

# Learning package to develop and assess employability of bioscience students taking work placements

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## **Guidance notes for Course tutor**

### *Background*

The learning package is based on exercises already successfully used by providers of BSc biomedical science courses at three HE institutions. The component assignments have been trialled and adapted for use by work placement students taking a broad range of Bioscience courses with the support of a Higher Education Academy Centre for Bioscience Teaching Development Fund.

### *Who is this resource aimed at?*

Course tutors and students of BSc Biosciences programmes containing a work placement component. One of the assignments (assignment 1) is suitable for use during a standard long (1year) as well as a relatively short placement period with some prior preparation and planning. Assignment 2 enables students to reflect back over several vocationally-related objectives that would typically require a longer period of work experience.

### *What does it provide?*

Two student assignments that help students recognise and develop desirable skills and attitudes of a graduate bioscientist in employment. Guidance notes for students and tutors and suggested marking criteria related to specified learning outcomes. Both assignments contain a strong component of reflection which in the experience of the authors, was found to present the most difficult challenge to students. It is recommended that assignment 1 is more suitable for use at level 4 or 5 of study, while assignment 2 is more suitable for level 5 or 6. It is anticipated that course tutors may wish to adapt the exercises contained in the package and these are intended as examples that can be adapted to be more appropriate to a local course needs.

### *Feedback*

The package authors would like to continuously improve and add to the learning package so any feedback from course tutors to help this process would be very valuable. If you already use an exercise that develops a complementary aspect of employability which could enhance the package we would also be very interested in extending the resource in this way. Please send comments and any other contributions to: [j.m.cunningham@brighton.ac.uk](mailto:j.m.cunningham@brighton.ac.uk)

# Assignment 1: An investigation of career pathways in biosciences and assessment of career opportunities

**Learning outcomes:** students will be able to:

1. describe a specified current career pathways in the biosciences, including progression criteria and salaries
2. collaborate with a student partner to arrange, design and conduct a structured interview
3. reflect on insights gained into personal career aspirations

In the first part of the exercise, students will individually investigate a career pathway that can be followed by a graduate in biosciences in the UK. This should be reported in summary form, for example as a flow-diagram or table, with appropriate references identifying sources of information and include details on: career grades from entry to profession to senior positions; entry and promotion criteria; statement of main duties and responsibilities; approximate length of time to progress through different stages; salary scales.

In the second part, students work in pairs to arrange two interviews with graduate bioscientists working in the professional area selected. Interviews should be arranged with a professional bioscientist at a relatively early career stage (e.g. 1-3 years after entry) and more senior (e.g. 10+ years with at least one level of career progression achieved). The interviews should be arranged in good time and conducted in a professional manner (see guidelines below). A report from this should state the main aims of the interview (i.e. the key information sought) and a summary of the main findings; the full transcript of the interview should be recorded and included as an appendix.

## Assignment and assessment

The single report should include the following:

- i) description of the career pathway (table or flow diagram plus accompanying commentary and references, maximum 2 pages)
- ii) description of interviews with the professional staff including- aim; background details of staff interviewed; summary of main points from interview (1 page)
- iii) conclusion- discuss how successful the interviews were in providing information sought (i.e. were aims met?); include a reflective statement of what new personal insights have been gained into the career of the selected profession through this assignment. (1 page).
- iv) a joint statement of the contribution of each member of the pair to the interview assignment
- iv) appendix- correspondence with interviewees to arrange interviews; transcript of interviews

The following criteria will be used for awarding marks:

Learning outcome 1

Answer	Score
Thorough description of career pathway	high
Superficial description of career pathway with important mistakes or omissions	medium
No description of career pathway	low

### Learning outcome 2

Answer	Score
Clear evidence of collaboration with partner(s) and well conducted and carefully structured interviews	high
Evidence of some collaboration , but process and outcome not recorded in detail	medium
No evidence of collaboration with other students	low

### Learning outcome 3

Answer	Score
Insightful personal reflection showing how the information gathered has helped the individual to think about their career options in this pathway	high
Description of new and interesting information gathered, but no personal insights given	medium
No reflection presented	low

### **Guidelines for arranging interviews**

Students are advised to complete part i) of assignment which can be found largely from the references supplied and related sources before designing the interview questions. In this way, interview questions will be informed by an understanding of the career pathway and structure etc. and the interviews used more effectively to gather information from individual experiences e.g. identification of perceived positive/negative aspects of career structure; aspects of current post that interviewee finds most/least satisfying etc.

