Supplementary Skills Guides for Built Environment Researchers

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Introduction

Deepening specialised knowledge-base and wider skills of researchers in a wider variety of disciplines are prerequisite for developing successful leadership in higher education, the public sector and industry. In response to this repeated calls for enhancing supplementary skills of the built environment researchers, TG53 (Postgraduate Research Training in Building and Construction) initiated steps to develop and nurture understanding of supplementary skills and providing a common frame of reference for use and further discourse and has developed 6 good practice examples highlighting skills for researchers within the built environment. Accordingly, this TG53 publication is in response to the repeated calls for enhancing supplementary skills of the built environment researchers.

Funding to carry out this work was received through the Educational Development Grant Scheme of Centre for Education in the Built Environment (CEBE) in the UK. These guides are focusing on identifying a foundation for creating, developing, and exploiting knowledge of supplementary skills of the built environment researchers. Generic and transferable skills were identified under the following six broad themes and the guides are developed accordingly:

- paper / report writing skills;
- communication and presentation skills;
- personal development, professional competence, judgement and confidence;
- planning, organising, and time management;
- critical thinking and problem solving; and,
- Team work and leadership.

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Supplementary Skills for Built Environment Researchers

Guide to communication and presentation skills

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Supplementary Skills for Built Environment Researchers

Guide to communication and presentation skills

Introduction

This guide to communication and presentation skills for Built Environment researchers is prepared to provide some tips on how to enhance your skills and competence during your course of study. This is an outcome of a project funded by an Educational Development Grant through Centre for Education in the Built Environment (CEBE). The project, called SuSi-BER (Supplementary Skills for Built Environment Researchers), was conducted within the Research Institute for the Built & Human Environment (BuHu), the University of Salford.

There have been repeated calls for enhancing research and supplementary skills of the built environment researchers. Few would disagree that deepening specialised knowledge-base and wider skills of researchers in a variety of disciplines are prerequisite for developing successful leadership in higher education, the public sector and industry. We believe that, there is ample room for improvement in developing supplementary skills for quality research and researchers in the built environment. Further, as the modern society is changing in an unprecedented pace, you as an individual might realise the need to develop skills and competencies on a continual basis.

In this context, the project has been focusing on creating a foundation for creating, developing, and exploiting knowledge of supplementary skills for various activities of the built environment researchers. The project has identified and classified generic and transferable skills under the following six broad themes.

- paper / report writing skills;
- communication and presentation skills;
- personal development, professional competence, judgement and confidence;
- planning, organising, and time management;
- critical thinking and problem solving; and,
- team work and leadership.

There would be a guideline for each theme and an overall guideline for developing supplementary skills. The guides are written for everyone who is engaged in the Built Environment research, particularly postgraduate researchers reading for academic qualifications, e.g. MSc or PhD.

There is a wealth of information on each topic already available elsewhere, be it written or embedded in practice at various institutions. Due to space limitations, this guide does not provide comprehensive and exhaustive advice on each topic. Instead, this guide will provide some examples and practical tips that can help you to understand what developing each skill entails. It is hoped that this generic guide will stimulate you to think or rethink your chosen course of study as not just acquiring a qualification or passive learning experience of gaining some specialist knowledge on a research topic, but also as a process of developing you as a competent professional who can solve problems and contribute to the body of knowledge during the course of your study as well as for your future career.

This guide is thus intended to provide a foundation for which you can start with and as a common frame of reference to facilitate knowledge sharing among fellow students. For those of you who are interested in exploring further on particular topics, a reading list is provided at the end of each guide. Also remember that these supplementary skills need practice and you will learn through experience as well as reading some good materials. Like learning craft skills, we suggest that, as a starter, you emulate how other model people do and adapt their style and behaviour to suit your particular needs and style.

Developing communication and presentation skills

As with other skills, communication and

presentation skills are essential for researchers to present a clear logic of arguments to the academic domain experts and/or practical implications in a succinct and professional manner to a group of non-academics including busy industrialists and policy-makers. This guide concerns skills on communication and presentation (especially oral and visual) skills. For writing skills, there is a separate guide on paper and report writing, which is essentially complementary to this guide. Similar to writing, there are various ways to acquire and improve your communication and presentation skills.

First of all, this entails that you learn from doing and also from observing how other people are doing. Second, you need opportunities to practice these skills. This means you need to proactively seek opportunities to present your research and other related issues. Presenting your case in a non-threatening environment may boost your confidence. Third, abundant materials are already available and you may get practical advice on it. Even if you're an expert in communication and presentation skills, there might be always room for improvement. Last, but not least, you can form a small discussion group with peer researchers who can mutually learn from presenting and participating in subsequent discussion.

Successful presentations need thoughts and practice *a priori*. The relationship between the efforts for the delivery of presentation and those for its preparation can be described as a tip of iceberg shown above the water level and its hidden and much larger part below the surface.

Rehearsal of your presentation several times with yourself (and also possibly in front of your family and friends) would help you gain confidence. As the real life situation is highly variable, be prepared for the expected!

This guide is intended to give some (rather than exhaustive) practical advice and at the end some self-assessment questions through which you can identify gaps in your skills and devise an action plan to reach your desired level. For those of you who are interested in developing your communication and presentation skills, further reading list is also provided.

Some tips on preparing your conference presentation

Knowing your intended audiences

You have to know your audience. You may want to ask the following questions prior to preparing your presentation:

- Do you know what they need to know?
- Do you know what they know already?
- Do you know what they want to know?
- Do you know what their interests are?
- Do you know what their 'language' is?

If you do not know your audience in advance, you may have to make your presentation generic and, later on once you become more informed, attune the content of presentation to suit the audience's level of understanding, interest, and language. However, it would be better for you to ask the organiser about the audience.

Structure of your presentation

Your presentation structure will be largely dependent on the objective of the presentation, available resources, time requirements as well as the intended audience as discussed above. You may want to ask following questions:

- Do you know what your objective is?
- Do you know what equipment will be available?
- Do you know the time requirements for your presentation?

Is your objective to present and discuss key findings based on your case study in front of the industrial participants? Or, is this to report your empirical results in front of other peer researchers? Or, are you now requested to present your whole thesis in front of the external examiners? Although you may be equally nervous in each situation, your audience's anticipation might be considerably different.

Unless you are delivering your presentation at your own office or in your institution which you may know what facilities are there for you to use or, if not, who you should contact, you may need to check out whether you are expected to bring your own laptop and, even a projector and screen (it may not be a problem if you're presenting in a well organised conference, but always better to be safe than sorry)!

Even if the facilities are provided, you may be better off to check in advance whether your presentation materials are compatible with the systems running on the machine. Some conference organisers might ask you to send your presentation beforehand to load it to the machine (but never assume they check the compatibility between your file and their own system).

Lastly, it is important to stick with the time requirements for your presentation. It is often the case that certain time limits will be allocated for your presentation. Plan how much time you would assign for each part of your presentation. Say you have twenty minutes, it would be last thing you would like to do that you present your introduction for the first nineteen minutes and cram everything else in the last minute, do you? Allow five to ten minutes for discussion so that you do not just present your case, but also receive some constructive criticism or feedback. As there is a fair chance that previous presentations overrun, and you may have to shortcut your presentation, omitting some redundant introduction or arguments.

The objective of your presentation, availability and compatibility of technology, and time requirements may need to be taken into account when designing your presentation structure. There is no one best structure which is applicable for all situations; however, the structure may look similar to the following:

- Overview of the presentation
- Introduction
- Key areas
- Research methodology and scope
- Findings
- Summary
- Closing

Important thing is you have to design your presentation to suit your own style and the setting in which your presentation will take place. If you have too many slides or too many graphics with far too many animation effects to present, the audience will be easily distracted. Adjust the amount of information to be conveyed considering the time and your audience, unless your objective is to prove that human beings are prone to information overload (there is already significant evidence of this, so please don't). As Einstein has once said, 'What can be counted can not be always counted upon.' You may have to compromise the quantity against the quality you wish to deliver.

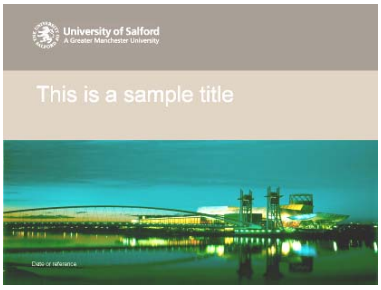
Sometimes you may have to deliver a joint presentation and, in this case, you have to consider several other points to ensure your presentation is to be successful:

- Group presentations require close coordination among group members, thus allow more time for preparation of the material;
- If you are presenting the whole case on behalf of the group, make sure that you are also familiar with those parts that others have contributed;
- Discuss how you're going to split the roles during the presentation;
- Introduce the group members and their contributions briefly;
- Agree the timing for each has to finish (and perhaps develop and signal some symbolic signs to indicate when to finish); and,
- Rehearse several times together.

The first page

The first page of your Powerpoint™ presentation often includes title, author(s), affiliation, venue, etc. Apart from this basic information it conveys, the first page is quite important in that you don't want to give a bad impression of your presentation from the start. Although there is a saying that you cannot judge a book from its cover, some people may quickly judge the quality of your presentation based on the impression that the first page of your presentation leaves. Not many people would be impressed by your first page, but on the contrary it holds also true that once you've messed about in the first page it would be very difficult to revert people's judgement later on.

You may want to create and use your own style; however, if you're presenting to any group of people who are external to the university/research institutes/school, check out whether there are any templates styles recommended for use. For example, the university's templates styles are available on your network drive (eg, f: or h:) in the Corporate Templates folder. If you do not have access to your network drive they are available on the university intranet under Corporate Templates (<http://intranet.salford.ac.uk>). Some of the samples are shown as below:



Message

It is very tempting to overcrowd your slides with many narratives using very small fonts thus you can 'read' the slides. Avoid the temptation, and use appropriately populated message. Adopt the KISS (Keep it Simple Stupid!) principle as far as possible.

Keep the font size as far as possible and choose good colour mix and combinations. You can also utilise paging and animation functions, but maintain consistency. Minimise boredom factor by using graphics sparingly and varying your voice to emphasise certain key points.

Using graphics, pictures and animations

As an old adage goes, 'a picture is worth a thousand words', using graphics, pictures and animations in an appropriate manner can convey a rich message. However, if misused or abused, they can easily offend or distract the audience. Thus, use graphics, pictures and animations only where appropriate.

Some suggestions for overcoming fear:

- Check facilities and gather information on the audience in advance;
- Use interesting quotes or humorous jokes in the beginning;
- Create an informal setting;
- Assume that your audience are on your side;
- Prepare some responses to tough questions or situations;
- Remember that you don't have to answer all the difficult questions on the spot;
- Don't be afraid to say you do not know when you really do not know; and,
- Rehearse several times.

Some tips on delivering conference presentations

Opening

In the opening you 'sell' your research by outlining your presentation, setting the background of your research and introducing key areas. It is much like the abstract of your written paper. In this part, you engage your audience, leave them wanting to know more. For this, you may want to discuss some controversial, unique or strange issues. You can also warm up the audience by introducing the context of research. For example, if the audience are from general fields rather than built environment specific, you may want to introduce the significance of built environment in terms of its contribution to GDP, employment, and national infrastructure. You can also identify the key areas of your research.

Capturing your audience

Although your research may represent a groundbreaking piece of research, do not assume that your audience will automatically show patience and reverence while you're presenting your own case. Your research may be important to you, but should have significance to others. There should be something in it for them! Hence, what is your selling point? How do you sell it? If

you sound dull, your product might be perceived as dull as your voice. You may want to think about how you can keep your audience from being distracted. At least, the following may be considered:

- Your voice
- Body language and eye contacts
- Key points

First, you may need to vary your voice and avoid monotonous speech by reading your material. You can vary your volume, pace, and emphasis during your speech. Not everything needs to be emphasised, and you may have to make sure that the logic of arguments flow naturally. Use your own words and if necessary some anecdotes, analogies, and examples could help bring the material to life.

