Evidence for Policy and Practice Information and Co-ordinating Centre

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

EPPI-Centre team

ACKNOWLEDGEMENTS

Authors

David Gough, Dina Kiwan, Katy Sutcliffe, Donald Simpson and Nicholas Houghton, Evidence for Policy and Practice Information and Co-ordinating Centre (EPPI-Centre), Social Science Research Unit, Institute of Education, University of London.

Project management and Advisory and Group

Funding

LIST OF ABREVIATIONS

CRA	Centre for Recording Achievement
HE	Higher Education
ILTHE	Institute of Teaching and Learning in Higher Education
LTSN	Learning and Teaching Support Network
PDP	Personal Development Planning
PDP HE	Personal Development Planning in Higher Education (Scotland)
QAA	Quality Assurance Agency
SCoP	Standing Conference of Principals Ltd
UUK	Universities UK

This report should be cited as: Gough DA, Kiwan D, Sutcliffe K, Simpson D, Houghton N (2003). A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning. London: EPPI-Centre, Social Science Research Unit.

TABLE OF CONTENTS

SUMMARY

Background

Personal Development Planning (PDP) is a process by which individuals reflect upon and plan their own learning. The introduction of PDP and similar approaches with names such as Records of Achievement and Profiling have been major policy initiatives in secondary education in the UK over the last two decades and more recently in further education and higher education (HE).

In 1997 the National Committee of Inquiry in Higher Education recommended that students should have a Progress File to help make the outcomes of learning more explicit, identify the achievements of learning and support the concept that learning is a lifetime activity (NCIHE 1997). Such innovations in educational policy have been based on beliefs and assumptions that PDP is a good thing.

The purpose of this systematic review is to examine the research literature relevant to such policies on PDP. Despite a large literature on PDP and its analogues, there is a lack of clarity about the extent of empirical research and evidence for the effects of PDP on student learning. The review focuses on the PDP element of the HE Progress File: 'a process that is undertaken by an individual to reflect upon their own learning and achievement and to plan for their own educational, academic and career development' (http://www.qaa.ac.uk/crntwork/ progfileHE/contents.htm 25th November 2002).

This systematic review is the first of its kind in UK higher education (HE). It was commissioned by the Learning and Teaching Support Network (LTSN) Generic Centre as part of its programme of collaborative work with the Progress File Implementation Group (PFIG) aimed at supporting the introduction of the HE Progress File and demonstrating a commitment to a research-informed approach to policy and practice. The PFIG was formed by representatives of Universities UK (UUK), the Standing Conference of Principals Ltd (ScoP), the Quality Assurance Agency (QAA) and the Learning and Teaching Support Network (LTSN). Its purpose is to help institutions interpret and implement policy for PDP and monitor progress towards achieving the policy goals.

PDP construct

PDP is proxy for a number of constructs that attempt to connect and draw benefit from reflection, recording, action-planning and actually doing things that are aligned to the action plan. The actions and experiences of doing are connected to and draw upon concrete learning experiences in a wide range of formal curricula and extra curricula contexts. In North American literature, the term 'self-regulation' or 'portfolio building' embraces a similar range of actions, processes, support mechanisms and purposes.

PDP processes can be facilitated or self-directed. Both place responsibility on learners to plan their own learning, to act on the plans and to generate evidence of learning. When expressed as a set of actions and processes, PDP contains:

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

1

- planning (how to achieve objectives or general change)
- doing (learning through the experience of doing with greater awareness)
- recording (thoughts, ideas, experiences, evidence of learning through writing, audio, video, visual or other means)
- reviewing (reflections on what has happened, making sense of it all)
- evaluating (making judgements about self and own work and determining what needs to be done to develop/improve/move on)

Aims

The purposes of the review are as follows:

- to create a map of the empirical research that has been undertaken on PDP processes in higher and related education to inform discussions on what future research might usefully address

- to synthesize the known evidence for the effects of PDP on student learning in higher and related education, for the benefit of policy-makers and users of policy including students

Review questions

In the context of the introduction of policy on personal development planning the review questions are as follows:

- *Systematic map:* What empirical research has been undertaken on the use of PDP in higher and related education?

- *In-depth review (systematic synthesis):* What evidence is there that processes that connect reflection, recording, planning and action improve student learning?

Methods

The systematic map and synthesis review were undertaken using EPPI-Centre methods, procedures and tools. The methods are based upon a research question specified by users of research and formal methods for:

- determining the scope of the review
- identifying potentially relevant studies through searching and screening
- describing studies through keywording to produce a 'map' of research activity
- determining the studies to be included in the in-depth review
- in-depth scrutiny through a process of data-extraction of each study that includes judgements of research quality and weight of evidence that the findings of individual studies contributed to the review question
- synthesis of such studies identified as relevant
- quality assurance procedures for the methodology

Results of systematic map and in-depth review

1. Identification of studies

The systematic review developed a search strategy and detailed inclusion and exclusion criteria to identify the English language empirical literature on PDP-type processes. This literature was not easily identifiable by agreed key terms in the literature. Most of the studies identified were from outside the UK and were identified by electronic databases with only 8% identified through contacts with workers in the field; 15% of the studies were not published. No one single source identified more than 41% of the relevant literature.

2. Mapped studies

The identified literature was described in a map of research activity on PDP. The findings of the map included the following:

- **Approaches to PDP in the literature**: Most of the research has been undertaken on learning logs and journals and diaries and studies of reflective practice. Most studies adopted a prescriptive approach to PDP implementation in order to achieve course-specific outcomes, but there were also many studies that adopted a negotiated approach to implementation for course-specific outcomes and for broader self-development. A significant proportion of studies used a prescriptive approach to implementation to achieve broader self-development. Studies of learning logs and journals, reflective practice, self-assessment and self-regulation were particularly associated with course-specific outcomes. Studies of Records of Achievement and self-direction were slightly more likely to be associated with broader self-development aims. There is considerable international overlap in the frequency that the different terms for PDP are used, but it is clear that records of achievement and profiling are particularly UK phenomena, and that self-direction and self-regulation are particularly common in North American studies.

- **Context of the studies**: Most of the studies were undertaken in the USA or the UK; most concerned HE and focused on learners. Studies in HE compared with other educational settings focused slightly more on course-specific than on broad developmental outcomes. Studies in HE were more likely to have used learning logs, journals and reflective practice and less likely to have used action planning and Records of Achievement than other educational settings. Studies in secondary schools were more likely to have used PDP styles of self-regulation, learning style and attitudes to learning. Knowledge gains were common outcome measures in studies in all educational settings but particularly in HE.

- **Study outcome measures**: Most of the research outcome variables were on approaches to learning and learning styles. Next most common was knowledge gains, skills and identity; career or employment outcomes were rare. The most common method of measuring outcomes was through participants' views. There was little variation across work or course contexts in the type of outcomes measures; the use of learning logs and journals and reflective practice were relatively more common in studies with course-specific outcomes.

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

3

- **Research design**: The most common designs were the exploration of relationships between variables followed by evaluations of naturally occurring policies and practices, then evaluations of researcher-manipulated interventions. Relatively more of the studies from the USA and Australia were evaluations of researcher-manipulated interventions compared with other countries. Very few of the studies from the USA were descriptive. UK studies were more likely to be descriptive and emphasise exploration of relationships compared with other countries. Very few of the UK studies were evaluations of researcher-manipulated interventions.

3. In-depth review and synthesis

A sub-set of the studies in the map of research activity was selected for synthesis of research findings in the in-depth review. The basis for inclusion in the in-depth review was that the study type was an evaluation of a researcher-manipulated intervention and included objective external outcome measures. The findings of the in-depth review included the following:

- **Characteristics of the subset of studies included in the in-depth review (data extracted) compared to all studies included in the map**: The studies in the in-depth review did not differ in obvious ways from the rest of the mapping keyworded studies. This applies equally to the evaluation studies not included in the in-depth review on sub-concepts of PDP; the context of PDP; reasons for learners using PDP; focus on course-specific or broader self-development aims; population focus; sex of learners; age of learners; and educational setting. The studies in the in-depth review were more likely to be concerned with both self-regulation and prescribed approaches to implementation and less likely to be concerned with independent learning, logs and journals, and cooperative learning; they were also slightly less likely to be concerned with self-assessment. Studies in the in-depth review were more likely to have been undertaken in the USA with few evaluations of researcher-manipulated interventions undertaken in the UK. Studies in the in-depth review were relatively over-represented in terms of outcomes of knowledge attainment and less represented in terms of identity and attitudes to learning outcomes compared with all mapped studies and the evaluation studies not included in the in-depth review.

- **Weight of evidence of studies in the in-depth review**: All of the studies in the in-depth review were assessed on (A) the quality of the study in terms of accepted practice within the research design employed; (B) the appropriateness of that research design for addressing the systematic review question; (C) the relevance of the focus of the study in relation to the systematic review question; (D) an overall judgement about the weight of evidence that the results of the study provide towards answering the review question based on judgements A, B and C. Four of the 25 studies were rated as contributing a high, 15 a medium, and six a low weight of evidence to answering the review question.

- **Weight of evidence and direction of results**: Most studies reported a positive effect of PDP on learning. Some studies did not find any evidence of an effect but only one study reported a negative effect of PDP on learning compared with controls. Most of the evidence showing positive effects was reported from studies rated as medium in terms of weight of evidence. The

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

4

results do not suggest that weaker evidence is more positive about the effects of the PDP interventions. The conclusion is that PDP can have a positive effect on student learning.

- **Results of studies on outcomes of student attainment**: Fourteen out of the 25 studies measured 'attainment', ten of which were rated as having high or medium weight of evidence for the review. All the ten studies reported positive effects on student learning in terms of 'attainment'. This suggests that PDP can have a positive effect on student attainment.

- **Results of studies on outcomes of student 'learning styles'**: Fourteen out of the 25 studies measured approaches to learning outcomes and 13 of these were rated as providing high or medium weight of evidence. Of these 13 studies, nine reported positive effects on learning styles, one reported mixed effects and three reported no evidence of effect. This suggests a positive effect of PDP on students' approaches to learning.

- **Results of studies on outcomes of student 'personal' outcomes**: Four out of the 25 studies measured 'personal' outcomes and three were medium-rated for weight of evidence. One of these medium weight of evidence studies reported a positive effect on personal variables. The other two studies reported a negative effect and no evidence of effect respectively. There is insufficient evidence from these studies to conclude that PDP effects positively or negatively the personal outcomes for learners.

- **Effects of independent variables of different PDP approaches, contextual variables and person variables on the impact of different aspects of student learning**: The relatively few studies meeting the narrower inclusion criteria and the heterogeneity in their samples, interventions and measures of outcomes makes it difficult to differentiate more specific results in terms of effects.

Conclusions

Strengths and limitations of the review
There have been few literature reviews on this topic in UK higher education. This is the first systematic review.

The current stage of development of the field, the diversity of practice that results from different policy-practice contexts and the heterogeneous research arising from this complexity limit the extent that clear conclusions can be drawn about the usefulness of PDP in enabling learning. One systematic map and in-depth review and synthesis cannot in itself overcome these complexities but can provide some clarity about the research evidence and its implications for policy, practice and further research.

The literature search required screening of over 14,000 references using three search strategies and undertaking empirical checks on the inclusiveness of the search strategy results. Only studies in the English language were included. It is not known what other relevant materials in other languages would have contributed to the review's findings.

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

5

Another issue is the decisions made about research methodology. Firstly, a decision was made to limit the synthesis findings to evaluations of researcher-manipulated interventions with independent outcome measures. Secondly, the criteria adopted for making judgements about study quality (category A in the weight of evidence process) were not strict so the results of the synthesis, although strong in direction, should be considered as tentative.

The study confirms the value of the approach in providing the evidence to inform the development of policy and practice in respect of teaching and students' learning.

Policy-makers and the funders of research
The findings of the map and synthesis confirm the central policy claim that PDP supports the improvement of students' academic learning and achievement. The absence of research studies that address other claims, particularly those relating to broader self-development and improved employability outcomes, means that these claims cannot be substantiated at this stage. The implications are that the development of PDP should be encouraged but a policy steer, supported by targeted funding, may be necessary to ensure that relevant, good quality and properly described research is undertaken to extend our knowledge of the most effective strategies and contexts for PDP as well as the effects of these on different outcomes. This could be achieved by (a) requiring greater clarity on these issues before funding new research and (b) encouraging greater use of secondary research to provide focus and sustainability in the field.

Educators and learners
The systematic map and synthesis revealed many examples of interesting practice. The review provides evidence to students, teachers and institutional administrators that the processes and actions that underlie PDP do have a positive impact on student attainment and approaches to learning.

There is insufficient evidence to conclude what effects, if any, PDP has on personal factors such as identity. There is also insufficient evidence to state which balance of the many PDP approaches is more or less effective in impacting on student learning. Neither is there evidence to comment on the influence of the individual teacher in promoting and facilitating learning through PDP.

The study was focused on higher education but the findings will have implications for educators and learners in other formal learning environments (e.g. schools and further education colleges) which employ PDP congruent processes as an aid to learning.

Change agents working in institutions and national bodies
Those individuals charged to act as agents of change in supporting the development of PDP within institutions – such as staff and educational developers, or national bodies like the LTSN – have been primarily influenced by policy claims, PDP practitioner arguments for PDP, and their own beliefs and experiential learning. The synthesis provides PDP change agents with a body of research to inform their work as well as evidence to those with whom they work. Similarly, institutional managers may also seek such evidence before committing the institution to major change programmes and investment in new systems.

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

6

Researchers

The map and synthesis have shown that research on PDP and its analogues is still a young area of research with little coherence in terms used, research focus or availability of research. There is also a lack of balance, at least in the UK, between descriptive and experimental research testing the effects of the introduction of PDP. Many studies examining effects of PDP focused on participants' views while these are crucial, they are only one aspect of studying the effects of an approach to learning. In addition, where there were independent evaluations of effect, there were often serious limitations in the research methodology applied or the clarity in reports of which methods were used in a study. The map reveals that some aspects of PDP learning (reflection, use of learning logs and journals, self-assessment, self-regulation) have been studied more than others (e.g. action planning, recording of achievement, use of portfolios, self-awareness and self-motivation).

There is also a tendency for the experimental research to focus on directed rather than self-directed approaches to learning through PDP. There also appear to be limited numbers of research studies that utilise employability or career outcomes as their focus for measurement.

The database produced through the review can inform future research to address some of the under-researched features of PDP.

The synthesis has also identified a number of empirical studies that provide methodologically sound benchmarks for future studies on the effects of PDP on learning.

The main implication of the findings is that there is a need for an increase in well-designed experimental research to add to the descriptive research of PDP in the UK. A greater focus on systematic mapping and synthesis to coordinate the research field is recommended.

1. BACKGROUND

This chapter introduces the aims and rationale for the study and its conceptual, policy, practice and research background. It also explains why the review is being undertaken at this time and the interests of the authors, funders and other audiences for the review.

1.1 Aims and rationale for the review

Personal Development Planning (PDP) is a process by which individuals reflect upon and plan their own learning. The introduction of PDP and similar approaches such as Records of Achievement and Profiling have been major policy initiatives in secondary education in the UK over the last two decades and more recently in further and higher education. Major political decisions have been made about educational policy based on beliefs and assumptions that PDP is a good thing. Decisions which require significant changes to teaching, course design and students' learning have been made without being informed by a substantial evidence-base from research. Despite a large literature on PDP and its analogues, there is a lack of clarity about the extent of empirical research and evidence for the effects of PDP on student learning.

The purposes of the systematic review are:

- to create a map of the empirical research that has been undertaken on PDP processes in higher and related education; to provide an overview of research activity in the area for different users of research; to inform decisions on what future research might usefully address

- to synthesize the known evidence for the effects of PDP on student learning in higher and related education, for the benefit of policy-makers and users of policy, such as teachers and students.

1.2 Definitional and conceptual issues

1.2.1 Terminology and definition

There are many definitions of PDP and PDP type processes. The Quality Assurance Agency (QAA) website which hosts the policy for PDP in higher education (http://www.qaa.ac.uk/ 25th November 2002) defines PDP as:

> a structured and supported process undertaken by an individual to reflect upon their own learning, performance and / or achievement and to plan for their personal, educational and career development. The primary objective for PDP is to improve the capacity of individuals to understand what and how they are learning, and to review, plan and take responsibility for their own learning, helping students:
>
> - become more effective, independent and confident self-directed learners;
> - understand how they are learning and relate their learning to a wider context;

- improve their general skills for study and career management;
- articulate personal goals and evaluate progress towards their achievement;
- and encourage a positive attitude to learning throughout life.

PDP is proxy for a number of constructs that attempt to connect and draw benefit from reflection, recording, action-planning and actually doing things that are aligned to the action plan. The actions and experiences of doing are connected to and draw upon concrete learning experiences in a wide range of formal curricula, and extra curricula contexts. In North American literature, the term 'self-regulation' or 'portfolio building' embraces a similar range of actions, processes, support mechanisms and purposes.

PDP processes can be facilitated or self-directed. Both place responsibility on learners to plan their own learning, to act on the plans and to generate evidence of learning. When expressed as a set of actions and processes, PDP contains:

- planning (how to achieve objectives or general change)
- doing (learning through the experience of doing with greater awareness)
- recording (thoughts, ideas, experiences, evidence of learning through writing, audio or video)
- reviewing (reflections on what has happened, making sense of it all)
- evaluating (making judgements about self and own work and determining what needs to be done to develop/improve/move on)

PDP is a generic term that covers a range of different component processes undertaken in different contexts for different aims. There are many related terms in use. Jackson (2002) listed the following related terms:

- action-planning
- improving own learning and performance
- managing own learning
- personal development planning
- profiling
- recording
- records of achievement
- reflection

Two particularly important and often interchangeable terms are Records of Achievement and Profiles and these can be described as 'a process which involves students in recording, reviewing and reflecting on their own experience, to turn into learning which empowers them to become more confident, self aware and capable people' (Assiter and Shaw 1993).

This definition is similar to that of PDP, but there are many other uses of these terms (Hitchcock, 1990). Profiles or Records of Achievement put greater emphasis on a written record of achievements rather than also including reflection and planning. All of these terms relate to an active rather than passive approach to learning and development. Reflection is thus a key term. The importance of reflection to learning has been well documented in all directed or self-directed contexts (for example, Boud *et al.*, 1985; Brockbank and McGill, 1998; Kolb, 1984; Moon, 1999; Schön, 1983; Tremblay, 2000; Zimmerman, 2002) but it is difficult to be precise in distinguishing the concept from reasoning, thinking, reviewing, problem-solving, inquiry, reflective judgement, reflective thinking, critical reflection and reflective practice (Moon, 1999). Reflective analytical skills can also

be seen as higher order metacognitive skills on which there is an extensive psychological research literature. Indeed, in North America reflectivity in educational processes similar to PDP is based on the idea of self-regulation, which emanates from the psychological literature (Zimmerman, 2000). It includes a rapid increase in interest in electronic portfolios (Cambridge, 2001) that bear a striking resemblance to the electronic tools that underlie PDP in Britain.

Even those concerned with reflection as part of PDP-type processes may use different terminology in their particular national or discipline context. A good example of similar yet related domains is provided by reflective professional practice and action research used to assist the development of practice (Schön, 1983). Such practice includes the provision to students, of learning environments by teachers and lecturers which illustrates the *interconnectedness* of concepts in this area.

All of these variations in the concept of reflection may be relevant to PDP, but PDP also includes recording and planning.

1.2.2 Theories of PDP

PDP is a proxy for a number of concepts that attempt to connect and draw benefit from reflection, recording and planning.

O'Connell (1999, Chapter 4) argues that there has been little cross reference between the literatures on Records of Achievement and on student learning and development but that the theoretical foundations of Records of Achievement seem to be based on the following types of learning:

- experiential learning
- self-directed learning
- reflective learning
- transferable skills and metacognition

The work of Kolb has been particularly influential in conceptualising the way in which PDP processes link together to formalise learning (Kolb and Fry, 1975; Kolb, 1984; Wolf and Kolb, 1984) in the model shown in Figure 1.1.

Figure 1.1: Kolb (1994) experiential learning cycle and Wolf and Kolb (1994) learning styles

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

10
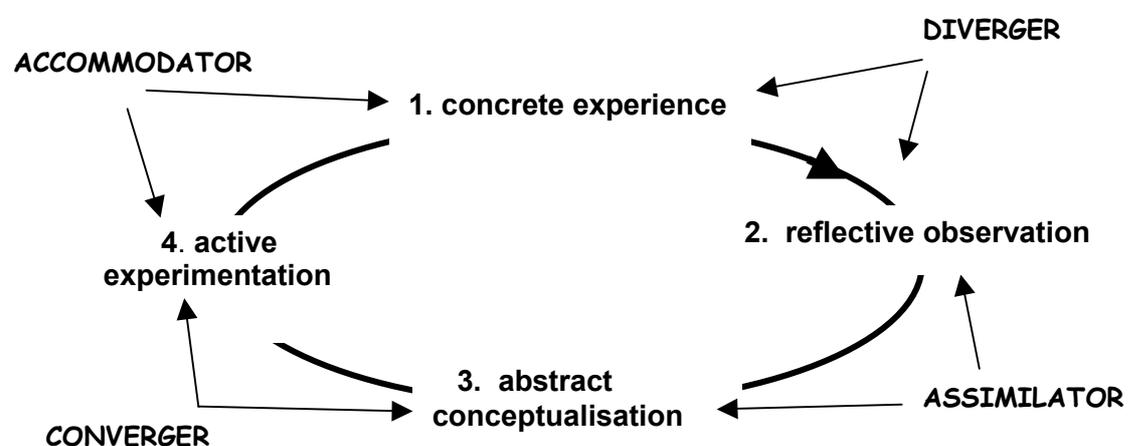
The emphasis on different parts of the model may vary between what is being learnt and for what purpose, and therefore may also vary between academic disciplines. It may also vary according to the styles of the learner with some learners being 'concrete active', 'concrete reflective', 'abstract reflective', or 'abstract active' (Biglan, 1973). This fits the four stages of the Kolb model.

1.2.3 Purposes of PDP

The different purposes and contexts of the use of PDP result in further variation in emphasis on the terminology, definitions, and components of PDP type processes. Jackson *et al*., (2002) identified a number of curriculum responses to PDP:

- Curricula environments that are predominantly disciplinary in focus utilise four extra-curricula strategies to engage students in reflecting on, and recording, their own learning and their capacities to learn (i) support mechanisms with, for example, personal tutors; (ii) extra-curricular award frameworks to develop non-academic skills; (iii) external award frameworks to recognize non-curriculum learning; (iv) development of automated profiling tools.
- Disciplinary curricula environments also recognise non-disciplinary learning and incorporate reflective processes into skills-based curriculum units.
- In curricula environments where there is an explicit focus on skills and capability throughout the academic curriculum, PDP becomes an important sense-making, progress-monitoring and development tool.
- The curriculum is constructed around a model of learning that has embedded within it principles of recording, reflection and planning.
- Trans-disciplinary curricula, such as foundation degrees involving negotiated work-based learning where reflective models of learning, recording and action planning are integral to the process.

These different approaches to PDP encompass many different emphases in how PDP is applied, including the following:

- knowledge acquisition versus self-regulation and development (Barnett *et al*., 1999)
- tactical pieces of work versus strategic programmes of work (Jackson, 2002)
- self-directed versus negotiated versus facilitated PDP (for example, negotiation in process of personal knowledge construction (Baillie, 2002))
- institutional tool versus personal development (Paczuska and Turner, 1997)
- means to an end versus process as product in its own right (Watts, 1992)
- unstructured versus structured versus dialogue recording systems (Langer, 2002)
- formal versus informal and incidental learning (Cseh *et al*., 2000)

These distinctions in purpose lead into the policy and practice contexts within which PDP has been developed.

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

11

1.3 Policy and practice background

Policy and practice initiatives to develop reflective practice in education have a long history. A major policy development was the launch in England in 1991 of the National Record of Achievement (NRA) by the then Department of Education and Science and Department of Employment as a lifelong record of achievement produced in secondary schools to support self-development for all throughout life.

The NRA built on a range of other initiatives that aimed to use reviewing, recording and action planning to help and motivate people to learn and to progress. It provided a single recognisable framework for recording achievements to assist transitions between education, training and employment. It was offered to all 16 year olds and to others on Modern Apprenticeships, National Traineeships and other training initiatives, and 87% of all school-leavers receive an NRA (http://www.dfes.gov.uk/nra/ 26th November 2002). The NRA is now being superseded by an updated system called the Progress File (see http://www.dfes.gov.uk/progfile/ 26th November 2002). A report on ten demonstration projects using the new scheme has recently been published (DfES, 2002).

The development of similar systems in HE arose from the recommendations of the National Committee of Inquiry in Higher Education for a greater focus on means to assist students in monitoring and reflecting upon their personal development (Recommendation 20 in NCIHE, 1997). The committee recommended that students should have Progress Files to help make the outcomes, or results, of learning in higher education more explicit, identify the achievements of learning, and support the concept that learning is a lifetime activity. These Progress Files consist of the following:

- a transcript recording student achievement which should follow a common format devised by institutions collectively through their representative bodies

- a means by which students can monitor, build and reflect upon their personal development consisting of: (a) an individual's personal records of learning and achievements, progress reviews and plans that are used to clarify personal goals and can provide a resource from which material is selected to produce personal statements (e.g. CVs, etc.) for employers, admissions tutors and others; (b) PDP process (http://www.qaa.ac.uk/crntwork/progfileHE/contents.htm 25th November 2002).

A number of organizations concerned with learning in higher education have worked to develop PDP as concept. Representatives from Universities UK (UUK), ScoP, QAA and LTSN have formed a Progress File Implementation Group to help institutions interpret policy for PDP (Jackson, 2001). Their Guidelines for HE Progress files encourage HE institutions to implement a transcript of student achievement with a consistent data set by 2002/03 and suggest that the PDP element of the policy objectives should be operational across the whole HE system and for all HE awards by 2005/06 (http://www.qaa.ac.uk/crntwork/progfileHE/contents.htm 25th November 2002). The PDP in HE Network Scotland performs a similar function.

In addition, the Centre for Recording Achievement (CRA) has been set up as a self-funding UK-wide networking organisation, which supports good practice and

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

12

the sharing of experience in Recording Achievement, Personal Development Planning and Progress Files within educational institutions and professional bodies. The Centre seeks to inform staff involved in developing these processes in schools, colleges, universities, companies and professional bodies about examples of good practice, staff development materials and information on lifelong learning perspectives.
(http://www.recordingachievement.org/ 25th November 2002)

PDP has the potential to assist in the delivery of key national priorities, such as improving student retention; capacity for skill development; progress to employment and empowering individuals to remain employed (Jackson, 2002). The QAA's 'Code of practice: career education, information and guidance' suggests that HE institutions use Progress Files and states that: '..(students) need to develop the skills to manage their own career including the abilities to reflect and review, to plan and make decisions, to use information resources effectively, to create and to take opportunities, and to make provision for lifelong learning' (http://www.qaa.ac.uk/public/cop/copcex/precepts.htm).

In addition to these national initiatives, O'Connell (1999) lists reasons why PDP approaches are being seen by HE institutions as more relevant:

- practical need to develop learner autonomy in mass higher education
- modularity requiring linking across curricula (e.g. Peters *et al.,* 2000)
- employability with explicit transferable skills
- quality assurance with documentary evidence of guidance and support

The employability and key skills dimension links in with the key skills approach of NRA/and Profiles in secondary schools and vocational courses at other post 16 institutions. This is an issue of both documentation of progress and of students' awareness of their skills and potential employability (Hawkins, 1999; Hustler *et al.*, 1998).