Selection of interviewees and preliminary steps: One interviewee should be at a relatively junior grade and the second at a more senior grade. You should make your request for an interview in writing (email is acceptable but follow normal formal letter format). In some cases you may already know the interviewee, for example through a previous or current work placement experience and an informal conversation about the assignment may be the most appropriate step initially. However, this should also be followed up by a formal written invitation, e.g. thanking the interviewee for agreeing to take part and explaining: the purpose of the interview; the approximate length of the interview (no more than 20 minutes is suggested); what will happen to the information supplied and who it will be made available to. You may have been suggested a suitable person to contact through your tutor or training officer, in which case you may find it easier to write to them directly. You will obviously need to be flexible in arranging a time and date - give the person you write to plenty of choice of possible dates (pick a range of days of the week and times of day). If you don't get a reply to your request within about 14-21 days, enquire politely, explaining that you need to make arrangements rather quickly, to meet the assignment deadline. It is extremely unlikely that a professional person will be at all offended or annoyed by this, and you may be able to make

arrangements for a visit, on the 'phone. All this takes time so do not delay in starting the process of making contact and making arrangements for your interview.

Once an interview has been arranged you should confirm in writing the arrangements and so that you don't spend time at the interview collecting basic personal information it is suggested that you send a brief questionnaire that can be completed in advance and collected at the interview. Details that you can ask for include: position, job title or grade in the career structure; number of years in that post; number of years since qualification;. See Part A of the 'Questionnaire for investigation of bioscience career pathways exercise' included with this information.

You should assure the interviewee that all personal details will be reported in a way that the interviewee cannot be identified and that a copy of the interview transcript will be made available to them should they wish to see it. Arrange a time and place at the convenience of the interviewee; if they have an office then this may be the best location; otherwise you may need to arrange to book a meeting room or arrange to meet in a location which is suitably quiet and private.

For the report, the transcript and interviewee information should be used in common, but the analysis of the interview and reflective statement should be written individually. It is very important that the planning and making arrangements for the interviews should be conducted with in full collaboration with your partner so that you both contribute to the design of the interview and planning. One of the aims of the assignment is to develop your ability to form and work as part of a team; it is primarily your responsibility to establish a working relationship with your partner and not your tutor's. As a formative exercise, it is suggested that you practise your interviewing techniques with your partner as a role play' exercise prior to any aspects that you think should be amended or improved carrying out your arranged interview.

### **Carrying out the interviews**

The attached 'Questionnaire for investigation of biosciences career pathways exercise' (see end of document) is a booklet which has been designed to help you prepare the interview questions. You will notice that as well as questions designed to elicit specific information, there are some 'open-ended' questions which allow your interviewees to expand on their replies, telling you things that you hadn't thought about, perhaps. You can use this booklet as the basis of your interviews, adding a few extra questions to personalise it or you can write your own questions, using the guidelines in the section headed 'Questioning techniques' below. Consider what is the important and possibly unique information that can be obtained from the interviews (rather than what is freely available through other sources e.g. employer and career publications and websites).

To record the interviews, you could arrange that each of you takes the role of interviewer for one of the interviews while the other keeps notes. Tape recording the interviews is an option and this is an effective way to keep an accurate record. However, must ask the interviewees in advance if you are considering this, as some people may not wish to have the interview taped; also they may be less frank in their replies than otherwise; finally while the recording process may be a convenient option during the interview, the transcription of tape recorded conversation can be extremely time consuming relative to the recording time.

### **Questioning techniques**

In planning the interviews that you are to carry out, you should bear in mind that there are several different styles of question that may be appropriate at different times during an interview:

Closed questions produce short answers such as Yes or No. They can be useful for gathering very specific information (e.g. 'how many staff are you responsible for as a manager?') but may produce limited answers where more expansive information is sought. The question 'Do you enjoy your current job?' may produce a limited response and could be better phrased as 'What aspects of your job do you most/least enjoy'.

