchange for ongoing collaborations and research scholarship funding, rather than royalties. These may form a tangible fixed payment, with a degree of certainty, rather than the an undefined probability of income from royalties at some unknown later date.

In situations where the research student is the principal originator of the research, it may also be worthwhile to consider allowing (and supporting) the research student to commercialize the research independently. In such a situation, the university may receive no short-term financial benefit but – if a start-up company becomes financially successful – and the graduated student is sufficiently grateful, then he/she may give back to the university in far larger value than simple royalties.

All of these possibilities need to be weighed up and possibly discussed with the university's legal and IP departments before selecting a forward pathway. Once a direction is chosen, the supervisor needs to determine how this will impact on a research student's research program and future career. Specifically,

- Will the research student be permitted to publish during the program and submit a thesis to external examiners?
- Will the final thesis be permitted to be available as open-access in libraries and online?
- Will the research student be permitted to use the work in his/her future career – or start his/her own business based on the research?

Clearly, all these questions have serious implications for the research student and his/her future career. At some point, therefore, in order to make any university decision meaningful, the research student will need to agree to certain conditions/restrictions.

Importantly, it also needs to be noted that in some countries, government scholarships for research students may be conditional on research students making the findings of their research public – and perhaps not signing away IP. These sorts of snares need to be identified at

the outset of the program.

Only when all these factors have been resolved can a final decision be made on the IP arrangements for a postgraduate research project.

3.6 Research Ethics

There are two types of ethics for which a supervisor has to assume responsibility in postgraduate research. The first is the formal set of rules which are in place in universities, hospitals and other research organizations to govern experimentation pertaining to humans and animals. The second is the general, moral set of human operating principles by which the supervisor and student need to live their professional lives. In this section, we consider the former set of ethics issues.

Each university should have its own set of governing procedures pertaining to the conduct of research which has some impact upon living beings – either human or animal. In larger universities these will be governed by a specific ethics department – in smaller institutions they may be included within the activities of a broader research governance structure.

Research supervisors, who have themselves conducted research in human/animal experimentation, will already be familiar with the onerous requirements to carefully document and substantiate proposals for conduct of research procedures in these areas – and to have these formally analyzed and approved by a university body responsible for ethics. Sometimes, however, the need for ethics proposals and approvals may come as an unexpected requirement for a supervisor undertaking work in a seemingly innocuous area. For example:

- A researcher wishing to undertake an online survey in social science, involving human participants, may be required to submit the process to an ethics committee for approval
- A researcher wishing to gather personal information that is openly available on social media, use it for analysis, and then publish the results which disclose individual identities may be required to get ethics approval.

For those who are new to the process of seeking ethics approval, there are a few elements that need to be considered:

- The process can be onerous
- The process can take a considerable length of time to complete
- Ethics approvals may be conditional on researchers undergoing formal training programs and gaining certification in order to conduct particular types of research.

In the United States, at Harvard University, for example, researchers undertaking research relating to humans – including surveys – require

formal certification, undertaken by bodies such as the Collaborative Institutional Training Initiative (CITI) of the University of Miami. CITI operates a range of ethics based certification courses including

- Animal Care and Use (*Citiprogram.org, 2015a*)
- Human Subjects Research (*Citiprogram.org, 2015b*).

Other institutions around the world may have in-house or generic training certification programs that also need to be completed before approval can be given for particular types of research.

In terms of research supervision, because of the length of time associated with the process, the issue of ethics approval requires detailed consideration at the commencement of the program. A supervisor needs to discuss with his/her student whether any elements of the research will cover areas that require ethics approval and, if so, how the time associated with the process can be accommodated within the research plan.

The issue of ethics is further compounded when research students are operating in multiple research environments – for example, a student may conduct research experiments within the university proper and also at an affiliated teaching hospital. The teaching hospital may have different research ethics procedures and guidelines. It may therefore be the case that each set of experiments requires separate application and certification processes, further complicating the student's research plan.

The key points to take from these discussions are that:

- Supervisors cannot assume that they will be exempt from formal ethics requirements – they need to check this through university regulations at the outset of the program
- Some seemingly innocuous human-related investigations (e.g., simple surveys) may require ethics approval
- Ethics approvals and certifications are time-consuming and need to be incorporated into student research plans
- Submissions for ethics approvals need to be carefully prepared and scrutinized by the supervisor – an ethics committee rejection of an ill-conceived proposal could delay a student's research for weeks or months.

3.7 Prevention of Discrimination, Harassment/Bullying

Most democratic nations have enacted a system of national/regional laws to cover the issue of discrimination in various forms, generally:

- Disability
- Ethnicity
- Gender
- Race
- Religion.