Second, use your body language fluently. You don't have to be a football coach while you're presenting your research findings! Free your arms and hands as your hands kept in a pocket or finger-biting could be interpreted in certain culture as your incompetence or snobbishness. Take control of your gesture/posture and facial expressions and use them to your advantage. Among others, keeping constant eye contact with the audience is quite important so that you keep inviting them to your presentation. Show that you're communicating with the whole audience rather than leaving an impression that you're talking to the back window or door of the room (although this may be a perfectly appropriate practice if you're delivering a presentation to Idaho native Americans). Relatedly, a particular individual may ask you a question, but you need to attempt to answer everyone.

Third, develop your own style to sell your key points. For example, you can project your voice (but don't shout please), pause, or use repetition. You may pose (or invite) a question to the audience after each key area and engage them (however, if you have to stick to the time limit, it may be prudent to delay questions until the end).

Conclusion and closing

Highlight key points only and keep them simple. Invite the audience to refer to the proceedings for further information. Usually the chair will invite the audience to ask questions at the end of your presentation, so be prepared to answer the questions as far as possible and, if you don't know any particular aspects, acknowledge that you don't know well, and ask the audience, of whom may be able to help.

Presenting your research in conferences is in itself quite important because it can help you:

- Receive feedback from informed audience;
- Increase confidence on what you're researching;
- Have some medium-term goals and deadlines to motivate you;
- Network with other researchers who may be in a similar field and, thus, can help you access other experts or industry contacts;
- Raise your research profile; and,
- Get exposed to future employers.

To plan for conference presentation, seek advice from your supervisor and peers early on and target good relevant conferences.

Summary

This guide has discussed developing your communication and presentation skills and provided some practical tips on preparing and delivering conference presentations. Throughout the guide it is emphasised that you have to understand who your audiences are and what requirements you are expected to follow. Unlike journal papers, although more rigorous standards are often imposed, conference presentations require different skills as you have to respond to your audience instantly and you have to condense your research so that it can be presentable within a limited time frame.

Examples of good practice are abundant, but you can learn a lot from talking to your supervisor and colleagues. You can also practise your presentation skills with your friends, family, or relatives. There are some books which you can consult including the ones in the further reading list, but you may want to develop your presentation skills through lived experience, e.g. presentations in workshops, a small discussion group, or in front of your colleagues. Talk to your colleagues and help each other by reciprocating feedback.

To help you identify which areas you may need to improve, a self-evaluation matrix is provided at the end of this guide. You may want to reflect upon your current level of competency and identify the gaps between the current status and the desired status for this important skill. Although it is designed to help you increase your awareness through self-reflection, you may also want to discuss your concerns with your supervisor and colleagues. Problems are easy to rectify when they are identified at an early stage and shared with others, who may gladly be your helping hands.

Practice makes perfect. Some advice from fellow BuHu postgraduates on developing your presentation skills include the following:

- 'Do some dry runs in front of peers and act upon observations';
- 'Do presentations as much as possible within safe environments to boost the confidence';
- 'As a researcher, I think this aspect is very important. Only way of improving is by practice. Need to take whatever the opportunity you get to communicate with others may be orally or by any other means'

Well, why not consider voluntary presentations for your research or other relevant areas, or even telling your lived experience in BuHu postgraduate workshops? For presenting your research or any other related topics, please contact Dr Dilanthi Amaratunga or Dr Richard Haigh.

Further reading list

General books and guidelines on presentation skills abound. You may speak to other researchers and supervisors to recommend some good books appropriate to your level. The following further reading list provides some general books on presentation skills, which you can refer to:

Blaxter, L., Hughes, C. and Tight, M. (1996) *How to Research*, Open University Press, Buckingham.

Booth, W. C., Colomb, G. G. and Williams, J. M. (2003) *The Craft of Research,* The University of Chicago Press, Chicago.

Education Development Unit (Undated) Study Skills Pack: Presentation Skills, The University of Salford, Salford. (available at http://www.edu.salford.ac.uk/studyskills/sspacks/)

Potter, S. (Ed.) (2002) *Doing Postgraduate Research*, Sage Publications, London.

Robson, C. (2002) *Real World Research,* Blackwell Publishing, Oxford.

Acknowledgements

PowerPoint ™ is a registered trademark of Microsoft®.

This guide has benefited from numerous past presentation materials available within Research Institute for the Built and Human Environment, the University of Salford. Especially, this guide has borrow many ideas from the materials of 1) Ms Catherine Green and Dr Jack Goulding's joint presentation looking at general presentation skills and the use of PowerPoint™ for conference presenting and 2) Dr Dilanthi Amaratunga's presentation on conference presentations – personal perspective, both of which were presented on 12 February 2002.

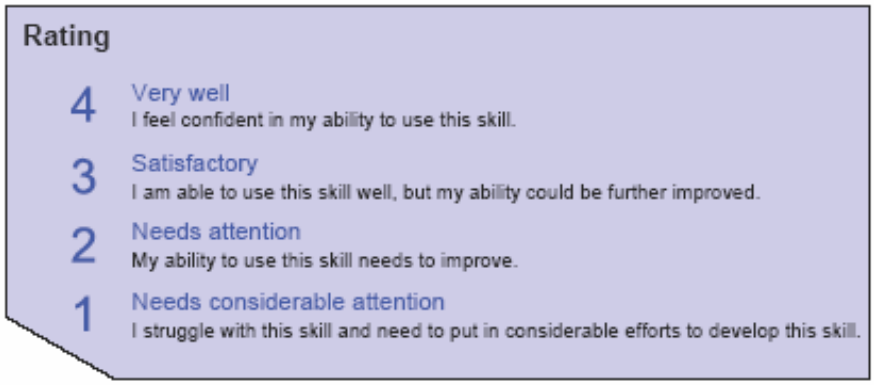
For the self-assessment skills audit, various materials provided valuable insights. Especially, Royal Society of Chemistry's postgraduate skills record and Dr Dilanthi Amaratunga's presentation materials on 'postgraduate skills assessment' delivered on 15 October 2003 were very helpful to construct the audit table.

Further, authors would like to acknowledge the financial assistance received from Centre for Education in the Built environment (CEBE) through its Educational Development Grants Scheme to develop this guide.

Appendix:
Self-assessment for Communication and Presentation Skills

Complete this Skills Audit now and compare progress each year during your PhD. Through this exercise, you would have opportunities to assess your awareness of both strengths and weaknesses. This will form the basis of your supplementary skills profile. Having completed this assessment of your supplementary skills, you may want to set targets for yourself and develop strategy to improve any aspect of the particular supplementary skills. You may want to identify sources of good practice or model which you would like to emulate or learn through experience. Some of the aspects might be discussed during workshop or training sessions in your school, research institute or university, so check with the pertinent websites or student handbook. You may also discuss with your supervisor(s), who can provide you with some help on whether there are opportunities for you to practice your skills.

Rate your ability according to the scale provided as below. As you go through each category, it is useful to think about how you can develop your skills on a short-term as well as long-term basis.



Rate your ability against each statement below:	Rating	Target	Improvement Strategy
I am able to give oral/visual presentations in a setting involving industry audience			
I am able to give oral/visual presentations of my research in my university			
I can give oral/visual presentations of my research at academic/industry conferences			
I can make contributions (questions/ suggestions) that relate to the previous material			
I can participate actively in seminars including giving constructive criticism			
I can effectively use audio-visual materials to support presentations (e.g. Powerpoint, OHT, and/or other audio-visualisation programmes)			
I can give oral presentations to a non-expert audience			
I am able to manage the time given for my presentation			
I am able to use additional functions of Powerpoint software (e.g. animation effects and linking to other files)			
I can introduce myself as well as others in a workshop setting			
I am able to meet a sudden request to shorten or lengthen my presentation			
I listen to other speakers			

Consider your responses above and rate your overall ability for communication and presentation skills	Rating	Target	Improvement Strategy
Communication and presentations skills			

Any problems?

Things I need to improve

Action plan for the next review (set your own review frequency such as quarterly or yearly)

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Developing paper & report writing skills

We all write things in our daily life, be it a simple memo, shopping list, personal diary entry, journal paper, letter of complain, office memorandum, industry reports, and highly academic journal

paper. This is a common form of human communications so permeated that sometimes we take it for granted. Having said that, this guide concerns skills on writing papers and reports as an outcome of our enquiry. Writing is the way you publicise your enquiry. In this regard, there are two key factors you need to consider while you produce papers or reports:

- Who are your intended audiences?
- Are you aware of the conventions or guidelines that have to be adhered?

Visit websites for collecting relevant information on the requirements of your target conference or journal papers. For example, a call for abstracts to be submitted to the 5th International Postgraduate Research Conference can be found from: http://www.research.scpm.salford.ac.uk/irw/

If you are intending to write and submit a journal paper, often the target journal's website contains the instructions for authors submitting papers. For example, manuscript submission requirements for Construction Management and Economics can be found from:

http://www.tandf.co.uk/journals/authors/rcmeauth.asp

An appropriate format for your writing depends on the audiences you intend to address. If you write primarily for the academic audiences, it is likely that you have to adhere to a conventional academic journal format. For non-academic audiences, other formats may well communicate better. The purpose of writing may differ, but in general it is to inform and influence several different audiences. Thus, it is unlikely that all the audiences will find the style of report or paper appealing to the same degree. Even though some audiences may have less strict rules, you have to show your professionalism and achieve what you intend to do.

In general, you have to follow certain strict rules when you write for academic audiences. There is an increasing acceptance on unconventional formats especially in phenomenological and ethnographic studies; however, if you are writing traditional scientific academic papers, you have to be ready to meet the expectations and conventions of those audiences. Typically journals have their requirements for potential contributors at the end of each journal issue (and/or in their websites). Similarly, requirements for submitting conference papers are announced by the conference organisers in the call for abstracts. The more you adhere to their requirements, the more likely your paper gets accepted!

Although requirements for a particular journal or conference vary, you will need to answer the following questions:

- Is this an appropriate journal/conference for my paper? (Ask your supervisor if in doubt).
- Is my paper within the word limits of the journal/conference?
- Did I follow the journal/conference's instructions on referencing?
- Is my title reflecting the main arguments of my paper?
- Did I follow the journal/conference's instructions on spacing, numbering of chapters, tables, figures, and paging?
- Are there any grammatical, typographical, or logical errors? (Perhaps you and your colleagues can help each other).

Writing as a learning process

There are abundant sources of tips and guidelines how you can learn to write, but this guide is not written for repeating the same advice you can find in those books and texts. You're strongly encouraged to consult those books if you are in need of improving writing skills *per se*. Here what we would like to highlight is writing something (or anything) regularly can help you to improve your learning skills, e.g. to construct arguments in a logical manner, to acknowledge criticism and weaknesses, and to synthesise ideas and claims put forward by other authors.

Writing something regularly during your course of study will help you to make your arguments sharper and facilitate your self-reflection on the process, content, direction, or context of the study. With similar reasons, your supervisor may also encourage you to write and submit reports prior to regular meetings, during which you can discuss your progress and direction of the study.

Remember that your supervisor cannot comment on blank sheets, so do not delay writing until your final year in which you have to write your chapters!

As one PhD student comments,
'Write extracts and get peers/supervisor to review.'
It is always good to check whether you can make your readers understand what you want to tell them. One reality check can be asking your family members or friends to read your paper and check whether your paper makes sense. Even though they may not be an expert in your chosen area of study, they can provide some external views and insights on your writing. You may also organise peer group which can share ideas and help each other proof-read or provide constructive criticism.

