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#### **Enterprise and Entrepreneurship for Postgraduate Research Students**

Report Three Training Needs Analysis

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#### **Executive Summary**

In Phase 3 of the project we designed a Training Needs Analysis instrument for postgraduate researchers. The questions within the TNA cover personal definitions of the terms *enterprise*, entrepreneurship, impact; current career intentions; attitudes towards enterprising activities, exploitation of research, spin out from research groups, business start-up, and barriers to engagement. The report incorporates the complete questionnaire to be used to assess current confidence about key skills and potential training needs of postgraduate researchers and provides a brief justification for each question. The framework for the questionnaire has been constructed from a variety of sources, including the Vitae Enterprise Lens, Frugier et al (2003), Lumpkin and Dess (1996) and Wagener et al. (2010) research on Entrepreneurial Orientation, the Rugby Team Impact Framework, the Student Entrepreneurial Intentions Survey (2005), and the Postgraduate Research Experience Survey (2011). The questionnaire consists of six brief sections (A-F) and takes no more than 20 minutes to complete. It will be available as a template for modification and use by all UK HEIs through Bristol Online Surveys. The TNA was also devised to assist in monitoring the effects of training programmes through repeated administration and analysis of the survey throughout the duration of postgraduate research programmes.

#### Introduction

The TNA aims to assess relevant skills, attitudes and knowledge of postgraduate researchers in the area of enterprise and entrepreneurship. It is intended to help central administration and others to identify potential gaps in current activities, to aid development of additional provision, and to facilitate monitoring of the efficacy of training programmes.

The Enterprise lens was created by Vitae for researchers, skills trainers, programme developers and others. It defines enterprise as 'a set of skills and attitudes that can enable a culture of innovation, creativity, risk taking, opportunism, etc. that underpins employability, enables entrepreneurship, intrapreneurship and facilitates knowledge transfer' (Vitae, 2011). The lens focuses on enterprise-relevant skills in each of the four domains that comprise the Researcher Development Framework: Knowledge and Intellectual Abilities (Domain A) includes knowledge base, cognitive abilities and creativity. Personal effectiveness (Domain B) includes personal qualities, self-management, and professional and career development, and financing, funding and resources Engagement, Influence and Impact (Domain D) includes engagement and impact, communication and dissemination and working with others. Components of all four domains have been incorporated into the TNA to help ensure that the resulting training programmes are compatible with the aspirations of the national Researcher Development Framework.

This report includes the questions used in the TNA survey and provides the background to them.

#### SECTION A

- What is your age?
- What is your gender?
- What is your ethnicity?

There has been research on differences in enterprising attitudes according to age, gender and ethnicity. This question is designed to help us explore the relevance of these variables. The categories have been adapted from the UK National Census 2001.

#### For fees purposes, what is your normal place of residence?

This question allows us to build a profile of international and home students and helps us to tailor programmes and workshops to their needs.

#### Which programme are you currently enrolled on?

This question allows us to analyse differences between cohorts enrolled on different programmes.

- What is your mode of study?
- Which year of study are you currently in?

These questions allow us to structure the programme timetable appropriately and to identify the needs and attitudes of researchers that might be dependent on their stage and mode of study, e.g., whether they are likely to engage in such programmes at certain stages or have a more positive attitude towards undertaking such programmes owing to current employment status.

- Which academic school do you belong to?
- Which discipline do you belong to?

This question can assist in profiling researchers' intentions towards certain skills development by the nature of their course and subject discipline. This could also assist the

team in developing a profile of researchers' interests by grouping them under specific academic schools.

#### SECTIONS B & C

The following skills have been adopted from categories (A1-A3) based on Knowledge and Intellectual Abilities - Domain A, (B1 - B3) Personal Effectiveness - Domain B, (C1 - C3) - Research Governance and Organisation - Domain C and (D1-D3) Engagement, influence and impact - Domain D.

Delivering presentations?
Writing project proposals?
Understanding and managing financial resources?
Job applications?
Understanding intellectual property rights, copyright and patents?
Understanding ethics, integrity, professional standards?
Understanding contracts and legal issues?
Applying for funding, sponsorships and generating income?
Effectively networking?
Collaborating in a team?
Responding to changes and opportunities?
Communicating effectively?
Leading and managing a team?

I

Planning, organising and delivering projects?
Managing risks?
Selecting activities useful for your professional and career development?
Prioritising and managing your activities?
Selling and negotiation skills?
Seeking information and applying it creatively to a situation or problem?
Being innovative?
Analysis, synthesis, critical thinking, and evaluation?
Self-reflection?
Self motivation?
Writing a business plan.
Awareness of University policy on technology transfer and commercialisation.

