

## **Developing Undergraduate Research at Oxford Brookes University Recommendations and Models for Future Development**

The attached paper offers a an overview of and arguments for developing a more structured and embedded (within the UMP) approach to undergraduate research activity at Oxford Brookes University. While recognising the existence of current good practice across the institution, the paper argues for a more explicit, visible and structured approach to developing undergraduate research opportunities within the curriculum and the student learning experience.

The paper has developed out of one strand of activity currently being supported by the Oxford Brookes/University of Warwick HEFCE funded Centre for Excellence in Teaching and Learning, the Reinvention Centre for Undergraduate Research (see [www2.warwick.ac.uk/fac/soc/sociology/research/cetl/](http://www2.warwick.ac.uk/fac/soc/sociology/research/cetl/)) which has supported the development of this project. That support has included visits to a number of universities in the US with established undergraduate research programmes (see <http://tinyurl.com/37eshv> for a copy of the report of those visits), the organisation of two seminars at Oxford Brookes to inform and review the development of these recommendations and models and the on-going support to the project team to enable these recommendation to be pursued further.

Learning and Teaching Committee is now asked to comment on these recommendations and to approve the continued development of this project under the guidance of the Reinvention Centre and to support the development of a more structured and embedded approach to undergraduate research at Oxford Brookes.

### **For decision**

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# Developing Undergraduate Research at Oxford Brookes University – Recommendations and Models for Future Development

Richard Huggins, Alan Jenkins and David Scurry.

## 1. The Internal and External Context – Developing a New USP?

In recent years Oxford Brookes has demonstrated a growing commitment to developing the links between staff research and learning and teaching delivery<sup>1</sup> and the visibility of student research within the undergraduate offer. In part this has reflected the growing interest amongst external stakeholders, for example the Higher Education Council and Research Councils<sup>2</sup> and the increased interest among staff and HE professionals in the enhancement of the student experience and independent learning. In addition some research also suggests a growing interest from students themselves.<sup>3</sup>

In particular, the development of the Reinvention Centre for Undergraduate Research<sup>4</sup> offers a key opportunity to enhance this activity even further, to embed undergraduate research centrally within the curriculum at Oxford Brookes University and to make undergraduate research central to, if not all, at least a majority of courses and programmes. In addition, taken with the current review of the University's Academic Offering and wider concerns with the university's market and organisational position and the desire for distinctive and sustainable excellence, Brookes' involvement in the Reinvention CETL, and the activities and networks that this development is creating, provides an excellent opportunity to create a new unique selling point. Namely, an undergraduate student learning experience where **all students** are encouraged and are afforded the opportunity to develop a strong set of research skills and expertise that complement their academic course content and facilitate the development of high level independent learning, analytical, communication and critical skills.

Drawing on the projects and initiatives outlined above, on the current developments associated with the Reinvention Centre for Undergraduate Research and the recent CETL funded research trip to the USA<sup>5</sup> this paper outlines – in brief summary – some of the key issues, recommendations and proposals for the development and enhancement of undergraduate research at Oxford Brookes University. In part our suggestions and recommendations find their intellectual origins from the US and in particular the work of Ernest Boyer<sup>6</sup> and the Carnegie

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<sup>1</sup> This has manifested in a number of projects and initiatives including Project Link, Course Redesign for Semesters, the development of the Reinvention Centre for Undergraduate Research CETL (with Warwick University) and a range of strategic commitments, at School and University level (see, for example, the BSLES Strategy or the SSL Strategic Plan), as well as a number of individual and team projects across the university.

<sup>2</sup> The Higher Education Academy and the Research Councils UK Executive Group held a joint conference in London on 24 November on 'Bringing research and teaching together'. Attended by some 80 delegates including Pro-Vice-Chancellors, Directors of Learning and Teaching, National Teaching Fellows and CETL and Subject Centre Directors, it focused on exploring links between research and undergraduate teaching programmes; learning from the UK and US experiences of linking research and teaching; and developing ideas and strategies to take this agenda forward in the UK – see <http://www.heacademy.ac.uk/5124.htm>

<sup>3</sup> See Smith, P, (2007), *Students Expectations of Research-Based Curriculum: Results from an Online Questionnaire Survey of First Year Undergraduates at Oxford Brookes University*, Reinvention Centre for Undergraduate Research, Oxford.