A main emphasis of PDP in HE is thus in improving student outcomes in terms of attainment and styles of learning as transferable skills across different academic and practice contexts, and personal skills of self-esteem, awareness and life planning. Jackson (2002) argues that the world is complex and becoming increasingly more complex and requiring more complex models of learning. In addition, there is a growing recognition that the models and cultures of learning in traditional disciplinary based higher education do not fit well with the world of daily life and work. Transdisciplinary models of learning with more explicit models of recording progress in learning may be more appropriate for this complex non-disciplinary world. The move is thus toward curricula to encourage more efficient, more complex, and more self-led learning (O'Connell, 1999).

Expert teachers continually reflect on their own teaching in order to improve it (Schön, 1983; Biggs, 2000). If the teachers are correct in this view, then students might also benefit from reflection. Houghton (2002) goes further in arguing that PDP is both a logical development of good teaching practice and that PDP can only happen if supported by reflective practitioners.

PDP may benefit academic staff by enabling them to be more effective, focused and relevant as teachers. There is also pressure for HE lecturing staff to develop these self-reflective and monitoring skills in order to obtain membership of the

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

13

Institute of teaching and Learning in Higher Education (ILTHE) when such forms of accreditation in teaching is increasingly becoming a prerequisite to teach in HE.

Similarly institutions will benefit from being more relevant and effective and be able to monitor students' progress in achieving the new outcomes of learning.

In addition to developments in secondary schools and HE there have been parallel developments in professional education such as law (Prince, 2002; UK Centre for Legal Education (UKCLE) PDP Working Group (http://www.ukcle.ac.uk/), medicine (McKimm, 2001), and nursing (Lunyk-Child *et al.,* 2001) as well as business (Tamkin *et al.*, 1995).

Many argue that universities should involve critical thinking not only about knowledge but also about self and the world (Barnett 1977). Such ideas can be based on lifelong learning as part of a liberal ideology, a skill based conception of employers' needs, or as a post-modern critique of universal principles or laws (Menon, 1997).

1.4 Research background

A recent literature review by O'Connell argued that there had been little empirical research in the area and that the policy of implementing PDP was based on beliefs and values promoted by committed enthusiasts. Broadfoot (1986) came to the same conclusions about the development of PDP-type systems in schools, and both authors argue for increasing the research base. O'Connell (1999) summarises Kirkpatrick's (1967) distinction between four levels at which educational interventions can be assessed as:

- student reaction data
- evaluation of immediate learning outcomes
- behaviour change
- cost-benefit evaluation

O'Connell (1999) concludes that most of the limited research is on level 1 with the finding that users are often not impressed at first with PDP approaches. However, they later see the value of these for their learning, though this is dependent on the particular approach and the means of its implementation. In addition to O'Connell's levels of research there are studies that focus on the implementation of PDP initiatives (e.g. Broadfoot *et al.,* 1991). There are few studies of independent measures of change. One study reported that use of Records of Achievement at secondary level was associated with school students being better prepared for university, though there was no difference in later academic outcomes (reported in O'Connell, 1999).

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

14

1.5 Authors, funders and other users of the review

This chapter has described the conceptual, policy, practice, and research background to PDP in HE in England where the growth of PDP in HE has been a policy-based initiative developing new practices with little awareness of the research evidence to support. This review was funded by the LTSN with a policy interest in this area in its role of helping HE communities implement new policies that impact on teaching and students' learning. The research team at the EPPI-Centre had little previous knowledge of PDP issues but was assisted by an Advisory Group that allowed for the representation of a range of other user perspectives. The Advisory Group determined the scope of the review in terms of the review question and the audiences for the results of the review.

The development of the Advisory Group stemmed from the LTSN Generic Centre's extensive knowledge of the field. Involvement was sought from a number of organisations which have an interest in this topic area, including the Centre for Recording Achievement (CRA), and the PDP in HE Network Scotland which aims to promote good practice in PDP across education and non-education sectors.

A complete list of the members of the Advisory Group can be found in Appendix 1.1. The eleven members of the Advisory Group represented:

- *Policy interests:* LTSN
- *Practitioner interests:* university and college teachers (including two National Teaching Fellows), Centre for Recording Achievement (main practitioner network outside Scotland involved in staff and institutional development) and PDP in HE Scotland (equivalent to CRA in Scotland)
- *Student interests:* National Union of Students and National Postgraduate Committee
- *Researcher interests*: universities (educational researchers), university staff and educational developers

Many of the members of the Advisory Group represented more than one sector of interest, such as university staff who were both lecturers and researchers. Although such members were not necessarily representing the interests of both of these roles, the overlap in roles of members of the group added to the richness and variety of perspectives.

The Advisory Group was connected to the Progress File Implementation Group (the inter-agency group with responsibility for promoting PDP and monitoring its introduction – UUK, SCoP, QAA and LTSN) via the chair of the group who is a member of PFIG.

1.6 Review questions

In the context of the introduction of policy on personal development planning, the review questions are as follows:

- *Systematic map:* What empirical research has been undertaken on the use of PDP in higher and related education?

- *In-depth review (systematic synthesis):* What evidence is there that processes that connect reflection, recording, planning and action (i.e. PDP) improve student learning?

2. METHODS USED IN THE REVIEW

This chapter describes the methods used in conducting this systematic review employing EPPI-Centre methods, procedures and tools. Figure 2.1 provides an overview of the stages of conducting a systematic review and how they flow from each other. Section 2.1 describes methods for user involvement which are intertwined with each section of the review. Section 2.2 describes methods for identifying potentially relevant studies through searching and screening. Section 2.2 also describes the methods for describing studies through keywording and mapping. Finally, section 2.3 describes methods for in-depth scrutiny and synthesis of studies identified as relevant. The purpose, process and quality assurance measures for each stage are described.

Figure 2.1: Review process and operationalisation of methods

1. **Defining scope of review** → Review question and include/exclude criteria developed

*Please note that other exclusion criteria of historical time limits and language were screened out through search strategies.

2. **Identification of potential studies** → Papers identified through searching

3. **Application of inclusion/ exclusion criteria** → Abstracts and titles screened → Full document screened → Papers excluded

1 Not on topic

2 Not empirical

3 Not age 14+

4 Not student in formal education

Duplicates

4. **Characterisation** → Included papers keyworded for map

5. **In-depth review** → Narrower inclusion criteria applied for data-extraction and synthesis of results

2.1 User involvement

2.1.1 Approach and rationale

The involvement of users in the review process is driven by a rationale of providing research evidence to inform policy and practice. In order for a systematic review to address policy, practice and research questions, a clear specification of such questions is required. The range of groups involved with PDP issues may have different perspectives and be concerned about different questions that will produce different answers. To be of relevance to a wide audience of policy-makers, practitioners, students, researchers and other users of research, it is important that those groups be involved in shaping the review.

2.1.2 Methods for user involvement

The main method for ensuring user involvement in the review was consultation with the Advisory Group throughout the process of undertaking the review. The members of the advisory group and their interests are described in section 1.5 and Appendix 1.1.

The expertise and user perspectives of the Advisory Group assisted the review team in the following five main areas:

- identification of the most important focus of the review
- definition of PDP and its sub-concepts
- identification of the different audiences for the review
- specifics – searching and other parameters for the review
- a sounding board in the evaluation of interim and final results

2.2 Identifying and describing studies

In order to be considered relevant for answering the review question 'What evidence is there that processes that connect reflection, recording, planning and action (the four components of PDP) improve student learning?', a study had to meet a set of inclusion/exclusion criteria. These criteria were used to exclude all studies that fell outside the scope of this review. This section describes (i) the detail of the criteria; (ii) the methods for identifying potential studies, and (iii) how the criteria were applied to the studies found. The full inclusion/exclusion criteria document can be found in Appendix 2.1.

2.2.1 Defining relevant studies: inclusion/exclusion criteria

Twelve criteria were drawn up that a study would have to meet in order to be included in the review. These criteria focused on the topic area, socio-demographic and historic details, education sectors and contexts, and study type.

Topic
The first type of criteria was that the research should be on the topic of PDP. As PDP is a relatively new term, it was necessary to use criteria that specified the essential components of PDP rather than simply the term PDP. The Advisory

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

19

Group assisted the research team by proposing the following five criteria related to topic. (For further guidance regarding the topic area codes, see the full inclusion/exclusion criteria in Appendix 2.1.)

(i) Concrete learning experiences in a wide range of contexts
(ii) Metacognitive awareness in relation to PDP
(iii) For strategic PDP processes: at least implicitly include 'reflection', 'action', 'planning' and 'recording' (otherwise review would be on all study skills, but search strategy would be broader with just 'reflection' plus at least of one of the other three processes)
(iv) For tactical PDP processes: process of 'reflection' plus at least one other process
(v) Evidence of outcomes of learning

The purpose of criterion (i) was to identify that learning might not simply occur in academic subject areas of the curriculum; in fact, in addition to academic/subject contexts, educational contexts within HE might include professional and vocational, work-based and work-related, key/core/transferable skills development or career and personal development outside the academic curriculum.

Criterion (ii) specifies the need for metacognition, or an awareness of learning, to be taking place in relation to PDP.

The Advisory Group identified two types of PDP, strategic (criterion (iii)) and tactical (criterion (iv)). Strategic PDP was identified as being programmes of work involving PDP in a longer-term and broader context than tactical PDP which relates to individual pieces of work involving PDP.

Evidence of outcomes of learning (criterion (v)) is intended to capture both internal evidence of learning, such as participants' own judgement that their capacity to learn has improved, or external evidence of outcomes of learning, for instance judgements based on evidence such as improved exam grades, increased retention of students or improved progression to employment.

Socio-demographic/historic criteria

(vi) Geography: no limits
(vii) Language: English only
(viii) Historical time: report of study dated 1982 onwards
(ix) Student age: 14 years and over

The country in which the studies took place was not limited (criterion (vi)) as the aim of the review was to understand the effect of PDP-type processes regardless of context and it was felt there would be much information on this topic from around the world. The Advisory Group acknowledged that there was likely to be a wealth of information from other countries, that it would be important to uncover areas that they were not yet familiar with, and that any comparisons between different approaches in different contexts would be interesting and valuable. The extent that geographical variations could be included was limited by the financial and time constraints of the project which meant it was not possible to incur the costs or time involved in translating studies not in English (criterion vii)).

The historical limits were set as at the date of the report from 1982 on. The rationale for this was that since PDP is such a recent phenomena 20 years would be more than ample for capturing relevant material (criterion (viii)).

The student age range was defined as those aged 14 or over (criterion (ix)) as the focus of this review is HE but studies on the older age group of school students were also included as it was expected that much PDP-type research conducted in secondary education could be relevant.

Education sectors and contexts
The HE focus was the basis for drawing up the two following criteria on:

(x) Education/Learning: The people using the PDP must be students enrolled in formal education.

(xi) Context of use of PDP: Although the PDP must be related to formal education, the actual use of the PDP may be in any educational context or non-educational context.

Study type
As the aim of this review is to assess the effect of the processes of reflection, planning, action and recording on learning, it was felt necessary to limit the type of study included to those that contained empirical evidence.

(xii) Must include empirical research.

2.2.2 Identification of potential studies: search strategy

Different sources of published and unpublished research literature were searched to locate any reports on the use of PDP-type methods. The aim of the literature search was to exhaustively locate as much of the relevant literature as possible.

Electronic databases
Searches were conducted on commercially available electronic databases (British Education Index, Social Science Citation Index, Sociological Abstracts, ASSIA, ERIC, Psychinfo, Educationline, CERUK, Australian ERIC, Zetoc).

A search strategy was developed by the EPPI team and was informed by several sources of evidence:

- expertise of the Advisory Group

- evidence from key texts on PDP provided by the Advisory Group

- evidence from handsearching of journals

- exploratory searching on several databases to compare the effectiveness of strategies

Three basic strategies were tested.

First exploratory searches were conducted, using key terms identified in literature provided by the Advisory Group. The terms used included PDP, planning, action, reflection, learning, record, Record of Achievement and Individual Action plans.

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

21

These initial exploratory searches yielded little material, of which only a small proportion was relevant. Therefore a second strategy was developed.

The second strategy was informed by discussion of the review team and the Advisory Group concerning the conceptual underpinnings of PDP. As a result of these discussions, four key concepts were specified: reflection, action, planning and recording. It was further determined that activities involving reflection and at least one other of the key concepts could identify papers on PDP-type processes. These key conceptual terms were then applied to the databases.

The second search strategy was found to be deficient. This was evidenced by the fact that it failed to access relevant literature known to the Advisory Group, because the papers did not include these key concepts in titles or abstracts. Furthermore, these search terms often identified studies which were not relevant to this review. For example 'recording' often identified literature regarding 'recording contracts' for music artists. The second strategy was therefore ineffective in capturing relevant material whilst also capturing large proportions of irrelevant material.

The ineffectiveness of the second strategy identified the need to compose a search strategy using terminology researchers would be likely to use in this area. A string of terms was composed using the expertise of the Advisory Group, the literature provided by the Advisory Group, and the relevant literature identified by preliminary handsearching. The string of terms was then systematically tested for its effectiveness in capturing the literature provided by the Advisory Group, and the relevant material identified by the exploratory handsearches.

This third strategy was applied to the various databases on dates between the 5th and the 22nd of April 2002. The terms used in the final search string included broad terms covering the wider concept of PDP, including personal development but also phrases, such as 'independent learning' and 'active learning'. Other terms reflected the key concepts identified in strategy two, for example 'learning log', 'learning journal', 'knowledge profile' and 'record of achievement' were among the terms depicting the key concept of 'recording'.

For certain databases the search strategy needed to be further refined, for instance, non-education databases required further terms to be applied to the search string specifying the focus of education and learning. Furthermore certain databases did not cover the full breadth of the historical time limits for inclusion (1982-2002), so searches were conducted from the earliest to the latest possible dates for each database within the confines of the inclusion criteria.

The final search strategy and its application to the individual databases can be found in Appendix 2.2.

Handsearches
Handsearches of journals were conducted of all journals which were:

- identified as potentially containing relevant studies (meeting the inclusion criteria)
- held in the University of London Institute of Education Library
- not covered by the electronic databases

The identification of journals containing potentially relevant material was informed by consideration of (1) the initial planning discussions on the LTSN review's ideas page (e.g. journals in the areas of special educational needs, careers education, teacher education and counselling included because the LTSN Review Project Manager and Advisory Group Member was aware that PDP was well represented in these fields); (2) the review question and (3) the review protocol, including the inclusion/exclusion criteria for the review.

The list of 3,016 journals available on 14th April 2002 in the Institute of Education's library was searched and a sub-group of 54 journals was identified.

Searching the ERIC and BEI databases to ascertain if any of the 54 identified Journals appeared further refined this list. Journals that were not covered by ERIC or BEI were then handsearched from 1982 to 2002 where available. Handsearching was also conducted for journals where some, but not all, issues from 1982 to 2002 were covered on BEI or ERIC. In all, 13 journals were searched by hand; for details of the handsearched journals, see Appendix 2.3.

Information from the Advisory Group
In addition to the electronic database and handsearching, potentially relevant material for screening was forwarded to us by the LTSN Advisory Group. Also included for screening was literature handed to the review team in the form of references in the bibliographies of two key papers produced by the LTSN for this project and the references in the bibliography of a Master's Thesis on PDP.

Internet searches
The information provided by the Advisory Group informed a search of the internet for any further relevant materials (unpublished primary research reports). The Internet search procedure involved three strands:

Strand 1: Investigating ERIC for web-based resources that are identified when using the LTSN search strategy on this particular database.

Strand 2: Using the global search engine Google to perform a search of websites containing the following terms in their title: (i) personal development plan; (ii) personal development plans; and (iii) personal development planning. It was decided to search specifically for PDP because the terms denoting concepts and actions associated with the topic of PDP and previously utilized in the string for searching databases (e.g. learning log, progress file, etc.) resulted in several thousand hits per term on Google.

Strand 3: The Advisory Group identified several sites as being possible sources of primary research on PDP or background materials. These included (i) the DfES' progress file site, (ii) several sites of universities and colleges developing policy and practice in the use of personal development planning; (iii) the recording of achievement.com website and (iv) the website of Alverno College in Milwaukee, USA.

2.2.3 Screening studies: applying inclusion/exclusion criteria

The inclusion/exclusion criteria (vii) that studies must be in the English Language and criteria (viii) that studies must be published from 1982 onwards were applied

at the searching stage as they could be applied via the search facility of electronic databases and in handsearching.

The members of the review team (authors of this report listed on page i) applied the remaining criteria. There were two rounds of screening in which these criteria were applied. An initial round of screening was conducted using the information provided by electronic databases, the study title and, where available, the abstract. A second stage of screening occurred where the group then applied the same criteria to the full text of each report that was (i) not excluded in the first round of screening and (ii) was available to the review team before Monday 22nd July 2002.

The criteria applied by the review team were operationalised using the following codes:

- Not on topic = Exclude 1
- Not empirical = Exclude 2
- Not aged 14+ = Exclude 3
- Not student in formal educational setting = Exclude 4
- Include = I

The method used for screening was to apply a set of exclusion codes in sequence from Exclude 1 to Exclude 4. If none of the exclusion codes could be applied, then the study would be coded I = Include.

Only one code, the highest relevant code, was applied. This method enables identification of studies as being on topic if they were not excluded on Exclude 1 for not being on topic. Similarly, studies excluded on Exclude 3 must, therefore, be on topic and empirical. In this way the method for application of exclusion codes acted as a form of keywording.

References which met one or more criteria for exclusion, but were thought to be of particular interest to the study by the coder (e.g. non-empirical studies that had much to say about the topic of interest) were marked as B = background in addition to the exclusion codes.

2.2.4 Characterising included studies

All full reports meeting the inclusion criteria that were available were then coded using the EPPI-Centre Educational Keywording System V0.9.5 and an additional set of Review Specific Keywords (Appendix 2.4).

The benefits of using the EPPI-Centre standardised keywording system for coding are as follows:

- It codes detailed bibliographic information which can be entered into a database and used for searching purposes.
- It provides a quick summary of key aspects of individual studies.
- The collation of the detailed bibliographic information of studies on EPPI databases is a valuable and sustainable resource.

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

24

Core keywording: EPPI-Centre Educational Keywording System

The EPPI-Centre Educational Keywording System enables reports to be classified according to various criteria including bibliographic detail such as how the report was identified, whether a report is published or unpublished, whether or not it is linked to another report, contextual detail including the language of its publication, the country in which the study was carried out. In addition, key aspects of study are coded for such as the topic focus of the study, population on which the study focuses (e.g. teachers, learners, etc., including demographics of age and sex if study participants are learners), and the focus of the context of participants in study (e.g. curriculum and educational setting of the participants). Furthermore, the type of study the report describes (e.g. description, exploration of relationships, researcher-manipulated evaluation) is also coded.

Review-specific keywords

For the purposes of this review, an additional keywording system was developed and used in addition to the EPPI-Centre core keywords. A list of 13 review specific keyword categories enabled reports to be classified in relation to this specific review (keywords 11 to 23 in Appendix 2.4).

The course/qualification and discipline of students involved in PDP activities were keyworded in order to map the educational levels and fields PDP is used in. To provide an overview of the types of PDP being used, two keyword categories were developed: the main features of the PDP intervention (e.g. Action Planning, Goal Setting, etc.) and the sub-concepts of the PDP intervention as identified by the review team and the Advisory Group (reflection, planning, recording, action).

Further keyword categories were developed in order to characterise the implementation of the PDP. The aims of the PDP were identified through keywording as either being course-specific or broader than course-specific. The context (school- or work-based) and implementation (directed by teacher or negotiated with students) of the PDP were also keyworded to enable the review to demonstrate how these variables interact with others.

The outcomes of the intervention were classified enabling a detailed description of the impact of the PDP. The type of outcome measure was also classified as to whether it was 'Participant(s) views', 'Psychometric tests', 'Examinations' or 'Other'. Two 'free text' keyword categories allowed coders to identify the 'theoretical/ideological framework' of the study and to report the 'Author's account of results'. These results had not been scrutinized by the reviewers with respect of quality or weight of evidence, so needed to be interpreted with care.

Systematic map

This classification according to the EPPI-Centre core educational keywords and the review-specific keywords enabled a rich description, or map, of the research literature relevant to this review. The mapped results of the keywording are described in Chapter 3.

The mapping stage of a review has a number of uses:

- It provides a way of describing the studies found to be relevant.
- It gives an overview of the field of study, highlighting where research is located and where there are gaps in the research.
- It enables reviewers to focus on one particular area of the map, further narrowing the criteria for inclusion in the in-depth review.

2.2.5 Identifying/describing studies: quality assurance process

Quality assurance was carried out at the stages of application of Inclusion/Exclusion criteria and application of keywords to ensure consistency in application across the team.

Screening
A selection of references from all databases was 'double-coded' by the review team to ensure consistency in coding.

The team first met to collectively screen 30 studies from ERIC and five from each of the other databases. This initial exercise was conducted to foster a shared understanding of the inclusion/exclusion criteria and as a result further guidance for applying the inclusion/exclusion criteria were drawn up (see the full inclusion/exclusion criteria document Appendix 2.1).

Quality of consistency of coding was further assured by the 'double-coding' of 5% of studies downloaded from each electronic database; due to the very large number of references obtained from ERIC, 100 rather than 5% of references were double coded from this database.

Keywording
Quality assurance was also conducted for the review-specific keywords in the form of a pilot test. Once the keywords had been compiled, they were piloted by keywording five papers to assess for relevance and ease of application. Once this pilot had been conducted, further discussion of the keywords and the results with the Advisory Group led to agreement on the final strategy and guidance for use was developed.

2.3 In-depth review

2.3.1 Moving from broad characterisation (mapping) to in-depth review

The production of the map allowed reviewers to tighten the focus of a review and draw on the most relevant information for answering the review question 'What evidence is there that processes involving reflection, recording, planning and action (i.e. personal development planning (PDP)) improve student learning'? The review question provided a rationale for focusing on those studies that would provide the most rigorous 'evidence' of an effect on 'learning'.

Narrowing of inclusion criteria
The narrowing of focus to studies addressing the review question for systematic research synthesis concentrated on two variables: study type and outcome measures.

Study type
Using the results of the keywording, the review team was able to identify those studies that evaluated an intervention or process. The focus on a particular study type was further narrowed, by selecting only those evaluation studies that were

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

26

keyworded as evaluations of 'researcher-manipulated' as opposed to 'naturally occurring' policy and practice interventions.

The rationale for identifying studies within this study type was that the aim of the review was to look for evidence of effect of processes connecting reflection, action and recording; therefore it was important to identify studies where the methodology had been set up to test for effects of PDP. Evaluations of naturally occurring policies and practices obviously have the benefit of examining interventions taking place in a naturalistic context; however, it is then difficult to disentangle the effect of the topic of interest (PDP) from the effect of uncontrolled variables related to the context. (For example, in naturally occurring evaluations, bias can occur from the lack of control of how participants are selected to receiving PDP, participants may have been self-selected, therefore pre-disposing the results to a positive bias).

Since the focus of this review was on the impact of the processes involved in PDP, rather than the impact of the context in which PDP occurred, it was agreed that evaluations of researcher-manipulated interventions would provide the most rigorous evidence.

Type of outcome measure
In addition to narrowing the criteria by study type, the review team felt it was important to look at the type of outcome measure. The review-specific keywords identified the types of outcomes measured as falling into four categories:

- participant(s) views
- psychometric tests
- examinations
- other

The focus of the review question on impact again provided a rationale for selecting outcome measures that would provide evidence of effect. Although participants' views are important for understanding processes, the focus of the review question was an efficacy question and individuals cannot be sure about what factors affect their behaviour. Thus the review team further narrowed the focus by only looking at those studies providing independent evidence of an impact on learning; therefore studies where the outcome measures were only participants' views were excluded.

This narrowing of focus resulted in studies being included for in-depth review that were evaluations of 'researcher-manipulated interventions' with independent outcome measures.

2.3.2 Detailed description of studies in the in-depth review

In order to focus on the included studies in an in-depth manner, data were extracted using a standardised template. The EPPI-Centre Guidelines for extracting data and quality assessing primary studies in educational research Version 0.9.5 (EPPI-Centre 2002) are a set of questions enabling a reviewer to draw out details on the aims of the study, the nature and characteristics of the intervention, the nature and characteristics of the sample, the methods of analysis of the study, the outcome measures, results and conclusions. The guidelines were applied using EPPI-Reviewer software.

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

27

2.3.3 Assessing quality of study and weight of evidence for the review question

The quality of execution of each study, and the weight of evidence of each study for the review in terms of appropriateness of design and relevance of focus, was assessed using four criteria:

Weight of evidence A: Taking account of all quality assessment issues, is the study undertaken according to the accepted quality criteria for the research design used?

Weight of evidence B: Appropriateness of research design and analysis for addressing the question, or sub-questions, of this specific systematic review.

Weight of evidence C: Relevance of particular focus of the study (including conceptual focus, context, sample and measures) for addressing the question or sub-questions of this specific systematic review.

Weight of evidence D: Taking into account quality of execution, appropriateness of design and relevance of focus, what is the overall weight of evidence this study provides to answer the question of this specific systematic review?

Criterion A aims to assess the quality of execution of a study for answering its own 'study' question. Criteria B and C are review-specific questions, assessing the appropriateness of the research design and the relevance of focus of the study in relation to the 'review' question. Criterion D is again a review-specific question, allowing an overall judgement of the weight of evidence each study provides for answering the question of this systematic review.

2.3.4 Synthesis of evidence

The data-extraction process, including the weight of evidence criteria, provides a basis for the interrogation and assessment of the research evidence reported by the research studies. As such the tools enabled the review team to consider the evidence of the impact of processes involving reflection, recording, planning and action (i.e. personal development planning (PDP)) on improving the learning of different people, in different contexts and using different approaches.

2.3.5 In-depth review: quality assurance process

For each study in the in-depth review, two members of the review team independently completed the procedures of data-extraction and assessing weight of evidence. A moderation exercise was then carried out between the two reviewers to deal with any disagreements and establish consistency in application of the guidelines.

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

28

3. IDENTIFYING AND DESCRIBING STUDIES: RESULTS

Section 3.1 of this chapter reports the numbers of studies identified at each stage of searching, the source of studies included in the review, and the publication status of the included studies. Section 3.2 presents the characteristics of these studies based on the generic and review-specific keywording tools, broadly divided into 'PDP approach', 'context', 'outcomes' and 'research design'.

3.1 Studies included in the map from searching and screening

The search of electronic databases identified 14,271 articles. A further 168 references were identified, 145 through contacts on the LTSN Review Advisory Group, and 23 from handsearching of journals. The total of 14,439 articles identified were screened based on a reading of their title and/or abstract resulting in the identification of 982 potential includes (Figure 3.1). A total of 813 of the 982 articles were obtained and the full report read; the other 169 were unobtainable. From these 813 reports, a total of 157 studies were identified as meeting the criteria for inclusion and were keyworded using the EPPI-Centre generic keywording tool and the specific keywords developed for use in this review. The full references for each of the 157 included studies are listed in section 7.1 of the references.