**Section B:** requires the researchers to rank their current confidence level in skills and abilities derived primarily from the Vitae Enterprise lens framework. This will allow the research team to understand the current assessment of students and can highlight strengths and weaknesses in areas which could be used to develop programme content. A likert scale has been included in Section B with (1 - signifying not at all confident and 5- highly confident).

**Section C:** These categories have been included to evaluate researchers' views on the importance of aspects of their professional and personal development as well as of their future career orientation. This can assist the team in developing programme content. The likert scale ranks from 1 "least important" to 5 "highly important". The analysis could also be

completed by academic school and/or discipline to understand the difference/similarities in skills development. The analysis of section B could be cross referenced with Section A to highlight the training needs of the researcher community.

#### **SECTION D**

This section measures the current skills and attributes of researchers. A likert scale (1-5) has been included with 1 signifying "not me at all" to 5 "totally me".

Many of the following categories have been applied by Frugier et al (2003) and include attitude estimating variables such as autonomy, need for fulfilment, dynamism risk taking, initiative taking, responsibility, innovation, and determination from the hypothesised range of entrepreneurship skills. Others were adapted from Wagener et al (2010). The themes are:

- Independence
- Risk Taking
- Self-Efficacy
- Tolerance of Ambiguity
- Innovativeness

These were adapted and included into section D in the following statements outlined by Wagener et al (2010):

I prefer to make decisions myself.

I trust in my own judgement.

Even under pressure, I make my own decisions.

I take responsibility for my own decisions.

I regularly take calculated risks.

If I get a chance, I will take it.

I am prepared to invest much of my time and resources to make a chance.

I see uncertainty as a challenge rather than a threat.

It is not unusual for me to change the way I am working if the situation requires change.

When I am confronted with a problem, I can usually find several solutions.

I am confident that I could deal with unexpected events.

No matter what comes my way, I can usually handle it.

It is important for me to excel at what I do.

I consider creativity one of my stronger points.

I am open to new and challenging ideas.

I regularly come up with new ideas.

I deliberately seek out new opportunities.

I believe I am in control of my own future.

#### **SECTION E**

#### • What are your career aspirations following completion of the programme?

This question related to career aspirations of PhD researchers will help us identify the number of students wishing to pursue careers in academia, industry or enterprise following completion of the programme. This can also help develop the programme content and inform usage of enterprise, entrepreneurship terminology.

- Do you feel that your PhD can have a commercial impact?
- What type of impact do you believe your PhD research can have?

This is an important question as it will help map current awareness of pathways to the impact of research, which is central programme content. This question can be followed up through post evaluation research to measure the effectiveness of the programme(s) introduced. Impact categories have been included from documentation on the Research Excellence Framework 2014 to develop a deeper insight into the participants' perception of the potential nature of impact their research can have.

- Have you previously attended any enterprise related development programmes, workshops or courses in the past?
- Are you aware of the following programmes (Business Mine, IPC, Enterprising Researcher and Enterprise Skills Series)
- If you have attended any of the programmes above, how satisfied are you with them?

These three questions highlight the current awareness and use of existing programmes at the University and also help the project team to evaluate the participation rate of researchers on enterprise programmes, workshops and courses. The question on satisfaction can also be used to understand reactions to existing programmes delivered at the University.

# • Would you support inclusion of an optional enterprise and entrepreneurship programme for postgraduate research students?

This question allows us to estimate potential demand and informs project management aspects of the programmes (e.g., venue, resources, etc)

# • Do you have any of the following? (Business Plan, Business Idea, Portfolio, Personal Statement, Current CV).

This question helps us to estimate the proportion of researchers that have business ideas and business plans etc.

- Do any of your family members run a business?
- Does the idea of starting a business to appeal to you?

These two questions, which are derived from the Students Entrepreneurial Intentions Survey (2005), help address the transferability and usefulness of the skills available as well as motivations and role models.

#### **SECTION F**

\*If you wish to take part in the in the £150 Amazon Gift Voucher prize draw, please provide the following:

Name\_\_\_\_\_

Email Address\_\_\_\_\_

Please tick if you are willing to be contacted for further research

This question will provide the incentive to attract the researcher community towards participating in the research and also allow the project team to conduct a focus group (providing they tick the box for further research). The name and email address will be used to contact the winner for the £150 Amazon Gift Voucher.