<sup>4</sup> A HEFCE funded Centre for Excellence in Teaching and Learning involving the University of Warwick and Oxford Brookes University see [www2.warwick.ac.uk/fac/soc/sociology/research/cetl/](http://www2.warwick.ac.uk/fac/soc/sociology/research/cetl/)

<sup>5</sup> The project team visited the following institutions in October 2006, Universities of Boston, Michigan, Penn State, MIT, Tufts University and Bates College, see <http://www2.warwick.ac.uk/fac/soc/sociology/research/cetl/ugresearch/> for a copy of this report and a discussion of the US context.

<sup>6</sup> See, for example, Boyer, E, (1990), *Scholarship Reconsidered: Priorities of the Professoriate*. New York, The Carnegie Foundation for the Advancement of Teaching, University of Princeton or Boyer, E, (1996). "The scholarship of engagement", *Journal of Public Outreach* 1,1,11-20.

Association<sup>7</sup> which advanced the view that research and teaching should be brought together through progressing 'undergraduate research' where undergraduates learn through research activities, often guided by or alongside the research activities and interests of staff. A related perspective is that universities should engage with their (local) communities but in clearly scholarly ways. One way this has been achieved in the US has been through the development of research partnerships with local communities and community groups, such as the University's of Michigan's Arts of Citizenship programme<sup>8</sup>. In the USA such activities are often extra curricula and/or reserved for selected students. The perspective taken here is that US structures and ideas are of considerable potential value to UK practice and delivery *if* they can be successfully adapted to the UK context, firmly integrated within the mainstream curriculum and made available to all students. We also feel that Oxford Brookes can be a pioneering UK institution in embedding a structured and credit-bearing undergraduate research experience within the UMP providing students with practical and applied research experience in a progressive way from basic to honours level.

## 2. What is Undergraduate Research?

It seems reasonable to ask what constitutes undergraduate research? Although, the authors of this paper take a reasonably broad view of what might constitute undergraduate research we would identify the following as key elements and characteristics. The first is that undergraduate research should provide opportunities for the student to learn *as* and *through* undertaking research and research activities. Such activity may have a number of specific outcomes which could include:

- Students learning to be researchers
- Students learning to become professional, disciplinary researchers
- Students learning more about their discipline or a new discipline through researching in that subject.
- Students learning to become sensitive, compassionate, reflexive, appropriate and effective researchers.
- Students learning about or becoming members of academic communities.

To unpick this further we would argue that the development of undergraduate research activity – within the mainstream curriculum of a programme area – has specific benefits for students which will or might include the enhancement of both disciplinary knowledge and skills, including:

- Gaining experience “real” research work and contribute to developing knowledge in their chosen field.
- Learning about how a research project is carried out and how a research team works.
- Developing their research skills in areas such as project planning, data collection and analysis, use of specialised equipment, and writing up findings.
- Developing their transferable skills such as group-working, time and resource management and giving oral presentations.
- Develop their ability to reflect on their own learning and achievements.

However, we feel the potential impact of increasing the extent of undergraduate research in the curriculum offers more than an enhancement of such skills and abilities (valuable as these are). In some ways the *research* operates as a tool or vehicle through which a more general enhancement of learning and the student experience can take place, opening up the discipline and learning to students, staff and other stakeholders. We would suggest, for example, the introduction of a Year one, Semester Two, basic cross-disciplinary (in Schools or clusters of subject areas) that encouraged initial engagement with research, the activities and objectives of academic staff and the disciplines they pursue, methods and scholarly devices and protocols. This module – perhaps called Academic Literacy and Practice or something similar –

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<sup>7</sup> See [www.carnegiefoundation.org/](http://www.carnegiefoundation.org/) and the Boyer Commission, (1999), *Reinventing Undergraduate Education: A Blueprint for America's Research Universities*, Stony Brook, NY, Carnegie Foundation for University Teaching.

<sup>8</sup> [www.artsofcitizenship.umich.edu](http://www.artsofcitizenship.umich.edu)

would encourage the development and understanding of academic skills through the early immersion in the practice (research/enquiry/action) of academic activity. The key would be to involve students, probably in small groups, in small-scale research activity with the aim of generating some original data. Such work would act as a focus for research project design and development, basic method selection, discussion of the epistemological and ontological scope of academic disciplines and even introduction to key current issues in HE such as avoiding plagiarism. Such foundations (as we will see in section six below) would be built on through a set of further modules in Stage II leading to the progressive development of disciplinary knowledge and skills through the individual and team research activities. The development of this type of structured and progressive research pathway offers the opportunity to provide students with a greater insight into their discipline and the nature of academic and scholarly enquiry, widening the breadth of learning, provide complementary experiences and learning and the opportunity to find out what the discipline and university level work (for staff and students) is really all about.