Writing as communication

Writing is also an important vehicle which enables you to communicate with others. You may mainly use verbal texts in papers or reports to communicate with others, but as an old adage says 'one picture may be worth a thousand words.' An appropriate use of visual techniques to produce graphs and tables can help the readers understand your arguments more clearly. If you need to improve visualisation skills, do so early in your course of study. Mastering some ICT tools takes some time (often longer than you thought) and practice. Check which software packages are available within the university and, if you require a specialist software package essential to your study, discuss availability with your supervisor as early as possible.

Predicting what entails in your study during the early days would be rather difficult. Read other theses, conference papers, journal papers, and reports and ask yourself whether you can use some software packages proficiently to produce similar effects. Also there may be some conventions you have to follow in order to draw certain types of graphs, diagrams, figures or maps (e.g. process maps, cognitive maps, rich pictures, or loop diagrams). Familiarise yourself with the conventions and the software package you're planning to use.

You may also need to learn jargons or terminologies that are accepted within the academic and industry community. Some words or phrases have different meanings when used in academia than everyday usage. Make sure that you understand the meaning of certain frequently used words or phrases and when to use them. Of course, you need to be 'multi-lingual' and adjust your tone and vocabulary if you have to deal with various audiences coming from a whole range of backgrounds.

Writing as a motivator

If you are writing a conference or journal paper for the first time, it is seldom the case that your paper will be accepted as it is. Don't be discouraged by the comments or feedback you receive from your supervisor, referees, or colleagues. There are natural born writers, but most of us need to go through the same paper several times to revise until we produce its final version.

If it is a thesis or a long piece of writing, then it is doubtful you just write the whole chunk straight away. Therefore, it may be helpful to divide your thesis or the piece of writing into manageable parts. Once you start write some parts of it, you may have a better sense of how long it would take to complete the whole. Devise a realistic plan to complete your paper or report, and don't be surprised that it takes much longer than you thought. Writing a conference paper or report during your course of study can thus act as a motivator for you, as you may have to complete your writing by the deadline set by the conference organiser or your supervisor. It also helps you to meet peers from various universities (or even your future employer!). Submitting a number of journal papers to prestigious journals can also significantly enhance your employability within and beyond the university.

Develop your synopsis of your paper or report, and allocate certain time to develop your ideas. If you're using a word processor such as MS Word®, you may find it useful to use a document map (you may have to define and use styles) showing the structure of your paper. It is always easy to look at trees but get lost in a forest!

A Lecturer who recently completed his PhD used a mind map to identify which areas his thesis covers and does not cover, and also figure out the interrelationships between his key research areas. The mind map provided him with a focus so that he can develop his arguments bits by bits but at the same time maintain coherence of the whole thesis.

Writing as an outcome

Are you familiar with the department, school, university requirements for writing during your course of study? For example, you need to write your learning agreement at an early stage and also you will have to submit your interim report between 12-15 months (if full time PhD) since the inception of your study. Your thesis/dissertation at the end of your PhD or other postgraduate programmes will constitute a significant part of your study. Although these tangible outcomes are just part of your programme, they form an important part to evaluate whether you have achieved certain level of competence in your chosen field. Be aware that there are certain minimal requirements set down to which you have to adhere when compiling these interim or final documents. You must check those regulations before you start writing in order to ensure that you do not violate any part of them. As the regulations set out minimal requirements, you have to choose your own style and way of handling other non-specified items. Whatever style you choose, ensure that there is a consistency throughout your paper or report. Avoid mixing different styles, which can easily distract your readers. Perhaps you would like to check a couple of papers, reports, or theses and have a good understanding of what your reader may expect.

Increasingly studies in the Built Environment discipline are conducted in a multi-disciplinary and interdisciplinary environment. As such, sometimes you may have to understand the requirements may vary depending on from which perspective you are approaching to your research questions. Again, it is important to understand your target audiences. Attend workshops or other training programmes where you can meet some editors, educators, industrialist, and policy makers who may advise you on type of content, style, and evidence they are looking for. Also talk to your supervisor and colleagues and learn from their experiences. Unfortunately, there is no royal road to master craft skills such as writing without practice. Be ready to learn from what others say and develop your own style and skills.

Summary

This guide has reviewed importance of developing paper and report writing skills and presented four different but complementary perspectives on writing: a learning process; communication; a motivator; and an outcome. Throughout the guide it is emphasised that you have to understand who your audiences are and what requirements you are expected to follow. You have to balance your creativity *vis-a-vis* discipline in your writing. An appropriate balance of the two will depend on the target audience group; hence, make yourself familiar with different requirements suitable for different audiences. Examples of good practice are abundant, but you can learn a lot from talking to your supervisor and colleagues. Regardless of its length and its audiences, writing something within academia is difficult but provides a rewarding experience. Students who would like to develop writing skills are strongly encouraged to consult other books including the ones in the further reading list. To help you identify which areas you may need to improve, a self-evaluation matrix is provided at the end of this guide. You may want to reflect upon your current level of competency and identify the gaps between the current status and the desired status for this important skill. Although it is designed to help you increase your awareness through self-reflection, you may also want to discuss your concerns with your supervisor and colleagues. Problems are easy to

rectify when they are identified at an early stage and shared with others, who may gladly be your helping hands.

Further reading list

General books and guidelines on how to write papers and reports abound. You may speak to other researchers and supervisors to recommend some good books appropriate to your level. The following further reading list provides some general books on writing, which you can refer to:

Anderson, J. and Poole, M. (1998*) Assignment & Thesis Writing*, John Wiley & Sons, Brisbane.

Booth, W. C., Colomb, G. G. and Williams, J. M. (2003) *The Craft of Research,* The University of Chicago Press, Chicago.

Peck, J. and Coyle, M. (1999) *The Student's Guide to Writing: Grammar, Punctuation and Spelling,* MacMillian, London.

Robson, C. (2002) *Real World Research,* Blackwell Publishing, Oxford.

Acknowledgement

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Appendix:
Self-assessment for Report and Paper Writing Skills

Complete this Skills Audit now and compare progress each year during your PhD. Through this exercise, you would have opportunities to assess your awareness of both strengths and weaknesses. This will form the basis of your supplementary skills profile. Having completed this assessment of your supplementary skills, you may want to set targets for yourself and develop strategy to improve any aspect of the particular supplementary skills. You may want to identify sources of good practice or model which you would like to emulate or learn through experience. Some of the aspects might be discussed during workshop or training sessions in your school, research institute or university, so check with the pertinent websites or student handbook. You may also discuss with your supervisor(s), who can provide you with some help on whether there are opportunities for you to practice your skills.

Rate your ability according to the scale provided as below. As you go through each category, it is useful to think about how you can develop your skills on a short-term as well as long-term basis.

Rating

4	Very well I feel confident in my ability to use this skill.
3	Satisfactory I am able to use this skill well, but my ability could be further improved.
2	Needs attention My ability to use this skill needs to improve.
1	Needs considerable attention I struggle with this skill and need to put in considerable efforts to develop this skill.

Rate your ability against each statement below:	Rating	Target	Improvement Strategy
I can use particular reporting styles appropriate for the purpose and target readership of the report (e.g. progress reports, industry reports, or thesis)			
I know generic requirements for writing conference and journal papers.			
I can construct coherent arguments and articulate ideas clearly to a range of audiences			
I can effectively defend research outcomes and choice of certain methodologies.			
I can take constructive feedback from peer reviews and incorporate them in producing a revision			
I can effectively use word-processing software packages for a long document (e.g. using style, page numbers, section breaks, or cross referencing)			
I can present my research in poster sessions			
I am able to contribute to Newsletters (electronic or hard copy)			
I am able to write introductory notes on my research topic to a non-expert audience			
I am able to use various techniques to visualise my concepts and ideas			
I can produce informative summaries on research topics			
I can produce a meeting memo from discussions with industrialists			
I can create and use tables, diagrams, graphs and sketches to illustrate arguments			

Consider your responses above and rate your overall ability for paper/report writing skills	Rating	Target	Improvement Strategy
Paper/report writing skills			

Any problems?

Things I need to improve

Action plan for the next review (set your own review frequency such as quarterly or yearly)

University of Salford
A Greater Manchester University

Supplementary Skills for Built Environment Researchers

Guide to teamwork and leadership skills

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Supplementary Skills for Built Environment Researchers

Guide to teamwork and leadership

Introduction

This guide to teamwork and leadership skills for Built Environment researchers is prepared to provide some tips on how to enhance your skills and competencies during your course of study. This is an outcome of a Centre for Education in Built Environment (CEBE) funded project, called SuSi-BER (Supplementary Skills for Built Environment Researchers) conducted within the Research Institute for the Built & Human Environment, the University of Salford.

There have been repeated calls for enhancing research and supplementary skills of the built environment researchers. Few would disagree that deepening specialised knowledge-base and wider skills of researchers in a variety of disciplines are prerequisite for developing successful leadership in higher education, the public sector and industry. We believe that, there is ample room for improvement in developing supplementary skills for quality research and researchers in the built environment. Further, as the modern society is changing in an unprecedented pace, you as an individual might realise the need to develop skills and competencies on a continual basis.

In this context, the project has been focusing on creating a foundation for creating, developing, and exploiting knowledge of supplementary skills for various activities of the built environment researchers. The project has identified and classified generic and transferable skills under the following six broad themes.

- paper / report writing skills;
- communication and presentation skills;
- personal development, professional competence, judgement and confidence;
- planning, organising, and time management;
- critical thinking and problem solving; and,
- team work and leadership.

There would be a guideline for each theme and an overall guideline for developing supplementary skills. The guides are written for everyone who is engaged in the Built Environment research, particularly postgraduate researchers reading for academic qualifications, e.g. MSc or PhD.

There is a wealth of information on each topic already available elsewhere, be it written or embedded in practice at various institutions. Due to space limitations, this guide does not provide comprehensive and exhaustive advice on each topic. Instead, this guide will provide some examples and practical tips that can help you to understand what developing each skill entails. It is hoped that this generic guide will stimulate you to think or rethink your chosen course of study as not just acquiring a qualification or passive learning experience of gaining some specialist knowledge on a research topic, but also as a process of developing you as a competent professional who can solve problems and contribute to the body of knowledge during the course of your study as well as for your future career.

This guide is thus intended to provide a foundation for which you can start with and as a common frame of reference to facilitate knowledge sharing among fellow students. For those of you who are interested in exploring further on particular topics, a reading list is provided at the end of each guide. Also remember that these supplementary skills need practice and you will learn through experience as well as reading some good materials. Like learning craft skills, we suggest that, as a starter, you emulate how other model people do and adapt their style and behaviour to suit your particular needs and style.

Developing teamwork and leadership skills

Undertaking postgraduate research is often wrongly regarded as a personal enterprise that has nothing to do with teamwork and leadership. Teamwork and leadership skills are as important as other skills and competencies such as *inter alia* writing and communicating skills. This is because your study involves managing various stakeholders such as funding bodies, family and relatives, friends, colleagues in the university, peers in the same or similar research field, research participants, supervisor(s), and many more! Your ability to lead and work as a team will be a great asset not only to successfully complete your study but also to your future employer (even much more so if you intend to be a freelance, self-employed, or entrepreneur).

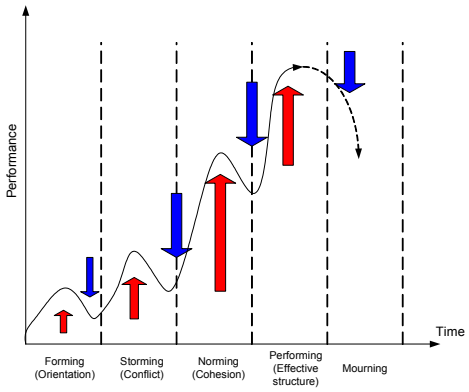
Given the importance of teamwork and leadership during and beyond the course of your study, developing relevant skills should start immediately. You don't have to be an expert of team working and leadership, but you can train yourself to become a successful teamworker and leader. This requires not just understanding how you can improve your own performance but also being sympathetic to the needs and wants of others. In other words, improving leadership and teamwork skills require exposure to first-hand experience of leading and working in a team as well as being a good listener to others.