Universities within those nations naturally operate under the umbrella of those legislative requirements and may also impose their own additional procedures and sanctions as they pertain to the treatment of staff and students. In some countries there are also additional legal mechanisms in place to prevent the harassment and bullying of individuals.

A research supervisor who undertakes activities including:

- Recruitment of research students
- Selection of research students
- Awarding of scholarships/stipends to research students
- Awarding of resources/facilities or conference travel stipends to research students
- Management and assessment of research student activities – at a one-to-one level – during the research program,

has significant legal and procedural responsibilities in relation to prevention of discrimination, harassment and bullying. Importantly, the supervisor is not only responsible for his/her behavior but may also be responsible for the behavior of others in the environment in which he/she exerts control.

Each nation/region (and university) has its own specific definitions of the terms discrimination, harassment and bullying. Supervisors need to be aware of their local definitions. However, the following broad definitions, from *USLegal*, are particularly helpful to understanding the challenges that supervisors need to address.

The concept of *Discrimination* is defined in the following terms (*Definitions.uslegal.com, 2015a*):

"Discrimination refers to the treatment or consideration of, or making a distinction in favor of or against, a person or thing based on the group, class, or category to which that person or thing belongs rather than on individual merit. Discrimination can be the effect of some law or established practice that confers

privileges on a certain class or denies privileges to a certain class because of race, age, sex, nationality, religion, or handicap."

The concept of *Bullying* is defined in the following terms (Definitions.uslegal.com, 2015b):

"Bullying is generally defined as an intentional act that causes harm to others, and may involve verbal harassment, verbal or non-verbal threats, physical assault, stalking, or other methods of coercion such as manipulation, blackmail, or extortion. It is aggressive behavior that intends to hurt, threaten or frighten another person. An imbalance of power between the aggressor and the victim is often involved. Bullying occurs in a variety of contexts, such as schools, workplaces, political or military settings, and others."

The concept of *Harassment* is defined in the following terms (Definitions.uslegal.com, 2015a):

"Harassment ... is generally defined as a course of conduct which annoys, threatens, intimidates, alarms, or puts a person in fear of their safety. Harassment is unwanted, unwelcomed and uninvited behavior that demeans, threatens or offends the victim and results in a hostile environment for the victim. Harassing behavior may include, but is not limited to, epithets, derogatory comments or slurs and lewd propositions, assault, impeding or blocking movement, offensive touching or any physical interference with normal work or movement, and visual insults, such as derogatory posters or cartoons."

Some supervisors – particularly novice supervisors without significant management experience – believe that their newfound status as a supervisor gives them *carte blanche* to dictate to their research students what they should and should not do. The definitions above clearly demonstrate that this is *definitely not* the case, and modern management and legislative frameworks simply don't function on the *my way or the highway* dictum.

Much and all as academics believe that anything which does not lead to research outcomes is bureaucracy, the fact remains that that bureaucracy is generally backed up by legislation and university sanctions – up to and including termination of employment or even imprisonment.

Universities often have formal staff training and certification programs that cover the issues of discrimination, harassment and bullying – and the sanctions that apply to those who breach protocols. Supervisors therefore need to ensure that they:

- Are up to date with university practices and regulations in these areas
- Consult with relevant university bodies before recruiting/selecting research students to ensure that their intended procedures comply with university policy
- Always act in a manner which would be deemed – by an impartial observer – to be fair, reasonable and unthreatening.

3.8 Personal/Professional Ethics Development

A research student will often view the research supervisor as a mentor, and may ultimately end up adopting that supervisor's professional traits in later life – for better or worse. The supervisor therefore has a *de facto* responsibility to ensure that the traits passed on to the research student are for the better.

In addition to the formal ethics requirements and certification related to the specifics of the research program, the supervisor needs to consider how his/her behavior is subliminally forming professional attitudes in the student.

A supervisor may wish to consider how he/she would tackle the following issues/challenges of professional ethics insofar as they relate to management of postgraduate students – all of which have been derived from actual student complaints:

- Is the supervisor acting as a mentor or tormentor? Is the supervisor going to elicit good work practices and productivity by personal positive example, or by threats and intimidation?
- Will the supervisor pass on bad traits (bullying, overworking students) inherited from his/her own supervisor under the dictum that *it never did me any harm*?
- Is the supervisor capable of separating his/her own personal career requirements from the best interests of the student – "*writing this research proposal for me will be good experience for you*" – or "*you should publish this paper with me as first-named author because you will get more citations*"?
- Will the supervisor use the *not now I'm really busy* excuse to avoid his/her supervisory responsibilities?
- Will the supervisor ask a research student to dissect a single research project into multiple part-papers to increase his/her total publications and because *it will be good for the research student's research career*?
- Will the research supervisor ask his/her research students to all cite each others' papers to increase all their citations because *it's good for the research group to have more citations*?
- Will the research supervisor ask research students to include his/her name on all papers because he *contributed to all of them by virtue of getting the grants that paid for their scholarships*?
- Will the research supervisor ask that a research paper bear

his/her name even though he/she has neither read nor contributed to the paper?