Table 3.1 presents the source of identification of the 157 studies included as relevant in the systematic map. The first column shows that the largest number of studies were identified by ERIC, the Social Science Citation Index. None of these sources on their own identified more than 41% of the included studies showing the importance of not relying on a single source for searching in this topic area. The sources were searched in sequence. The second column in the table shows the number of new studies identified by each source and the number of studies already identified by previous sources. The third column shows the number of studies identified by the source but that had already been identified earlier in the sequence.

Table 3.1: Source of studies with sequential search of sources (N=157 studies)

Source of study	Total studies identified by each source: not mutually exclusive N	Further studies identified sequentially: mutually exclusive N	Studies identified earlier in sequence N
1. Contacts (Advisory Group)	13	13	0
2. ERIC	65	64	1
3. Social Science Citation Index	51	25	26
4. Psychinfo	27	17	10
5. Australian ERIC	13	9	4
6. British Educational Index	26	14	12
7. ZETOC	42	11	31
8. ASSIA	6	2	4
9. Sociological Abstracts	4	2	2
10. Hand searching	1	0	1
11. Total	248	157	N/A

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

30

Figure 3.1: Filtering of papers from searching to map to synthesis

Total number of papers found through searching of electronic databases

14,271

Further 168 articles identified – 145 by LTSN Advisory Group and 23 by hand searching of journals

Abstracts and titles screened = 14439

Excluded papers = 13457

Duplicates = 1394

1 Not on topic = 10302

2 Not empirical = 1164

3 Not age 14+ = 220

4 Not student in formal education = 348

Not in English /or pre-1982 = 29

Potential includes = 982

Unobtainable papers = 169

Full document screened (813)

Excluded papers = 656

Duplicates = 3

1 Not on topic = 451

2 Not empirical = **152**

3 Not age 14+ = 30

4 Not student in formal education = 16

Not in English = 4

Included and keyworded papers for map = 157

Included in narrower inclusion criteria for data-extraction and synthesis of results = 25

Table 3.2 shows that the majority of the keyworded studies are published journal articles or chapters in books. Most of the unpublished keyworded studies are conference papers (n = 21 of 24) or unpublished reports of research (e.g. one Masters thesis).

Table 3.2: Type of paper (N=157 studies)

Status	N
Published	133
Unpublished	24
Total (mutually exclusive)	157

Only 22 of the 157 keyworded studies included in the map were linked to one or more other reports in such as way that they report the same study.

3.2 Characteristics of the included studies (systematic map)

The rest of this chapter focuses on characteristics of studies identified as meeting the inclusion criteria of the review. These studies are mapped using keywords which provide a mapped overview of the research field.

In reporting the findings of the map, it is important to be aware that (i) the results indicate research activity and are not a survey of practice in PDP and (ii) the results show frequencies and associations between variables but there may be other factors causing the associations (i.e. the associations may be artefacts).

In many instances totals do not equal 157, as many keyword codes are not mutually exclusive. Also, not all research reports provided data for all codings. Appendix 3.1 lists details of all 157 included studies including the first author and date of study, the educational setting in which each study was completed, the discipline and course/qualification which featured in the study, the country/countries in which each study was completed, the main features of the PDP intervention reported in each study and the context of using PDP in each study. As 25 of the 157 included mapping keyworded studies were taken forward to the in-depth review (see Chapter 4) these are listed separately in Appendix 3.1.

3.2.1 PDP Approach

As outlined in Chapter 2, the inclusion/exclusion criteria stipulated that to be included the PDP activity in a study must include reflection and at least one or more of the other sub-concepts of PDP, planning, recording and action. Reflection and one or more of these sub-concepts therefore characterized all of the included studies with 118 studies involving at least reflection and planning, 120 studies involving at least reflection and recording and 118 studies involving at least reflection and action (Table 3.3).

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

32

Table 3.3: Sub-concepts of PDP referred to (N=157 studies)

Sub-concepts of PDP referred to	N
Reflection and planning	118
Reflection and recording	120
Reflection and action	118
Total (not mutually exclusive)	356

Table 3.4 provides details with regard to the main features of the PDP in the 157. Main features varied, but the most common features are the keeping of learning logs/journals/diaries (n = 62 out of 157) and reflective practice (n = 58 out of 157). Overall numbers are greater than 157 as studies could include two or more main features.

Table 3.4: Main features of the PDP in included studies (N=157 studies)

Main features of PDP	N
Action planning	21
Case-based instruction	1
Goal setting	30
Independent/autonomous learning	20
Learning logs/journals/diaries	62
Learning styles	23
Learner training	8
Portfolios	5
Problem-based learning	7
Profiling	3
Record of achievement	14
Reflective practice	58
Self-assessment/evaluation	36
Self-awareness	15
Self-direction	28
Self-motivation	6
Self-regulation	32
Cooperative learning between students	23
Cooperative learning between student(s)/teacher(s)	19
Other	15
Total (not mutually exclusive)	426

The context of learning using PDP was course-based in the vast majority of included studies (n = 147); 30 of the studies involved a workplace context for learning. However, a study could involve both: for example, some of the learning involved in included studies took place in the context of teaching practices within an initial teacher-training course.

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

33

Table 3.5 shows the reasons provided for learners using PDP. PDP being required as part of a course was the most popular reason. Only in a relatively small number of studies (15) was the PDP self-initiated. Indeed, in 76 included studies the PDP process was categorized as 'directed (prescriptive)' and this compared to 77 studies in which the PDP implementation was categorized as 'negotiated (emergent)'.

Table 3.5: Reasons for learners using PDP in included studies (N=157 studies)

Reason for using PDP	N
Part of course requirement	105
Optional	20
Self-initiated	15
Unclear	8
Not stated	10
Total (mutually exclusive except for one study*)	158

*Double coding in one study where both course requirement and optional components

Table 3.6 reveals that in the majority of studies the main aims of the PDP intervention and the breadth of outcomes for PDP were closely tied to course specific concerns.

Table 3.6: Main aims of PDP and breadth of outcomes of PDP (N=157 studies)

Main PDP aims	N	Breadth of outcomes of the PDP	N
Helps attain course-specific outcomes	89	Predominantly course specific	99
Broader self-development	63	Predominantly broader than course specific	56
Not stated	6	Not stated	2
Total (mutually exclusive)	158*	Total (mutually exclusive)	157

*Double coding in one study where comparison of course-specific outcomes with broader self-development

Cross-tabulations of main PDP aims by reasons for using PDP (Figure 3.2) show where the reason for using PDP is said to have been self-initiated by the learner, in eight studies the aims of the PDP were course-specific and in only three studies was self-initiated PDP aimed at broader self-development. On the other hand, a slightly higher proportion of the course requiring PDP had broader self-development as an aim.

Figure 3.2: Main PDP aims by reasons for using PDP

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

34

(N = 157 studies, with 1 study double-coded on each of 'reasons for learners using PDP' and main aims of PDP' – see notes under Tables 3.5 and 3.6)
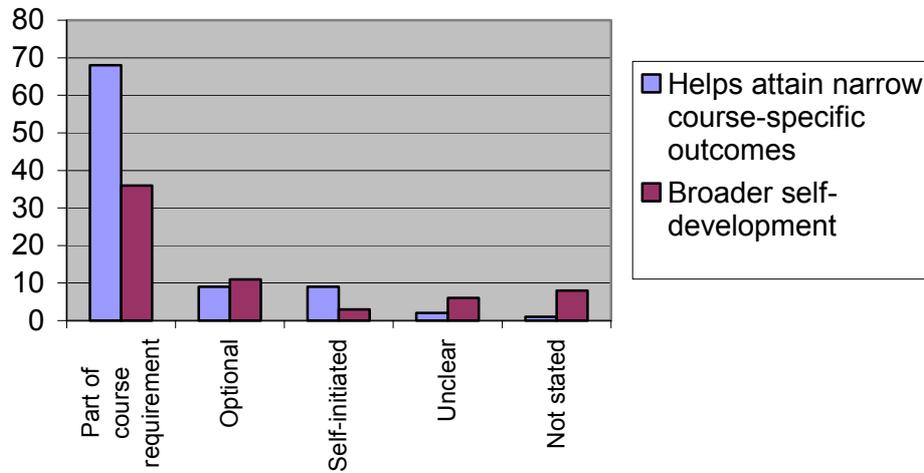
Cross-tabulations of main PDP aims by PDP implementation (Figure 3.3) reveal that 50 studies involving directed PDP implementation aimed to attain narrow course-specific outcomes whilst only 39 studies including PDP with this aim involved negotiated implementation. Of those studies involving PDP with the aim of achieving broader self-development, 26 involved PDP implemented in a directed (prescriptive) way and 36 involved PDP implemented in a negotiated way.

Figure 3.3: Main PDP aims by PDP implementation
(N = 157 studies, with 6 'not stated')
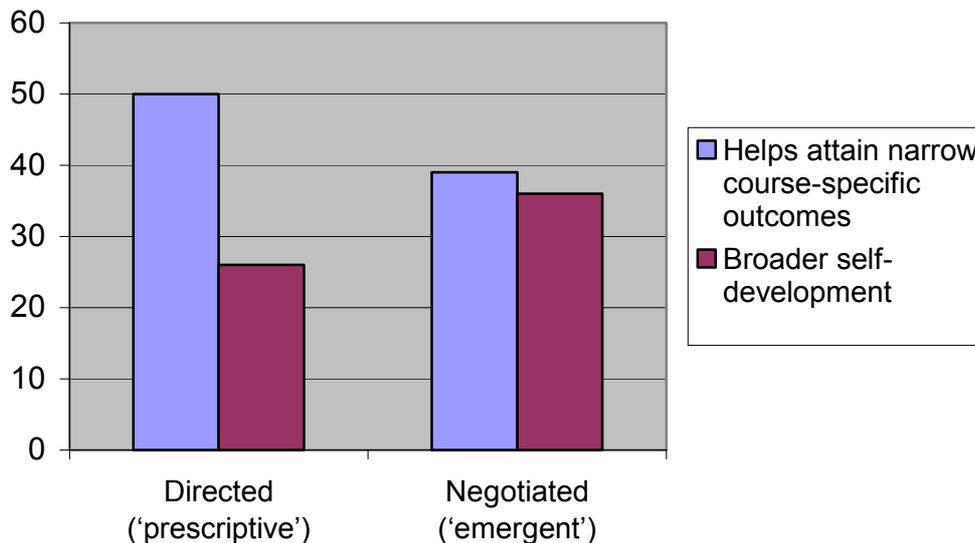
Cross-tabulations of main PDP aims by main features of PDP (Figure 3.4) illustrate that under the majority of main features of PDP, more studies were aimed at course-specific outcomes than at broader self-development. However, the

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

35

opposite was true with regard to recording achievement and self-direction (Table 3.3).

Figure 3.4: Main PDP aims by main features of PDP
(N = 157 studies; not mutually exclusive with 426 features coded)
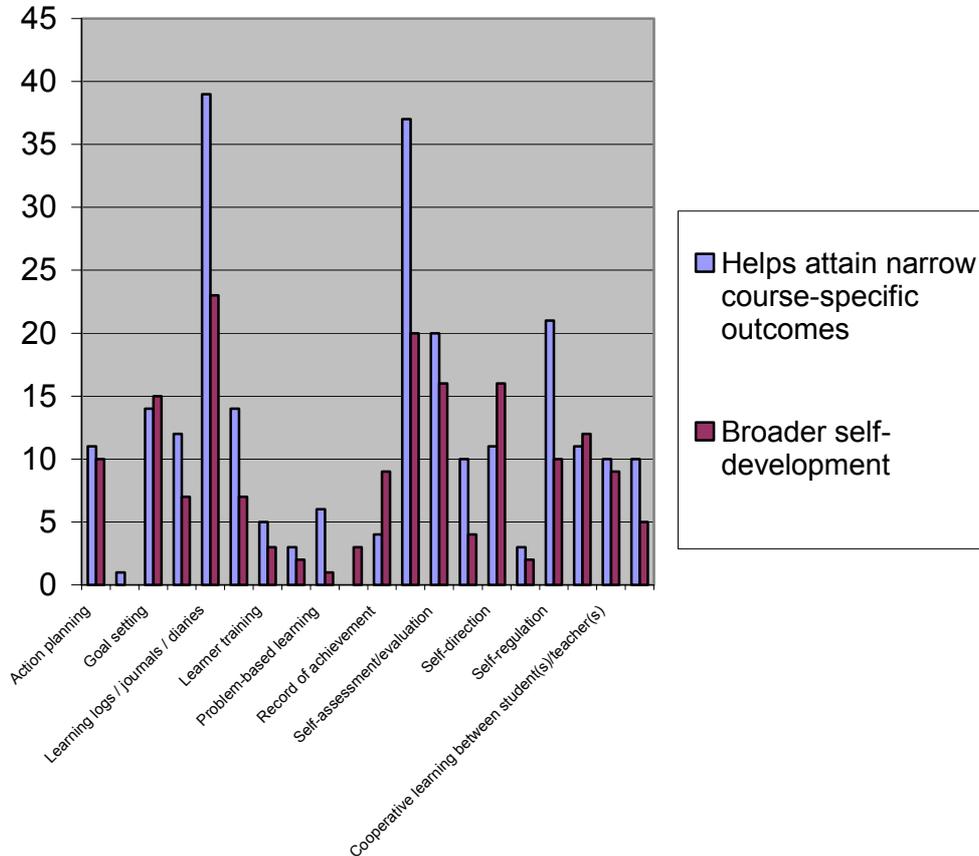
Figure 3.5 shows how the main features of PDP varied by country. Records of achievement and profiling were only used in UK studies. Action planning was also absolutely and relatively more coming in UK than in North America. The same was true, but with lower frequency, for self-awareness which was also a relatively common feature of PDP in non-UK European studies (published in English).

Goal-setting, independent autonomous learning, logs, journals and diaries, and reflective practice were similarly common in the UK and North America. The same was true for Australian studies, except for the very few studies on goal setting in that country.

Self-direction, self-regulation, and cooperative learning were all relatively more common in North America than other countries. Self-regulation was also relatively common in non-UK Europe than in other non-North American countries.
These results show the differential use of terms in research reports on PDP-type processes. It is unclear the extent that this is due to the use of different processes, theories about PDP or terminology to describe such processes. There is much international overlap in the frequency that the PDP terms are used, but it is clear that records of achievement and profiling are particularly UK phenomena, and that

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

36

self-direction and self-regulation are particularly common in North American studies.

Figure 3.5: PDP feature by country
(N = 157 studies; not mutually exclusive with 426 PDP features coded)
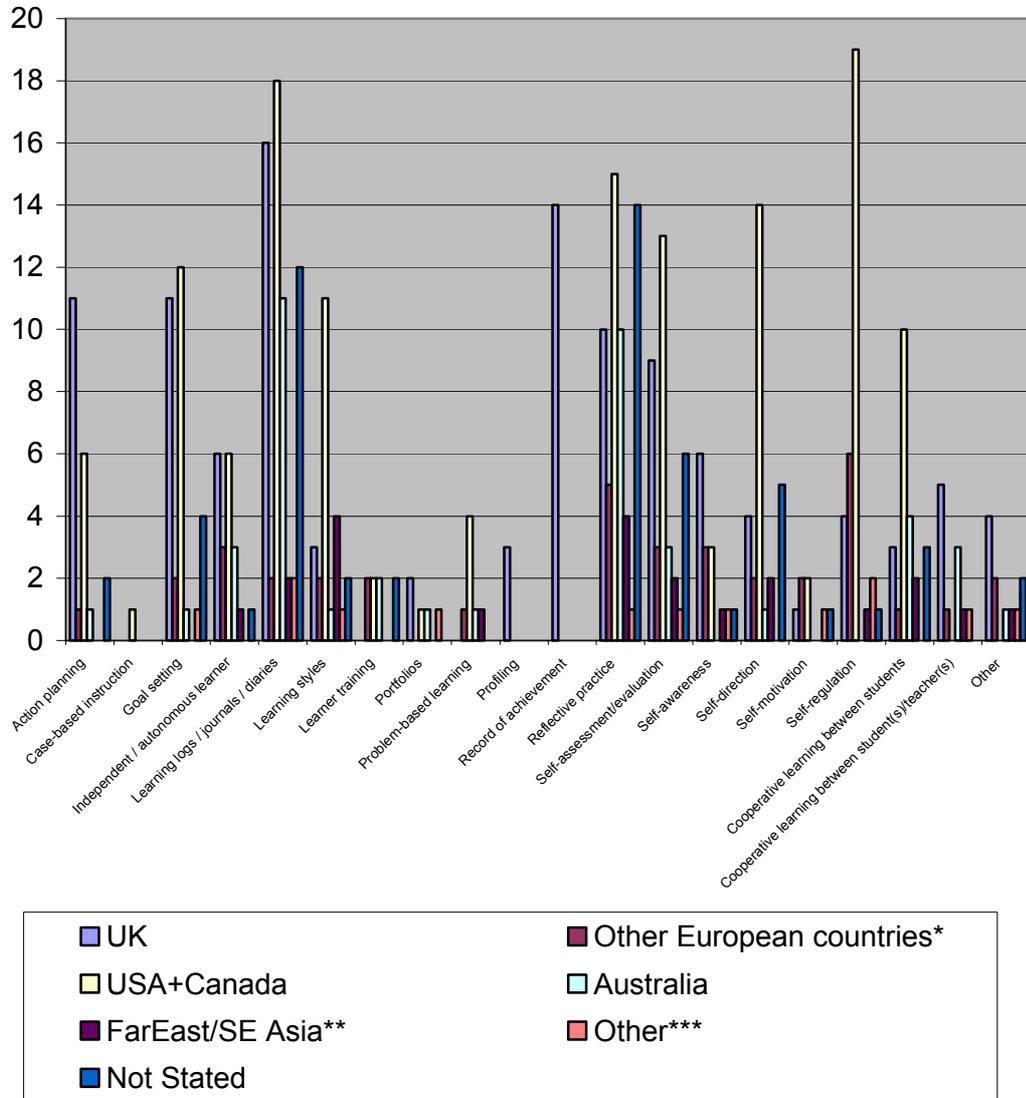
* Belgium, Finland, Netherlands, Spain
** Hong Kong, Japan, Singapore, Taiwan, China
*** Israel, South Africa

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

37

3.2.2 The context of the included studies: country, educational setting and population focus

Table 3.5 provides details with regard to the number and proportion of included studies according to the country in which they were conducted. It was not possible to determine the country in which the research was undertaken for 15 of the 157 mapped studies. Where identification was possible, the majority of included studies were carried out in the USA, closely followed by the UK.

Table 3.7: Country/countries in which the studies were carried out (N=157 studies)

Country	N
USA	47
UK	41
Australia	19
Canada	9
Hong Kong	6
Netherlands	5
Finland	3
Israel	3
Japan	2
Spain	2
Belgium	1
China	1
Singapore	1
South Africa	1
Taiwan	1
Not stated	15
Total (mutually exclusive)	157

Table 3.8 describes the educational setting for the 157 included studies, with several studies covering more than one educational setting. The most popular educational setting, for the mapped studies, was higher education institutions, although 26 studies are wholly or partly based in secondary schools and 15 in post-compulsory educational institutions.

Table 3.8: The educational setting(s) of the studies (N=157 studies)

Educational Setting	N
Correctional institution	1
Higher education institution	118
Home	1
Post-compulsory educational institution	14
Primary school	4

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

38

Educational Setting	N
Secondary school	26
Special needs school	1
Workplace	3
Other educational setting	5
Total (not mutually exclusive)	173

All of the studies focused on learners with several studies having additional population foci (Table 3.9).

Table 3.9: Population focus of the included studies (N=157 studies)

Population focus of the study	N
Learners	157
Senior management	1
Teaching staff	12
Other	2
Total (not mutually exclusive)	172

Table 3.10 shows that the majority of studies in the map involved learners aged 17 or over, which is a function of studies being excluded from the review if they solely involved learners that were under 14 years of age. Seventy-five studies did not provide information on the age of learners.

Table 3.10: Age of learners in the included studies (N=157 studies)

Age of learners	N
5-10	2
11-16	22
17-20	46
21 and over	51
Not stated	75
Total (mutually exclusive)	196

Table 3.11 shows that the majority of the included studies were focused on learners of mixed sex, although there are a few studies that focus on male learners only or female learners only. Sixty-six studies did not provide information on the sex of learners.

Table 3.11 Sex of learners in the included studies (N=157 studies)

Sex of learners	N
Female only	6
Male only	3
Mixed sex	82
Not stated	66
Total (mutually exclusive)	157

Cross-tabulations of educational setting by main PDP aims (Figure 3.6) show that the majority of the HE-based studies were reported to have aims of course-specific outcomes rather than aims of broader self-development. In contrast, the majority of studies based in a post-compulsory educational setting involved PDP-type interventions aimed at broader self-development. Primary and secondary school based studies included an equal number of PDP interventions aimed at course-specific and broader self-development.

Figure 3.6: Educational setting by main PDP aims
(N = 157 studies; not mutually exclusive with 173 codings)

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

40
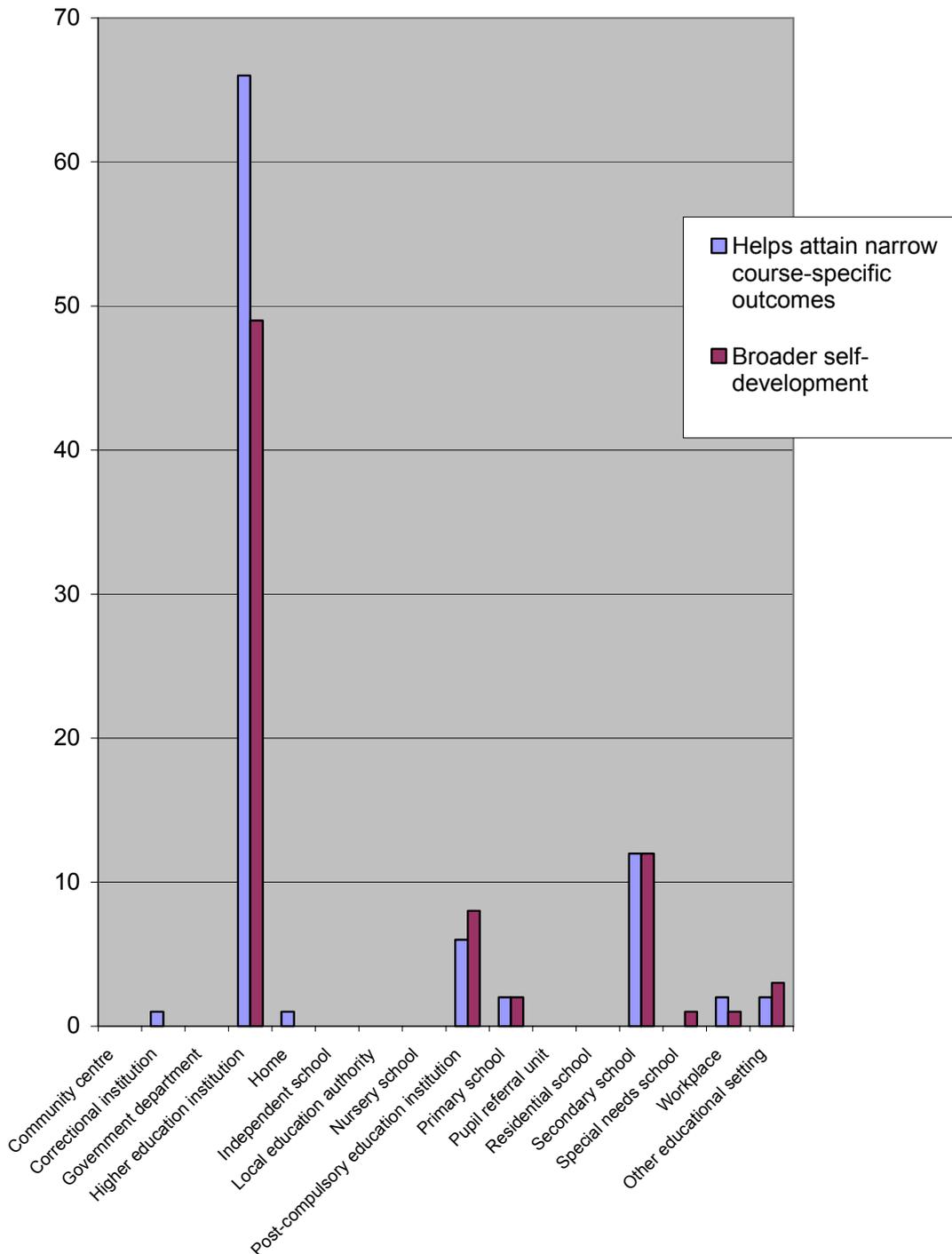
Figure 3.7 presents cross-tabulations of educational setting by main features of PDP. This shows that studies in HE were more likely to have used learning logs and journals and reflective practice and less likely to have used action planning and Records of Achievement compared to other educational settings. Studies in secondary schools were more likely to have used self-regulation. These findings may be due to differential approaches or differential use of language in different educational settings.

Figure 3.7: Educational setting by main features of PDP
(N = 157 studies; not mutually exclusive with 426 PDP features coded)
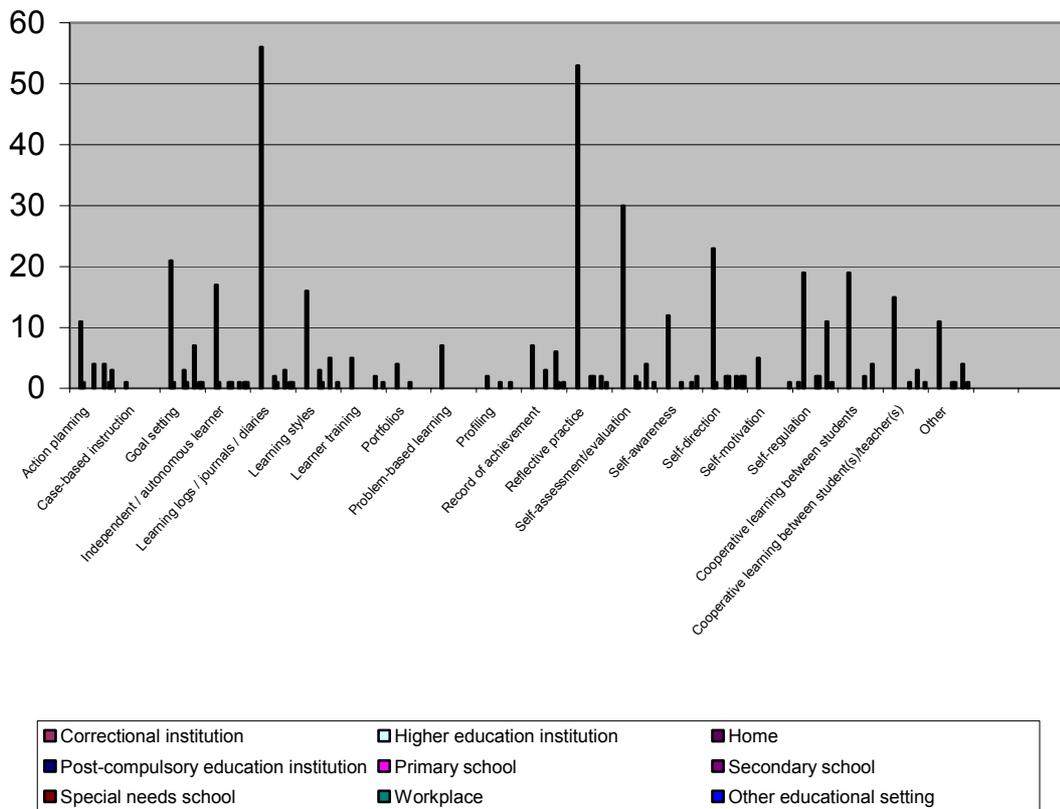
Cross-tabulations of educational setting by outcome type (Figure 3.8) show that the most popular outcomes for PDP in HE-based studies are related to context/learning style/autonomy (84 of 119 studies and to attitudes to learning and reflection (69 of 119 studies). A total of 50 of the 119 HE-based studies had information/content (grades and increased knowledge as outcomes).