Establishing and building upon teamwork skills

Teamwork is an interesting topic whose discussion can last hours and hours, and page after page. Instead of discussing all technicalities of teamwork in various settings, we offer a team building process model to illustrate why this issue is important and what are the issues that you might have to effectively deal with.

Some researchers suggest that teambuilding process goes through several stages to mature the relationships among members. These stage models often argue that the more mature the team, the better its performance. Although the stage models provide some insight on how teams form and develop, not all teams develop as linearly as often suggested. Besides, group dynamics, team member attributes and interactions among them, and various other factors can effectively reduce the team's performance at any stage.

Instead of the rigid stage model, based on Sommerville and Dalziel's (1998) teambuilding model, the following figure presents a fluid and more realistic model showing that teams work together towards a (or several) common objective. The process can be viewed as going through several fluid phases of development, where enabling forces can facilitate the process; whilst restraining forces can impede the process. The indicated phases are: forming, storming, norming, performing, and mourning (if the team dissolves at the end just like project teams in construction).



Forming is the starting phase of team, where needs of achieving certain objectives or goals are identified and appropriate team members are selected or allocated. The next storming phase is where conflict might arise due to uncertainty, disagreement, hostility, tension, different personal values, conflicting ambitions, different personal dispositions, or resistance to cooperate. Once the personal differences are resolved or the consequent problems are mitigated, the team builds up cohesion through consensus, accepting its leader, understanding interdependence, accepting team standards and rules, and accommodating the situation as the benefits of cooperation might be bigger than its related loss. However, these behaviours are necessary but not sufficient to produce the target performance successfully. Team members often need to go beyond this so that they reach the performing phase. The team performance is enhanced through openness, trust, flexibility, assuming wider roles and accountabilities, mutual respect and

assistance, and taking one's own initiatives. Finally, when the time comes to dissolution of the team, members might 'mourn' and display openness, sadness, longing, and revisiting.

What makes a team more successful than others continuously attracts high research interest but we do not intend to delve much into that in this guide. However, there is a general consensus that the quality of interactions among members and their teamwork as well as (if not more important than) the quality of specific individuals affects team performance outcomes, day-to-day management, and continual growth of the team. In other words, teamwork has an important bearing on motivation and ultimately team performance.

The implication of this is that, regardless of which team you are working with (be it you and your supervisor, your colleagues sharing the same office with you, your research or project team comprising diverse stakeholders, friends, or simply your flatmates), you need to pay attention to the team dynamics and do not take good teamwork for granted. Further, don't assume that other members of your team necessarily share the common vision and have the same propensity as you to choose options for solving problems. Effective goal setting, selecting appropriate members, consensus building, negotiation, leadership, and managing needs and expectations of stakeholders are important means to lubricate the teambuilding process.

Establishing and building upon leadership skills

Leadership skills are complementary to teamwork skills. They are not mutually exclusive and the challenge to postgraduate researchers will be to switch between teamworker and leader modes depending on the situation. During the course of study or your research project, you might predominately work as a team member and this mode may suffice to produce desired results. At other times, however, you are expected to show your leadership and shape the team and provide directions. Both are equally important and challenging.

Leadership is another topic that management students have extensively been studying. Yet, there is no universal agreement on what makes a good leader. In this guide, we take a contingent approach of leadership. That is, leadership effectiveness is depending on the context. Burns (1978), offers a contextual view of management vs leadership [see below table, source: Burnes (2000: Table 16.2)].

	Transactional management	Transformational leadership
Creating the agenda	Planning and budgeting: developing a detailed plan of how to achieve the results	Establishing direction: developing a vision that describes a future state along with a strategy for getting there
People	Organising and staffing: which individual best fits each job and what part of the plan fits each individual	Aligning people: a major communication challenge in getting people to understand and believe the vision
Execution	Controlling and problem solving: monitoring results, identifying deviations from the plan and solving the problems	Motivating and inspiring: satisfying basic human needs for achievement, belonging, recognition, self-esteem, a sense of control
Outcomes	Produces a degree of predictability and order	Produces changes – often to a dramatic degree

The table distinguishes transactional management and transformational leadership. This approach argues that the effectiveness of management-leadership styles is dependent upon two basic contexts, convergent and divergent. Burns contend that appropriate management-leadership styles should match the prevailing context. A *convergent* state refers to when the team or organisation is operating under stable conditions. Most notably, this means where the group has set and agreed goals and when the environment

(both internal and external) is predictable. In this state, transactional management is likely to be more effective. In contrast, a *divergent* state means that the group confronts a significant change(s) in the environment and thus the efficacy and appropriateness of its established goals and means are under serious doubt. Transformational leadership is argued as the most appropriate leadership style in this situation.

The contingent view of leadership is very intuitive, as we see some brilliant leaders in one time in the history become miserably powerless leader in another. However, this contingency view of leadership has not gone without challenge. For example, Kanter (1989) argues that increasingly successful leaders will have to possess both transactional and transformational management-leadership styles. Indeed, conducting research involves uncertainty and the modern society is changing rapidly. The challenge of postgraduate researchers during the course of study and future career will be to sense when to switch from transactional management to transformational leadership, and vice versa.

Summary

This guide has discussed teamwork and leadership skills. We proposed that you have to possess appropriate teamwork and leadership skills in order to succeed in your course study and future career. Both skills are complementary. In order to achieve desired results, we have argued, you need to sense when you need to switch your role as a teamworker or manager/leader. We have also argued that sticking to one management/leadership style may not be always effective and thus you need to take a flexible approach depending on the situation.

Some of you might have already accumulated some knowledge on teamwork and leadership. Or, you believe that you are a born teamworker/leader. We don't intend to resolve the continuing question whether these skills are nature or nurture; however, we believe that conscious efforts to develop related skills will help you to improve your ability to work in a team setting and to lead others.

Further Reading List

General books and guidelines on teamwork and leadership abound. You may speak to other researchers and supervisors to recommend some good books appropriate to your level. The following further reading list provides some articles and books on teamwork and leadership which you can refer to:

Burnes, B. (2000) *Managing Change: A Strategic Approach to Organisational Dynamics*. Financial Times/Prentice Hall, London.

Burns, J.M. (1978) *Leadership*. Harper & Row, New York.

Kanter, R.M. (1989) *When Giants Learn to Dance: Mastering the Challenges of Strategy, Management, and Careers in the 1990s*. Unwin, London.

Kotter, J.P. (1990a) *A Force for Change: How Leadership Differs from Management*. Free Press, New York.

Kotter, J.P. (1990b) *What leaders really do*, Harvard Business Review, May-June.

Manktelow, J. (2004) *MindTools: Essential skills for an excellent career*, Mind Tools, West Sussex.

Paulus, B. (1983) *Basic Group Processes*, Springer-Verlag, New York.

Sommerville, J. and Dalziel, S. (1998) Project teambuilding – the applicability of Belbin's team-role self-perception inventory, *International Journal of Project Management*, 16(**3**), pp. 165-171.

Tosi, H.L., Rizzo, J.R. and Carroll, S.J. (1990) *Managing Organisational Behaviour*, Harper and Row, New York.

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Appendix:
Self-assessment for Teamwork and Leadership Skills

Complete this Skills Audit now and compare progress each year during your PhD. Through this exercise, you would have opportunities to assess your awareness of both strengths and weaknesses. This will form the basis of your supplementary skills profile. Having completed this assessment of your supplementary skills, you may want to set targets for yourself and develop strategy to improve any aspect of the particular supplementary skills. You may want to identify sources of good practice or model which you would like to emulate or learn through experience. Some of the aspects might be discussed during workshop or training sessions in your school, research institute or university, so check with the pertinent websites or student handbook. You may also discuss with your supervisor(s), who can provide you with some help on whether there are opportunities for you to practice your skills.

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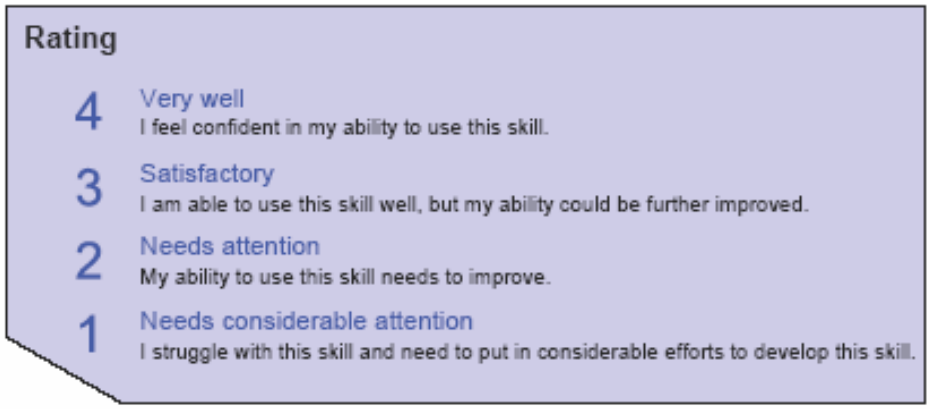

Rate your ability against each statement below:	Rating	Target	Improvement Strategy
I am able work as part of a research team			
I can work with colleagues in a shared office and behave in a considerate manner			
I can assist colleagues in an area or technique that others may want to learn			
I am able to work with my supervisor(s) to further my progress in research			
I am able to network with peers within and across universities and industry			
I can network with peers nationally and internationally			
I can assist undergraduates as a mentor, graduate teaching assistant, guest lecturer, or demonstrator			
I can lead group seminars or workshops in my area of research			
I know requirements of professional bodies where I (want to) belong and comply with them			
I can construct and contribute to problem solving solutions for successful teamwork			
I can communicate effectively at the interpersonal and organisational level, and in doing so resolve or mitigate conflict			
I am apt at setting direction and motivate others to achieve common goals			
I can analyse different needs and wants of stakeholders of my research and act upon resultant knowledge			

Consider your responses above and rate your overall ability for teamwork and leadership	Rating	Target	Improvement Strategy
Overall teamwork and leadership skills			

Any problems?

Things I need to improve

Action plan for the next review (set your own review frequency such as quarterly or yearly)

University of Salford
A Greater Manchester University

Supplementary Skills for Built Environment Researchers

Guide to planning, organising, and time management

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Supplementary Skills for Built Environment Researchers

Guide to planning, organising and time management

Introduction

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Developing planning, organising, and time management skills

As with other skills, planning, organising and time management skills are essential for researchers to successfully achieve the goal of their research

or project. According to the survey conducted under this project, planning, organising, and time management skills are perceived the most important skills just next to critical thinking and problem solving skills. However, these skills are not used as fluently as their importance may indicate. There is a clear gap to be filled, and some practical tips on how you can systemically plan, organise and manage time can make a big difference.

This guide concerns skills on how to plan, organise, and manage time during your course of study. There are various ways to acquire and improve your planning, organising, and time management skills.

First of all, this entails that you learn from doing and also from observing how other people are doing. Second, you need opportunities to practice these skills. This means that it is necessary for you not only to learn some basic skills but to apply those in day-to-day situations. Third, abundant materials are already available and you may get practical advice on it. Even if it may not be your sole objective to be an expert in planning, organising and time management skills, these are fundamental life skills which are easily transferable to many situations. Sharpening your skills and be prepared to exploit them during your course of study will put you in a better position to demonstrate the demonstrable skills to your future employees or customers.