In addition to the development of enhanced student learning and disciplinary expertise, of progression and retention, of research skills, of providing students with a framework for intellectual and disciplinary experimentation and greater integration into academic communities - students may well engage in this type of provision for a number of other reasons and benefits. Indeed, in the US, students appear to demonstrate a range and variety of motivations for engaging in research based learning ranging from what might be described as a focused approach to graduate school entry to broader and more generalised aims to improve career and their employability or other life goals. This may take the form of the engagement with a clearly civic or wider, humanist agenda or support for key issues and areas of interest or activism (for the student) in an immediate or particular locality.

### **3. How do Staff benefit?**

Staff we met in the US, as well as colleagues in the UK, identify a number of key benefits that range from the pragmatic and functional to more high-level pedagogic, philosophical or educational value ones. For example some faculty identified the value and benefit of gaining research support for their own research or the ability to “cheery-pick” the most able or suitable students, early in their academic career, to bring them into the discipline and into the department’s research work. In the US, undergraduate research offers a relatively straightforward way of meeting institutional teaching and service requirements. Some colleagues identified the utility of undergraduate research in terms of preparing students for graduate school and enhancing their applications and overall profile for such progression. In some institutions participation in undergraduate research has also provided a means by which “small” or low recruiting subjects have been able to demonstrate their institutional value or even increase recruitment.

Other colleagues stressed that the development of undergraduate research programmes had led to the re-vitalisation of student learning and their own approach to and appetite for learning and teaching delivery. Staff highlight the value of such schemes in encouraging deeper disciplinary learning, the development of more effective and better researchers and the induction of students into and then the development of a more pronounced disciplinary and professional identity.

### **4. How could Oxford Brookes benefit from this development?**

Although we have covered some of the benefits that would accrue to the University through enhancement of the student learning experience and through benefits to staff we would also contend that there are some significant benefits to the institution from developing undergraduate research. These include facilitating delivery on key strategic objectives such as revitalising the curriculum, linking staff research and undergraduate teaching and developing links to the region, and enhancing student employability and higher skills and encouraging access, recruitment and retention. This advantage applies also to postgraduate recruitment through by growing our own researchers and postgraduate students.

In addition, in a period of growing external stakeholder expectations of what universities’ should be doing and the complex balance between different activities for staff, such as increasing research quality, delivering high quality learning and teaching and the pressures

and expectations that consequently arise. An innovative and outward facing approach to undergraduate research would contribute to the notion of the university as “public good” or civic good through the positive, of staff and students, in the form of public scholarship, service research and learning and community engagement. Not only is this potentially valuable “PR” but, additionally opens up a set of potential funding routes – including endowments and donations<sup>9</sup> - and highlights the innovative nature of Oxford Brookes University.

The creation of a highly visible, progressively structured undergraduate research programme, embedded within the Undergraduate Modular Programme, taken with the current review of the Academic Offering, offers a significant opportunity to create a new USP which resonates with the desire for distinctive and sustainable excellence throughout our activities.

## **5. Organisational and operational issues.**

Whilst the authors of this paper are clearly in favour of developing an institutional approach to enhancing and embedding undergraduate research we are also aware of the organisational and operational issues that exist and would need to be dealt with. Drawing on discussions with US and UK colleagues we would identify the following as some of the key issues.

First is the issue of how to reward students and recognise their work. In the US this takes the form of the award of academic credit, direct pay for project undertaken outside or in addition to the formal curriculum or through work-credit arrangements often accompanied by some level of State or Federal financial support. Clearly, such issues bear on student commitment, the costs of the scheme and the form it takes. We would argue for an academic credit based scheme and would suggest that this is not only a cost effective method of developing and rewarding undergraduate research but would also argue that this is readily compatible with current Oxford Brookes University systems and structures.

In addition, there are a number of possible issues which focus around administrative frameworks, scheme ownership, location of such activity within the curriculum and the student’s programme of study, the operational logistics including travel, skills and other training and health and safety procedures. There are some complex and important ethical issues involved in developing such schemes and in working with communities, individuals and staff research projects and our discussions revealed some interesting and valuable lessons from US colleagues involved in Institutional Review Boards and their governance (or otherwise) of undergraduate research. Of critical importance is both staff and institutional support for and engagement with the aims of creating an undergraduate research scheme and of valuing the contribution it can make to student, staff and institutional goals, objectives and experiences.