Figure 3.8: Educational setting by outcome type
(N = 157 studies; not mutually exclusive with 418 outcomes types coded)
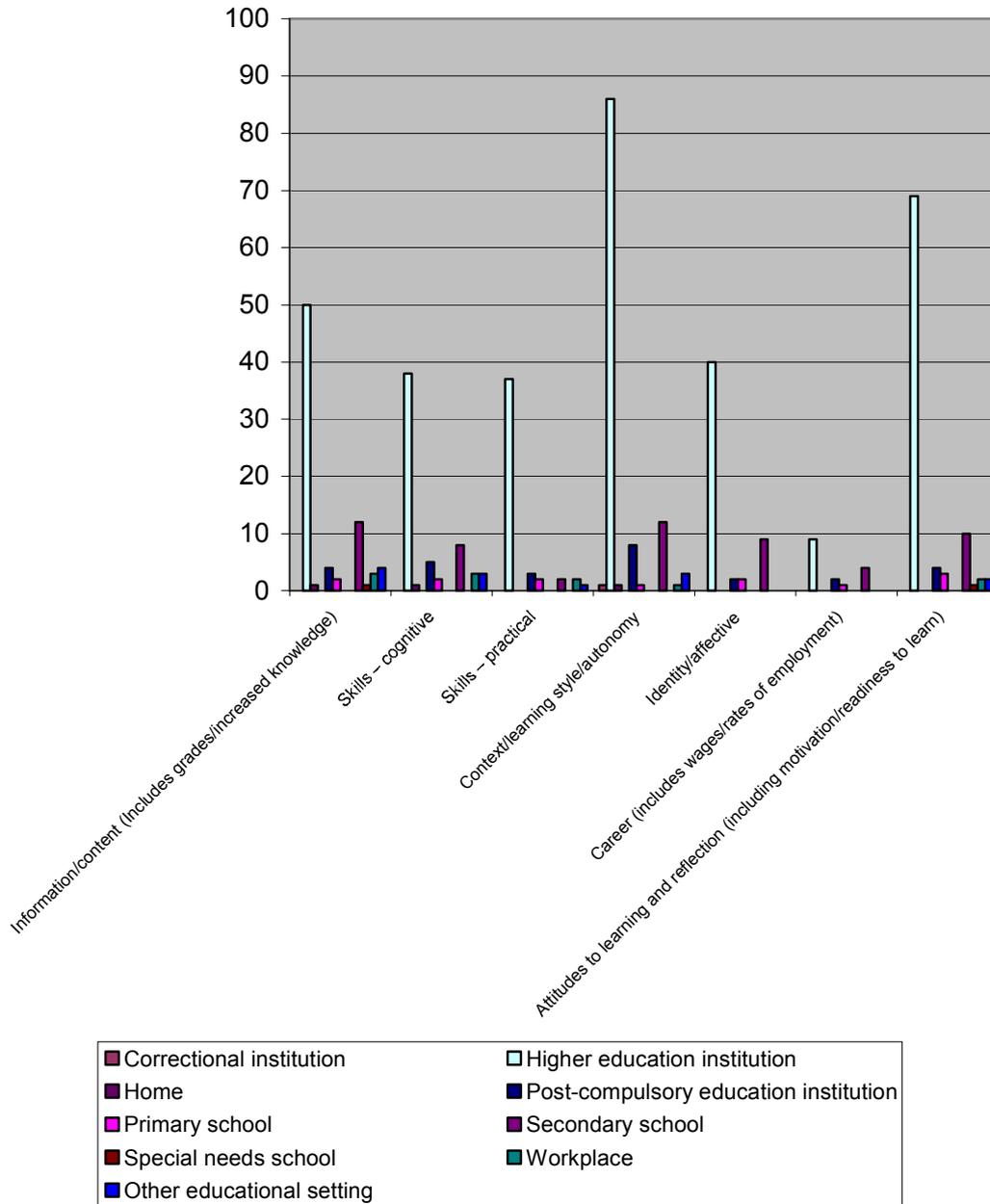
3.2.3 Outcome measures

Table 3.12 describes the outcomes measured in the 157 included studies. A single study could have one or more outcomes. A relatively high number of the mapped studies (107 of 418 codings from 157 studies) involved PDP with a outcome measure relating to context/learning style/autonomy. Attitudes to learning and reflection were also popular outcome measures (84 of 418 codings from 157 studies), being more prevalent than information/content, including grades and increased knowledge (69 of 418 codings from 157 studies).

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

42

Table 3.12: Outcomes of the PDP in included studies (N=157 studies)

Outcomes of PDP	N
Information/content (includes grades/increased knowledge)	69
Skills-cognitive	53
Skills-practical	43
Context/learning style/autonomy (improved communication/ways of learning)	107
Identity/affective (self-esteem/confidence/self-awareness)	49
Career (includes wages/rates of employment)	13
Attitudes to learning and reflection (including motivation/readiness to learn)	84
Total (not mutually exclusive)	418

Table 3.13 provides a description of the type of outcome measures used in the 157 included studies. Many studies included more than one type of PDP outcome measure. The most popular type of outcome measure for PDP in the mapped studies was participants' views (135 of 203 codings from 157 studies). Examinations were used as an outcome measure in only 26 of the 157 mapped studies.

Table 3.13: Type of outcome measure used in the included studies (N=157 studies)

Type of PDP outcome measure	N
Participant(s) views	135
Psychometric tests	25
Examinations	26
Other	17
Total (not mutually exclusive)	203

Cross-tabulations of outcomes by age of learners (Figure 3.9) show that there seems to be a link between the age of learners and certain types of PDP outcomes, such as context/learning style, autonomy and attitudes to learning and reflection. The older the age of the learners involved in the mapped studies, the more likely the studies are to report the latter outcomes.

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

43

Figure 3.9: Outcomes by age of learners
(N = 157 studies; not mutually exclusive with 418 outcome types coded
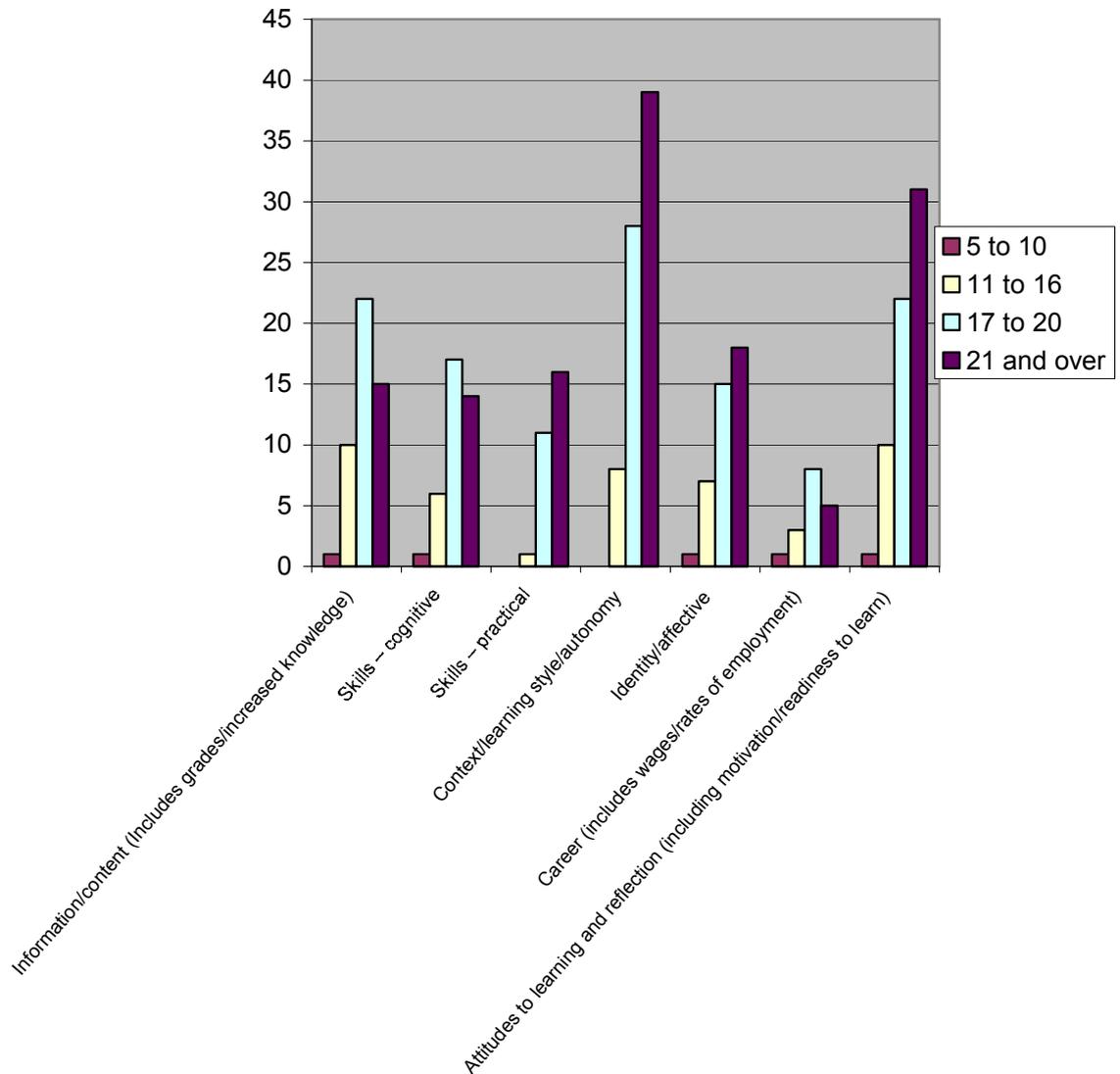
Cross-tabulations of outcomes by context for PDP (Figure 3.10) show that for all types of outcomes, except those where outcomes relating to career are evident, the context is predominantly course-based. With 15 studies including outcomes relating to careers, 12 are course-based.

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

44

Figure 3.10: Outcomes by context
(N = 157 studies; not mutually exclusive with 418 outcome types coded)
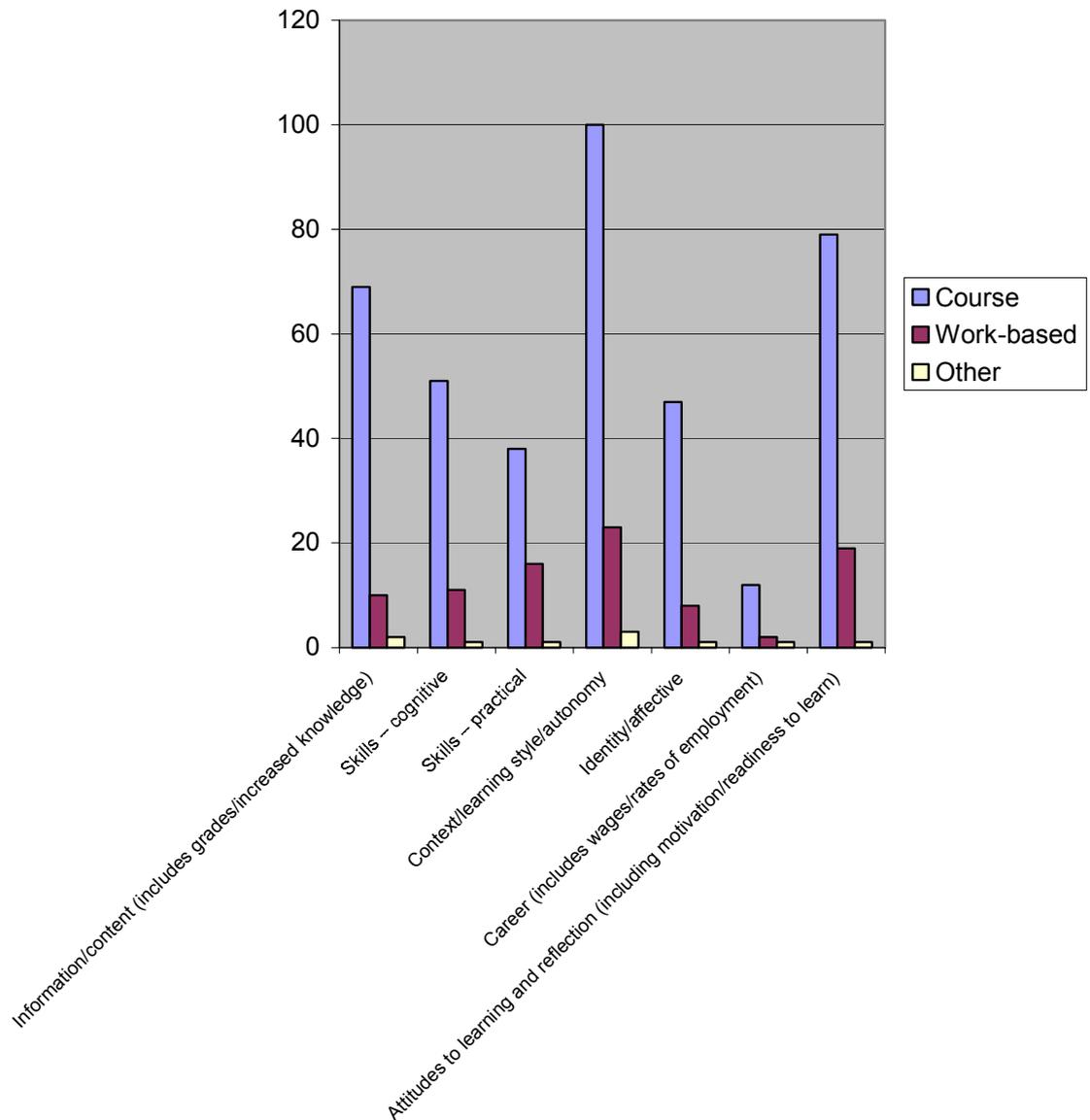
Cross-tabulations of breadth of outcomes by main features of the PDP intervention (Figure 3.11) show that 46 of the studies involving PDP that feature learning logs/journals/diaries are predominantly course specific, while 16 are broader than course specific. Similarly, 42 of the studies featuring reflective practice as a main feature of PDP have course specific outcomes, while 17 have broader outcomes. It is interesting to speculate whether the emphasis on course-specific outcomes in any way restricts the reflection that takes place as part of such interventions. For PDP with features of action planning, goal-setting and learning styles, there are more similar levels of coding of course specific and broader outcome types.

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

45

Figure 3.11: Breadth of outcomes by main features of PDP
(N = 157; not mutually exclusive with 426 PDP features coded)
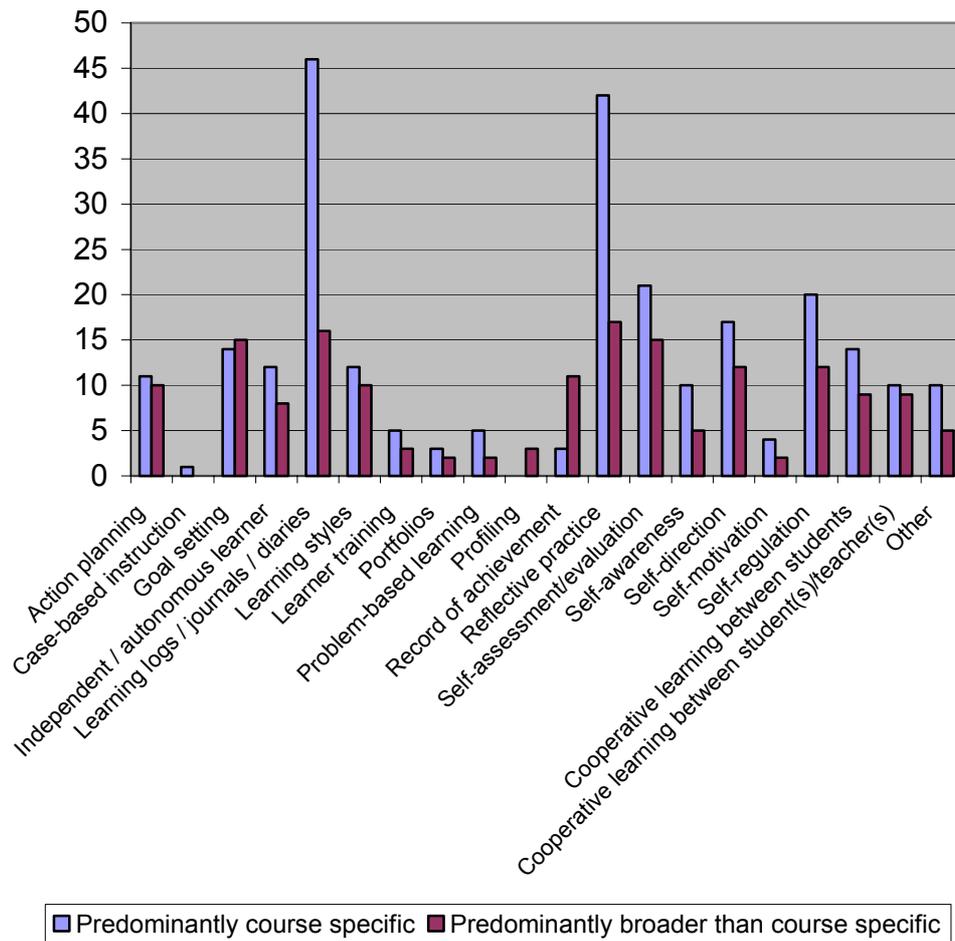
3.2.4 Research design

With regard to the type of studies included, data in Table 3.14 show that 70 were evaluations; 40 were of naturally occurring interventions and 30 were of researcher manipulated interventions. Sixty-three studies were explorations of relationships and 24 were descriptive studies.

Table 3.14: Type of study (N=157 studies)

Type of study	N
Description	24
Exploration of relationships	63
Evaluation naturally occurring interventions	40
Evaluation researcher manipulated interventions	30
Total (mutually exclusive)	157

There were no obvious patterns in the data between study type and main aims of PDP, PDP implementation, main features of PDP, breadth of outcomes, type of outcome measures and specific outcomes.

Study type by country in which the study was carried out (Figure 3.12) showed that the great majority of the included studies that were keyworded in the map as descriptive were undertaken in the UK. In contrast, the majority of all other types of studies were carried out in the USA. The relative distribution across countries of study type shows that USA, UK and Australia dominate and between them are the setting for the majority under each study type. However, there appears to be a shortage of studies in the UK where there has been an evaluation of impact through the researcher manipulating the provision of the PDP.

Figure 3.12: Study type by country of study
(N = 157 studies; mutually exclusive codings)
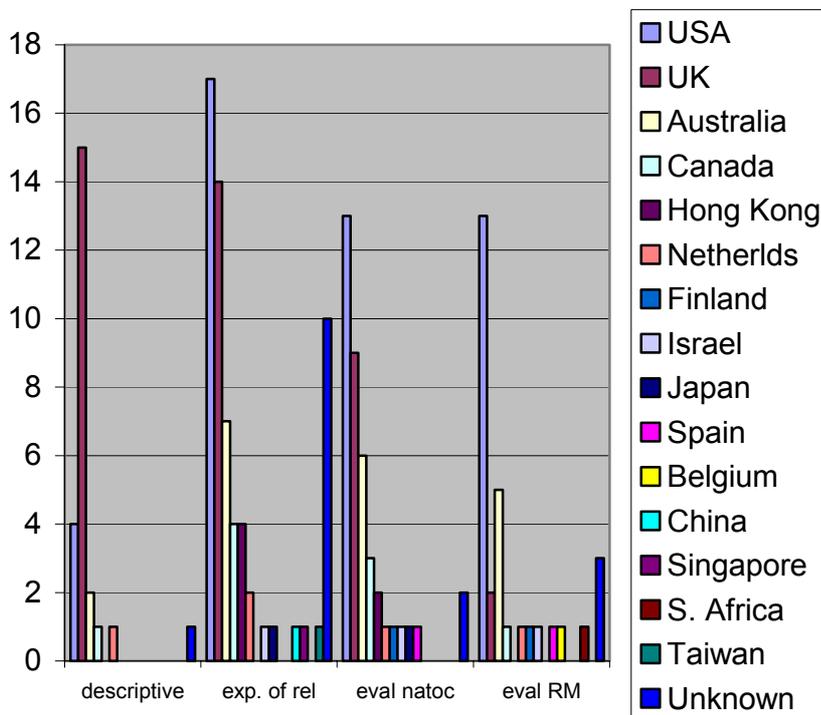
3.3 Identifying and describing studies: quality assurance results

As described in Chapter 2 (section 2.2.5), the quality assurance process involved a joint development stage for screening and keywording. This was followed by double-screening of 5% of identified studies.

Each pair of codings was compared and results showed that 86% of the time coders had applied the same code. Of the 14% where there was disagreement this was often between the different exclusion codes rather than between inclusion and exclusion; less than 7% of the total were differences of coding between 'include' and 'exclude'. These differences were discussed and agreements were made between the two coders.

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

47

4. IN-DEPTH REVIEW: RESULTS

This chapter begins by describing the process of selection involved in moving from the broader characterisation of the 157 studies keyworded for the map and described in the previous chapter to an in-depth review of 25 studies selected for data-extraction and synthesis. The 25 studies selected for in-depth review are then compared with the total of the 157 studies in the map. A brief comparison is also made between the 25 evaluations of researcher-manipulated interventions with external objective measures of learning outcomes chosen for the in-depth review and the 45 'other evaluations' included in the map. The quality assessment and synthesis of findings from the in-depth review is presented.

4.1 Selecting studies for the in-depth review

The searching and application of inclusion/exclusion criteria resulted in 157 studies being keyworded for the map of research activity. These were all studies identified as meeting the inclusion criteria of being on topic, in English, published since 1982 and concerned with people at least 14 years of age engaged in formal education. The subsets of these studies that were most able to answer the review question were selected for detailed data-extraction, quality assessment and synthesis. The review question was:

> *In the context of the introduction of policy on personal development planning (PDP), what evidence is there that processes that connect reflection, recording and action planning improve student learning?*

As explained in Chapter 2, the studies most likely to answer this impact question were evaluations of PDP-type processes. Altogether 70 evaluations were part of the 157 included studies keyworded for the map. A further decision was taken to use those evaluations where the policy or practice intervention was or could be classified as researcher-manipulated. Within evaluations of researcher-manipulated interventions, there is an attempt to control for factors that might affect the relationship between learning outcomes and PDP-type processes.

Altogether there were 30 evaluations of researcher-manipulated interventions, of which 25 included external evidence of learning outcomes and five had participants' views as learning outcome data. Although participants' views are central to questions of adequacy and acceptability of a public service, such as higher education, they are less able to determine the effectiveness of services, so these five studies were not included in the synthesis.

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

48

4.2 Comparing the studies reviewed in-depth with the total studies in the systematic map

This section examines the similarities and differences between the sub-set of studies included in the in-depth review (evaluations of researcher manipulated interventions with objective outcome measures) with the rest of the evaluation studies and other studies included in the map.

Tables 4.1 to 4.19 list frequency counts for all the 157 mapping keyworded studies, the subset of 25 studies included in the in-depth synthesis and the 45 'other evaluation' studies not included in the in-depth synthesis. As with the 157 studies included in the map, the majority of the 25 studies in the in-depth review were identified from the searches of electronic databases (n=24 of 25) and were published reports of research (n=20 of 25). Four of the five unpublished studies were conference papers and one was a Masters thesis.

As with the 25 studies in the in-depth review, the majority of the 'other evaluations' were found through electronic databases, were published reports and were not linked to one or more other reports in such a way that the latter also reported the same study.

Table 4.1: Identification of report

	Map	In-depth	Other evaluation
Citation	0	0	0
Contact	13	1	2
Handsearch	0	0	0
Electronic database	144	24	43
Total codings /studies	157 /157	25 /25	45 /45

Table 4.2: Status

	Map	In-depth	Other evaluation
Published	133	20	38
Unpublished	24	5	7
Total codings /studies	157 /157	25 /25	45 /45

Table 4.3: Linked reports on same study

	Map	In-depth	Other evaluation
Not linked	128	20	38
Linked	22	2	7
Not stated	7	3	0
Total codings /studies	157 /157	25 /25	45 /45

Table 4.4: Topic focus/foci of the study

	Map	In-depth	Other evaluation
Assessment	3	0	0
Curriculum*	2	1	1
Equal opportunities	1	0	0
Teacher careers	3	0	0
Teaching & learning	155	25	44
Other	4	0	0
Total codings /studies	168 /157	26 /25	45 /45

Table 4.5: Country/countries in which the study was carried out *(please specify)*

	Map	In-depth	Other evaluation
USA	47	15	13
UK	41	1	11
Australia	19	2	9
Canada	9	1	3
Hong Kong	6	0	2
Netherlands	5	1	1
Finland	3	1	1
Israel	3	1	1
Japan	2	0	1
Spain	2	1	1
Belgium	1	1	0
China	1	0	0
Singapore	1	0	0
South Africa	1	1	0
Taiwan	1	0	0
Not stated	15	0	2
Total codings /studies	157 /157	25 /25	45 /45

Table 4.6: Population focus/foci of the study

	Map	In-depth	Other evaluation
Learners	157	25	45
Senior Management	1	0	0
Teaching Staff	12	2	1
Other	2	0	1
Total codings /studies	172 /157	27 /25	47 /45

Table 4.7: Sex of learners

	Map	In-depth	Other evaluation
Female only	6	0	0
Male only	3	1	2
Female and male	82	17	24
Not stated	66	7	19
Total codings /studies	157 /157	25 /25	45 /45

Table 4.8: Age of learners (years)

	Map	In-depth	Other evaluation
5-10	2	0	1
11-16	22	5	3
17-20	46	9	14
21 and over	51	7	18
Not stated	75	10	9
Total codings /studies	196 /157	31 /25	45 /45

Table 4.9: Educational setting(s) of the study

	Map	In-depth	Other evaluation
Correctional institution	1	0	1
Higher education institution	118	16	38
Home	1	0	1
Post-compulsory education inst.	14	3	2
Primary school	4	1	1
Secondary school	26	5	5
Special needs school	1	0	0
Workplace	3	0	1
Other educational setting	5	2	1
Total codings /studies	173 /157	27 /25	50 /45

Table 4.10: Type(s) of study

	Map	In-depth	Other evaluation
Description	24	0	0
Exploration of relationships	63	0	0
Evaluation: naturally occurring intervention	40	0	40
Evaluation: researcher-manipulated intervention	30	25	5
Total codings /studies	157 /157	25 /25	45 /45

Table 4.11: Main features of PDP intervention

	Map	In-depth	Other evaluation
Action-planning	21	3	6
Case-based instruction	1	0	1
Goal-setting	30	4	7
Independent/ autonomous learning	20	1	10
Learning logs/journals/diaries	62	4	21
Learning styles	23	3	4
Learner training	8	4	2
Portfolios	5	1	2
Problem-based learning	7	1	3
Profiling	3	0	2
Record of achievement	14	0	5
Reflective practice	58	8	15
Self-assessment /evaluation	36	4	12
Self-awareness	15	2	4
Self-direction	28	3	11
Self-motivation	6	2	0
Self-regulation	32	11	6
Cooperative learning between students	23	0	10
Cooperative learning between student(s)/ teacher(s)	19	2	9
Other	15	4	2
Total codings /studies	426 /157	57 /25	132 /45

Table 4.12: Sub-concept(s) of PDP other than 'reflection' referred to

	Map	In-depth	Other evaluation
Planning	118	18	31
Recording	120	15	36
Action	118	20	33
Total codings /studies	356 /157	53 /25	100 /45

Table 4.13: Context of learner using PDP

	Map	In-depth	Other evaluation
Course	147	22	43
Work-based	30	3	7
Other	5	1	1
Total codings /studies	182 /157	26 /25	51 /45

Table 4.14: Reasons for learner using PDP

	Map	In-depth	Other evaluation
Part of course requirement	105*	19	30*
Optional	20*	4	9
Self-initiated	15	0	3
Unclear	8	1	2
Not stated	10	1	2
Total codings /studies	158* /157	25 /25	46* /45

* Double coding on one item

Table 4.15: PDP implementation

	Map	In-depth	Other evaluation
Directed (prescriptive)	76	22	19
Negotiated (emergent)	77	1	26
Not stated	4	2	0
Total codings /studies	157 /157	25 /25	45 /45

Table 4.16: Main PDP aims

	Map	In-depth	Other evaluation
Helps attain course-specific outcomes	89*	17	27
Broader self-development	63*	7	16
Not stated	6	1	2
Total codings /studies	158 /157	25 /25	45 /45

* Double coding on one item

Table 4.17: Breadth of outcomes

	Map	In-depth	Other evaluation
Predominantly course specific	99	18	30
Predominantly broader than course specific	56	7	15
Not stated	2	0	0
Total codings /studies	157 /157	25 /25	45 /45

Table 4.18: Outcomes

	MAP	IN-DEPTH	Other Evaluation
Information/content (includes grades/increased knowledge	69	16	19
Skills-cognitive	53	9	18
Skills-practical	43	5	12
Context/learning style/autonomy (improved communication / ways of learning)	107	16	29
Identity/affective (self-esteem/confidence/self-awareness)	49	6	19
Career (includes wages / rates of employment)	13	0	5
Attitudes to learning and reflection (including motivation / readiness to learn)	84	8	25
Total codings /studies	418 /157	60 /25	127 /45

Table 4.19: Type of outcome measure

	Map	In-depth	Other evaluation
Participant(s) views	135	12	42
Psychometric tests	25	13	7
Examinations	26	12	4
Other	17	8	3
Total codings /studies	203 /157	45 /25	56 /45

4.2.1 PDP approach

With regard to several factors – PDP sub-concepts referred to in studies, context of PDP, reasons for learners using PDP and a greater focus on course specific than broader self-development – the studies in the map, data extracted and 'other evaluation' studies were similar. Table 4.11 reveals a difference between the samples of studies in terms of the prevalence of main features of PDP. Compared with all studies in the map and the 'other evaluation' studies, data-extracted studies were relatively more likely to be concerned with self-regulation and less likely to be concerned with independent learning, logs and journals, cooperative learning and slightly less likely to be concerned with self-assessment.