When asked from the participants in the survey of this project, some of good practices are identified and put forward as follows:

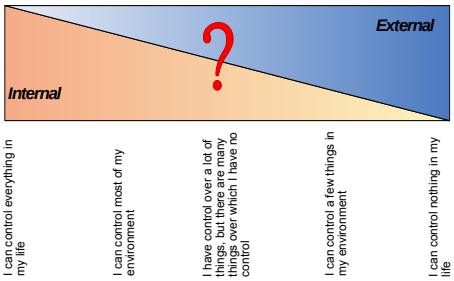
- Draw a plan with targets and try and stick to it. See why you could not and adapt accordingly. Keep testing; and,
- Prioritise the tasks according to the deadlines and importance.

The above recommendations are valid in many occasions. However, there are other aspects of planning, organising, and time managing. In this guide, some practical tips are provided to help you use those in practice.

This guide is intended to give some (rather than exhaustive) practical advice and at the end some self-assessment questions through which you can identify gaps in your skills and devise an action plan to reach your desired level. For those who are interested in developing planning, organising and time management skills, further reading list is also provided.

Planning, organising and time management for research

There is a wide variance of approaches towards planning, organising, and time management. Of course, there is no one best way to deal with these issues. Further, there are some personal (and cultural) differences in terms of sense of control as shown in the below figure. The figure shows a continuum between two extremes: one is internal, which shows a person has belief that he/she can control everything in his/her life; the other is external, which represents a person's attitude towards the course of action is fixed as everything is pre-determined and the person merely tries to respond to the varying circumstances.



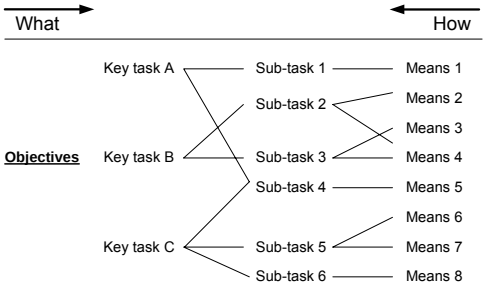
You might want to keep your own particular approach to control and manage your own research throughout the period. If it fits you and it works well to help you achieve your objectives, then by all means adopt your own way. This guide is not meant to give you 'the' right solution, but to present a systematic method which can be also considered for use.

Key planning questions

Sometimes you have only one big task to do in a day; however, most of the time we have a big task spanning several months or even years of time horizon, such as a PhD! Whether it is an overall planning for the PhD, or for a smaller scale project or task, you may want to ask the following key planning questions:

- Why should it be done?
- What has to be done?
- When should it be done?
- Who should do it?
- Where should it be done?
- What priority should it have?
- How much time will it require?

The purpose of asking the above questions are to ensure that you have a full understanding of the nature of problem, project, or questions that you're dealing with. Once you have answered the above questions, the next step might be listing a few key tasks to achieve your objectives. In some cases and stages, this list of key tasks and their anticipated duration for each might suffice. However, if you want to build upon the list of key tasks and develop to a more detailed plan, you need to flesh your initial list of key tasks with more specific ideas that can be enacted. At this stage, 'what-how' analysis can help you identify sub-tasks and means to achieve your objectives. The below figure illustrates the way 'what-how' analysis can be conducted. On the left side, jot down your objectives and key tasks. On the opposite side, you identify sub-tasks and means to achieve the objectives.



Estimating time: master and detailed programmes

In order to develop a realistic and useful plan, you need to ensure that you fully understand what you want to or have to achieve. Sometimes this might be a straightforward task, but oftentimes you need to cope with uncertainties. As each research or project will be different from the others, you need to develop your plan taking into account of idiosyncrasies of your research or project.

Once you have completed producing a list of key tasks, allocate approximate timescale for each key task and adjust as necessary. Hardly these tasks will be sequential, but overlapped. Also some tasks will be on-going, for example, literature review, until you write up your thesis. Thus, allow sufficient time for each key task and anticipate surprises! This will form your overall or master PhD programme. Once you have developed your master programme, it will be prudent of you to review it periodically (say, quarterly or biannually) by yourself and/or with your supervisor in order to check your progress against your master programme.

The master programme will only broadly indicate how you're progressing against it. Each item will also involve several sub-tasks, for example, literature search and review will entail identifying relevant bodies of knowledge, comparing different schools of thought, and synthesising the literature for producing a research framework, etc.

Once you have a list of relevant sub-tasks that you want to achieve, think about how long each sub-task will realistically take to complete. Allow sufficient time for other relevant activities for each task. For example, conducting fieldwork might include developing interview schedule, liaison with external collaborators, interviewing key participants, transcribing interview data, collecting relevant documents, sending transcripts to participants, and holding a workshop.

The time required to complete these sub-tasks will vary depending on some factors such as each individual postgraduate researcher's own experience, clarity and type of research questions, availability of previous literature, the chosen methodology, mode of study (full-time, part-time, split-site, or work-based), and other individual circumstances. As conducting research always entails uncertainty, it will be appropriate to take into account of some contingent factors (e.g. holidays, interruptions, internal meetings, and computer breakdowns!) so that you can cope with unanticipated events and consequences.

Once you have allocated sub-tasks and their expected time to complete, this will form your detailed programme. Speak to your fellow researchers who have gone through the process already and get informed advice on your time estimate for each key and sub-task. You may want to check your progress periodically, say monthly or fortnightly, and adjust your programme according to the real progress. Reward yourself if

you have achieved planned activities successfully, or devise catch-up plans if you have missed some important deadlines.

Scheduling

As your study might involve interviewing participants, visiting sites, or having regular meetings with your supervisor, always check other concerned people's schedule and incorporate their schedule into your programmes. It would be unwise to plan to have interviews in, say, mid December when most of the people are busy compiling annual reports or packing for seasonal holidays. Always treat other people's time as valuable as (if not more valuable than) yours, and be considerate.

If your programmes are not complicated, you do not have to use tools such as Gantt charts or critical path diagrams. Use simpler timetables and action plans, if more appropriate and sufficient.

Payoff vs priority: producing 'prioritised to do lists'

It is fairly easy to produce a 'Things to Do' list. However, not all things have equal levels of payoff and priority. Therefore, each item on the 'to do' list needs to be reviewed based on their potential payoff and priority. This exercise will help you produce 'Prioritised to Do' lists.

High payoff items are those that give us the most payoff towards our goals/objectives. This is different from those that need to be done in urgency, but have little or nothing to do with achieving our goals/objectives. High priority items are those that are urgent. This might coincide with high or low payoff. It is important not to undertake all tasks in the 'to do' list in a sequence.

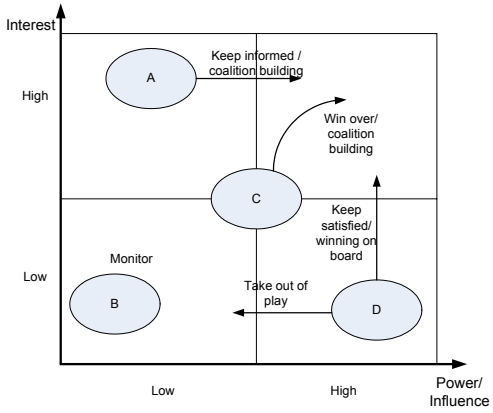
Set up your own system of dealing with payoff and priority of your tasks. For example, you can rate highest payoff items as '5', while lowest payoff items '1'. In terms of urgency (priority), you can allocate the most urgent tasks as '3' and the least urgent tasks as '1'. Multiply the two scores of each task and prioritise the list of tasks accordingly. The tasks with the highest score need to be tackled first. If you are not able to complete all the tasks, focus on those with highest composite scores.

Alternatively, you may just want to use a simpler version of prioritised 'to do' lists. In this case, allocate scores according to the payoff potential (say, 1-5) and focus on those with high scores and leave others until you are able to deal with. Don't worry too much if those with low payoff scores are piled up. If you need to tackle certain tasks urgently, raise payoff scores for those so that you can deal with them accordingly.

Managing stakeholders

During your course of study, it will directly and indirectly involve people. This is very much so if you're carrying out case studies or action research in real life settings. In this case, planning and organising become more complicated and you have to accommodate various expectations of your project or research stakeholders. If you can accommodate them all, it is fine. However, if there is a need to devise a strategy in order that you can carry out your research or project, then stakeholder analysis might help you do that.

Some of your project or research stakeholders wield considerable power to influence the whole direction and progress of your research or project, and they could be your strong supporters. Equally, the opposite is also possible, in other words, they can block the progress of your research or project. Some stakeholders are important, but their concerns are marginally related to your research or project. You can classify your stakeholders in terms of their power/influence and their attitude/interest, and map out in a grid as shown below.



The above figure depicts four groups of stakeholders who have varying degrees of power/influence and interest. Group D exerts the

most powerful influence, however their interest is low. In this case, you have to either satisfy them or winning them on board so that they can support what you're trying to do. Otherwise, make sure that they are taken out of play so that your project/research can progress safely. Group A has low power, but high interest. You need to keep them informed on the progress or turn them into your coalition. Similarly, win over Group C or build a coalition with them. Lastly, Group B requires minimum effort to manage their expectations; however, monitor any change in their power or interest status.

Summary

This guide has discussed developing your planning, organising, and time management skills. This is another important area which might determine the success of your research/project. Several tools are presented as an example of good practice in planning, organising and time management.

It will be helpful to get advices from your supervisor or your colleagues who have gone through the process. There are many books offering practical tips on how you can improve planning, organising and time management skills. A few of them are listed in the further reading list.

To help you identify which areas you may need to improve, a self-evaluation matrix is provided at the end of this guide. You may want to reflect upon your current level of competency and identify the gaps between the current status and the desired status for this important skill. Although it is designed to help you increase your awareness through self-reflection, you may also want to discuss your concerns with your supervisor and colleagues. Problems are easy to rectify when they are identified at an early stage and shared with others, who may gladly be your helping hands.

Further reading list

General (and specialist) books and guidelines on planning, organising, and time management skills abound. You may speak to other researchers and supervisors to recommend some good books appropriate to your level. The following further reading list provides a few books which you can refer to:

Blaxter, L., Hughes, C. and Tight, M. (1996) How to Research, Open University Press, Buckingham.

Burns, T. and Sinfield (2003) *Essential Study Skills: The complete guide to success @ university,* Sage Publications, London.

Manktelow (2004) *Mind Tools: Essential skills for an excellent career*, Mind Tools, West Sussex.

Potter, S. (Ed.) (2002) *Doing Postgraduate Research*, Sage Publications, London.

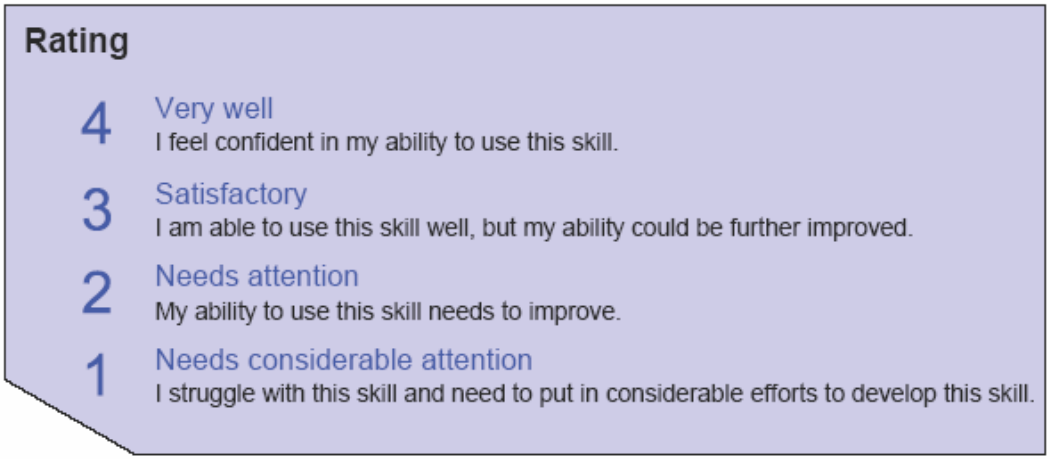
Acknowledgement

Authors would like to acknowledge the financial assistance received from Centre for Education in the Built environment (CEBE) through its Educational Development Grants Scheme to develop this guide.