## **6. A Model for Oxford Brookes University? (See Fig 1).**

At this point we would very much want to acknowledge the amount of excellent work already going on in all eight academic schools. In addition, would we seek to characterise learning and teaching and undergraduate research as necessarily distinct or self-contained activities. Clearly there are many ways in which we can build on current good practice to make undergraduate research more visible and become more embedded within the Brookes student experience. Current work in Social Sciences and Law and the School of the Built Environment, sponsored by the Reinvention Centre, has begun to demonstrate the existing range of ways in which undergraduate research activity takes place. Furthermore, simple steps, such as renaming all modules in which undergraduate research already takes place (for example Methods Training, Independent Study Modules, Project and Dissertation Modules) as Research Modules would raise the visibility of this activity and ensure immediate embedding within much of the university (at all levels too not just undergraduate for that matter). These steps would be welcome, easier to enact and consistent with much work already being undertaken.

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<sup>9</sup> Certainly colleagues in the US report that such schemes can be very popular with a range of funders – including alumni, corporate and charitable organisations as well as a growing interest from research councils and other HE funding streams.

However, we would like to go much further and see clear value in doing so, through the development of a structured framework and progressive pathway for undergraduate research in the following way.

Introduction of cross-School or disciplinary cluster **Academic Literacy and Practice** Basic Module in Year One Semester Two linked to **Research Methods** (Compulsory or Optional) in Year Two, Semester One. These modules would be directly linked to a range of optional or compulsory modules that progressively build on the research skills and activities of students and allow students to engage directly in their own and/or staff research activity either individually or in teams. For example, this might include modules such as, **Research Practice One** – which could be a taught, class/lab based module, activities based on staff research, team research or a more “stand alone” research activity designed and developed by staff and student(s) working together. **Research Practice Two** – which would build on work already undertaken and could take the form of an ISM, a research-based placement, volunteering within a community (or other) research based project or activity directly linked to staff research. This pathway would be capped with the **Final Year Dissertation** or **Research Project** which could be designed to build on work undertaken in the previous modules. Such a pathway could, in year three, mark a clear delineation for honours modules and for advanced independent learning.

The above could be complemented with a range of additional research-based activities including, for example,

- The Reinvention Undergraduate Research Scheme.
- Externally Funded Projects which involve student research.
- Politics in Action – The Scholarship of Engagement an FDTL-5 funded project which or other Placement Learning Opportunities<sup>10</sup>.
- Community Based Research.
- Undergraduate Research Days
- Summer Undergraduate Research Programs.
- Service Learning and/or Volunteering.

Importantly, students and staff would work together to ensure synergy of activities, additional subject and disciplinary skills enhancement and other mechanisms for evidencing this activity, for example Personal Development Planning (PDP).

## **7. Key Issues and Conclusion.**

The model offered here aims to combine the strengths and advantages of the current UMP at Oxford Brookes with some key elements of the US and other UK schemes. We think it would provide a viable innovation for Brookes that would bring significant benefits to students, staff and the institution and add to Brookes' reputation. Clearly, a number of key questions remain.

We would need to resolve where the scheme would it be located, who would run it and how would it be taken forward, maintained and managed. In the US a number of institutions have placed such schemes under the direction of the research office, or equivalent and have identified key senior figures to lead, develop and embedded the scheme. In all institutions we visited some form of central unit was responsible for the day-to-day management and administration of the scheme, to support staff and students, to provide or oversee research training, project preparation and to ensure health and safety and other obligations are met. In addition such central units often provide effective and streamlined partner management, develop generic guidance and ensure parity and comparability across the institution, are responsible for distributing funds, organising and operating the student/staff application process and for ensuring fairness and equal opportunity of provision. We would argue for a central office to be established at Oxford Brookes University to develop, support and administer this programme, to ensure cross-institutional quality assurance and enhancement, to ensure cost-effective partnership and project management and to provide a framework for cross-school, cross-programme and interdisciplinary project working.