Table 4.15 highlights a further possible distinction between the set of mapped studies and the sub-set of studies in the in-depth review. While the PDP within the 157 mapped studies was characterized by an almost even split between directed and negotiated implementation, within the subset of studies in the in-depth review only one (Entwistle and Ramsden, 1983) of the 25 studies was categorized as negotiated implementation. Figure 4.1 illustrates this difference.

Figure 4.1: Implementation of PDP
(N = 154 mapping keyworded studies with not stated on 4 studies)
N = 25 data-extracted studies in the in-depth review; all mutually exclusive
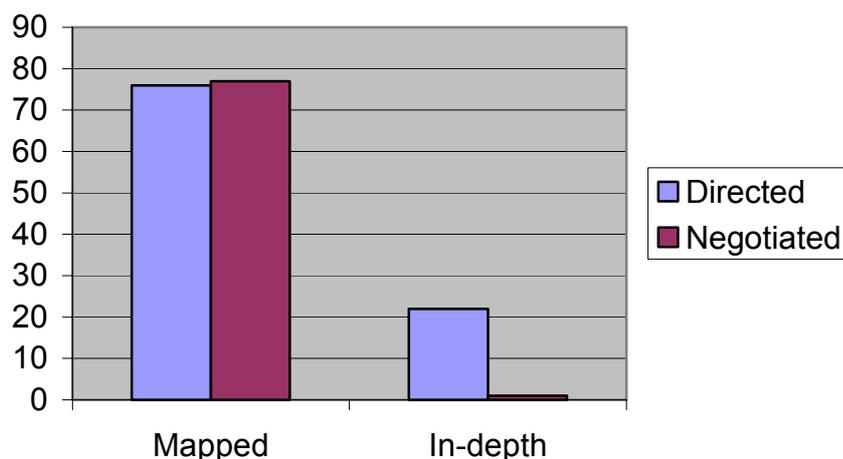
Figure 4.1 also shows that most of the 25 studies in the in-depth review contained PDP that was implemented in a directed (prescriptive) way, whilst the majority of the 'other evaluations' (evaluations not in the in-depth review) involved PDP that was implemented in a negotiated way (25 of 45 studies). Too much emphasis should not be placed upon the distinction between 'negotiated' and 'non-negotiated' PDP. Negotiation might be implicit and tolerated within prescriptive processes and intended outcomes might be specified in such a way that negotiation is integral to the process.

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

53

4.2.2 People and context

Table 4.5 shows that the most of the 25 studies in the in-depth review were carried out in the USA, as was also the case for the total of 157 included studies included in the map. However, while the number of the studies from the UK was relatively high, there was only one UK-based study (Entwistle and Ramsden, 1983) in the 25 studies in the in-depth review. This was also the only negotiated implementation study (Figure 4.2). There appears to be a shortage of evaluations of 'researcher-manipulated' intervention studies relating to PDP-type processes for learning from the UK. In contrast, relatively more of the 'other evaluations' were undertaken in the UK (Figure 3.11). This may reflect a more general lack of evaluations of researcher-manipulated interventions in educational research in the UK.

The main sample of 157 studies and the two sub-samples of 25 studies reviewed in-depth and the 45 'other evaluation' studies did not differ in regard to topic focus, population focus, sex of learners, age of learners and educational setting.

Figure 4.2: Country of study by type of study
(N = 143 mapped keyworded studies as missing data on 14 studies)
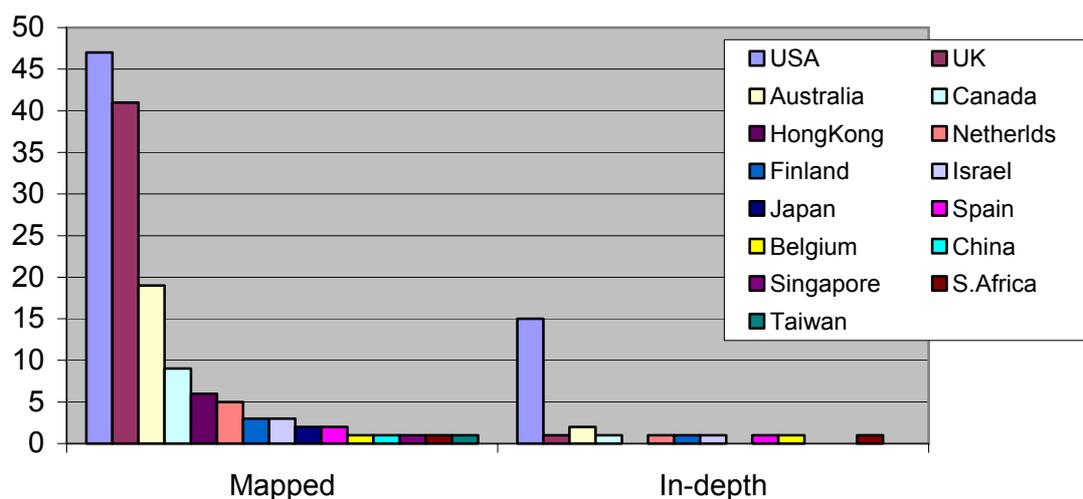
4.2.3 Outcomes and outcome measurement

A difference between the 157 studies in the map and the 25 studies in the in-depth review is shown in table 4.18. The most frequent outcome measured in terms of the mapped studies was context/learning style/autonomy. The studies in the in-depth review were relatively over-represented in terms of knowledge attainment outcomes and less represented in terms of identity, attitudes to learning compared to all mapped studies and the sub-set of 'other evaluation' studies.

Table 4.19 shows the relatively high use of psychometric tests and examination measures in the studies in the in-depth review and low use of participants' views. This may reflect the psychology-based origin of a significant number of the studies. This is not surprising when studies with only participant views measures were excluded from the in-depth synthesis. Similarly, the other evaluation studies made much greater use of participants' views (Figure 4.3).

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

54

Figure 4.3: Outcome measure by the 25 data-extracted studies and the 45 other evaluation studies
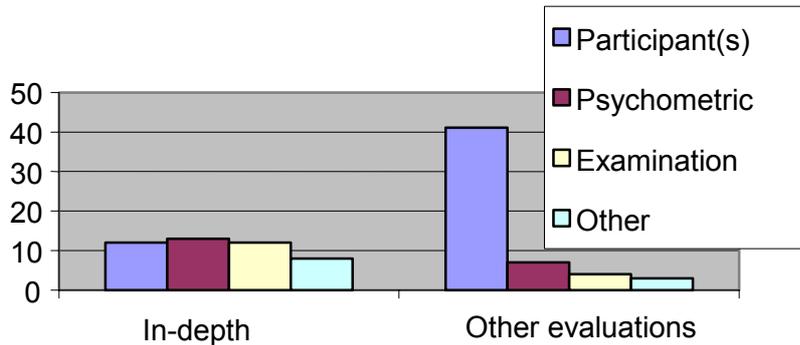
All studies in the subset of 25 studies in the in-depth review were restricted to evaluations of researcher-manipulated interventions. The study designs are summarized in Appendix 4.3. The sub-set of 45 'other evaluation' studies comprised five that were categorised as evaluations of researcher-manipulated interventions (but only used participants' views as an outcome measure) and 40 that were categorised as naturally occurring evaluations.

4.3 Further details of studies included in the in-depth review

For each of the 25 studies included in the in-depth review, a high level of detail concerning the PDP-type intervention featured, the context of the study and the study design can be found in the appendices.

Appendix 4.1 provides contextual information on country, population, educational setting and the main features of the PDP intervention and its context and implementation. Appendix 4.2 provides more detail on the specific phenomena with which the study is concerned and the discipline or topic within which it is based. Appendix 4.3 provides more detail on the research methodology and research sample.

4.4 Synthesis of evidence

The weight of evidence provided by the results of primary research study towards addressing the review question is different from the results of the primary study. Appendix 4.4 lists the outcome measures used in each of the 25 studies in the in-depth review, and the ratings given to each study according to the quality of the study in its own terms (criterion A), the appropriateness of the research design and the focus of the study in addressing the synthesis question (criterion B and C respectively). This leads to an overall judgement (criterion D) of the weight of evidence that the study results provide towards the synthesis question (see Chapter 2).

Four of the 25 studies in the in-depth review were judged to have a high rating in terms of weight of evidence to the review question. Fifteen of the 25 studies

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

55

received a medium overall weighting and six of the 25 studies received a low overall weighting. While some of the studies receiving a low overall weighting rated highly in terms of, for example, the relevance of their topic focus to the LTSN review, the study may not have met basic generic methodological standards and therefore this would have a negative effect on the overall weighting. The thresholds for judging quality criteria of studies were not high so studies had to be quite weak or not reporting basic information on methodology to be coded as low on quality.

A common limitation of studies was the reliance on quasi rather than full experimental designs. Another problem was the use of cluster designs (where groups of students were randomised on the basis of their class or school rather than individual randomisation), but with no clear indication that the necessary statistical adjustment had been made for clustering in the analysis of results.

In other cases, studies did not provide sufficient information on methods to allow for a high rating of quality of research methods to be made. The paper by Lan (1998), for example, is in many ways a good illustration of the use of an experimental design to study PDP. The study reported evidence of an effect of student self-monitoring on student learning styles and no effect on student attainment, but the weight of evidence from the study could only be coded as medium as so few details of data collection and analysis were provided.

4.4.1 Overall study results

Appendix 4.5 lists the main PDP features, outcomes and the overall weight of evidence (D) for each of the 25 studies in the in-depth review. Four of the 25 studies were rated as high weight of evidence, 15 as medium weight of evidence, and 6 as low weight of evidence in answering the review question.

Table 4.20 shows the breakdown of weight of evidence compared with whether the studies showed positive, mixed, negative or no evidence of effects of PDP. Some studies do not find any evidence of an effect, but only one study reported a negative effect of PDP on learning compared with controls. The table shows that most of the evidence showing positive effects is from studies rated as medium in terms of weight of evidence. There is only a slight tendency for the weaker evidence to be more positive about the effects of the PDP interventions.

Table 4.20: Results by weight of evidence (N= 25 studies)

Results	High weight	Medium weight	Low weight	Total
Positive effect	3	10	5	18
Mixed effect	1	1	2	4
No evidence of effect	0	5	1	6
Negative effect	0	1	0	1
Total (not mutually exclusive)	4	17	8	29

In section 4.4.2, evidence of student learning outcomes is reported in terms of three broad categories: 'attainment', 'learning styles' and 'personal' for ease of description. These categories are composite variables created by collapsing certain outcome categories from the mapping keywords. Whilst these categories are conceptually distinct in their own right, the composite variables help to identify broad patterns in the data. Only the 19 studies meeting at least medium weight of evidence are considered in terms of addressing the review question.

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

56

4.4.2 Results by outcome measure

Attainment

'Attainment' refers to the learning gains or outcomes as reflected in 'new knowledge information/content' (i.e. grades), 'skills-cognitive' and 'skills-practical'. 14 out of the 25 studies measured 'attainment', 10 of which were rated as having a high or medium weight of evidence for the review. All of the 10 studies reported positive effect on student learning in terms of 'attainment'.

There were two studies rated as having a high weight of evidence that showed positive effects on attainment (Bielaczyc *et al.*, 1995; Masui and De Corte, 1999). The second of these studies found that the use of two learning tools in the experimental group – 'orienting' and 'self-judging' – resulted in these learners acquiring more knowledge than a control group.

A further eight studies rated as medium weight showed positive effects on 'attainment' outcomes (Agran *et al.*, 2000; Kramarski and Zeichner, 2001; Lan, 1998; Lonka and Ahola, 1995; McCrindle, 1995; McInerney *et al.,* 1997; Ridley, 1991; Simpson *et al.*, 1990). For example, Kramarski and Zeichner (2001) found that the experimental group participants that used technology involving metacognitive feedback achieved higher scores on mathematical reasoning and mathematical explanations than participants in the control group. Higher examination scores were also the outcome of using self-monitoring skills in statistics (Lan, 1998).

Learning style outcomes

This variable refers to 'context, learning style', as delineated on the review-specific keywording sheet. Fourteen out of the 25 studies measured a 'learning styles' outcome and 13 were rated as providing high or medium weight of evidence. Nine of these 13 studies reported positive effects on learning styles (Bielaczyc *et al.*, 1995; Lan, 1996; Lan, 1998; Lizarraga, 2002; Lonka and Ahola, 1995; McCrindle, 1995; Ridley, 1991; Ridley, 1992; Simpson *et al.,* 1990), one reported mixed effects (Tillema 2000) and three reported no evidence of effect (Higgins 2000, Knoff *et al.* 1999, Travers and Sheckley 2000).

There were two studies rated as high weight evidence showing positive effect. The first was carried out by Bielaczyc *et al.* (1995), who found that training in self-explanation and self-regulation strategies resulted in greater use of these strategies at follow-up. The second study by Lizarraga (2001) showed pre-test – post-test gains in making more reflexive decisions and improved planning.

Personal outcomes

This category includes the outcome categories of 'attitude to learning and reflection' and 'identity/reflective', as coded for all mapped studies. Four out of the 25 studies measured 'personal' outcomes. The low number of studies may, in part, be due to the fact that 'personal' outcomes may have been more likely to have been measured in terms of participants' views and so therefore excluded from the synthesis. The map shows that 94 of the 103 studies with 'personal outcomes' used participants' views as an outcome measure.

Three of the four studies (Higgins 2000, Knoff *et al.* 1999, Schunk and Ertmer 1999) were rated as having medium weight of evidence. There were no studies in this category judged to be of high weight evidence. Only one of these medium

weight of evidence studies reported a positive effect on personal outcomes. The other two studies reported a negative effect and no evidence of effect respectively.

4.4.3 Results by independent variables

The relatively few studies meeting the narrower inclusion criteria and the heterogeneity in their samples, interventions and measures of outcomes makes it difficult to differentiate more specific results in terms of effects of different PDP approaches, contextual variables and person variables on the impact of different aspects of student learning

4.5 In-depth review: quality assurance results

The in-depth review used a system of 'quality assessment' developed by the EPPI-Centre to evaluate the reliability of the study findings. These are based upon the understanding that the extent to which a study's findings are reliable depends upon the research methods used and how they have been applied and reported. The reviewers then present their own conclusions of the study's findings in the light of the quality assessment.

As noted in Chapter 2 (section 2.3.5), two reviewers independently undertook data-extraction and quality assessment for each study. The two reviewers then met and discussed the study before reaching consensus. The electronic EPPI-Reviewer database is able to compare two sets of independent data-extraction and quality assessment automatically and to produce a summary of those questions where there has been disagreement between the two reviewers. With regard to the weight of evidence A, B, C and overall weight of evidence D, the two reviewers agreed initially 68% of the time. In the 32% where there was initial disagreement, this was nearly always borderline and in each case a simple resolution was achieved once the two reviewers met to reach consensus.

4.6 Nature of user involvement in the review and its impact

In terms of the focus of the review, the Advisory Group had significant involvement in developing the key research question and its context. The group was invited to respond to a questionnaire developed by the LTSN which had the explicit aim of 'defining the scope of the PDP review and key research questions'. The responses to this were further discussed via email between the Advisory Group members, with input from the EPPI-Centre. Such discussion allowed for a very detailed consideration of what the review question should be with involvement of a wide range of perspectives.

The Advisory Group also had significant impact on the searching, inclusion and exclusion criteria through their assistance with defining PDP and its sub-concepts. In addition the Advisory Group assisted in defining the scope of the review by listing the main audiences for the review. These included the following:

- people responsible for helping HE teachers develop their practices (for example, staff and educational developers)
- policy-makers at national level (DfES schools, HE progress File Implementation Group UUK, SCoP QAA LTSN)

- educational research community
- Centre for Recording Achievement and PDP in HE Scotland to support HE communities
- academic teachers in HE
- students
- funding bodies

The Advisory Group also had input into more specific and technical aspects of the review. This included assisting with developing terms to be used in the search strategy for electronic databases, and the inclusion and exclusion criteria such as the historical, geographical and socio-demographic criteria.

5. FINDINGS, RESERVATIONS AND IMPLICATIONS

5.1 Summary of principal findings

5.1.1 Identification of studies

In this project, several strategies for searching for relevant studies on electronic databases were developed in order to identify as many relevant studies as possible.

The first search strategy of using key terms such as PDP, planning, action, reflection, learning, record, Record of Achievement and Individual Action plans yielded little material, of which only a small proportion was relevant.

The second strategy of using four sub-concepts of PDP of reflection, action, planning and recording also revealed few relevant studies and many non-relevant studies including those concerned with other meanings of the word 'recording'.

The third and final strategy used terms from strategy one and two; specification of types of relevant recording, such as 'learning log' and 'knowledge profile'; other terms, such as 'personal development', 'independent learning' and 'active learning'.

The final strategy identified over 14,000 studies of which 157 were relevant to the review question. The Advisory Group also provided 145 key references. These were mainly background material with only 13 (8%) referencing studies included in the review. Twenty-four (15%) of the included studies were from non-published reports.

The findings of the project in relation to identification of studies are as follows:

- The empirical literature on learning relating to PDP-type processes is not easily identifiable by agreed key terms in the literature.

- Most of the relevant studies were from outside UK and were identified by electronic databases with only 8% identified through contacts with workers in the field.

- No single source identified more than 41% of the relevant literature.

- Sixteen percent of the studies were not in formally published books, journals or reports.

5.1.2 Mapping of all included studies

Mapping keywording allowed for a description of the research field.

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

60

Approaches to PDP

- Most of the research has been undertaken on learning logs, journals and diaries, and studies of reflective practice. Next most common were studies of self-assessment, then goal-setting, then self-regulation (Table 3.4).

- The main reason for learners using PDP in these studies was course requirement (Table 3.5).

- The studies were mostly about PDP used as a course requirement to fulfil course specific outcomes but many others were course required for broader self-development (Figure 3.2).

- In most cases PDP implementation was prescriptive in order to achieve course specific outcomes, but there were also many studies which used a negotiated approach to implementation to achieve course specific outcomes and broader self-development. A significant proportion of studies used a prescriptive approach to implementation to achieve broader self-development (Figure 3.3).

- Studies of learning logs and journals, reflective practice, self-assessment and self-regulation were particularly associated with course specific outcomes. Studies of Records of Achievement and self-direction were slightly more likely to be used for broader self-development aims but this may be related to the educational settings in which those PDP approaches were used (Figure 3.4).

- Studies of self-direction, self-regulation, and co-operative learning were all relatively more common in North America than other countries. Studies of self-regulation were also relatively common in non-UK Europe than in other non-North American countries. These results show the differential use of terms in research reports on PDP-type processes. It is unclear the extent that this variation in use of terminology is due to the use of different processes or concepts and terminology to describe such processes. There is much international overlap in the frequency with which the PDP terms are used, but it is clear that records of achievement and profiling are particularly UK phenomena, and that self-direction and self-regulation are particularly common in North American studies (Figure 3.5).

Context of the studies

- Most of the studies were undertaken in the USA or the UK with a sizeable number undertaken in Australia (Table 3.7). We do not know to what extent this reflects differences in research or PDP practices.

- The great majority of studies were undertaken in HE, although about 17% were undertaken in secondary schools and 9% in post compulsory institutions (Table 3.8).

- The great majority of studies focused on learners rather than those facilitating learning (Table 3.9).

- The studies in HE focused slightly more on course specific rather than broad self-development outcomes compared with other educational settings (Figure 3.6).

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

61

- The studies in HE were more likely to have used learning logs and journals and reflective practice, and less likely to have used action planning and Records of Achievement compared with other educational settings. Studies in secondary schools were more likely to have used self-regulation. These findings may be due to differential approaches or differential use of language in different educational settings (Figure 3.7).

- Learning style, attitudes to learning, and knowledge gains were common outcome measures in studies in all educational settings but particularly in HE (Figure 3.8).

Study outcome measures

- Most of the research outcome variables were on approaches to learning and learning styles. Next most common was knowledge gains, skills and identity. Career or employment outcomes were rare (Table 3.12).

- By far the most common method of measuring outcomes was through participants' views (Table 3.13).

- Outcomes of learning style and attitudes were associated with studies of older learners. This result may be due to variation in the educational contexts experienced at different ages (Figure 3.9).

- There was little variation across work or course contexts in the type of outcomes measures (Figure 3.10).

- The use of learning logs, journals and reflective practice were relatively more common in studies with course-specific outcomes. Records of Achievement were more common in studies concerned with broader self-development. These findings may be an artefact of educational setting or country (Figure 3.11).

Research design

- The most common research design was the 'exploration of relationships' between variables, followed by evaluations of naturally occurring interventions then evaluations of researcher-manipulated interventions (Table 3.14).

- Very few of the studies from the USA were 'descriptive'. Relatively more of the studies from the USA and Australia were evaluations of researcher-manipulated interventions compared with other countries. Many more of the UK studies were 'descriptive' and 'exploration of relationships' compared with other countries (Figure 3.12).

5.1.3 Nature of studies selected for in-depth review

A subset of the studies included in the map were selected on the basis of their meeting the narrower inclusion criteria for addressing the review synthesis question of being evaluations of researcher-manipulated interventions with independent outcome measures. The studies included in the in-depth review differed from other evaluation studies and from the whole map in the following ways:

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

62

- Studies did not differ in obvious ways from the rest of the studies in the map or from other evaluation studies on PDP sub-concepts referred to in studies, context of PDP, reasons for learners using PDP and a greater focus on course specific than broader self- development.

- Compared with other studies in the map, studies in the in-depth review were relatively more likely to be concerned with both self-regulation and prescribed implementation; they were less likely to be concerned with independent learning, logs and journals, and cooperative learning, and slightly less likely to be concerned with self-assessment (Tables 4.12 and 4.15).

- Studies in the in-depth review were more likely to have been undertaken in the USA with few researcher-manipulated studies undertaken in the UK.

- The samples of studies did not differ in any obvious way in regard to topic focus, population focus, sex of learners, age of learners and educational setting.

- Studies in the in-depth review were relatively more likely to have 'knowledge attainment' and less likely to have 'identity' and 'attitudes to learning' as learning outcomes compared with all mapped studies and the sub-set of 'other evaluation' studies.

- Studies in the in-depth review had a relatively high use of psychometric tests and examination measures and low use of participants' views. This is not surprising since studies using only participant views measures were excluded from the in-depth synthesis.

5.1.4 Synthesis of findings from studies in in-depth review

The findings of the synthesis for the in-depth review are dependent on the quality and weight of evidence of each individual study. The results of weight of evidence for answering the review question and the main findings of the studies were as follows:

- Four of the 25 studies in the in-depth review were rated as including results that had a high weight of evidence to answering the review question. Fifteen of the 25 studies received a medium overall weighting and six of the 25 studies received a low overall weighting.

- Most studies report a positive effect of PDP on learning. Some studies do not find any evidence of an effect, but only one study reported a negative effect of PDP on learning compared with controls.

- Most of the evidence showing positive effects is from studies rated as medium in terms of weight of evidence.

- The results do not suggest that weaker evidence is more positive about the effects of the PDP interventions.

- Fourteen of the 25 studies measured 'attainment', 10 of which were rated as having high or medium weight of evidence for the review. All 10 studies reported positive effects on student learning in terms of 'attainment'. This suggests that PDP can have a positive effect student attainment.

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

63

- Four of the 25 studies measured a 'learning styles' outcome and 13 of these were rated as providing high or medium weight of evidence. Of these 13, nine studies reported positive effects on learning styles, one reported mixed effects and three reported no evidence of effect. This suggests a positive effect of PDP on students' approaches to learning.

- Four of the 25 studies measured 'personal' outcomes and three were medium-rated for weight of evidence. One of these medium-rated weight of evidence studies reported a positive effect on personal variables. The other two studies reported a negative effect and no evidence of effect respectively. There is insufficient evidence from these studies to reach any conclusions about the effects of PDP on personal outcomes for learners.

- The relatively few studies meeting the narrower inclusion criteria and the heterogeneity in their samples, interventions and measures of outcomes makes it difficult to differentiate more specific results in terms of effects of different PDP approaches, contextual variables and person variables on the impact of different aspects of student learning.

5.2 Strengths and limitations

Chapter 1 discussed the complexity of the definitional, research, policy and practice issues concerning PDP. One systematic map and synthesis cannot in itself address these complexities but it can provide some clarity about the research evidence and its implications for policy, practice and further research.