- Will the supervisor ask the student to delete/omit data points in their research which don't fit the supervisor's hypothesis because *they are extraneous outliers*?

The issues listed above constitute some of the more common complaints against supervisors, and there are a number of key points to take from these examples:

- Research students are generally highly intelligent and are capable of seeing through transparent self-interest in a supervisor who feigns that behavior as being in the best interests of the student
- Research students will ultimately graduate – some may become highly successful – and they are unlikely to give back to an institution which has staff which they hold in contempt
- Some research students will go on to become supervisors in their own right and perpetuate the sorts of problems of professional ethics illustrated above.

A research student needs to respect his/her supervisor. In turn, the supervisor needs to earn that respect – not just by being an expert in a given field but also by acting in a genuinely ethical manner. Respect will never be found on a curriculum vitae littered with dubious publications, citations and grants, regardless of how these appear in research metrics.

Finally, it should be noted that a lack of professional ethics is largely self-defeating for the supervisor. Most senior university staff are acutely aware of the sorts of behaviors outlined in the list above and, once they are detected, regardless of other achievements, an academic will find his/her own behavior counterproductive to moving upward in a career sense.

It is worth remembering that a reputation takes decades to build and it can be wiped out very quickly with opportunistic behavior.

3.9 Personal Development

The research supervisor and the research student both need to consider their participation in a postgraduate program as a journey of personal development. However, in the case of the supervisor, acting as a mentor, there is also an onus to look beyond career development self-interests and towards those of the research student.

It may be uncharitable to suggest that some supervisors view their research students as little more than a low-cost form of research labor that can be exploited for their own personal career development. If this is the case, then there is little that can be said to change such a mindset, save to say that such an attitude/approach has already been tried and tested by many academics – and found to be wanting in the long-term. In the end, truth will out, and naked opportunism is not a sustainable pathway to research eminence or respectability. It is also counterproductive to the extent that self-serving behavior is generally transparent to others. Colleagues who might otherwise be supportive, given the presence of goodwill, may in fact become aggressive obstacles to progression.

For those research supervisors who value the true essence of research and education, and wish to use their time as supervisor to create something of lasting value – in the form of a highly successful research graduate – then there are a number of things that need to be considered.

First and foremost, it is generally too late to look at careers for the postgraduate research student at the end of the research program – by that stage, either the student has made his/her own arrangements or has decided to leave the academic research environment – perhaps with some bitterness. The time to start the process of personal development is at the outset of the research program.

A good approach may be to develop a table of possible development pathways for one's students, with estimates of the requirements and timeframes involved. An example is provided in Table 3.2, but supervisors should consider developing their own sets of development pathways, based upon the research field/profession in which they operate. These can be used as the starting point for discussions with the research student early in the research program.

| <i>Career Aspirations</i> | <i>Key Factors</i> | <i>Timeframe</i> |
|--|---|-------------------------|
| Academic Career | <ul style="list-style-type: none"> • Significant research outcomes • Publications/conference attendance • Citations • Academic service work – reviewing for journals, contributing to student programs • Networking with senior staff in current and prospective universities • Understanding of broader university research and education requirements and performance issues | 3 Years |
| Professional Career in Broad Field of Research | <ul style="list-style-type: none"> • Understanding of research outcomes in the context of business/industry • Experience in/exposure to (e.g., internship) relevant companies • Understanding of company business models in fields of interest • Understanding of competitive advantages of PhD qualification relative to other graduates | 1-2 Years |
| Management Career | <ul style="list-style-type: none"> • Formal management training/accreditation (e.g., MBA) • Basic business/industry experience (e.g., internship) in possible future employment organizations • High level communication ability • Networking with business-oriented colleagues | 3 Years |
| Commercial Research and Development Career | <ul style="list-style-type: none"> • Demonstrable ability to deliver tangible research outcomes – on time • Ability to communicate R&D outcomes in an efficient, concise manner • Experience in commercial R&D environment (e.g., internship) • Possible Management training/accreditation (e.g., MBA) | 2 Years |
| Start-up Company | <ul style="list-style-type: none"> • Understanding of basic entrepreneurship concepts and processes • Financials, budgeting, generation of business plans • Understanding of the business value proposition of the research outcomes • High level of communication ability • Networking with business angels, seed funding and venture capital organizations • Networking with enthusiastic colleagues to form possible teams | 3 Years |