Leading questions lead the interviewee to giving the answer that the interviewer wants to hear and should therefore be guarded against. Example: 'Would you agree that the development of reflective practice is of value in an academic course?'

Probing or building questions extend or deepen a topic. Example 'what value do you place on the time spent on professional training or 'continuing professional development' courses?'

Open ended questions allow the interviewee to develop a topic as he or she wishes. Example: What do you think are the most desirable qualities in a trainee ..... ***(insert appropriate professional term for career selected , eg biochemist, pharmacologist, ecologist...etc. )?***

Mirror or reflecting questions restate a reply to test or examine the interviewee's understanding. Example: 'So can I confirm that you think that newly a qualified ..... ***(insert appropriate professional term for career selected , eg biochemist, pharmacologist, ecologist...etc. )*** needs to carve out their own future in the company, and not rely on a formal staff development programme?'

Hypothetical questions examine the interviewee's general beliefs and values. Example: What would you say if a new graduate suggested that all distinctions between different grades, such as different restaurants, car parks and the like, should be abolished?'

Controlling questions change the direction of a conversation, to bring the interviewee back to the point or develop a new topic. Example: You said earlier/it states in your company material that you had discontinued your graduate training programme three years ago. Can you explain why you did that?'

Be warned that can be difficult to keep to the schedule of questions, because the interviewee is too chatty or 'directs' the conversation too much. If this is the case then 'go with the flow' to some extent but try to make sure that you get information on your main points. You may need to be firm in re-directing the flow of the interview though do not despair if you do not achieve all of your pre-planned aims as often, even a relatively unstructured conversation can be very informative (but it can be difficult to keep notes).

### **Questionnaire for investigation of biosciences career pathways exercise.**

Guidelines for interviewers.

Use this interview sheet as a basis for your interview. If you both have a copy of this sheet, one person can answer the questions and the other can record the answers.

Before you start, thank the interviewee for their time and assure them that all the information that you collect is for your own study purposes only, that you will not be recording their name and that all the information they give you will be kept anonymous and confidential. Also say that if they do not feel able to answer any of your questions, then that is fine, they can 'pass' and move on to the next one.

You can write the answers to Part B in the space provided or on a separate sheet if you prefer. There is an extra space at the end of this booklet for further comments that you might want to record during the interview (for example, if the person you are interviewing strays

from the main questions, but you think the information is useful) or if something occurs to you when the person has left the room and you want to make a note of it.

### Questions

#### Part A: General information about interviewee:

1. Grade/job title:

2. Age group:

Under 25  26-35  36-45  46-55  56-65

3. Number of years have worked as in this career pathway.....

4. Number of years have worked with current employer.....

#### Part B: Questions about the interviewee's career as a bioscientist

1. Please describe the academic and professional training that you have received so far during your career

2. In your opinion, what experience is required for a graduate ..... **(insert appropriate professional term for career selected , eg biochemist, pharmacologist, ecologist...etc. )** to get a job at your current grade?

3. How would you like your own career to develop and what training/qualifications are you working towards at the moment?

4. Why did you choose your particular career pathway?



Space for extra notes

## Assignment 2: self evaluation and reflective practice in work-based learning (amended and generic version)

### Learning Outcomes

students will be able to:

1. With reference to relevant professional graduate skills, audit, reflect and review personal practice and recognise their own skills, attributes and limitations
2. Demonstrate effective approaches to study and learning in the workplace, including self-management and self-evaluation

### Teaching and Learning

During the placement the student will consider the attributes they require to become employable graduate specialising in the discipline appropriate to the work experience. This will involve (i) an analysis of their personal attributes and needs at the start of the placement and (ii) reflection on how they have addressed these during the term of the placement. In some cases the criteria for employability will overlap with those specified in professional and/or statutory body requirements and in these cases the workplace tutor and other laboratory staff can play an important role in teaching the student the relevant skills and procedures. Where appropriate, learning and the record of learning should be coordinated with any Professional, Statutory or Regulatory Body (PSRB) training requirements or criteria. The student will be required to demonstrate reflective learning related to development of personal and career management skills.