Appendix:
Self-assessment for Planning, Organising and Time Management Skills

Complete this Skills Audit now and compare progress each year during your PhD. Through this exercise, you would have opportunities to assess your awareness of both strengths and weaknesses. This will form the basis of your supplementary skills profile. Having completed this assessment of your supplementary skills, you may want to set targets for yourself and develop strategy to improve any aspect of the particular supplementary skills. You may want to identify sources of good practice or model which you would like to emulate or learn through experience. Some of the aspects might be discussed during workshop or training sessions in your school, research institute or university, so check with the pertinent websites or student handbook. You may also discuss with your supervisor(s), who can provide you with some help on whether there are opportunities for you to practice your skills.

Rate your ability according to the scale provided as below. As you go through each category, it is useful to think about how you can develop your skills on a short-term as well as long-term basis.



Rate your ability against each statement below:	Rating	Target	Improvement Strategy
I can identify and articulate the aim and objectives of my research or project			
I can set intermediate milestones in pursuit of the goals and objectives of my research or project, and produce short-term as well as long-term plans			
I can generate and evaluate alternative strategies to achieve the objectives of my research or project			
I can identify, analyse and manage the stakeholders of my research/project			
I am able to ensure timely completion of the project			
I am able to identify, analyse and manage risks involved in my study or project			
I am able to operate a daily planning system			
I can accommodate some changes and exploit emergent opportunities during the course of study or project			
I take uncertainties into account and have a sound contingency plans			
I can prioritise things to do in terms of urgency and importance			
I am able to balance my research and social time			
I can reflect on the past and put the lessons learnt in action for the future			
I am able to locate and collect all relevant information in the library			
I can identify and access appropriate bibliographical resources, archives and other relevant sources of information			
I can use a systematic method to keep up to date with the state-of-the-art literature			
I can use information technology effectively for producing, storing, managing, retrieving, analysing, and presenting data			

Consider your responses above and rate your overall ability for planning, organising, and time management	Rating	Target	Improvement Strategy
Planning, organising, and time management			

Any problems?

Things I need to improve

Action plan for the next review (set your own review frequency such as quarterly or yearly)

University of Salford
A Greater Manchester University

Supplementary Skills for Built Environment Researchers

Guide to personal development, professional competence, judgement and confidence

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Supplementary Skills for Built Environment Researchers

Guide to personal development, professional competence, judgement and confidence

Introduction

This guide to paper/report writing skills for Built Environment researchers is prepared to provide some tips on how to enhance your skills and competence during your course of study. This is an outcome of a Centre for Education in Built Environment (CEBE) funded project, called SuSi-BER (Supplementary Skills for Built Environment Researchers) conducted within the Research Institute for the Built & Human Environment, the University of Salford.

There have been repeated calls for enhancing research and supplementary skills of the built environment researchers. Few would disagree that deepening specialised knowledge-base and wider skills of researchers in a variety of disciplines are prerequisite for developing successful leadership in higher education, the public sector and industry. We believe that, there is ample room for improvement in developing supplementary skills for quality research and researchers in the built environment. Further, as the modern society is changing in an unprecedented pace, you as an individual might realise the need to develop skills and competencies on a continual basis.

In this context, the project has been focusing on creating a foundation for creating, developing, and exploiting knowledge of supplementary skills for various activities of the built environment researchers. The project has identified and classified generic and transferable skills under the following six broad themes.

- paper / report writing skills;
- communication and presentation skills;
- personal development, professional competence, judgement and confidence;
- planning, organising, and time management;
- critical thinking and problem solving; and,
- team work and leadership.

There would be a guideline for each theme and an overall guideline for developing supplementary skills. The guides are written for everyone who is engaged in the Built Environment research, particularly postgraduate researchers reading for academic qualifications, e.g. MSc or PhD.

There is a wealth of information on each topic already available elsewhere, be it written or embedded in practice at various institutions. Due to space limitations, this guide does not provide comprehensive and exhaustive advice on each topic. Instead, this guide will provide some examples and practical tips that can help you to understand what developing each skill entails. It is hoped that this generic guide will stimulate you to think or rethink your chosen course of study as not just acquiring a qualification or passive learning experience of gaining some specialist knowledge on a research topic, but also as a process of developing you as a competent professional who can solve problems and contribute to the body of knowledge during the course of your study as well as for your future career.

This guide is thus intended to provide a foundation for which you can start with and as a common frame of reference to facilitate knowledge sharing among fellow students. For those of you who are interested in exploring further on particular topics, a reading list is provided at the end of each guide. Also remember that these supplementary skills need practice and you will learn through experience as well as reading some good materials. Like learning craft skills, we suggest that, as a starter, you emulate how other model people do and adapt their style and behaviour to suit your particular needs and style.

Personal development, professional competence, judgement, and confidence

The answer sounds trite, but, in today's changing environment, we need to continuously update our own skills, knowledge, and experience to realise one's full potential. In relation to this, Peter Drucker observes (for reference, see Further Reading List)

> '*Success in the knowledge economy comes to those who know themselves – their strengths, their values, and how they best perform*.'

The statement is highly relevant to postgraduate researchers regardless of their chosen career path. Although the goals and objectives of one's study might differ from individual to individual, we all need to take heed of developing oneself during and beyond the course of our studies. The answer to 'How one can actually develop personal and professional skills, competence, and confidence?' will be different as we have different predispositions, traits, desires, and styles. This guide is not therefore attempting to present a single best solution for all postgraduate researchers' needs and capabilities. Instead, it is to present some useful tips and examples of achieving one's full potential.

Do you know where you want to be?

> '*If you don't know where you are going, any road will take you there*' (Lewis Carroll, *Alice in Wonderland*)

When you start your research, you might have specific purpose of your study: be it career progression, starting an academic career, or pure interest in knowing something! Whatever you have in mind, it may change during the course of your study as more opportunities (or even problems) come up, or simply your ambition has been heightened (or be that matter, lowered).

As the opening quote tells us, it is very hard for oneself to manage personal or professional career. The responsibility of managing one's career lies in oneself. This is especially true for today's knowledge workers like you! You have to assume the responsibility of managing yourself and figure out what or who you want to be, and what your value is for achieving excellence.

Think about five or ten years ahead, and do you know where you want to be? Is it where you can make the greatest contribution? Essentially, this is not just a matter of 'success' but also 'value'. You may be highly successful in an organisational setting, while its value system is not harmonious with yours. Thus, knowing where you want to be requires a deep understanding of how do you rate your own success and what kind of 'value' you would pursue. The two are not necessarily the same and one. Check out the profession or the institution where you want to belong before you realise that your value system is in conflict with theirs or the setting is not the most favourable and conducive for your personal and professional growth.

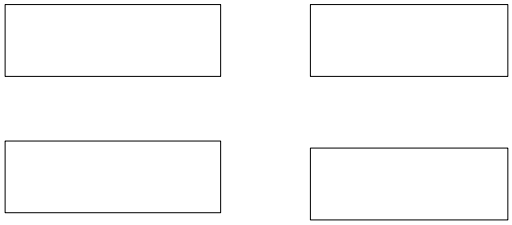
Once you are happy with the place you want to be in the future, try to understand what takes you to get there. This may entail understanding the skills, competences and qualifications the profession or organisation expect from you. Knowing what they want from you is necessary, but not sufficient for you to succeed. The next question you want to ask is, 'where do I stand?'

Do you know where you are?

On the one hand the question 'where I stand?' sounds easy to answer, but on a second thought, as is often the case, this is a very difficult question to answer instantly. In order to answer the question, you have to assess your strengths and weaknesses (and in relation to the future desired status). Knowing your own position and the desired state highlights the gap that you need to fill in. As Watts Humphrey, the founder of the Software Process Program of the Software Engineering Institute (SEI) at Carnegie Mellon University says '*If you don't know where you are, a map won't help.'*

You may want to start from the self-assessment questions listed in the appendix in this guide and other guides. Or, you can construct your own essential and desired skills and competence that will allow you to perform effectively in your current

position. Whatever approach you take, it will be a tantalising experience to expose yourself to both what you are good at and what you are bad at. The following figure shows four rectangles that pose questions leading to your deeper understanding of strengths and weaknesses.



The two left rectangles ask ‘what do I know what I am good at?’ and ‘what don’t I know what I am good at?’ The answers to these questions might be straightforward to some; however, surprisingly, not many of us do not know exactly what we are good at. Your strengths will become evident if you’re forced to do something. You may have some knowledge but you cannot demonstrate you’re capability until you act upon the knowledge. This means you have to identify opportunities to exploit your strengths and to explore whether you have something that can perform better than you might have thought.

Unlike the left ones, the right rectangles ask whether you know your weaknesses: ‘what do I know what I am not good at?’ and ‘what don’t I know what I am not good at?’ This is a harder task as you may feel bad. However, knowing what you are not good at allows you to avoid or mitigate problems you may encounter in the future. In order to get an accurate picture of your weaknesses, talk to your colleagues, friends, family or supervisor and get some honest feedback. Unless you know what your weaknesses are, there would be no effective strategy to address them. You may want to develop more skills in what you are not particularly good at or find complementary skills that allow you to overcome your weaknesses.

There are many roads, but…

Knowing where you are now and where you want to be is a first step to develop and manage yourself. Perhaps a less talked about issue is how you are going to address the gap. This is a complex issue which cannot be fully discussed in this guide, but one suggestion is put forward: know how you perform and learn best.

Some of us perform and learn through by doing. Others may find it easier to read and understand how it works first. Some are working and learning better in a group, whilst others prefer individual task and learning. Some of us enjoy doing multiple tasks at the same time, while others need to have quite place to concentrate on the prioritised tasks.

Try to identify the pattern and rhythm you find most comfortable to develop your skills and competencies. You may want to experiment by changing your particular pattern and rhythm to what you haven’t tried before and learn whether you know what’s best for you and what’s not really for you. Once you identify under what circumstances you perform better and worse, speak to your friends, family, colleagues, or supervisor and seek help. Not everything can be changed for you and your career, but at least you might be able to find some alternative ways to perform and learn.

Summary

As a knowledge worker, your learning does not stop when you finish your given postgraduate research. Managing oneself requires one’s conscious efforts and energy, but the consequences will be far greater than the input. In the process, you may want to seek your ‘role model’ as well as to learn through reflection. Equally, as this guide highlights, finding your goal, value, strengths and weaknesses, and opportunities are important to nurture your personal and professional growth. In order to act upon the knowledge, however, you need to understand how you perform and learn best. Identify what is enabling and restraining your performance and devise your own strategy to overcome your weaknesses and to exploit and further strengthen what you’re good at. Last, but not the least, have a faith in yourself that you’re the master of your personal and professional life!

Further reading list

The following article provides stimulating ideas on

how knowledge works need to become a CEO of one's own career:

Drucker, P.F. (2005) Managing oneself. *Harvard Business Review*, January, pp. 100-109.