The main reservations about the current map and synthesis is that the stage of development of the field and the diversity of practice that results from different policy-practice contexts and absence of research limits the extent that clear conclusions can be drawn about the usefulness of PDP in enabling learning. The literature search required screening of over 14,000 references and, despite using three strategies and undertaking some empirical checks on the inclusiveness of the search strategy results, there is no independent evidence of other relevant material that may have been missed. Furthermore, 168 potentially useful studies were unobtainable. A further limitation on the findings is that only studies in the English language were included. It is not known what other relevant materials in other languages would have contributed to the review's findings.

Another potential limitation concerns the decisions made about research methodology, such as the decision to limit the synthesis findings to evaluations of researcher-manipulated interventions with independent outcome measures. Another strategy would have been to have had broader criteria for including studies in data-extraction and synthesis, but this would have complicated and thus compromised the already difficult process of judgement in rating the quality and weight of evidence contributed by studies. In addition, the judgement of study quality was not strict, so the results of the synthesis, although strong in direction should be considered as tentative. On the other hand, there were only limited data to suggest that weaker evaluation studies included in the synthesis were more positive about the results of the PDP processes on learning.

5.3 Implications

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

64

5.3.1 Policy

The findings of the map and synthesis confirm the central policy claim that PDP supports the improvement of students' academic learning and achievement. The absence of research studies that address other claims, particularly those relating to broader self-development and improved employability outcomes, means that these claims cannot be substantiated at this stage. The implications are that the development of PDP should be encouraged, but a policy steer supported by targeted funding may be necessary to ensure that relevant, good quality and properly described research is undertaken to extend our knowledge of the most effective strategies and contexts for PDP. This could be achieved by requiring greater clarity on these issues before funding new research and encouraging greater use of secondary research to provide focus and sustainability in the field.

5.3.2 Practice

Educators and learners
The systematic map and synthesis revealed many examples of interesting practice. The study provides evidence to students, teachers and institutional administrators that the processes and actions underlying PDP do have a positive impact on student attainment and approaches to learning.

There is insufficient evidence to conclude what effects, if any, PDP has on personal factors such as identity. There is also insufficient evidence to state which balance of the many PDP approaches is more or less effective in impacting on student learning. Neither is there evidence to comment on the influence of individual teachers in promoting and facilitating learning through PDP.

The review was focused on higher education but the findings will have implications for educators and learners in other formal learning environments (e.g. schools and further education colleges) which employ PDP congruent processes as an aid to learning.

Change agents working in institutions and national bodies
Those individuals charged to act as agents of change in supporting the development of PDP within institutions such as staff and educational developers, or national bodies like the LTSN, have been primarily influenced by policy claims, PDP practitioner arguments for PDP and their own beliefs and experiential learning. This synthesis provides PDP change agents with a body of research to inform their work. Similarly, institutional managers may seek such evidence before committing to major change programmes and investment in new systems.

5.3.3 Research

The map and synthesis have shown that research on PDP and its analogues is still a young area of research with little coherence in terms used or research focus. There is also a lack of balance, at least in the UK, between descriptive developmental research and experimental testing of the effects of such new developments. Many studies examine the effects of PDP focus on participants' views. While these are crucial, they are only one aspect of studying the effects of an approach to learning. In addition, where there are independent evaluations of effect, there are often serious limitations in the research methodology applied or the clarity in reports of which methods were used in a study. The map reveals that some aspects of PDP learning (for example, reflection, use of learning logs and journals, self-assessment and self-regulation) have

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

65

been studied more than others (for example, action planning, Records of Achievement, use of portfolios, self-awareness and self-motivation).

There are also some signs that the experimental research focuses more on directed rather than self-directed approaches to learning through PDP. There appear to be a limited number of research studies that utilise employability or career outcomes as their focus for measurement.

The database produced through the review can inform future research to address some of the under-researched features of PDP.

The synthesis has also identified a number of empirical studies that provide methodologically sound benchmarks for future studies on the effects of PDP on learning.

The main implication of the findings is that the field needs to change the balance from practice development to knowledge building. A greater focus on systematic mapping and synthesis to coordinate the research field is recommended.

6. REFERENCES

6.1 Studies included in map and synthesis

1.   Abbas A, Gilmer PJ (1997) The use of journals in science teaching and learning for prospective teachers: an active tool of students' reflections. Paper presented at the Annual Meeting of the American Educational Research Association. Chicago, USA: 15-16 March.
2.   Agran M, Blanchard C, Wehmeyer ML (2000) Promoting transition goals and self-determination through student self-directed learning: the self-determined learning model of instruction. *Education and Training in Mental Retardation and Developmental Disabilities* **35:** 351-364.
3.   Alderman MK, Klein R, Keck Seeley S, Sanders M (1993) Metacognitive self-portraits: Preservice teachers as learners. *Reading Research and Instruction* **32:** 38-54.
4.   Alvarez MC, Burks G, Sotoohi G, King T, Hulan B, Graham A (2000) Students creating their own thinking-learning contexts. Paper presented at the Annual Meeting of the American Educational Research Association. New Orleans, USA: April 24-28.
5.   Anthony G (1994) Learning-strategies in the mathematics classroom - what can we learn from stimulated recall interviews. *New Zealand Journal of Educational Studies* **29:** 127-140.
6.   Arrendondo DE, Rucinski TT (1994) Using the workshop approach in university classes to develop student metacognition. *Innovative Higher Education* **18:** 273-288.
7.   Baillie A (1998) The use of learning journals in teaching psychology. In: Radford J, Van Laar D, Rose D (eds) *Innovations in Psychology Teaching.* Birmingham, UK: Seda Publications, pages 85-94.
8.   Bain JD, Ballantyne R, Packer J, Mills C (1999) Using journal writing to enhance student teachers' reflectivity during field experience placements. *Teaching and Teaching: theory and practice* **5:** 51-73.
9.   Barclay J (1996) Assessing the benefits of learning logs. *Education and Training* **38:** 30-38.
10.   Barclay J (1996) Learning from experience with learning logs. *Journal of Management Development* **15:** 28-43.
11.   Bartram PE (1984) Proceedings of the 3rd Annual Conference. *Canadian Association for the Study of Adult Education.* Guelph, Ontario, Canada: pages 324-339.
12.   Beveridge I (1997) Teaching your students to think reflectively: the case for reflective journals. *Teaching in Higher Education* **2:** 33-43.
13.   Bielaczyc K, Pirolli PL, Brown AL (1995) Training in self-explanation and self-regulation strategies - investigating the effects of knowledge acquisition activities on problem-solving. *Cognition and Instruction* **13:** 221-252.
14.   Billington DD (1990) Developmental aspects of adult education: A comparison of traditional and nontraditional self-directed learning programs. *Journal of Continuing Higher Education* **38:** 31-38.
15.   Birenbaum M, Amdur L (1999) Reflective active learning in a graduate course on assessment. *Higher Education Research and Development* **18:** 201-218.

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

67

16. Black RS, Sileo TW, Prater MA (2000) Learning journals, self-reflection, and university students' changing perceptions. *Action in Teacher Education* **21:** 72-90.
17. Boud D (1988) *Developing Student Autonomy in Learning.* London: Kogan Page.
18. Broadfoot P (1988) Personal development through profiling: a critique. *British Journal of Guidance & Counselling* **16:** 300-315.
19. Broadfoot P, Grant M, James M, Nuttall D, Stierer B (1988) *Records of Achievement: report of the national evaluation pilot schemes.* Report submitted to the Department of Education and Science and the Welsh Office by the Pilot Records of Achievement in Schools Evaluation (PRAISE) team. London: HMSO.
20. Broadfoot P, James M, McMeeking S, Nuttall D, Stierer B (1991) *Records of Achievement: report of the national evaluation of extension work in pilot schemes.* London: HMSO.
21. Bruce C, Parker A, Herbert R (2001) The development of self-directed and peer-based clinical training programme. *International Journal of Language and Communication Disorders* **36:** 401-405.
22. Buehl D (1996) Improving students' learning strategies through self-reflection. *Teaching and Change* **3:** 227-243.
23. Bull J, Otter S (1994) *Recording Achievement: Potential TLTP Project Alter*. UK: Committee of Vice-Chancellors and Principals of the Universities of the United Kingdom, Staff Development Agency.
24. Bullock K, Jamieson I (1995) The effect of personal development planning on attitudes, behaviour, and understanding. *Educational Studies* **21:** 307-321.
25. Bullock K, Harris A, Jamieson I (1996) Personal development plans and equal opportunities. *Educational Research* **38:** 21-35.
26. Bullock K, Wikeley F (1999) Improving learning in year 9: Making use of personal learning plans. *Educational Studies* **25:** 19-33.
27. Burrows VA, McNeill B, Hubele NF, Bellamy L (2001) Statistical evidence for enhanced learning of content through reflective journal writing. *Journal of Engineering Education* **90:** 661-668.
28. Butler DL (1997) The roles of goal setting and self-monitoring in students' self-regulated engagement in tasks. Paper presented at the Annual Meeting of the American Educational Research Association. Chicago, USA: 24-28 March.
29. Button D, Davies S (1996) Experiences of encouraging student-centred learning within a wellness-oriented curriculum. *Nurse Education Today* **16:** 407-412.
30. Campbell Williams M, Dobson P (1995) Using metaphors and rich pictures in university education. In: Summers L (ed) *A Focus on Learning.* Proceedings of the 4th Annual Teaching Learning Forum, Edith Cowan University, February 1995. Perth, Australia: Edith Cowan University. Electronic version: http://cea.curtin.edu.au/tlf/tlf1995/campbell-williams.html.
31. Campbell-Evans G, Maloney C (1998) An analysis framework for reflective writing. *Australian Journal of Teacher Educaiton* **23:** 29-38.
32. Carnall L (1998) Developing student autonomy in education: the independent option. *British Journal of Occupational Therapy* **61:** 551-555.
33. Carr KM (1997) A constructivist approach to reflective judgment and science literacy in introductory college science instruction. Paper presented at the 15th Annual Meeting of the Northern Rocky Mountain Educational Research Association. Jackson, WY, USA: 3 October.

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

68

34. Carter CW (1997) The use of journals to promote reflection. Paper presented at the Annual Meeting of the American Educational Research Association. Chicago, USA: 24-28 March.

35. Cennamo KS, Ross D (2000) Strategies to support self-directed learning in a web-based course. Paper presented at the Annual Meeting of the American Educational Research Association. New Orleans, USA: 24-28 April.

36. Cheung CK, Kwok ST (1998) Activities and academic achievement among college students. *Journal of Genetic Psychology* **159:** 147-162.

37. Chiang LH (1998) Enhancing metacognitive skills through learning contracts. Paper presented at the Annual Meeting of the Mid-Western Educational Research Association. Chicago, USA: 14-17 October.

38. Clifford VA (1999) The development of autonomous learners in a university setting. *Higher Education Research and Development* **18:** 115-128.

39. Confessore SJ (1995) What student journals reveal about the learning process. In: Long HB (ed) *New Dimensions in Self-Directed Learning*. Norman, Oklahoma, USA: University of Oklahoma, pages 99-112.

40. Corno L, Collins KM, Capper J (1982) Where there's a way there's a will: self-regulating the low-achieving student. Paper presented at the Annual Meeting of the American Educational Research Association. New York, USA: 19-23 March.

41. Dale M, Liss M (1995) Reforming liberal adult education. *Adults Learning* **6:** 246-247.

42. Dale M, Liss M (1996) "Parlez-vous bien Francais?" No comment! *Language Learning Journal* **13**: 77-79.

43. Dart BC, Clarke JA (1990) Modifying the learning environment of students to enhance personal learning. Paper presented at the Annual Conference of the Australian Association for Research in Education. Sydney, Australia.

44. Dart BC, Boulton-Lewis GM, Brownlee JM, McCrindle AR (1996) Change in knowledge of learning and teaching through journal writing. Joint Conference of Educational Research Association, Singapore and Australian Association for Research in Education. Singapore: 25-29 November.

45. Dorsey M, Manning R, Shindell T (1990) Action science as a paradigm for a critical theory of self-directed learning. In: Long HB (ed) *Advances in Research and Practice in Self-Directed Learning.* Norman, Oklahoma, USA: Oklahoma Research Center for Continuing Professional and Higher Education.

46. Drew PY, Watkins D (1998) Affective variables, learning approaches and academic achievement: a causal modelling investigation with Hong Kong tertiary students. *British Journal of Educational Psychology* **68:** 173-188.

47. El-Hindi AE (1997) Connecting reading and writing: College learners' metacognitive awareness. *Journal of Developmental Education* **21:** 10-19.

48. Entwistle NJ, Ramsden PL (1983) *Understanding Student Learning.* London: Croom Helm.

49. Ertmer PA, Newby TJ, MacDougall M (1996) Students' responses and approaches to case-based instruction: The role of reflective self-regulation. *American Educational Research Journal* **33:** 719-752.

50. Evensen DH (2000) Observing self-directed learners in a problem-based learning context: Two case studies. In: Evensen DH, Hmelo CE (eds) *Problem-Based Learning: A Research Perspective on Learning Interactions.* Mahwah, NJ: Lawrence Erlbaum Associates Inc, 263-297.

51. Evensen DH, Salisbury-Glennon JD, Glenn J (2001) A qualitative study of six medical students in a problem-based curriculum: Toward a situated model of self-regulation. *Journal of Educational Psychology* **93:** 659-676.

52. Fazey D, Fazey J (1996) *Guidance And Learner Autonomy Project.* Bangor: University of Wales.

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

69

53. Feldmann SC, Martinezpons M (1995) The relationship of self-efficacy, self-regulation, and collaborative verbal-behavior with grades - preliminary findings. *Psychological Reports* **77:** 971-978.

54. Fouberg EH (2000) Concept learning through writing for learning: using journals in an introductory geography course. *Journal of Geography* **99:** 196-206.

55. Fowler A (1997) Developing independent learning. In: Burns A, Hood S (eds) *Teachers Voices 2: Teaching Disparate Learner Groups.* Sydney, Australia: University of Sydney.

56. Francis D (1995) The reflective journal: a window to preservice teachers' practical knowledge. *Teaching & Teacher Education* **11:** 229-241.

57. Freeman M (2001) Reflective logs: an aid to clinical teaching and learning. *International Journal of Language & Communication Disorders* **36:** 411-416.

58. Fry H (2002) Developing progress files: a case study. *Teaching in Higher Education* **7:** 97-111.

59. Fung Kee Fung M, Walker M, Fung Kee Fung K, Temple L, Lajoie F, Bellemare G, Bryson SCP (2000) An internet-based learning portfolio in resident education: The KOALA-super ™ multicentre programme. *Medical Education* **34:** 474-479.

60. Garcia T (1995) The role of motivational strategies in self-regulated learning. *New Directions For Teaching And Learning* **63**: 29-42.

61. Gould JWI (1997) Practitioners' application of self-directed learning: education of the department of defense's program managers under the Defense Acquisition Workforce Improvement Act. In: Long HB, *et al*. (eds) *Expanding Horizons in Self-Directed Learning.* Norman, Oklahoma, USA: University of Oklahoma.

62. Gow L, Kember D, McKay J (1996) Improving student learning through action research into teaching. In: Watkins D, Biggs J (eds) *The Chinese Learner: Cultural Psychological and Contextual Influences.* Hong Kong: Comparative Education Research Centre (CERC) & Australian Council of Educational Research (ACER).

63. Gray P, Chanoff D (1986) Democratic schooling: what happens to young people who have charge of their own education? *American Journal of Education* **94:** 182-213.

64. Gunstone RF, Slattery M, Baird JR (1989) Learning about learning to teach: a case study of pre-service teacher education. Annual Meeting of the American Educational Research Association. San Francisco, USA.

65. Hadwin AF, Winne PH, Stockley DB, Nesbit JC, Woszczyna C (2001) Context moderates students' self-reports about how they study. *Journal of Educational Psychology* **93:** 477-487.

66. Harland F, Myhill D (1997) The use of reflective journals in initial teacher training. *English in Education* **31:** 4-11.

67. Harrison JK, Lawson T (1997) Individual action planning in initial teacher training: A course review. *Journal of Education and Work* **10:** 73-87.

68. Hart AW, Sorensen NB, Naylor K (1990) Learning to lead: reflective practice in preservice education. Paper presented at the Annual Meeting of the University Council for Educational Administration. Pittsburgh, USA.

69. Harvey L, Moon S, Geal V, Bower R (1997) *Graduates' Work: Organisational change and students' attributes*. Centre for Research into Quality. Birmingham, UK: University of Central England.

70. Heath LA (1996) The use of self-directed learning during fieldwork education: The students' perspective. *British Journal of Occupational Therapy* **59:** 515-519.

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

70

71. Higgins BA (2000) *An Analysis of the Effects of Integrated Instruction of Metacognitive and Study Skills upon the Self-Efficacy and Achievement of Male and Female Students*. Oxford, Ohio, USA: Miami University.
72. Hinett K (1997) Encouraging flexible learning through action research: a case study of student perceptions. In: Bell C (ed) *Implementing Flexible Learning.* London: Kogan Page.
73. Hodkinson P, Sparkes AC (1993) Young people's career choices and careers guidance action planning: a case-study of training credits in action. *British Journal of Guidance & Counselling* **21:** 246-261.
74. Hong E (1995) A structural comparison between state and trait self-regulation models. *Applied Cognitive Psychology* **9:** 333-349.
75. Jones D (1993) Individual learner pathways. In: Dixon K, Haldane A (eds) *Access to lifelong learning: papers presented at a Network conference, Birmingham, 28 April 1993.* UK: Planned Access to Learning Network, Employment Department Group.
76. Katchen JE (1995) Self-directed listening: what student journals reveal. Paper presented at the 29th Annual Meeting of the International Association of Teachers of English as a Foreign Language. York, UK: 9-12 April.
77. Kember D (1996) Developing curricula to encourage students to write reflective journals. *Educational Action Research* **4:** 329-348.
78. Kember D, Jones A, Loke A, McKay J, Sinclair K, Tse H, Webb C, Wong F, Wong M, Yan PW, Yeung E (1996) Encouraging critical reflection through small group discussion of journal writing. *Innovations in Education and Training International* **33:** 313-320.
79. Kember D, Charlesworth M, Davies H, McKay J, Stott V (1997) Evaluating the effectiveness of educational innovations: using the study process questionnaire to show that meaningful learning occurs. *Studies in Educational Evaluation* **23:** 141-157.
80. Kincannon J, Gleber C, Kim J (1999) The effects of metacognitive training on performance and use of metacognitive skills in self-directed learning situations. Paper presented at the 21st National Convention of the Association for Educational Communications and Technology. Houston, USA: 10-14 February.
81. Kitsantas A, Baylor A (2001) The impact of the instructional planning self-reflective tool on preservice teacher performance, disposition, and self-efficacy beliefs regarding systematic instructional planning. *Educational Technology Research and Development* **49:** 97-106.
82. Kneale P (2002) Developing and embedding reflective portfolios in geography. *Journal of Geography in Higher Education* **26:** 81-94.
83. Knoff E, Rugh JD, Littlefield JH (1990) Comparing learning logs and note summaries in a dental research methods course. *Journal of Dental Education* **54:** 724-729.
84. Kolkhorst FW, Mason CL, DiPasquale DM, Patterson P, Buono M J (2001) An inquiry-based learning model for an exercise physiology laboratory course. *Advances in Physiology Education* **25:** 45-50.
85. Kramarski B, Zeichner O (2001) Using technology to enhance mathematical reasoning: Effects of feedback and self-regulation learning. *Educational Media International* **38:** 77-82.
86. Kremer Hayon L, Tillema HH (1999) Self-regulated learning in the context of teacher education. *Teaching and Teacher Education* **15:** 507-522.
87. Kuyper H, van der Werf MPC, Lubbers MJ (2000) Motivation, metacognition and self-regulation as predictors of long term educational attainment. *Educational Research and Evaluation: An International Journal on Theory and Practice* **6:** 181-205.

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

71

88. Lan WY (1996) The effects of self-monitoring on students' course performance, use of learning strategies, attitude, self-judgement ability, and knowledge representation. *Journal of Experimental Education* **64:** 101-115.

89. Lan WY (1998) Teaching self-monitoring skills in statistics. In: Schunk DH, Zimmerman BJ (eds) *Self regulated learning: From teaching to self-reflective practice.* New York, USA: Guilford Publications Inc, pages 86-105.

90. Landeen J, Byrne C, Brown B (1995) Exploring the lived experiences of psychiatric nursing-students through self-reflective journals. *Journal of Advanced Nursing* **21:** 878-885.

91. Lasonen J (1995) *A case study of student self-assessment in upper secondary education.* In: Lasonen J, Stenström M-L (eds) *Contemporary Issues of Occupational Education in Finland*. Jyvaskyla, Finland: University of Jyvaskyla, pages 199-215.

92. Lee I (1998) Supporting greater autonomy in language learning. *ELT Journal* **52:** 282-290.

93. Levchuk JW (1983) Self-directed learning of hospital pharmacy residents in western Canada. *American Journal of Hospital Pharmacy* **40:** 78-83.

94. Lindner RW (1994) Self-regulated learning in correctional education students and Its implications for instruction. *Journal of Correctional Education* **45:** 122-126.

95. Lizarraga M, Iriarte MDI (2001) Enhancement of cognitive functioning and self-regulation of learning in adolescents. *Spanish Journal of Psychology* **4:** 55-64.

96. Lonka K, Ahola K (1995) Activating instruction: how to foster study and thinking skills in higher education. *European Journal of Psychology of Education* **10:** 351-368.

97. Lunenberg ML, Volman M (1999) Active learning: views and actions of students and teachers in basic education. *Teaching & Teacher Education* **15:** 431-445.

98. Lunsford BE, Herzog MJR (1997) Active learning in anatomy and physiology: student reactions and outcomes in a nontraditional A&P course. *American Biology Teacher* **59:** 80-84.

99. Lunyk-Child OI, Crooks D, Ellis PJ, Ofosu C, O'Mara L, Rideout E (2001) Self-directed learning: Faculty and student perceptions. *Journal of Nursing Education* **40:** 116-123.

100. MacCallum J, Hickey R (1997) Using a self-reflective journal to enhance science communication. Paper presented at the Annual Conference of the Australian Association for Research in Education (AARE). Brisbane, Australia.

101. Mahrag P (2001) Plans for action, time for reflection: an experiment with time, action and personal development. In: Jurwah C, Stefani Lea (eds) *Personal Development Planning in Practice.* Aberdeen: Personal Development Planning in Higher Education (Scotland).

102. Malpass JR, O'Neil Jr HF, Hocevar D (1999) Self-regulation, goal orientation, self-efficacy, worry and high-stakes math achievement for mathematically gifted high school students. *Roeper Review* **21:** 281-288.

103. Mann KV, Kaufman D (1994) Skills and attitudes in self-directed learning: the impact of a problem-based curriculum. In: Rothman AI, Cohen R (eds) *Medical Education.* Toronto, Canada: University of Toronto Bookstore Custom Publishing, pages 607-609.

104. Manor O (1988) The monitoring of co-active learning in social groupwork: a pilot study. *Social Work with Groups* **11:** 53-76.

105. Marienau C (1999) Self-assessment at work: outcomes of adult learners' reflections on practice. *Adult Education Quarterly* **49:** 135-146.

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

72

106. Mast L (1997) Application of the problem-based learning model for continuing professional education: a continuing medical education program on managed care issues. *American Journal of Managed Care* **3:** 77-82.
107. Masui C, De Corte E (1999) Enhancing learning and problem solving skills: orienting and self-judging, two powerful and trainable learning tools. *Learning and Instruction* **9:** 517-542.
108. McCrindle AR, Christensen CA (1995) The impact of learning journals on metacognitive and cognitive processes and learning performance. *Learning and Instruction* **5:** 167-185.
109. McDuffie AR (2001) Fostering the process of becoming a deliberate practitioner: an investigation of preservice teachers during student teaching. *Annual Meeting of the American Educational Research Association.* Seattle, US: 10-14 April.
110. McInerney V, McInerney DM, Marsh HW (1997) Effects of metacognitive strategy training within a cooperative group learning context on computer achievement and anxiety: An aptitude-treatment interaction study. *Journal of Educational Psychology* **89:** 686-695.
111. Millen D (1998) Formulating a personal development programme for female science undergraduates: the experiences of Cambridge University. In: Fogelberg P (ed) *European Conference on Gender Equality in Higher Education; Hard work in the academy, research and interventions on gender inequalities in higher education.* Helsinki: Helsinki University Press, pages 110-115.
112. Miller C, Tomlinson A, Jones M (1994) *Learning Styles and Facilitating Reflection*. London: English National Board for Nursing, Midwifery and Health Visiting.
113. Niles K, Bruneau B (1994) Portfolio assessment in preservice courses: scaffolding learning portfolios. Paper presented at the 44th Annual Meeting of the National Reading Conference. San Diego, USA.
114. Oliver M, Naidu S (1997) *Computer supported collaborative reflection in and on action in nursing education*. ultiBASE e-journal, December. Electronic version: http://ultibase.rmit.edu.au/Articles/dec97/oliver1.htm
115. O'Rourke R (1998) The learning journal: from chaos to coherence. *Assessment & Evaluation in Higher Education* **23:** 403-413.
116. Paterson CC (1996) Self-regulated learning and academic achievement of senior biology students. *Australian Science Teachers Journal* **42:** 48-52.
117. Pee B, Woodman T, Fry H, Davenport ES (2000) Practice-based learning: Views on the development of a reflective learning tool. *Medical Education* **34:** 754-761.
118. Pillay H, Boulton-Lewis G (2000) Variations in conceptions of learning in construction technology: implications for learning. *Journal of Education and Work* **13:** 163-181.
119. Pintrich PR, Garcia T (1993) Intraindividual differences in students' motivation and self-regulated learning. *Zeitschrift fuer Paedagogische Psychologie* **7:** 99-107.
120. Poppenhagen BW, Schuttenberg EM, Gallagher JP (1982) Active learning for postsecondary educators: a study of two learning designs. *Alternative Higher Education* **6:** 242-257.
121. Purdie N, Hattie J (1996) Cultural differences in the use of strategies for self-regulated learning. *American Educational Research Journal* **33:** 845-871.
122. Ridley DS (1991) Reflective self-awareness - a basic motivational process. *Journal of Experimental Education* **60:** 31-48.
123. Ridley DS, Schutz PA, Glanz RS, Weinstein E (1992) Self-regulated learning: the interactive influence of metacognitive awareness and goal-setting. *Journal of Experimental Education* **60:** 293-306.