Teaching and learning support will be provided by practical demonstrations *and tutorials* in the workplace, *through seminars and tutorials jointly organised by the workplace and the university*, by provision of documentation, and by workplace visits by university staff.

### The Process

Shortly after starting the placement, the student should evaluate their personal attributes and needs at the start of the placement by means of a '**SWAIN**' analysis that relates to their future employability. This consists of a self-evaluation of the following personal attributes:

<b>Strengths</b>	-in personal knowledge, understanding, skills and attributes related to the workplace
<b>Weaknesses</b>	-in personal knowledge, understanding, skills and attributes related to the workplace
<b>Aspirations</b>	-from the placement year that will enhance the prospect of employability
<b>Interests</b>	-recognition of particular aspects of the placement that will be motivating
<b>Needs</b>	-what is required to address weaknesses, fulfil aspirations, and successfully pursue interests

A **learning plan** based on this SWAIN analysis will be drawn up.

This should cover duration of the placement, but initially it can be an outline for the year, with semesters and other periods of study planned in more detail as the placement progresses.

The plan should cover:

- The professional disciplines in which the students will be working
- The techniques and skills that the student will learn
- Transferable skills
- Activities related to PSRB requirements (if appropriate)
- Expected university input, including visits, documentation required, and tutorials
- An anticipated timescale

- The relationship of these activities to particular aspects of the SWAIN analysis e.g. development of skills or personal attributes that would address an area of weakness identified in the SWAIN analysis (including employability)

The student, employer/workplace tutor and the university tutor *may formalise this plan in the form of a written **learning contract** for the placement year, allowing the tutor to comment on the proposed plan before both parties 'sign off' a final version as an agreed course of action to follow.* The student should keep a **learning journal/diary/log** throughout the year, in which all key learning experiences are documented as this will provide an important resource for evaluating and reflecting on how the key aims underlying the learning plan have been addressed during the course of the placement. Your tutor may consider it important to schedule meetings with your tutor at appropriate intervals during the placement to discuss your progress; if so you should negotiate with your tutor the timings of these which can then be incorporated into your plan.

At the end of the placement, the student will produce a *poster or report* which includes a **reflective commentary** on the learning throughout the placement and the extent to which the objectives specified in the SWAIN analysis have been achieved. Students should show and be able to explain how they have modified actions during the placement and procedures as a result of their reflective thoughts.

### **Assessment**

At the end of the placement, the student will present the following assessment artefacts.

- The SWAIN analysis (weighting 30%)
- A learning contract or learning plan detailing the activities for the year (30%)
- A poster or written report that demonstrates reflective learning during the placement (40%)- this may include a presentation and discussion of poster OR viva examination based on written report (your tutor will give guidance on this as appropriate)

### **Some hints and tips to help students with the assignment**

#### 1. SWAIN evaluation

It is quite common for individuals to find reflective-based exercises quite challenging, particularly if being carried out for the first time. In many instances clarification of the terms used and giving some examples may be of help. The SWAIN analysis has some parallels with the 'SWOT' (Strengths, Weaknesses, Opportunities, Threats) analysis that is commonly used in evaluating projects and, though for the SWAIN approach the emphasis is on the individual and self-directed.

- Take care that personal 'strengths', identified are relevant to the exercise, i.e. with some link to the work placement and employability. Do you have any examples of past experience to support or give you confidence in your evaluation? For example, if you think that you have good time-management skills then this can clearly help in most workplace situations and would be good 'strength' to identify; this could be evidenced through particular experience in a past employment or other activity.
- Weaknesses' include skills/experience or attributes that if improved would enhance meeting the needs of the work placement and an individual's employability in general. Try and be as specific as possible; identifying a 'lack of professional experience' as a weakness may be accurate and relevant, but by identifying the key experience/skills (e.g. experience in a particular technique or procedure or transferrable skill such as team working) may help ensure that these are more effectively planned for and supported.