Acknowledgement

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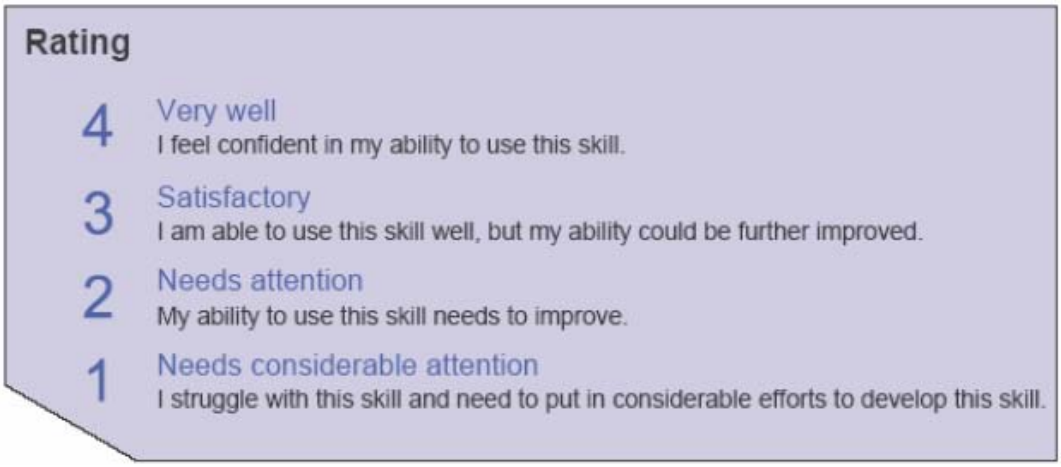

Rate your ability against each statement below:	Rating	Target	Improvement Strategy
I am able to assess my current skills requirements			
I am able to understand and assess my future skills requirements			
I can identify opportunities to develop my skills			
I am able to assess and monitor my progress regularly			
I am able to relate my research to other wider fields of research and practice			
I can understand how my field of research has, or could have, an impact on other disciplines			
I can assess critically my current skills in relation to the needs of potential future employers			
I can identify key researchers within my chosen and/or related fields			
I know requirements of professional bodies where I (want to) belong and comply with them			

Consider your responses above and rate your overall ability for personal development, professional competence, judgement and confidence	Rating	Target	Improvement Strategy
Overall personal development, professional competence, judgement and confidence			

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Supplementary Skills for Built Environment Researchers

Guide to creative thinking, critical thinking and problem solving skills

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Developing creative thinking, critical thinking and problem solving skills

We naturally think and solve problems everyday and thus often take them for granted. However, thinking and problem solving effectively and efficiently are another matter. In this guide, we base our discussions on Simon's (1955) concept of 'bounded rationality' of human beings. That is, we think rationally but the rationality is bounded by our cognitive limitations. In other words, our purposeful behaviour is not wholly rational and thus we accept good enough solutions.

Being creative and being critical are two distinctive but ultimately complementary skills to successfully solve problems. Whilst creative thinking refers to herein generating or using unusual ideas, critical thinking denotes evaluating and judging information, insights, or ideas. The two are like both sides of a coin.

Problem solving often relates to cognitive processing directed at devising solutions to problems, which are often well-defined. In this guide, a broader view of problem solving is taken as it is more likely that we encounter problems that are neither well-defined nor wholly problematic. A problem in this guide means a troublesome situation, event, or process as well as an opportunity that can be fruitfully exploited in one's own advantage.

Creative thinking

In the main, creative thinking is a mental process that generates a wide range of ideas and opens up opportunities. Thinking creatively means we can associate one with another, be it memory, imagery, natural object, situation, event or artefact.

Creative thinking can take place in two modes: *unconscious* or *random*; *conscious* or *reflective*. In the former mode, creative ideas seem to flow when our mind is in a floating or twilight state. We sometimes have very good ideas in a relaxed mood, during meditation, or even at an unexpected moment, like Archimedes uttered 'eureka!' in a bathtub, when he discovered a method of determining the purity of gold. On the contrary, 'conscious' or 'reflective' thinking produces creative ideas with a particular purpose, whether to address a problem or to exploit an emerging opportunity. It often relies on your experience, interpretation, intuition, and insights to associate things which may seem to display no similarities or connections at all.

Creative thinking can be used both at an individual and at group levels. For example, brainstorming – a technique to create a list of options by writing out (or 'storming') ideas without sieving them in accordance with certain preferences or pre-judging values associated with the ideas – can be effectively used by an individual or in a group setting. Group brainstorming process might be facilitated by a specialist, who can ensure that people feel comfortable with presenting their own ideas in a friendly environment and there is no unnecessary criticism, interception, influence, or 'contamination' which can impede or spoil the whole process.

A plethora of tools and techniques exist for facilitating creative thinking. Some examples are listed below:

- Brainstorming;
- Brainwriting;
- Free associations;
- Clustering;
- Asking reporter's questions (who? What? When? Where? Why? And How?)
- Buzz sessions;
- Nominal group techniques;
- Morphological analysis;
- Matrix analysis;
- Attribute listing;
- Provocation; and,
- Various mapping and visualisation techniques.

Using one or a combination of the above tools and techniques might considerably improve (or in fact decrease, if used inappropriately) quality and quantity of ideas. Bear in mind that each of these tools has advantages and disadvantages, and more importantly the tools are no substitute for human creativity and luck. Explore some of the above and other techniques for creative thinking. A good starting point would be some websites (such as www.mindtools.com) where you can find brief descriptions of problem solving and decision making techniques.

Critical thinking

Critical thinking is a mental process through which we evaluate something (such as ideas, assertions, or assumptions) and make well-reasoned judgements. Thus, critical thinking is relevant not only to problem solving activities but also various other research activities such as writing and debating. The latter case is often called 'logical thinking', which helps us identify fallacies.

At times it is difficult to notice fallacies even though care is duly exercised. The following lists some types of fallacies we encounter frequently in the everyday life:

- False dilemma;
- Slippery slope;
- Straw man;
- Affirming the consequent;
- Denying the antecedent;
- Equivocation or ambiguity;
- Begging the question;
- Appeal to pity;
- Appeal to tradition;
- Appeal to force;
- Appeal to authority;
- Prejudicial language;
- Appeal to mass opinion;
- Ad hominem – abusive;
- Ad hominem – ridicule;
- Ad hominem – circumstantial; and,
- Tu quoque.

The old debate 'nature vs nurture' of creativity is a classic example of false dilemma in that the argument distracts from the truth for it is worded so that we are given two alternatives. It is probable that both can equally influence human creativity. Another example of widely encountered fallacy is 'appeal to pity/tradition/force/authority'. Regardless of the actual validity of the proposition presented, humans tend to agree with venerable or favoured persons such as an expert, a celebrity, a clergy, or mass opinion. One of the victims of such fallacies is Galileo Galilei, one of the founders of modern science. Galilei had to publicly recant his acceptance of the Copernican system under the threat of torture from the Inquisition as the authorities and general public at the time believed the Copernican system as heretical and wrong.

As argued previously, critical thinking works together with creative thinking for successful problem solving. Whereas creative thinking is useful to open up and widen a range of options from which we can choose, critical thinking allows us to clarify the problem, analyse, drill down and test the options. The former is viewed as 'diverging' process and the latter 'converging' process.

There are a wide range of tools and techniques for supporting critical thinking. Some of the examples are listed below:

- Six thinking hats;
- Cost/benefit analysis;
- Force field analysis;
- Pareto analysis;
- Paired comparison analysis;
- Grid analysis; and,
- Decision tree analysis.

Problem solving and exploiting opportunities

So far as problems have certain outcomes or their probabilities are known, problem solving can be straightforward. In this case, structured problem solving approaches are helpful. However, 'real world' problems are often far more complex than as otherwise indicated. In this situation, the task of defining problem in the first instance will be very difficult. Real world researchers then need to enter the 'system' in order to more fully understand the context and any tensions in the interpretations of the problem situation. Soft systems methodology or other variants of action research methodology are well suited to handle such problems.

Hitherto in this guide the negative aspects of 'problems'. However, for proactive problem solvers, a 'problem' or 'crisis' can be construed as an 'opportunity'. Rather than taking the problem as given (or in some case, the solution is fixed for all situations!) or waiting until the problem occurs, researchers need to proactively and appropriately use creative thinking, critical thinking and problem solving skills to explore and exploit opportunities.

Summary

This guide has discussed creative thinking, critical thinking and problem solving skills. We proposed that creative thinking and critical thinking are two different mental processes but both of them are necessary for successful problem solving. We have also highlighted that tools and techniques for supporting creative thinking, critical thinking and problem solving abound, but care should be exercised as they are no substitute for human ingenuity, insight, experience, and fortuitous interactions. Lastly, we have suggested that proactive search for opportunities to exploit is equally (if not more) important as reactive approaches towards problem solving.

References

Simon, H. A. (1955) A behavioural model of rational choice. *The Quarterly Journal of Economics*, **69**, 99-118.

Further reading list

General books and guidelines on creative thinking, critical thinking and problem solving skills abound. You may speak to other researchers and supervisors to recommend some good books appropriate to your level and needs. The following further reading list provides some materials on creative thinking, critical thinking, and problem solving, which you might find helpful:

Brahm, C. and Kleiner, B.H. (1996) Advantages and disadvantages of group decision-making approaches. *Team Performance Management: An International Journal*, **2**(1), 30-35.

Checkland, P. B. (1981) *Systems Thinking, Systems Practice,* Wiley, Chichester.

Dornan, E. A. and Dawe, C. W. (2004) *The Brief English Handbook: A Guide to Writing, Thinking, Grammar, and Research,* Pearson Longman, London.

Manktelow, J. (2004) *MindTools: Essential skills for an excellent career*, Mind Tools, West Sussex.

Acknowledgement

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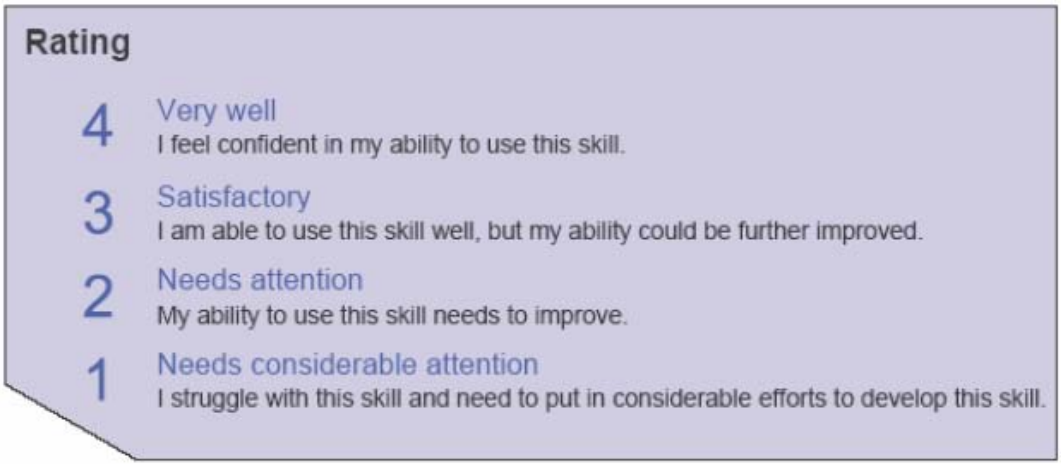
Appendix:
Self-assessment for Creative Thinking, Critical Thinking and Problem Solving Skills

Complete this Skills Audit now and compare progress each year during your PhD. Through this exercise, you would have opportunities to assess your awareness of both strengths and weaknesses. This will form the basis of your supplementary skills profile. Having completed this assessment of your supplementary skills, you may want to set targets for yourself and develop strategy to improve any aspect of the particular supplementary skills. You may want to identify sources of good practice or model which you would like to emulate or learn through experience. Some of the aspects might be discussed during workshop or training sessions in your school, research institute or university, so check with the pertinent websites or student handbook. You may also discuss with your supervisor(s), who can provide you with some help on whether there are opportunities for you to practice your skills.

Rate your ability according to the scale provided as below. As you go through each category, it is useful to think about how you can develop your skills on a short-term as well as long-term basis.