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

73

124. Riley-Doucet C, Wilson S (1997) A three-step method of self-reflection using reflective journal writing. *Journal of Advanced Nursing* **25:** 964-968.
125. Rivers WP (2001) Autonomy at all costs: An ethnography of metacognitive self-assessment and self-management among experienced language learners. *Modern Language Journal* **85:** 279-290.
126. Rouncefield M, Scott DA (1998) How do students prepare an application for a place in higher education? *Educational Research* **40:** 98-105.
127. Rouncefield M, Ward R (1998) Recording achievement and action planning: a basis for progression to higher education? *British Journal of Guidance and Counselling* **26:** 61-73.
128. Rowsell LV, Libben G (1994) The sound of one-hand clapping - how to succeed in independent language-learning. *Canadian Modern Language Review-Revue Canadienne Des Langues Vivantes* **50:** 668-687.
129. Rush RT, Milburn JL (1988) The effects of reciprocal teaching of self-regulation of reading comprehension in a post-secondary technical school program. *National Reading Conference.* Tucson, USA.
130. Ryan G (1993) Student perceptions about self-directed learning in a professional course implementing problem-based learning. *Studies in Higher Education* **18:** 53-63.
131. Schuck S, Foley G (1998) Challenging beliefs about mathematics learning and teaching using an electronic learning community. In: Kanes C, Goos M, Warren E (eds) *Teaching Mathematics in New Times.* Gold Coast, Australia: MERGA, 508-515.
132. Schunk DH, Ertmer PA (1999) Self-regulatory processes during computer skill acquisition: goal and self-evaluative influences. *Journal of Educational Psychology* **91:** 251-260.
133. Shokar GS, Shokar NK, Romero CM, Bulik RJ (2002) Self-directed learning: looking at outcomes with medical students. *Family Medicine* **34:** 197-200.
134. Simpson ML, Nist SL (1990) The effects of PLAE upon students' executive control, self-regulation, and test performance. Paper presented at the Annual Meeting of the American Educational Research Association. Boston, USA: 16-20 April.
135. Smith J (1998) Beyond the rhetoric: are general national vocational qualifications (GNVQs) doing students any good? *Journal of Vocational Education and Training: The Vocational Aspect of Education* **50:** 537-548.
136. Stansfield LM (1996) Is self-development the key to the future? Participant view of self-directed and experiential learning methods. *Management Learning* **27:** 429-445.
137. Stansfield LM (1997) "Employee-develop yourself!" Experiences of self-directed learners. *Career Development International* **2:** 261-266.
138. Stickel SA, Waltman J (1994) A practicum in school counseling: using reflective journals as an integral component. Paper presented at the Annual Meeting of the Eastern Educational Research Association. Sarasota, USA.
139. Stoecker R (1990) Strategies for enhancing learning in the "Blow-Off" course. *Innovative Higher Education* **14:** 141-153.
140. Tan K, Lim C (1999) Workplace practices: the cornerstone to effective learning? Paper presented at the Higher Education Research and Development Society of Australasia (HERDSA) Annual Inernational Conference. Melbourne, Australia: 12-15 July.
141. Thomson CK (1998) Junior teacher internship: promoting cooperative interaction and learner autonomy in foreign language classrooms. *Foreign Language Annals* **31:** 569-583.
142. Thorpe M (1995) Reflective learning in distance education. *European Journal of Psychology of Education* **10:** 153-167.

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

74

143. Tillema HH (2000) Belief change towards self-directed learning in student teachers: immersion in practice or reflection on action. *Teaching and Teacher Education* **16:** 575-591.
144. Tilley CM (1996) Reflective journalling and fieldwork: a case study with library and information studies students at the Queensland University of Technology, 1994. *Education For Library and Information Services: Australia* **13:** 25-34.
145. Travers NL, Sheckley BG (2000) Changes in students' self-regulation based on different teaching methodologies. Paper presented at the 40th Annual Meeting of the Association for Institutional Research. Cincinnati, USA: 21-24 May.
146. Tryssenaar J, Perkins J (2001) From student to therapist: exploring the first year of practice. *American Journal of Occupational Therapy* **55:** 19-27.

6.2 Other references used in the text of the report

Assiter A, Shaw E (Eds) (1993) Records of achievement background, definitions and uses. In: *Using Records of Achievement in Higher Education*. London: Kogan Page.

Ballie C (2002) Negotiating scientific knowledge. In: Lepenies W (ed) *Shared Histories and Negotiated Universals.* New York: Campus Press.

Barnett R (1977) Higher Education, a Critical Business. Buckingham: SHRE/Open University Press.

Barnett R, Parry G, Coate K (1999) *Changing Patterns of Undergraduate Curricula*. Swindon: ESRC.

Biggs J (1999) *Teaching for quality learning at university: What the student does*. Buckingham: Society for Research into Higher Education, Open University Press.

Biglan A (1973) The characteristics of subject matter in different scientific areas. *Journal of Applied Psychology* **57:** 195-203.

Boud D, Keogh R, Walker D (1985) *Reflection: Turning Experience into Learning.* London: Kogan Page.

Broadfoot P (1986) *Profiling and Records of Achievement. A Review of Current Practice*. Eastbourne: Holt Education (Holt, Rinehart & Winston).

Broadfoot P, Grant M, James M, Nuttall D, Stierer B (1991) *Records of Achievement: report of the national evaluation of extension work in pilot schemes.* London: HMSO.

Brockbank M, McGill J (1988) *Facilitating Reflective Learning in Higher Education*. Buckingham: SHRE/Open University Press.

Cambridge BL (2001) *Electronic Portfolios: Emerging Practices in Student, Faculty and Institutional Learning.* Washington, DC, USA: American Association for Higher Education.

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

75

Cseh M, Watkins K, Marsic V (2000) Informal and incidental learning in the workplace. In: Straka G (ed) *Conceptions of Self-Directed Learning, Theoretical and Conceptual Considerations.* New York, USA: Waxman, pages 59-74.

DfES (2002) *Best Practice Case Studies.* Annesley: Progress File Publications.

Hawkins P (1999) *The Art of Building Windmills.* Liverpool: Graduate Into Employment Unit.

Hitchcock G (1990) *Profiles and Profiling.* London: Longman.

Houghton W (2002) A reflective framework for describing learning and teaching. Paper presented at Improving University teaching Conference. Vilnius, Lithuania: 1-4 July.

Hustler D, Ball B, Carter K, Halsall R, Ward R, Watts AG (1998) *Developing Career Management Skills in Higher Education*. UK: NICEC/CRAC.

Jackson N (2001) Personal development planning: what does it mean? LTSB Generic Working Centre Working Paper 1.3. May 2001.

Jackson N (2002) LTSN-EPPI PDP Research Synthesis. Unpublished paper, 30th January.

Jackson N, Ward R, Rees-Jones P (2002) Certifying and recording learning and achievement: a fresh perspective on Progress Files. York: LTSN Generic Centre Working Paper.

Kirkpatrick DL (1967) Evaluation of training. In: Craig RI, Bittel LR (eds) *Training and Development Handbook*. New York, USA: McGraw-Hill.

Kolb D (1994) *Experiential Learning as the Science of Learning and Development.* Englewood Cliffs, NJ, USA: Prentice Hall.

Kolb DA, Fry R (1975) Toward an applied theory of experiential learning. In: Cooper CL (ed) *Theories of Group Processes*. London: John Wiley.

Langer AM (2002) Reflecting on practice: using learning journals in higher and continuing education. *Teaching in Higher Education* **7:** 337-351.

McKimm J (2001) Using Portfolios in Medical Education. Preparedness to Practice Project. London: Imperial College school of Medicine.

Menon Eliophotou M (1997) Higher education and the post-modern challenge. *Reflections on Higher Education* **9:** 103-113

Moon JA (1999) *Reflection in Learning & Professional Development: Theory & Practice*. London: Kogan Page.

O'Connell C (1999) Assessing the Impact of Recording Achievment in Higher Education: Frameworks for Evaluation. MSc Dissertation, University of Manchester.

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

76

Paczuska A, Turner I (1997) Recording achievement: the tensions between personal development and academic standards. *Innovations in Education and Training International* **34:** 76-83.

Peters J, Peterkin C, Williams C (2000) Progression within modular history degrees: profiling for a student-centred approach. In: Booth A, Hyland P (eds) *The Practice of University History Teaching.* Manchester: Manchester University Press.

Prince S (2002) Personal development planning and law. A draft position paper for the UKCLE PDP working group. Retrieved February 27, 2002 from www.ukcle.ac.uk/resources/prince.html.

Schön D (1983) *The Reflective Practitioner: How Professionals Think in Action*. London: Temple Smith.

Tamkin P, Barber L, Hirsch W (1995) Personal Devlopment Plans: case studies of practice. Institute for Employment Studies. Retrieved April 24, 2002 from www.employment-studies.co.uk .

Tremblay N (2000) Autodidactism: an exemplay model of self-directed learning. In: Straka G (ed) *Conceptions of self-directed learning, theoretical and conceptual considerations.* New York: Waxman, 207-220.

Watts AG (1992) Individual action planning: issues and strategies. *British Journal of Education and Work* **5:** 47-63.

Wolf D, Kolb D (1984) Career development, personal growth and experiental learning. In: Kolb D, Rubin I, JM (eds) *Organisational Psychology: Readings on Human Behaviour in Organisations.* New Jersey, USA: Prentice Hall.

Zimmerman BJ (2002) Self-regulatory cycles of learning. In: Straka G (ed) *Conceptions of Self-Directed Learning, Theoretical and Conceptual Considerations.* New York, USA: Waxman.

Zimmerman BJ (2000) Self-efficacy: an essential motive to learn. *Contemporary Educational Psychology* **25:** 82-91.

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

77

APPENDIX 1.1: Members of the Advisory Group

Jenni Anderson	NUS representing student interests
Alison Assiter	Dean of Economics and Social Science University of the West of England Educational researcher into PDP
Rosie Bignham	Sheffield Hallam University staff and educational developer with experience in institutional PDP implementation
Tim Brown	President National Postgraduate Committee
Rosemary Deem	Department of Education, University of Bristol Director of ESCALATE Subject Centre Educational researcher
Liz Dunne	University of Exeter Educational researcher and PDP practitioner
Nick Hammond	LTSN Psychology Subject Centre
Margaret Harrison	University of Gloucester Principal Lecturer and HE PDP practitioner
Gill Nichols	Kings College University of London Head of Kings Institute of Learning and Teaching Educational researcher
Catherine O'Connell	British Council and a leading practitioner in the field
John Peters	Worcester College of HE National Teaching Fellow researching PDP PDP practitioner
Angela Smallwood	University of Nottingham National Teaching Fellow and leader of PADSHE PDP project
Lorraine Stephanie	University of Strathclyde Educational research and development Chair of PDP in HE Network Scotland
Janet Strivens	University of Liverpool Educational researcher and PDP practitioner
Rob Ward	Manager Centre for Recording Achievement Main PDP practitioner network outside Scotland Involved in PDP-related staff and institutional development evaluator of several PDP-related projects in compulsory and post compulsory education

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

78

APPENDIX 2.1: Inclusion and exclusion criteria

Coders first reviewed a study to see if it met the exclusion criteria relating to the topic area; if it did not meet the criteria, the study would be excluded using code 1 = not on topic.

If a study did not meet the criteria for exclusion on topic, then the coder would check to see if it should be excluded using code 2 = non-empirical (e.g. theoretical papers).

If a study was on topic and reported empirical evidence, then a coder would check to see if the reference should be excluded using code 3 = not aged 14+, and then code 4 = not student in formal educational setting.

TOPIC (PDP AND LEARNING)

1. Concrete learning experiences in a wide range of contexts
2. Metacognitive awareness in relation to PDP
3. For strategic PDP processes: at least implicitly include 'reflection', 'action', 'planning', and 'recording' (otherwise review would be on all study skills, but search strategy would be broader with just 'reflection' plus at least of one of the other three processes).
4. For tactical PDP processes: process of 'reflection' plus at least one other process

Note: As outcomes require evidence of learning, in practice the sub-process of recording will be a required component even for tactical PDP

5. Evidence of outcomes of learning:

   Internal evidence
   - Increased capacity to learn in a variety of ways and in a variety of contexts
   - Capacity to recognise and have evidence of own learning and therefore recognise gains in learning outcomes
   - Improved capacity to draw upon and use personal knowledge
   or
   External evidence
   - Evidence-based judgment that students are more able to do the above
   - Evidence that the outcomes of learning are quantitatively better as a result of value being added through the process

Evidence of other indicators that might be linked to this process (e.g. retention, improved progression to employment, better overall degree outcomes)

Notes
(i) *May need to define quantitatively in terms of measurable difference*
(ii) *To what extent is transferability of skills necessary?*
(iii) *Need to ensure that not circular question of 'How does learning enable increases in learning?' This can be reduced by narrower specification of the independent variable (nature of learning experienced) and dependent variable (the outcome)*

SOCIODEMOGRAPHIC / HISTORY

6. Geography: no limits
7. Language: English only
8. Historical time: report of study dated 1982 onwards
9. Student age: 14 years and over

EDUCATION SECTORS AND CONTEXTS WITHIN OR WITHOUT HE

10. Must relate to students enrolled in formal education
11. As long as criteria 5 is met, then it can be focused on any educational context or non-educational context.

Educational contexts within HE may include: academic/subject, professional and vocational, work-based and work-related, key/core/transferable skills development, career and personal development outside the academic curriculum.

PDP is used in many different ways to support the development, recognition and evidencing of academic and generic skills and other learning within and outside the formal curriculum. Some examples are given below.

A. Focus

Academic curriculum
· Academic modules/units: there is a need to unpack specific learning activities, such as essay-writing/assignments, revision, case studies and problem-working
· Purpose designed (e.g. key skill/career development) modules/units
· Research projects and dissertation work
· Academic tutorials
· Negotiated areas of the curriculum, such as negotiated projects
· Work-related learning, work placement or work experience
· Study overseas
· Aspects of a programme that promote a commitment to continuing professional development

Support and guidance contexts
· Student induction process
· Planning programmes and reviewing/discussing progress
· Integral to pastoral/academic tutorial system
· Career planning and guidance strategies

Extra-curricular contexts
· Student training initiatives
· Working as a representative of the student body or Student Union officer
· Part-time paid or voluntary work

B. Approach

Support for the learner: This type of PDP activity is often linked to a personal tutor system. The key purpose is to guide and support the learner. The focus is on personal development through self-profiling and identifying learning opportunities within and outside the curriculum to achieve self-development objectives.

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

80

Support for learning: This type of PDP activity is linked to learning within a particular subject/programme context. The intention is to improve the capacity of the individual to manage their own learning by making the learning intentions of the programme/ discipline more explicit and creating opportunities for students to reflect up on and assess their learning.

Support for off-campus learning: This type of PDP activity is designed to help students optimise the benefits of off-campus study: for example by a year abroad or employment placement through structured learning logs or diaries, and personal development plans and portfolios.

Support for extra-curricular learning: This type of PDP activity is designed to help students to recognise the opportunities for learning and personal development afforded by extra-curricular activities like part-time work, community service or service as a student representative/SU Officer, through structured self-assessment and personal development plans and portfolios.

Preparation for employment/ professional practice: This type of PDP activity is designed to support students in their transition to employment by helping them develop a greater appreciation of the skills they have acquired through the discipline which are relevant and applied in the workplace.

RESEARCH
12. Must include empirical research

Operationalising criteria at initial screening for DB1

The following details the strategy for applying the criteria at the initial screening stage. The following inclusion criteria were applied through specification of the database searches: Criteria 2 of Language: English only; Criteria 3: Historical time: 1982 onwards.

Remaining criteria were applied in initial screening in the following order and with the following codes for the Endnote databases in order to maximize the coding information (e.g. that reference must be on topic if Exclude 1 not applied):

To screen – the code automatically applied to all downloaded references
Exclude 1 – not on topic
Exclude 2 – not empirical
Exclude 3 – not aged 14+
Exclude 4 – not student in formal educational setting
I – include

B (Background) – additional code to be added to Excludes 1 – 4 if seem to be of particular relevance for introduction and discussion sections:

Further guidance relating to EXCLUDE 1 (from piloting screening strategy)

- *Reflection:* has a metacognitive regulation function, and can be conceptualised as being a central feature of PDP. The process of reflection in turn regulates the processes of 'planning', 'recording' and 'action'.

- *Careers*: on topic only if it occurs in the context of PDP processes, which must at least implicitly include reflection on learning processes.

- *Reflective journals*: on topic only if the intention is for the learner to reflect on learning processes.

- *Action research:* on topic only if the learners are explicitly investigating their own learning processes, or if the focus of the action research is on reflection on learning processes. For example, this would not include action research on curriculum development, or classroom administration unless it explicitly linked this to reflection on learning processes.

- *Self-management, self-regulation, self-direction, independent learning, active learning (and other individual terms from search string):* on topic only if they occur in the context of PDP processes, which must at least implicitly include reflection on learning processes.

- *Boundaries of learning:* no limitations on topics for learning, as what is of concern are the PDP *processes* of learning; for example, being trained in self-management of arthritis is 'on topic' if it at least implicitly includes a reflection on learning processes.

Further guidance to Exclude 2

If an article / report / book, is predominantly theoretical, but uses some empirical data to support / develop a theoretical position, this is considered to be non-empirical and should therefore be excluded.

If a generic example is presented (e.g. a typical type of student, labelled "Susan"), this is considered to be non-empirical and should therefore be excluded.

There were twelve inclusion/exclusion criteria based on the topic area, socio-demographic details, education sectors and contexts, and study type.

APPENDIX 2.2: Final search strategy for electronic databases

Source (database/ interface e.g. ERIC/OVID)	Date captured and person logging	Search strategy	Time period of search	Notes
BEI/OVID	Katy 11/4/02	TI or AB = learning log$ or learning journal$ or personal development or self-manag$ or self-regulat$ or self-direct$ or action plan$ or record$ of achievement or progress file$ or record$ of experience or active learn$ or independent learn$ or personal profil$ or skills profil$ or knowledge profil$ or progress portfolio$ or reflective journal$ or autonomous learn$	1982-2001	
Social Science Citation Index/ISI WOS	Katy 11/04/02	Topic = (learning log* or learning journal* or personal development or self-manag* or self-regulat* or self-direct* or action plan* or record* of achievement or progress file* or record* of experience or active learn* or independent learn* or personal profil* or skills profil* or knowledge profil* or progress portfolio* or reflective journal* or autonomous learn*) and (educat* or learn*)	1982-2002	Able to specify language = English and document types = Article, Abstract of Published Item, Bibliography and Review (selected from drop down list)
Sociological Abstracts		TI or AB = (learning log* or learning journal* or personal development or self-manag* or self-regulat* or self-direct* or action plan* or record* of achievement or progress file* or record* of experience or active learn* or independent learn* or personal profil* or skills profil* or knowledge profil* or progress portfolio* or reflective journal* or autonomous learn*) and (educat* or learn*)	1980-2001	19 refs from 1980 or 1981 were deleted, therefore number of refs in database is 284
ASSIA/CSA	Katy 05/04/02	TI or AB = (learning log* or learning journal* or personal development or self-manag* or self-regulat* or self-direct* or action plan* or record* of achievement or progress file* or record* of experience or active learn* or independent learn* or personal profil* or skills profil* or knowledge profil* or progress portfolio* or reflective journal* or autonomous learn*) and (educat* or learn*)	1987-2001	
ERIC/CSA	Katy 27/04/02	TI or AB= learning log* or learning journal* or personal development or self-manag* or self-regulat* or self-direct* or action plan* or record* of achievement or progress file* or record* of experience or active learn* or independent learn* or personal profil* or skills profil* or progress portfolio*	1994-2002	

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

83

Source (database/ interface e.g. ERIC/OVID)	Date captured and person logging	Search strategy	Time period of search	Notes
		or reflective journal* or autonomous learn*		
Psychinfo/silver platter	Dina 09/04/02	**Ti =** (learning log* or learning journal* or personal development or self-manag* or self-regulat* or self-direct* or action plan* or record* of achievement or progress file* or record* of experience or active learn* or independent learn* or personal profil* or skills profil* or knowledge profil* or progress portfolio* or reflective journal* or autonomous learn*) and (educat* or learn*) **Or Subj =** (learning log* or learning journal* or personal development or self-manag* or self-regulat* or self-direct* or action plan* or record* of achievement or progress file* or record* of experience or active learn* or independent learn* or personal profil* or skills profil* or knowledge profil* or progress portfolio* or reflective journal* or autonomous learn*) and (educat* or learn*)	1982-2002	As we were required to search on title and subject separately in Psychinfo, we were able to delete any overlap when these references were imported in to endnote; therefore the total of 856 is less than the sum of the individual saved files; there were 66 duplicates.
Educationline	Dina 9/04/02	Map to keywords in databases	No date field.	Papers can be obtained directly online.
CERUK	Dina 9/04/02	Using keywords in CERUK – action planning; action plans; independent learning; personal development; personal development planning; records of achievement; profiles; profiling		Screening done: details of three items obtained; this is research underway (not yet published). Can contact researchers for further details.
Australian ERIC	Katy 15/04/02	learning log? or learning journal? or personal development or self-manag? or self-regulat? or self-direct? or action plan? or record? of achievement or progress file? or record? of experience or active learn? or independent learn? or personal profil? or skills profil? or knowledge profil? or progress portfolio? or reflective journal? or autonomous learn?	No date field	*As no date field 24 references were deleted that were before this date, reducing the figure to 718.
ERIC/CSA	Katy 22/04/02	(TI or AB= learning log or learning journal or personal development or self-manag* or self-regulat* or self-direct* or action plan* or record* of achievement or progress file* or record of experience or active learn* or independent learn* or personal profil* or skills profil* or knowledge profil* or progress portfolio* or reflective journal* or autonomous learn*) and (PY = 1982-1993)	1982-1993	This search was conducted separately from the ERIC 1994-2002 search as we were awaiting instructions as to how to search for specific years before 1994 (see narrative log for details).

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

84

APPENDIX 2.3: Journals handsearched

Journal title	Publication details and volumes searched
Careers Education and Guidance	Publication info: Clevedon: Croft Publishing Services Volumes searched: Dec 1991 – Spring 1999.
Continuing Education in New Zealand	Publication info: Wellington: National Council of Adult Education Volumes searched: Vol. 14, 1982 (only held in the IOE library up until Vol. 14)
Higher Education Review (Islamabad)	Publication info: Islamabad: University Grants Commission Volumes searched: No 3 – No 5, 1985-1988
Higher Education Review: the international journal of policy and practice in post-school education	Publication info: Croydon: Tyrrell Burgess Associates, 1968– Volumes searched: Vol. 14, No. 1, 1982 – Vol. 34, No. 2 2002
Indian Educational Review	Publication info: New Delhi: National Council of Educational Research and Training Volumes searched: Vol. 17, no 1, 1982 – Vol. 37, No. 2, 2001
Journal for Further and Higher Education	Publication info: London: National Association of Teachers in Further and Higher Education Volumes searched: Vol.16, 1982 – Vol. 25, 2001
Journal for Further and Higher Education in Scotland	Publication info: Glasgow: Scottish School of Further Education Volumes searched: Vol.11, No 2, 1987 – Vol. 21, No 1, 1998 Not searched: Vols.13(1), 19(2), 20(2) (missing from the IOE library)
Journal of Distance Education = Revue de l' education a distance (Canadian)	Publication info: Ottawa: Simon Fraser University Publications, 1986– Volumes searched: Vol.3, No. 1, 1988 – Vol. 17, No. 1, 2002
Journal of Information technology for teacher education	Publication info: Wallingford: Triangle Journals, 1992 – Volumes searched: Vol.1, No. 1, 1992 – Vol. 10, No. 1–2, 2001
New Capability	Publication info: London: Higher Education for Capability Issue searched: Vol. 4(3) –, 2000 (only copy in IOE library)
Reflections on Higher Education	Publication info: Oxford: Higher Education Foundation

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

85

Journal title	Publication details and volumes searched
	Volumes searched: Vol. 1, 1988 – Vol. 11, 2000
Research in Higher Education: Journal of the Association for Institutional Research	Publication info: New York: Human Sciences Press Volumes searched: Full text electronic version of Vols.17, No. 1 1982 – Vol. 43, No. 1, 2002
Special Education: Forward Trends	Publication info: London: National Council for Special Education Volumes searched: Vol. 9, No 1, 1982 to Vol.10, No 4, 1983 (only copies held in the IOE library)

APPENDIX 2.4: EPPI keyword sheet for LTSN Review

EPPI-CENTRE EDUCATIONAL KEYWORDING SHEET v0.9.5 *LTSN Bibliographic details and/or unique identifier………………………………..*
NB: Please refer to the EPPI-Centre Core Keywording Strategy Version 0.9.5 for guidance on how to apply keywording

1. Identification of report
Citation
Contact
Handsearch
Unknown
Electronic database
 (*please specify*) …………………………

2. Status
Published
In press
Unpublished

3. Linked reports
Is this report linked to one or more other reports in such a way that they also report the same study?

Not linked
Linked *(please provide bibliographical details and/or unique identifier)*
……………………………………………
……………………………………………
……………………………………………
………………………………………………
…..

4. Language *(please specify)*

……………………………………

5. In which country/countries was the study carried out? *(Please specify)*

……………………………………………
……………………………………………

6. What is/are the topic focus/foci of the study?
Assessment
Classroom management
Curriculum*****
Equal opportunities
Methodology
Organisation and management
Policy
Teacher careers
Teaching and learning
Other (please specify)……………………………

*6a Curriculum
Art
Business Studies
Citizenship
Cross-curricular
Design & Technology
Environment
General
Geography
Hidden
History
ICT
Literacy – first language
Literacy further languages
Literature
Maths
Music
PSE
Phys. Ed.
Religious Ed.
Science
Vocational
Other (please specify)………………………...

7. Programme name *(Please specify)*

………………………………………………….
………………………………………………….
………………………………………………….

8. What is/are the population focus/foci of the study?
Learners*****
Senior management
Teaching staff
Non-teaching staff
Other education practitioners
Government
Local education authority officers
Parents
Governors
Other *(please specify)*………………………………

*8a Age of learners (years)
0-4
5-10
11-16
17-20
21 and over

*8b. Sex of learners
Female only
Male only
Mixed sex

9. What is/are the educational setting(s) of the study?
Community centre
Correctional institution
Government department
Higher education institution
Home
Independent school
Local education authority
Nursery school
Post-compulsory education institution
Primary school
Pupil referral unit
Residential school
Secondary school
Special needs school
Workplace
Other educational setting *(please specify)*……

10. Which type(s) of study does this report describe?

A.   Description
B.   Exploration of relationships
C.   Evaluation
      a.   Naturally occurring
      b.   Researcher-manipulated
D.   Development of methodology
E.   Review
      a.   Systematic review
      b.   Other review

11. Course / qualification
…………………………………………..

12. Discipline
…………………………………………

Please state here if keywords have not been applied from any particular category (1-12) and the reason why (e.g. no information provided in the text)

……………………………………………
……………………………………………
……………………………………………
……………………………………………
……………………………………………
……………………………………………

PTO to apply review-specific keywords (if applicable)

13. Main features of PDP intervention
(e.g. Record of Achievement ,etc.)
Action Planning
Case-based instruction
Goal setting
Independent/autonomous learner
Learning logs/journals/diaries
Learning styles
Learner training
Portfolios
Problem-based learning
Profiling
Record of achievement
Reflective practice
Self-assessment/evaluation
Self-awareness
Self-direction
Self-motivation
Self-regulation
Cooperative learning between students
Cooperative learning between
student(s)/teacher(s)
Other

14. In addition, to reflection, what other sub-concept(s) of PDP is/are referred to?
Planning
Recording
Action

15. Context of learner using PDP
(for practice within course tick both)
Course
Work-based
Other

16. Reasons for learner using PDP
Part of course requirement
Optional
Self-initiated
Unclear
Not stated

17. PDP implementation
Directed ('prescriptive')
Negotiated ('emergent')

18. Main PDP aims

Helps attain narrow course-specific outcomes
Broader self-development

19. Theoretical / ideological framework
(Please describe)
……………………………………………………
……………………………………………………
……………………………………………………
……………………………………………………
……………………………………………………
……………………………………………………
……………………………………………………
……………………………………………………
…………………………………………………
…………………………………………………
…………………………………………………
…………………………………………………

20. Breadth of outcomes
Predominantly course specific
Predominantly broader than course specific

21. Outcomes
Information/content (Includes grades/increased knowledge)
Skills – cognitive
Skills – practical
Context/learning style/autonomy
(improved communication/ways of learning)
Identity/affective (self-esteem/confidence/self-awareness)
Career (includes wages/rates of employment)
Attitudes to learning and reflection
(including motivation/readiness to learn)

22. Type of outcome measure
Participant(s) views
Psychometric tests
Examinations
Other

23. Author's account of results
(Please describe using text from report)
…………………………………………………………………………….
…………………………………………………………………………….
…………………………………………………………………………….
…………………………………………………………………………….
…………………………………………………………………………….
…………………………………………………………………………….
…………………………………………………………………………….
…………………………………………………………………………….
…………………………………………………………………………….
…………………………………………………………………………….
…………………………………………………………………………….
…………………………………………………………………………….