- 'Aspirations' can focus on your longer term ambitions, for example after graduation and your career plans. A longer term ambition of working in management in the same or a similar professional setting may make it important to gain some insights into the management process, for example by working with or 'shadowing' a manager. This may not be part of the normal placement pattern, but by identifying this, or another specialist role (e.g. a focus on research and development) could help you be ready to take up or explore opportunities with your university and workplace tutors.
- For the 'interests' category, it may help to think laterally about how your wider pastimes and activities may relate to the workplace and employability and how these may relate to particular 'strengths' that could support meeting your placement aims. For example, enjoyment/achievements in a sporting or artistic pastime could be related to strengths in teamwork, leadership, time management and self-discipline that may in turn help support addressing 'weaknesses'.
- A 'need' is a specific action or form of support or resource that will help address a specified 'weakness'. This may be a response required from the individual concerned, for example..... On the other hand the support required may be a normal part of the expected university/employer support for the placement and described in the placement module descriptor or any learning agreements or contracts; identifying the timing and nature of this support though can help ensure that it is utilised as effectively as possible.

2. Plan- The plan will typically be set out in the form of a calendar including key events and periods of activity in the placement and any related university activities or dates. If useful it can include additional key personal dates or periods, eg planned vacations, that may influence the scheduling or planning for the individual, and the complexity and level of detail may vary depending on the nature of the placement activities. It is essential to clearly incorporate into the plan elements of the SWAIN analysis, for example by highlighting how specified 'weaknesses' are being addressed with the support of the identified 'needs'. It may be possible to make this clear in the body of the plan itself by appropriate text or headed columns, or it may be made clearer by a brief accompanying text or commentary to describe how the plan has incorporated the elements of the SWAIN analysis.

3. Reflection- This have a main focus on the elements of the SWAIN analysis and the consequent work placement plan. Key points should relate to how well the plan succeeded in addressing the identified 'weaknesses', how effective were the identified 'needs' in supporting this and, if appropriate how well this was enhanced by utilising 'strengths' and 'interests'. On reflection would you have done anything differently? Are there any elements of your original SWAIN analysis that you would modify, for example have you revealed any new strengths, weaknesses, aspirations or interests. Do include any unexpected incidents or experiences during the placement year that may influence this evaluation.

## References

Reed R, Holmes D, Weyers J, Jones A (2007) Practical Skills in Biomolecular Sciences 3<sup>rd</sup> chapter 1. Pearson

Jones A, Reed R, Weyers J. (2007) Practical Skills in Biology 4<sup>th</sup> ed , chapter 1, Pearson

Pitt SJ, Cunningham JM (2009) An introduction to Biomedical Science in Professional and Clinical Practice, chapter 8. Wiley-Blackwell

Cottrell S (2010) Skills for Success 2<sup>nd</sup> ed Palgrave MacMillan

### Marking scheme/criteria

1. with reference to relevant professional graduate skills, audit, reflect and review personal practice and recognise their own skills, attributes and limitations (SWAIN)
2. Demonstrate effective approaches to study and learning in the workplace, including self-management and self-evaluation (plan, report)

	0-40%	40-60%	60-80%	80-100%
1a. Recognition of skills, attributes and limitations relevant to professional graduate skills.	missing or very superficial	some key points made though limited	most SWAIN elements recognised	all SWAIN elements recognised
1b. Articulation between elements of SWAIN in particular weaknesses linked to needs. May include interests/aspirations linked to strengths.	missing or very superficial	basic links drawn though limited	some consideration of links between identified SWAIN elements	detailed consideration of links between identified SWAIN elements
2a. Recognition and incorporation of key elements of SWAIN into learning plan, in particular weaknesses to be addressed and employment of needs/support. May refer appropriately to relevance of strengths, interests, aspirations.	missing or not clearly identified	basic elements incorporated	incorporates all identified SWAIN elements of into plan	incorporates and detailed consideration of all identified SWAIN elements
2b. Evaluates success of plan, in particular in addressing weaknesses and effectiveness of needs/support employed and comment on relevance of strengths, interests and aspirations. May re-evaluate or comment further on strengths, weaknesses, interests, aspirations (ie relevant to a new cycle of reflection)	missing or very superficial	some evaluation though limited	detailed evaluation of plan; some re-evaluation/elements of new reflective cycle demonstrated	detailed evaluation of plan and evaluation/elements of new reflective cycle demonstrated