Appendix 1.0

#### Entrepreneurship and Enterprise Programme Questionnaire

Student ID number: \_\_\_\_\_

#### **SECTION A**

					0 0 -		
QA1).	. What	is your a	nge?				
		21-24 yea	rs				
		25-30 yea	rs				
		31-35 yea	rs				
		35+ years					
QA2).	. What	is your g	gender?				
		Male			🗌 Fe	emale	
QA3).	. For fo	ees purpo	oses, is yo	our normal pl	ace of res	sidence registe	red as:
UK	domie	ciled		Rest of EU		Non-EU	
QA4).	. What	is your e	ethnicity	?			
		White	British		White	e (Other)	White (Irish)
		Mixed	l Race		Indiar	1	Pakistani
		Bangl	adeshi		Other	Asian	Black Caribbean
		Black	African		Black	(Others)	Chinese
		Any o	ther bacl	kground, please	e state		
QA5).	. Whic	h progra	mme are	e you currentl		 d on:	
- *			of Enter	-			Arts by Research
			-	ce by Research		Master of Ph	-
			of Philos	-		Doctor of Er	

		Professional Doctorate				
QA	6). What	is your mode of study?				
		Full-time		Part-Tim	e	☐ Writing up
QA7	'). What	year of study are you cu	irrent	ly in?		
		[] year (e	enter d	ligits)		
QA8	3). Which	1 Academic School do ye	ou belo	ong to?		
	Applied	l Sciences			Busi	ness and Law
	Art, De	sign and Architecture			Com	puting and Engineering
	Human	and Health Sciences			Educ	ation and Professional Development
	Music,	Humanities and Media				

#### QA9). Which discipline do you belong to?

- Allied Health and Biological Sciences (e.g. Nursing, Pharmacy, Podiatry, Biological sciences)
- Engineering and Physical Sciences (e.g. Computing, Physics, Chemistry, Material sciences).
- Social Sciences (e.g. Business, Sociology, Education, Psychology).
- Arts and Humanities (e.g. Language, Music, Art & Design, Media).

#### **SECTION B**

**QB1). How confident do you feel in the following:** *Please tick the most appropriate box which represents your preference (1 signifies least confident to 5 which signifies the highest confidence).* 

	1 Not at all confident	2 Not confident	3 Neutral	4 Confident	5 Highly Confident	A Don't Know	B Not Applicable
Delivering presentations?							
Writing project proposals?							
Understanding and managing financial resources?							
Job applications?							
Understanding intellectual property rights, copyright and patents?							
Understanding ethics, integrity, professional standards?							
Understanding contracts and legal issues?							
Applying for funding, sponsorships and generating income?							
Effectively networking?							
Collaborating in a team?							
Responding to changes and opportunities?							

Communicating effectively?				
Leading and managing a team?				
Planning, organising and delivering projects?				
Managing risks?				
Selecting activities useful for your professional and career development?				
Prioritising and managing your activities?				
Selling and negotiation skills?				
Seeking information and applying it creatively to a situation or problem?				
Being innovative?				
Analysis, synthesis, critical thinking, and evaluation?				
Self-reflection?				
Self motivation?				
Writing a business plan?				
Awareness of University policy on technology transfer and commercialisation?				

#### SECTION C

## QC1). Which of the following skills do you consider important towards your

**personal/professional development and future career?** *Please tick the most appropriate box which represents your preference (1 is of least importance to 5* being highly important).

	1 Not at all important	2 Not important	3 Neutral	4 Important	5 Highly Important	A Don't Know	B Not Applicable
Delivering presentations.							
Writing project proposals.							
Understanding and managing financial resources.							
Job applications.							
Understanding intellectual property rights, copyright and patents.							
Understanding ethics, integrity, professional standards.							
Understanding contracts and legal issues.							
Applying for funding, sponsorships and generating income.							
Effectively networking.							
Collaborating in a team.							
Responding to changes and opportunities.							

Communicating effectively?				
Leading and managing a team.				
Planning, organising and delivering projects.				
Managing risks.				
Selecting activities useful for your professional and career development.				
Prioritising and managing your activities.				
Selling and negotiation skills.				
Seeking information and applying it creatively to a situation or problem.				
Being innovative.				
Analysis, synthesis, critical thinking, and evaluation.				
Self-reflection.				
Self motivation.				
Writing a business plan.				
Awareness of University policy on technology transfer and commercialisation.				

#### **SECTION D**

**QD1).** Please indicate the extent to which each of the statements below describes you (1 signifies "not me at all" and 5 represents "totally me").

	1	2	3	4	5
	Not me at all	Not really me	Neutral	Somewhat Me	Totally Me
I prefer to make decisions myself.					
I trust in my own judgement.					
Even under pressure, I make my own decisions.					
I take responsibility for my own decisions.					
I regularly take calculated risks.					
If I get a chance, I will take it.					
I am prepared to invest much of my time and resources to make a chance.					
I see uncertainty as a challenge rather than a threat.					
It is not unusual for me to change the way I am working if the situation requires change.					
When I am confronted with a problem, I can usually find several solutions.					