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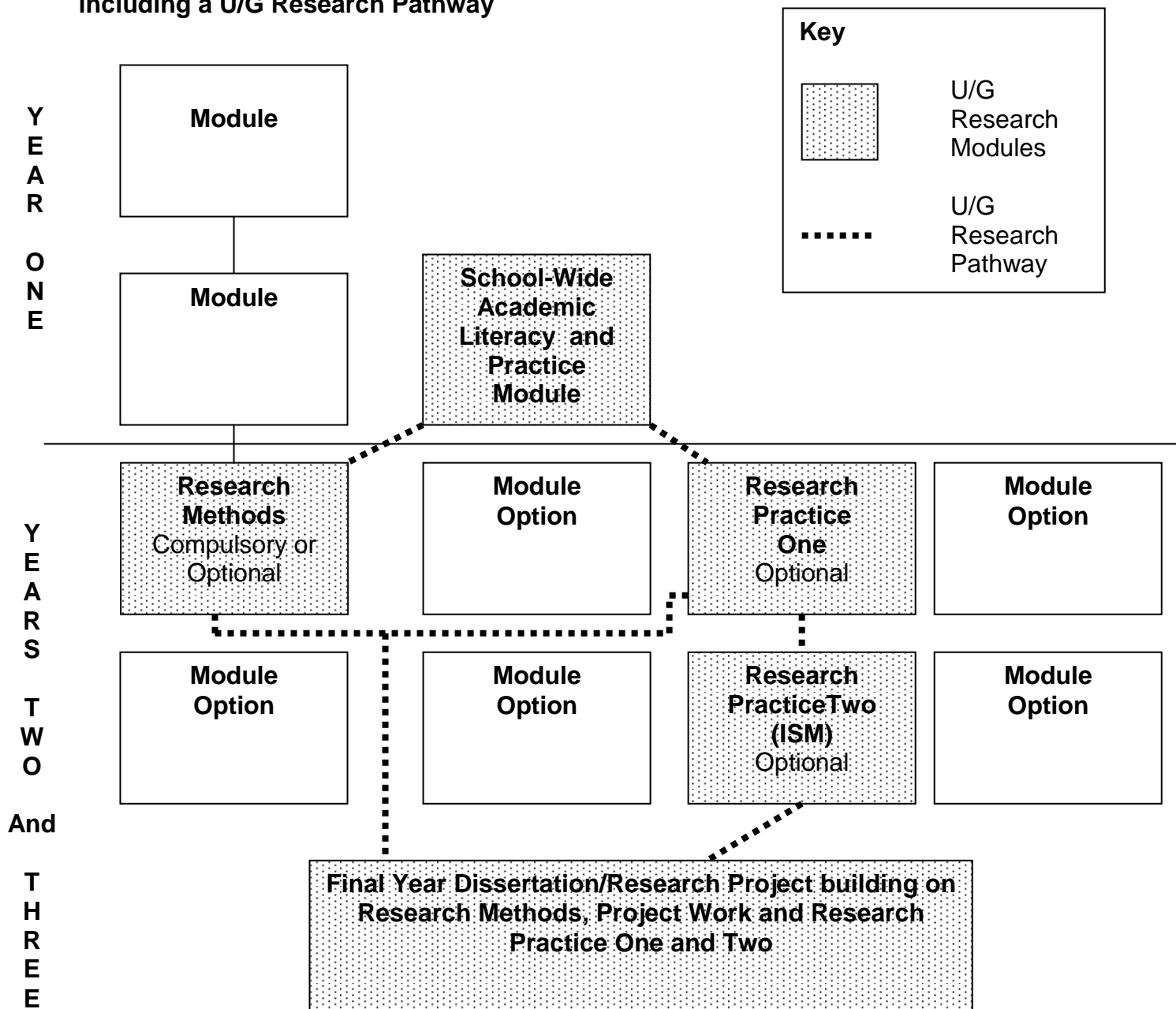
<sup>10</sup> A collaborative project involving Oxford Brookes University, the University of Warwick and Coventry University see <http://www.politicsinaction.ac.uk/>

The modular course provides an ideal opportunity to integrate credit-bearing research-based activities for students that has considerable potential to bring the objectives and activities of research and learning and teaching together *and* allows for students to pursue further complimentary activities as identified above. In addition, the model outlined here allows students to engage in more or less undergraduate research as they wish or as fits with their career and individual academic aspirations. A student could opt to undertake a full research pathway or simply take a smaller number of modules in which undergraduate research forms the focus.

In short the programmatic development of undergraduate research, embedded in the modular course, but with an outward facing aspect that links to the community, student volunteering, service and placement learning, provides a key opportunity to enhance access, underpin retention, demonstrate regional commitment and become central to academic innovation and the enhancement of the student learning experience at Oxford Brookes University.

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**Fig 1 - Outline Model of a Joint Honours Field including a U/G Research Pathway**



**Research Practice One** could be a taught, class/lab based module, activities based on staff research, team research or a more “stand alone” research activity designed and developed by staff and student(s) working together.

**Research Practice Two** could follow this model – building on work already undertaken – or an ISM, research-based placement, volunteering within a community (or other) research based project.

The above could be complemented with a range of additional research-based activities including:

- Reinvention UGRS
- FDTL-5 Type Placement Learning
- Community Based Research
- Service Learning/Volunteering

Students and Staff would work together to ensure synergy of activities, additional subject and disciplinary skills enhancement and other mechanisms for evidencing this activity, for example Personal Development Planning (PDP).