Rate your ability against each statement below:	Rating	Target	Improvement Strategy
I can clarify the nature of the problem or opportunity before taking action			
I am able to identify the sources of information and collect information in a timely manner			
I can generate alternative options for a given problem or opportunity			
I can evaluate the accuracy and relevance of information, insights, and ideas			
I can justify choosing a particular approach to problem solving and exploiting opportunities			
I am able to plan required actions to solve problems or exploit opportunities			
I can learn from experience when the solution or approach chosen was not entirely successful			
I can critically analyse assertions and reveal implicit assumptions in (both written and spoken) communications			
I can trace logical relationships and apply standards of reasoning in my paper and dialogues with peers			
I can compare and contrast between different schools of thought on a given topic			
I am able to synthesise a range of different opinions or interpretations on a given topic			

Consider your responses above and rate your overall ability for creative thinking, critical thinking and problem solving skills	Rating	Target	Improvement Strategy
Overall creative thinking, critical thinking and problem solving skills			

Any problems?

Things I need to improve

Action plan for the next review (set your own review frequency such as quarterly or yearly)

International Council for Research and Innovation in Building and Construction

CIB's mission is to serve its members through encouraging and facilitating international cooperation and information exchange in building and construction research and innovation. CIB is engaged in the scientific, technical, economic and social domains related to building and construction, supporting improvements in the building process and the performance of the built environment.

CIB Membership offers:
- international networking between academia, R&D organisations and industry
- participation in local and international CIB conferences, symposia and seminars
- CIB special publications and conference proceedings
- R&D collaboration

Membership: CIB currently numbers over 400 members originating in some 70 countries, with very different backgrounds: major public or semi-public organisations, research institutes, universities and technical schools, documentation centres, firms, contractors, etc. CIB members include most of the major national laboratories and leading universities around the world in building and construction.

Working Commissions and Task Groups: CIB Members participate in over 50 Working Commissions and Task Groups, undertaking collaborative R&D activities organised around:
- construction materials and technologies
- indoor environment
- design of buildings and of the built environment
- organisation, management and economics
- legal and procurement practices

Networking: The CIB provides a platform for academia, R&D organisations and industry to network together, as well as a network to decision makers, government institution and other building and construction institutions and organisations. The CIB network is respected for its thought-leadership, information and knowledge.

The CIB has formal and informal relationships with, amongst others: the United Nations Environmental Programme (UNEP); the European Commission; the European Network of Building Research Institutes (ENBRI); the International Initiative for Sustainable Built Environment (iiSBE), the International Organization for Standardization (ISO); the International Labour Organization (ILO), International Energy Agency (IEA); International Associations of Civil Engineering, including ECCS, fib, IABSE, IASS and RILEM.

Conferences, Symposia and Seminars: CIB conferences and co-sponsored conferences cover a wide range of areas of interest to its Members, and attract more than 5000 participants worldwide per year.

Leading conference series include:
- International Symposium on Water Supply and Drainage for Buildings (W062)
- Organisation and Management of Construction (W065)
- Durability of Building Materials and Components (W080, RILEM & ISO)
- Quality and Safety on Construction Sites (W099)
- Construction in Developing Countries (W107)
- Sustainable Buildings regional and global triennial conference series (CIB, iiSBE & UNEP)
- Revaluing Construction
- International Construction Client's Forum

CIB Commissions (May 2006)

TG33	Collaborative Engineering
TG43	Megacities
TG44	Performance Evaluation of Buildings with Response Control Devices
TG49	Architectural Engineering
TG50	Tall Buildings
TG53	Postgraduate Research Training in Building and Construction
TG55	Smart and Sustainable Built Environments
TG56	Macroeconomics for Construction
TG57	Industrialisation in Construction
TG58	Clients and Construction Innovation
TG59	People in Construction
TG61	Benchmarking Construction Performance Data
TG62	Built Environment Complexity
TG63	Disasters and the Built Environment
W014	Fire
W018	Timber Structures
W023	Wall Structures
W040	Heat and Moisture Transfer in Buildings
W051	Acoustics
W055	Building Economics
W056	Sandwich Panels
W060	Performance Concept in Building
W062	Water Supply and Drainage
W065	Organisation and Management of Construction
W069	Housing Sociology
W070	Facilities Management and Maintenance
W077	Indoor Climate
W078	Information Technology for Construction
W080	Prediction of Service Life of Building Materials and Components
W083	Roofing Materials and Systems
W084	Building Comfortable Environments for All
W086	Building Pathology
W087	Post-Construction Liability and Insurance
W089	Building Research and Education
W092	Procurement Systems
W096	Architectural Management
W098	Intelligent & Responsive Buildings
W099	Safety and Health on Construction Sites
W101	Spatial Planning and infrastructure Development
W102	Information and Knowledge Management in Building
W103	Construction Conflict: Avoidance and Resolution
W104	Open Building Implementation
W105	Life Time Engineering in Construction
W106	Geographical Information Systems
W107	Construction in Developing Countries
W108	Climate Change and the Built Environment
W109	Ecospace
W110	Informal Settlements and Affordable Housing
W111	Usability of Workplaces
W112	Culture in Construction

International Council for Research and Innovation in Building and Construction

Publications: The CIB produces a wide range of special publications, conference proceedings, etc., most of which are available to CIB Members via the CIB home pages. The CIB network also provides access to the publications of its more than 400 Members.

Recent CIB publications include:

- Guide and Bibliography to Service Life and Durability Research for Buildings and Components (CIB 295)
- Performance Based Methods for Service Life Prediction (CIB 294)
- Performance Criteria of Buildings for Health and Comfort (CIB 292)
- Performance Based Building 1st International State-of-the-Art Report (CIB 291)
- Proceedings of the CIB-CTBUH Conference on Tall Buildings: Strategies for Performance in the Aftermath of the World Trade Centre (CIB 290)
- Condition Assessment of Roofs (CIB 289)
- Proceedings from the 3rd International Postgraduate Research Conference in the Built and Human Environment
- Proceedings of the 5th International Conference on Performance-Based Codes and Fire Safety Design Methods
- Proceedings of the 29th International Symposium on Water Supply and Drainage for Buildings
- Agenda 21 for Sustainable Development in Developing Countries

R&D Collaboration: The CIB provides an active platform for international collaborative R&D between academia, R&D organisations and industry.

Publications arising from recent collaborative R&D activities include:

- Agenda 21 for Sustainable Construction
- Agenda 21 for Sustainable Construction in Developing Countries
- The Construction Sector System Approach: An International Framework (CIB 293)
- Red Man, Green Man: A Review of the Use of Performance Indicators for Urban Sustainability (CIB 286a)
- Benchmarking of Labour-Intensive Construction Activities: Lean Construction and Fundamental Principles of Working Management (CIB 276)
- Guide and Bibliography to Service Life and Durability Research for Buildings and Components (CIB 295)
- Performance-Based Building Regulatory Systems (CIB 299)
- Design for Deconstruction and Materials Reuse (CIB 272)
- Value Through Design (CIB 280)

A recent major CIB collaborative activity was the Thematic Network PeBBu Performance Based Building: a four-year programme that included 50 member organisations, that was coordinated by CIB and that was funded through the European Commission Fifth Framework Programme.

Themes: The main thrust of CIB activities takes place through a network of around 50 Working Commissions and Task Groups, organised around three CIB Priority Themes:

- Sustainable Construction
- Performance Based Building
- Revaluing Construction

A fourth priority Theme, Integrated Design Solutions is currently being developed within CIB.

CIB Annual Membership Fee 2005/07

Membership Fee (Euro)

Category	2005	2006	2007
FM1	10.019	10.270	10.526
FM2	6.680	6.847	7.018
FM3	2.297	2.354	2.413
AM1	1.154	1.183	1.213
AM2	703	773	851
IM	229	235	241

The lowest Fee Category an organisation can be in depends on the organisation's profile:

FM1 Full Member Multi disciplinary building research institutes of national standing having a broad field of research

FM2 Full Member Medium size research Institutes; Public agencies with major research interest; Companies with major research interest

FM3 Full Member Information centres of national standing; Organisations normally in Category AM1 or AM2 which prefer to be a Full Member

AM1 Associate Member Sectoral research & documentation institutes; Institutes for standardisation; Companies, consultants, contractors etc.; Professional associations

AM2 Associate Member Departments, faculties, schools or colleges of universities or technical Institutes of higher education (Universities only)

IM Individual Member Individuals having an interest in the activities of CIB (not representing an organisation)

Fee Reduction: A reduction is offered to all fee levels in the magnitude of 50% for Members in countries with a GNIpc less than USD 1000 and a reduction to all fee levels in the magnitude of 25% for Members in countries with a GNIpc between USD 1000 to 7000, as defined by the Worldbank.

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TG53	**Postgraduate Research Training in Building and Construction**	Edit date 26-04-06

Coordinator(s)	• Dr. Dilanthi Amaratunga, University of Salford, UK
Objectives/Scope	The aim of the proposed CIB Task group on Post Graduate (PG)/ Doctoral in the built environment will be to cooperate and transfer knowledge and experience between built environment research institutes on doctoral research methods and initiatives to increase the level of training received by the involved researchers. The scope of the activities of this proposed task group will be limited to PG/doctoral training issues within the Built and Human Environment disciplines, across the globe. The following objectives will be achieved during the mandate of the task group: • Provide a forum for the exchange of information relating to doctorial training issues within the built and human environment communityand encourage collaboration and joint projects among members and other interested parties • Arrange symposiums and workshops to facilitate wider discussions of relevant research pertaining to the subject area • Promote best practices (in terms of implementation and application) within the built an human environment doctoral/PG research training.
Work Programme	Research institutes with a strong focus on postgraduate/doctoral training will be working together within the proposed task group under the supervision of CIB. The group will share best practices on delivering doctoral training and will publish case studies illustrating such best practices. The proposed life span of this task group will be 4 years with a possible extension.
Planned Output	Following activities are planned as the output arising through the activities of the proposed task group: • **Best practice symposium** - at least 2 within the initial 4-year life cycle. Best practices that will be drawn will be presented and discussed. Equal consideration will be given to the training of possible future trainers who are responsible of delivering PG training. • **Annual international postgraduate conference** - BuHu annually organises a two-day international postgraduate research conference, which disseminates the research methodologies and research results amongst the internal research community and to the wider national, and international research communities. The content of the papers reflect any aspect of research being undertaken by a researcher at any stage of his/her study. A scientific committee reviews papers and all successful papers are published in the conference proceedings. Members of the task group, including others will benefit from this opportunity. It is anticipated that CIB will recognise this conference as a way of disseminating such research information. • **Annual task group meeting** – an annual task group meeting will be organised parallel to the international PG conference. The purpose of this meeting will be to monitor the progress and provide guidance. In addition, the committee will determine further dissemination mechanisms and future strategies of the task group. • **Web site** – a web site will be set up to share information on activities that will e carried out within the task group.
Internal Structure	
External Relations	Home Page TG53: http://www.research.scpm.salford.ac.uk/tg53
Membership	Members of this Task Group will be Individual CIB Members or appointed representatives of CIB Organisational Members.

The task Group was established in June 2003 and has a mandate until 2006

Meetings

Cape Town South Africa	CIB Commission Meeting on Postgraduate Training in Building and Construction in conjunction with the in conjunction with the CIB World Building Congress	2007 May 14-18
Hong Kong China PR	CIB Joint Commission meetings on Building Research and Education and Postgraduate Research Training in Building and Construction, in conjunction with the BEAR Conference 2006	2006 April 10-13
Delft Netherlands	CIB Commission meeting on Postgraduate Training in Building and Construction in conjunction with the International Built and Human Environment Research Week	2006 April 6
Brisbane Australia	CIB Joint Commission meeting on Postgraduate Training in Building and Construction and Building Research and Education	2005 July 4-8

Salford United Kingdom	CIB Commission meeting on Postgraduate Training in Building and Construction in conjunction with the International Built & Human Environment Research Week	2005 April 15-16

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