[			
I am confident that I could deal with unexpected events.			
No matter what comes my way, I can usually handle it.			
It is important for me to excel at what I do.			
I consider creativity as one of my stronger points.			
I am open to new and challenging ideas.			
I regularly come up with new ideas.			
I deliberately seek out new opportunities.			
I believe I am in control of my own future.			

### **SECTION E**

QE1). What are your career aspirations following completion of the programme?	' (Tick all that
apply).	

Academ	nia (Higher Education)	
Indepen	ndent research (Outside Academia)	
Researc	ch in Public Sector	
Research	h in Private Sector	
Teachin	ng below High Education Level	
U Workin	g in the Public Sector	
U Workin	g in the Private Sector	
Self em	ployment	
🗌 Start a b	ousiness	
Returni	ng to funded employer	
Joining	the family business	
U Workin	g outside the UK	
Other, I	f other, Please specify	
QE2). Do y	you believe that your research can have a o	commercial impact?
<b>QE2). Do y</b>	you believe that your research can have a o	commercial impact?
_		
Yes	□ No	
Yes QE3). What	□ No	Don't Know
☐ Yes QE3). What ☐ Impact	No N	Don't Know
<ul> <li>Yes</li> <li>QE3). What</li> <li>Impact</li> <li>Econo</li> </ul>	☐ No at type of impact or value do you believe y t on Quality of Life	Don't Know
<ul> <li>Yes</li> <li>QE3). What</li> <li>Impact</li> <li>Econo</li> <li>Public</li> </ul>	☐ No at type of impact or value do you believe y t on Quality of Life mic Impact (Commercial Potential)	Don't Know
<ul> <li>Yes</li> <li>QE3). What</li> <li>Impact</li> <li>Econo</li> <li>Public</li> <li>Social</li> </ul>	No at type of impact or value do you believe y t on Quality of Life mic Impact (Commercial Potential) Policy and Services Impact (Including on Pr	Don't Know
<ul> <li>Yes</li> <li>QE3). What</li> <li>Impact</li> <li>Econo</li> <li>Public</li> <li>Social</li> <li>Cultur</li> </ul>	No at type of impact or value do you believe y t on Quality of Life mic Impact (Commercial Potential) Policy and Services Impact (Including on Pr Impact	Don't Know
<ul> <li>Yes</li> <li>QE3). What</li> <li>Impact</li> <li>Econo</li> <li>Public</li> <li>Social</li> <li>Cultur</li> <li>Impact</li> </ul>	No at type of impact or value do you believe y t on Quality of Life mic Impact (Commercial Potential) Policy and Services Impact (Including on Pr Impact ral Impact	Don't Know
<ul> <li>Yes</li> <li>QE3). What</li> <li>Impact</li> <li>Econo</li> <li>Public</li> <li>Social</li> <li>Cultur</li> <li>Impact</li> <li>Environ</li> </ul>	No at type of impact or value do you believe y t on Quality of Life mic Impact (Commercial Potential) Policy and Services Impact (Including on Pr Impact al Impact t on Health	Don't Know

☐ None

	1 Not at all Important	2 Not Important	3 Neutral	4 Important	5 Highly Important	A N/A
<b>QE4).</b> How important to you is your development in enterprise skills?						

**QE5).** Have you previously attended any enterprise related development programmes, workshops?

Yes 🗌

No 🗌

#### **QE6).** Are you aware of the following programmes? (*Please tick the most appropriate box*)

	Not aware and not interested	Not aware but would consider	Aware but not interested	Aware and Considering	Aware and have attended
Business Mine start-up support.					
Intellectual Property Course					
Enterprising Researcher					
Business Mine Events Programme					

#### QE 6.1). If you have attended any of the programmes above, how satisfied are you with them?

Not at all Satisfied	Not Satisfied	Neutral	Satisfied	Highly Satisfied	N/A

### QE7).Would you support introduction of an optional enterprise and entrepreneurship programme for Postgraduate Research Students?

Yes No Maybe 🗌 QE8). Do you have any of the following? Yes **Business Plan** No No Yes **Business** Idea No Portfolio Yes No Personal Statement Yes No 

Current CV		Yes	□ No			
QE8). Does tl	ne idea of starti	ing a business a	ppeal to you?			
Yes 🗌	No 🗌	Maybe	l			
QE9). Do any of your family members run a business?						

Yes 🗌 No 🗌

#### **SECTION F**

\*If you wish to take part in the in the £150 Amazon Gift Voucher prize draw, please provide the following:

Name\_\_\_\_\_

Email Address\_\_\_\_\_

Please tick if you are willing to be contacted for further research

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