Quality in PhD supervision

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But how good is the PhD candidate?

- Grades, relatively easy to check and evaluate, most of our candidates have very good grades
- English skills, verbal and written, often very low skills in written English, skill of scientific written communication - writing journal papers
  - Check their previous writings such as MSc thesis (if in English) and other publications, if none ask for providing a small report on a given problem?
- Personal communication, openness, dare to ask questions, have ability to receive information
  - Interview, with questions on non-scientific issues, is Skype enough? It may or may not work
- Well organised? Project progress, milestones
  - Check with MSc/job supervisors
- Ability to take responsibility, manage to work for months uncertain of whether the effort will be successful (developing a new method, testing a new hypothesis)
  - Interview and previous supervisors
How good is the supervisor?

- Previous experience with supervision, success with progress and completion
- Experienced author of journal papers and presentations at international conferences
- International network, industrial network
- Experience in project planning and keeping schedule
- Flexibility in adjusting scope if original scope does not seem to work out
- Well read in relevant scientific literature, good overview of state-of-art
- Experienced referee for several relevant international journals
- Openness and ability to communicate with colleagues
- Ability to understand that all PhD candidates are different, that may require individual follow-up
- Ability to be firm but constructive when project progress and/or direction is off-track
- Having a good sense of humour usually is very useful
- Demanding high standard of candidate means having high standards for yourself (supervision by example)
- From time to time, have informal issues on the agenda, such as status of social life, friends, living conditions, getting along with your office room mates, cultural conflicts
Practical solutions

• Most new research innovations today come from multi-disciplinary efforts, PhD projects of this kind cannot achieve quality by a single-disciplinary supervision team. You must have established connections with supervisors from the other disciplines prior to starting up a new project (so that you know that the right «chemistry» is in place, and a common interest is established)
• Better with one too many than one too less in supervision team
• Be generous to invite junior professors in the team, they have to establish themselves as supervisors and need training in that, or else they don’t qualify to be principle supervisors
• Be involved in the first year of the 3(4)-year period (building culture, keeping progress, check on status for courses, status for settling in at department and in society). During the first year, state-of-art should be in place, it is not just a year that is spent on taking the courses, research starts also
• Start early to plan publications, e.g. for a 3 year candidate first paper is submitted after 1.5 years, for a 4 year candidate after 2 years. About at the same time the first conference presentation is given
• Do your own literature searches, usually you find important references that the candidate has missed, read the most central new references the candidate find
• Team/group/department seminars, important training on oral presentations for the candidate
• Don’t get too discouraged when your interdisciplinary paper gets rejected the first time. Sleeves up, improve paper and send to alternative journal (this is not so relevant when you publish in your usual journal where you have an established name)
• Interdisciplinary projects: need more meetings with all parties to get common understandings, there are no such thing as stupid questions in such projects, we have to learn from each other
Best practice?

• No general answer, candidates are different and supervisors are different

• Regular meetings? Some supervisors prefer this, I don’t. I rather «walk the corridor», meaning that I at least once a week drop in to candidates office for informal discussions on progress and obstacles (this may last 5 minutes or one hour). Also, my door is always open for my candidates (when I’m not in one of the many meetings). Usually I also answer emails after working hours

• I have learned one lesson from walking the corridor: if the candidates sit close, they notice if I visit one more often than the others. This can cause frustration. Be aware and fair. It is ok to tell candidates that they are in different phases, and that some needs more feedback at times than the others
• I think one rule is important: if supervisor is engaged and highly interested in the candidate’s work, providing efficient feedback and facilitation, it influences the candidate’s motivation and dedication

• This is obvious (of course a supervisor is interested in the candidate’s project), but in our daily, busy life, it is not easy in practice (it is always some project to plan, papers to review, meetings to prepare for and attend to, lectures, travels etc)
Quality in industry based projects

- My experience is that in most PhD projects defined in collaboration with industry, the research questions are very good, with many fundamental issues (a «simple» practical problem usually contains good research in order to provide answers).
- But the industry is impatient, think we can come up with quick fixes and simplified solutions. This is very often not the case. We need more time, we manage to answer parts of the problem with methods that initially are not ready for engineering application. Hence, the industry needs some education in how the research process evolves.
- PhD project for the industry: both relevance and quality (it just takes longer time than the industry hopes for). If you can solve the industrial problem in 6 months, it is most likely engineering and not research.
Final comments

• Celebrate victories (e.g. journal publications)
• Be patient and keep calm (when you feel like shouting)
• Seminar+dinner for the group/team once a semester (SFFs and SFIs have this «all the time», most other projects do not have much funding for such events)
• Research is fun, don’t forget the humour, we easily get very serious
• Monograph or paper collection: a monograph with one very good journal publication can have more impact than many publications with perturbations over established theory.