Table 3.2 – Example of Possible Development Pathways and Requirements

In looking at the sorts of issues and timeframes associated with career development for the research student, a few points become apparent:

- The research supervisor has to acknowledge/accept that the research student may not want to stay on as a postdoctoral researcher at the conclusion of the research program
- If the research student is seeking a career in academia, and the supervisor believes they have the talent to make a significant contribution, then the supervisor needs to be able to present a convincing case for why the student should stay on
- If a research student makes it clear that they wish to pursue non-academic career pathways, then the supervisor has a potential role in providing support in the student's development – perhaps funding relevant training programs from a research budget; providing networking opportunities for the student, etc.

If a research student gets to the end of their research program and starts filling out job applications in the hope of *finding something interesting*, then the supervisor has to recognize that they may not have fulfilled the broader personal development aspects of the mentoring role.

It may seem unfair that a research supervisor needs to extend himself/herself into the career development role but such is the reality of the modern world, where many who graduate from postgraduate degrees move outside the academic research arena.

In the final analysis, a research student who has performed a sound piece of research but is unemployed or unemployable at the end of the research program is as significant a failure for the supervisor as one who has performed poorly and failed the program outright. The research supervisor's role is to see that neither of these negative outcomes occur, and this requires considerable extra work on his/her part beyond the normal technicalities of research supervision.

3.10 Selection of Research Examiners.

In the final phases of the postgraduate research program, a supervisor will need to have some involvement in the identification/selection of examiners for the student – for the thesis and/or other defense, as applicable.

The level of involvement varies from institution to institution. For example:

- Some universities allow the supervisor to explicitly nominate those who will conduct the examination
- Some universities ask the supervisor to present a list of possible examiners (which are independently short-listed by others)
- Some institutions have sufficient resources to identify examiners completely independently of the supervisor
- In some US universities, a thesis committee is formed after a student has passed qualifying exams – that committee ultimately formulates the nature of the examination process.

Whichever approach is applicable, the supervisor needs to be acutely aware of those who will conduct the research examination process – perhaps not by specific name but certainly by research predisposition.

It has already been noted herein that, in the context of postgraduate examination, a research thesis is not regarded as a book aimed at a general audience. While research findings may be generic, the thesis is written for a specific target audience. In addition to detailing the research investigation and findings, a research thesis also serves to mount a defense of the methodology; directions and decisions made during the program. A supervisor needs to have an insight into whether a student's defense is feasible given the target audience.

By way of example, consider that in a given field of research there may be two, or more, well-established schools of thought on the possible approaches. Those who represent one particular school of thought may reject outright another school of thought – regardless of the merits of the argument. In these circumstances, the supervisor needs to determine if it is fair to expect a student to mount a defense for one school of thought which, in all likelihood, will never be accepted, under examination, by those working in another.

In order to set the groundwork for a fair examination of the research student's work, a supervisor needs to:

- Ensure that he/she is aware of the varying schools of thought on the scholarly approaches associated with the research, and the strength with which convictions are held by peers in the field
- Consider particular individuals that may not be appropriate for examination purposes because of their strongly held views (universities generally provide an avenue for exclusion of particular examiners because of their beliefs or views)
- Consider the audience for which the thesis has been written and the target and nature of the defense contained therein.

Once these issues have been considered, there is the task of nominating potential examiners. It is not uncommon for academic supervisors to consider nominating well-known colleagues to conduct examinations – however, this requires considerable reflection. Specifically,

- Is it really fair to a student, who has completed several years of work in a particular field, to have his/her work simply *rubber-stamped* by a sympathetic colleague?
- Conversely, is it fair to a student if a supervisor's colleague feels that they need to be tougher on that student's work just because of a close professional relationship with the supervisor?

There is merit to the case that the fairest approach to an independent, impartial examination is to engage an independent, impartial examiner who has no personal connections to either the supervisor or the student. This creates problems in its own right because it means that a supervisor has to use *cold-calling* techniques to contact academics and determine if they would be prepared to undertake the work required to assess a thesis. However, the proliferation of professional networking social-media sites means that it is possible for supervisors to have an ongoing cyber-connection to a large number of scholars in the field – and potential examiners can be sought from these contacts.