APPENDIX 3.1: Systematic map - details of the 157 included studies (25 data extracted studies listed separately at bottom of the table)

First author and date	Educational setting(s)	Discipline	Course / qualification	Country	Main features of PDP intervention	Context of learner using PDP
Abbas (1997)	HEI	*Education; teacher training*	*Physical science course*	*USA*	Learning logs / journals / diaries Reflective practice Cooperative learning between students Cooperative learning between student(s)/teacher(s)	Course
Alderman (1993)	HEI	*Psychology*	*BA/BSc*	*USA*	Goal setting Learning logs / journals / diaries Learner training Self-assessment/evaluation	Course
Alvarez (2000)	HEI	*Cosmology*	*Summer school course in astronomy*	*USA*	Independent / autonomous learner Learning logs / journals / diaries Problem-based learning Reflective practice Self-assessment/evaluation Cooperative learning between students Cooperative learning between student(s)/teacher(s)	Course
Anthony (1994)	Secondary	*Mathematics*	*Mathematics A level*		Reflective practice	Course
Arredondo (1994)	HEI	*Education*	*Graduate and undergraduate education courses*	USA	Learning logs / journals / diaries Cooperative learning between students Cooperative learning between student(s)/teacher(s)	Course
Baillie (1998)	HEI *Roehampton Institute, London.*	*Psychology*	*Honours level modules* *1) Case studies in applied psychology* *2) Fundamental issues in the practice of applied psychology*	*England*		Course
Bain (1999)	HEI	*Education*	*Graduate Diploma of Education*	*Australia*	Learning logs / journals / diaries	Work-based
Barclay (1996)	HEI	*Business Studies/Managem ent Studies*	*Diploma in Personnel Management (part-time) leading to membership of the Institute of Personnel and Development*	*UK: Scotland*	Action planning Goal setting Learning logs / journals / diaries	Work-based
Barclay (1996)	HEI	*Personnel Management*	*Diploma*	*UK: Scotland*	Action planning Learning logs / journals / diaries	Course

First author and date	Educational setting(s)	Discipline	Course / qualification	Country	Main features of PDP intervention	Context of learner using PDP
Bartram (1984)	HEI	*Adult Education*	*Graduate adult education courses*	*Canada*	Independent / autonomous learner Learning logs / journals / diaries Reflective practice	Course
Beveridge (1997)	HEI	*Numeracy*	*Degree modules*	*England*	Learning logs / journals / diaries Reflective practice	Course
Billington (1990)	HEI	*Social Sciences*	*PhD*	*USA*	Self-regulation Cooperative learning between student(s)/teacher(s)	Course
Birenbaum (1999)	HEI	*Education*	*Graduate Course on Alternative Assessment*	*Israel*	Learning logs / journals / diaries Cooperative learning between student(s)/teacher(s)	Course
Black (2000)	HEI	*Education*	*Elective University (two-year course)*		Learning logs / journals / diaries Reflective practice Self-assessment/evaluation	Course
Boud (1981)	HEI	*Medicine*	*Medical degree*	*Canada*	Goal setting Independent / autonomous learner Self-direction	Course
Brent (1982)	HEI	*Education*	*Masters Programme in post-secondary educational instruction, administration and counselling (Cleveland State U)*	*USA*	Self-direction Cooperative learning between students	Course
Broadfoot (1988)	Secondary	*Multi-disciplinary*	*Secondary school students*		Record of achievement	Course
Broadfoot *et al.* (1988)	Secondary	*Various*	*Secondary school age pupils (various)*	*UK: England*	Record of achievement	Course
Broadfoot (1991)	Post-compulsory Secondary Special needs Other	*Many*	*Across school/college (many)*	*UK: England and Wales*	Record of achievement	Course Other: *extra curricular activities (sometimes)*
Bruce (2001)	HEI	*Speech and Language Therapy*		*UK: England*	Reflective practice Self-assessment/evaluation Cooperative learning between students Cooperative learning between student(s)/teacher(s)	Work-based

First author and date	Educational setting(s)	Discipline	Course / qualification	Country	Main features of PDP intervention	Context of learner using PDP
Buehl (1996)	Secondary	*English*	*High school elective reading course*	*USA*	Learning logs / journals / diaries Self-assessment/evaluation	Course *elective, high school 'Reading' course, including speed reading.*
Bull (1995)	HEI	*Across 13 departments (Sheffield) Electronic and electrical engineering (Sheffield Hallam)*	*Undergraduate*	*UK*	Goal setting Learning logs / journals / diaries Profiling Record of achievement Self-assessment/evaluation	Course
Bullock (1999)	Secondary	*Not stated*	*Year 9*	*UK: England*	Action planning Goal setting Record of achievement Cooperative learning between student(s)/teacher(s)	Course
Bullock (1995)	Post-compulsory Secondary	*Many disciplines.*	*Impossible to answer. The population for the study was all Year 11 pupils in Wiltshire, as well as those aged 17 who had chosen to study at an institution of further education.*	*UK: England*	Record of achievement	Course
Bullock (1996)	Post-compulsory Secondary	*Many (school/college wide)*	*This took place in 'all but a few [secondary] schools' and all FE colleges in Wiltshire, hence various qualifications, including GCSE, A levels and GNVQs.*	*UK: England*	Goal setting Profiling	Other: *School and college-wide programme of PDP*
Burrows (2001)	HEI	*Engineering*	*Undergraduate engineering course*	*USA*	Learning logs / journals / diaries Learning styles Reflective practice	Course
Butler (1997)	HEI Post-compulsory	*Varied*	*Postgraduate and undergraduate courses University transfer courses Vocational training courses*	*Canada*	Goal setting Self-assessment/evaluation Self-regulation	Course
Button (1996)	HEI	*Health*	*BA in Nursing*	*UK: England*	Goal setting Learning logs / journals / diaries	Course

First author and date	Educational setting(s)	Discipline	Course / qualification	Country	Main features of PDP intervention	Context of learner using PDP
					Reflective practice Self-assessment/evaluation Cooperative learning between student(s)/teacher(s)	Work-based *Reflective placement was part of the BA nursing course.*
Campbell Williams (1995)	HEI	*Business Computing*	*University business computing classes*		Action planning Learning logs / journals / diaries Reflective practice Other: Rich Pictures - a drawing of a system that can assist in better planning or understanding Metaphors	Course
Campbell-Evans G (1998)	Primary	*Education*	*Teacher training course*	*Australia*	Learning logs / journals / diaries Reflective practice	Course Work-based
Carnall (1998)	HEI	*Occupational therapy*	*'Independent Option': 'The option aims to develop autonomous learning and reflective practice within an explicit theoretical framework.'*	*UK: England*	Independent / autonomous learner Learning logs / journals / diaries	Course Work-based
Carr (1997)	HEI	*Cosmology*	*Introductory college astronomy course*		Learning styles Reflective practice Cooperative learning between students	Course
Carter (1997)	HEI			*USA*		
Cennamo (2000)	HEI	*Child Development*	*Core course in undergraduate degree*	*USA*	Goal setting Self-assessment/evaluation	Course
Cheung (1998)	HEI	*Arts Science Social Science Business Medicine Engineering*	*First-year undergraduates*	*Hong Kong*	Learning styles Self-direction	Course
Chiang (1998)	HEI	*Varied*	*Developmental Reading in the Content Areas (undergraduate course)*	*USA*	Action planning Goal setting Learning logs / journals / diaries Reflective practice Self-direction	Course

First author and date	Educational setting(s)	Discipline	Course / qualification	Country	Main features of PDP intervention	Context of learner using PDP
Clifford (1999)	HEI	*Education*	*"issues in education research" unit*	*Australia*	Independent / autonomous learner Self-assessment/evaluation Cooperative learning between students	Course
Confessore (1995)	HEI	*Not stated*	*Masters and Doctoral Degree*	*Not stated*	Learning logs / journals / diaries Reflective practice Self-direction	Course
Dale (1995)	Post-compulsory	*Covering four languages*	*Beginner (post A- leve)l*	UK: *England*	Independent / autonomous learner Learning styles Record of achievement	Course
Dale (1996)	HEI	*Foreign languages*	*Extramural language course*	*UK; England*	Independent / autonomous learner Record of achievement	
Dart (1990)	HEI	*Education*	*Educational psychology (pre-service Teacher Education - secondary)*	*Australia*	Learning logs / journals / diaries Reflective practice Self-assessment/evaluation Cooperative learning between students	Course
Dart (1996)	HEI	*Education (teacher training)*	*Post-Graduate Diploma of Education (secondary teaching)*	*Australia*	Learning logs / journals / diaries Reflective practice	Course
Dorsey (1990)	HEI	*Science*	*Adult Education and Human Resource Development Programs*	*USA*	Reflective practice Self-direction Cooperative learning between students	Course Work-based
Drew (1998)	HEI	*Nursing, Radiography and language and communication*	*Degree courses*	*Hong Kong, China*	Learning styles Self-awareness	Course
El-Hindi (1997)	HEI	*Mathematics, science and technology*	*Six-week summer residential academic programme for freshmen*	*USA*	Learning logs / journals / diaries Reflective practice Self-awareness	Course
Ertmer (1996)	HEI	*Veterinary medicine*	*Veterinary degree course*	*USA*	Case-based instruction Self-assessment/evaluation Self-awareness Self-regulation	Course
Evensen (2000)	HEI	*Medicine*	*Degree in medicine*		Learner training Reflective practice Self-direction	Course
Evensen (2001)	HEI	*Medicine*	*Medical degree*	*USA*	Learning styles Problem-based learning Self-regulation	Course

First author and date	Educational setting(s)	Discipline	Course / qualification	Country	Main features of PDP intervention	Context of learner using PDP
Fazey (1996)	HEI		*Degrees (various)*	UK: *Wales*	Independent / autonomous learner Learning logs / journals / diaries Profiling Self-assessment/evaluation Self-awareness Cooperative learning between students	Course
Fouberg (2000)	HEI	*Geography*	*Undergraduate degree*	*USA*	Learning logs / journals / diaries	Course
Fowler (1997)	Post-compulsory	*Languages*	*Adult Migrant English Programme (Level 4): Technical and Further Education (TAFE)*	*Australia*	Action planning Learning logs / journals / diaries Portfolios	Course
Francis (1995)	HEI	*Education*	*Bachelor of Education*	*Australia*	Learning logs / journals / diaries Reflective practice	Course
Freeman (2001)	HEI	*Health*		*UK: England*	Goal setting Learning logs / journals / diaries	Course Work-based
Fry (2002)	HEI	*Dental therapy*	*Higher education diploma*	*UK: England* *UK: Wales*	Action planning Learning logs / journals / diaries Record of achievement Reflective practice	Course Work-based
Garcia (1995)	HEI		*Sophomore students: undergraduate degree*		Goal setting Self-motivation	Course
Gow (1996)	HEI	*Medicine*	*Professional Diploma Diagnostic Radiography*	*Hong Kong*	Reflective practice Self-assessment/evaluation Cooperative learning between students	Course Work-based
Gray (1985-86)	Primary Secondary	*Varied*	*Varied*	*USA*	Independent / autonomous learner Self-direction Cooperative learning between students Cooperative learning between student(s)/teacher(s)	Course
Gunstone (1989)	HEI	*Teacher training*	*Dip Ed*	*Australia*	Learning logs / journals / diaries Reflective practice Cooperative learning between student(s)/teacher(s)	Course Work-based
Hadwin (2001)	HEI	*Educational psychology*	*Undergraduate*	*Canada*	Goal setting Self-regulation	Course
Harland (1997)	HEI	*Education*	*PGCE*	*UK: England*		Course

First author and date	Educational setting(s)	Discipline	Course / qualification	Country	Main features of PDP intervention	Context of learner using PDP
Harrison (1997)	HEI	*Education*	*PGCE*	*UK*	Action planning Goal setting Independent / autonomous learner Self-regulation	Course Work-based
Hart (1990)	HEI	*Education administration*		USA	Action planning Learning logs / journals / diaries Problem-based learning Cooperative learning between student(s)/teacher(s)	Course
Harvey (1997)	HEI Workplace	*Various*	*Undergraduate degree*	*UK: England and Scotland*	Self-awareness Self-direction Self-regulation Other: Interactive attributes (communication, working in team)	Course Work-based
Heath (1996)	HEI	*Occupational therapy*	*Undergraduate degree*	UK: England	Self-regulation Cooperative learning between student(s)/teacher(s) Other: Learning contracts	Course
Hinett (1997)	HEI *University Central Lancashire, Preston*	*Learning theory - education*	*An optional 12-week first-year course, one-third of which is called "Learning to learn'.*	UK: England	Record of achievement	Course
Hodkinson (1993)	Post-compulsory Secondary	*Careers guidance*	*Training credits*	UK: England	Action planning	Course
Hong (1995)	Secondary	*Mathematics*	*High school mathematics course*	USA	Learning styles Self-regulation	Course
Jones (1993)	Post-compulsory	*Various*	*Various post-compulsory courses*	UK: England	Action planning	Course
Katchen (1995)	HEI	*Foreign language*	*English-as-a-second language course*	Taiwan	Learning logs / journals / diaries Reflective practice	Course
Kember (1996)	HEI	*Health*	*Including:* *(a) Discrete degree programme* *BSc course for post-experience nurses* *Postgraduate course for clinical educators* *(b) Elements within degree programmes* *Physiotherapy undergraduate students*	*Would appear to be Hong Kong from information about authors and sponsors,*	Learning logs / journals / diaries Reflective practice	Course

First author and date	Educational setting(s)	Discipline	Course / qualification	Country	Main features of PDP intervention	Context of learner using PDP
			Radiography undergraduate students *Occupational therapy undergraduate students*	*but not clearly stated in the text.*		
Kember (1996)	HEI	*Nursing Physiotherapy Occupational therapy Radiography Clinical educators*	*Undergraduate and postgraduate degrees*	*Researchers based and funding from Hong Kong*	Learning logs / journals / diaries Cooperative learning between students	Course Work-based
Kember (1997)	HEI	*Design Radiography Business*	*Honours degree, diploma*	*Hong Kong*	Other: Surface / deep learning	Course
Kincannon (1999)	HEI	*Varied*	*Beginners' photography course*	*USA*	Learning logs / journals / diaries Reflective practice Self-direction	Course
Kitsantas (2001)	HEI	*Education*	*Educational technology Course*	*On sample (pg 99) suggest USA but this is not clearly stated.*	Reflective practice Self-assessment/evaluation	Course
Kneale (2002)	HEI	*Geography*	*Various undergraduate courses*	*UK: England*	Action planning Goal setting Independent / autonomous learner Learning logs / journals / diaries Portfolios Reflective practice Self-assessment/evaluation Self-awareness Self-direction Self-motivation Self-regulation	Course
Kolkhorst (2001)	HEI	*Exercise and nutritional sciences*	*Undergraduate exercise physiology laboratory courses*	*USA*		Course
Kremer-Hayon, (1999)	HEI	*Education*	*Teacher training*	*Netherlands and Israel*	Goal setting Learning logs / journals / diaries Learning styles Reflective practice	Course

First author and date	Educational setting(s)	Discipline	Course / qualification	Country	Main features of PDP intervention	Context of learner using PDP
					Self-assessment/evaluation Self-awareness Self-motivation Self-regulation	
Kuyper (2000)	Secondary	*Across subjects*	*Secondary school curriculum*	*Netherlands*	Self-regulation Other: Metacognition	Course
Landeen (1995)	Workplace	*Health*	*13-week psychiatric clinical placement as part of nursing degree*		Learning logs / journals / diaries Reflective practice Self-awareness	Course Work-based
Lasonen (1995)	Secondary	*Varied disciplines*	*Upper secondary school vocational diploma and general educational diploma*	*Finland*	Self-awareness Self-regulation	Course
Lee (1998)	HEI	*English language learning*	*English course*		Self-assessment/evaluation Self-direction	Course
Levchuk (1983)	Home Workplace *Hospital Pharmacy* Other: *Library*	*Health*	*Hospital pharmacy residency*	*Canada*	Action Planning Goal setting Independent / autonomous learner Self-direction	Course Work-based *Residency in Hospital Pharmacy*
Lindner (1994)	Correctional institution	*Not specified: various*	*Not specified: various*	*USA*	Self-regulation	Course
Lunenberg (1999)	Post-compulsory	*Second language*	*Adult ('Basic Education') Dutch literacy courses for immigrant women*	*The Netherlands*		
Lunyk (2001)	HEI	*Nursing*	*Four-year undergraduate nursing programme*	*Canada*	Self-direction	Course
MacCallum (1997)	HEI Secondary	*Science and technology*	*Secondary school science and technology* *Undergraduate courses*	*Australia*	Learning logs / journals / diaries Reflective practice Other: *1. Assignments based on journals: e.g. 'Examine your peer tutoring experiences for the first two or three sessions. Use extracts from your journal to illustrate your points.'* *2. Workshops* *3. Seminars*	Course Other: *University students in peer tutoring of secondary school students.*
Mahrag (2001)	HEI	*Law*	*Law degree*	*UK: Scotland*	Action planning Goal setting Learning logs / journals / diaries Reflective practice	Course

First author and date	Educational setting(s)	Discipline	Course / qualification	Country	Main features of PDP intervention	Context of learner using PDP
Malpass (1999)	Secondary	*Maths*	*Advance placement calculus*	*USA*	Goal setting Learning styles Self-regulation	Course
Mann (1994)	HEI	*Health*	*Medical degree*	*Canada*	Learning styles Self-direction	Course
Manor (1988)	HEI	*Social work*	*Two-year graduate programme*	*UK: England*	Self-assessment/evaluation	Course
Marienau (1999)	HEI	*Varied*	*Master of Arts in Integrated Professional Studies*	*USA*	Reflective practice Self-assessment/evaluation	Course
Mast (1997)	Other: *Interactive small group setting mentioned but no location is indicated.*	*Health / Medicine*	*Continuing medical education course*	*USA*	Learning styles Self-direction	Course
McDuffie (2001)	HEI	*Education*	*Master in Teaching (MIT)*		Action planning Goal setting Learning logs / journals / diaries Reflective practice Other: Classroom-based action research project on own teaching	Course Work-based
Millen (1999)	HEI *Cambridge University*	*Science Engineering (Technology?) Law English literature*	*Undergraduate students studying natural science, engineering, English and law at Cambridge University*	*UK: England*	Goal setting Self-awareness Cooperative learning between students Other: Confidence building	Course
Miller (1994)	HEI Post-compulsory	*Nursing and midwifery*	*Dip HE*	*UK: England*	Learning logs / journals / diaries Learning styles Self-direction	Course Work-based
Niles (1994)	HEI	*Education*	*Teacher education course*		Learning logs / journals / diaries Portfolios Reflective practice	Course Work-based
Oliver (1997)	HEI	*Health*	*Post-registration Bachelor of Nursing Programme*	*Australia*	Learning logs / journals / diaries Reflective practice	Course
O'Rourke (1998)	HEI	*Literature*	*Degree (BA) Recent Canadian Fiction*	*UK: England*	Learning logs / journals / diaries Reflective practice Cooperative learning between	Course

First author and date	Educational setting(s)	Discipline	Course / qualification	Country	Main features of PDP intervention	Context of learner using PDP
					student(s)/teacher(s)	
Pee (2000)	HEI	*Medicine*	*Dental Hygiene, a 27-month, full-time course*	*UK: England*	Other: *Progress files: '"...designed for people to use throughout their lives"' plus "a means by which students could monitor, build upon and reflect upon their own [sic] personal development"' (p.754, quoting the 1997 National Committee of Inquiry into Higher Education, HMSO, 1997)*	Course
Pillay (2000)	HEI	*Construction technology*	*BA in construction management*	*Australia*	Learning styles	Course
Pintrich (1993)	HEI	*No stated*	*No stated*	*USA*	Learning styles Self-motivation	Course
Purdie (1996)	Secondary		*Secondary school*	*Japan Australia*	Learning styles	Course
Riley - Doucet (1997)	HEI	*Health*	*Second year of a nursing course (no qualification mentioned)*		Learning logs / journals / diaries Reflective practice Self-assessment/evaluation Self-direction Cooperative learning between students	Course Work-based
Rivers (2001)	HEI	*Language learning (Georgian, Kazakh, Kyrgyz)*	*Course for translators / interpreters*	*USA*	Independent / autonomous learner Learning styles Self-assessment/evaluation Self-direction Self-regulation	Course
Rouncefield (1998)	HEI	*Various disciplines*	*Various degree courses*	*UK: England*	Action planning Record of achievement Self-assessment/evaluation Self-direction	Course
Rouncefield (1998)	Secondary	*Secondary school study*	*A levels*	*England*	Record of achievement	Course
Rowsell (1994)	HEI	*Foreign languages*	*Undergraduate foreign language course*		Independent / autonomous learner Learning logs / journals / diaries Reflective practice	Course
Ryan (1993)	HEI *Faculty of Health, University of Western Sydney,*	*Medicine (nursing)*	*Nursing. First year of either a two-, or four-year part-time course for nurses to upgrade their qualification from a nursing certificate to either a diploma (two years) or a BA (four years).*	*Australia*	Goal setting Reflective practice Self-direction Cooperative learning between students	Course

First author and date	Educational setting(s)	Discipline	Course / qualification	Country	Main features of PDP intervention	Context of learner using PDP
	Macarthur					
Schuck (1998)	HEI	*Education*	*Primary School Teacher Training*	*Australia*	Independent / autonomous learner	Course
Shaham (1995)	Secondary	*Computers*		*USA*	Self-regulation Cooperative learning between students	Course
Shokar (2002)	HEI	*Medicine*	*Undergraduate degree*	*USA*	Problem-based learning	Course Work-based
Smith (1998)	Post-compulsory *FE college*	*Range of vocational areas*	GNVQ	*England*	Action planning Self-assessment/evaluation	Course
Stansfield (1996)	HEI	*Management studies*	*Diploma in Management Studies*	*UK: England*	Goal setting Learning logs / journals / diaries Reflective practice Self-assessment/evaluation Self-awareness	Course
Stansfield (1997)	HEI	*Management studies*	*Diploma*		Self-assessment/evaluation Self-direction	Course
Stickel (1994)	HEI	*Counsellor training*	Counsellor Training Practicum		Learning logs / journals / diaries Reflective practice	Course Work-based
Stoecker (1990)	HEI	*Sociology*	*'Introduction to Sociology' (undergraduate degree module)* *'The Family System' (undergraduate degree module)*	USA	Learning logs / journals / diaries Reflective practice Cooperative learning between students Cooperative learning between student(s)/teacher(s)	Course
Tan (1999)	HEI	*Law*	*Diploma of Legal Studies*	*Singapore*	Learning styles Problem-based learning Reflective practice Self-assessment/evaluation Self-direction Self-regulation Cooperative learning between students	Course
Thomsn (1998)	HEI	*Foreign language learning: Japanese*		*Australia*	Independent / autonomous learner Learning logs / journals / diaries Reflective practice Self-assessment/evaluation Cooperative learning between students Cooperative learning between student(s)/teacher(s)	Course Work-based

First author and date	Educational setting(s)	Discipline	Course / qualification	Country	Main features of PDP intervention	Context of learner using PDP
Thorpe (1995)	HEI *distance learning*	*Post-compulsory*	*Undergraduate Professional diploma*	*UK-based, but distance education so theoretically could be world-wide*	Learning logs / journals / diaries Portfolios Reflective practice	Course
Tilley (1994)	HEI	*Library and information studies*	*Graduate Diploma in Library and Information Studies*	*Australia*		Course Work-based
Tryssenaar (2001)	HEI	*Occupational and physical therapists*	*Professional therapist qualification*	*Canada*	Learning logs / journals / diaries	Work-based
Usuki (2001)	HEI	*Foreign languages*	*Undergraduate degree in English*	*Japan*	Independent / autonomous learner Learning logs / journals / diaries Reflective practice Cooperative learning between student(s)/teacher(s)	Course
Valo (2000)	HEI	*Speech Communication*	*Masters degree*	*Finland*	Goal setting Independent / autonomous learner Self-assessment/evaluation Self-awareness	Work-based
Vermunt (1995)	HEI	*Psychology*	*Undergraduate*	*Netherlands*	Learning styles Self-regulation	Course
Victori (1995)	HEI	*Languages*	*Counselling Plan for English or German*	*Spain*	Independent / autonomous learner Learner training Reflective practice Self-awareness Self-direction Cooperative learning between students	Course
Ward (1998)	HEI	*Varied disciplines*	*Various undergraduate degree courses*	*UK: England and Wales*		
Wedgewood (1993)	HEI	*Various*		*UK: England*	Learning logs / journals / diaries Record of achievement Reflective practice	Course
Weiner (1986)	Secondary	*Various*	*USA high school*	*USA*	Learning logs / journals / diaries	Course
Wile (1994)	HEI	*Education (initial teacher training)*	*Methods of literacy instruction in the elementary school*	*USA*	Learning logs / journals / diaries Reflective practice Self-assessment/evaluation	Course Work-based

First author and date	Educational setting(s)	Discipline	Course / qualification	Country	Main features of PDP intervention	Context of learner using PDP
Woodward (1989)	HEI	*Medicine*	*Medical degree*	*Australia*	Learner training Problem-based learning	Course
Zimmerman (1986)	Secondary	*Across disciplines*	*High school: 10th grade (aged 16)*	*USA*	Action planning Goal setting Learning styles Self-assessment/evaluation Self-direction Self-regulation Cooperative learning between students Cooperative learning between student(s)/teacher(s)	Course Other
Zimmerman (1990)	Primary *5th grade* Secondary *8th and 11th grade*	*Verbal and mathematical*	*11th grade relevant for this review*	*USA*	Goal setting Learning styles Self-assessment/evaluation Self-regulation Cooperative learning between students Other: self-efficacy	Course

25 Data Extracted Studies for In-depth Review

First author and date	Educational setting(s)	Discipline	Course / qualification	Country/countries	Main features of PDP intervention	Context of learner using PDP
Agran (2000)	Secondary	*Varied*	*High school*	*USA*	Goal setting Learner training Self-regulation	Work-based
Bielaczyc (1995)	HEI	*Not stated but includes computer programming*	*University degree*	*USA*	Self-regulation Other: Self-exploration	Course
Corno (1982)	Secondary	*Various*	*High School: summer school classes*	*USA*	Self-regulation	Course
Entwistle (1983)	HEI Post-compulsory	*This study draws its sample from a broad population of the following disciplines: English, Physics, Engineering, History, Economics, Psychology and '6th form'.*	*Many: undergraduates across a range of courses in 171 departments of 54 UK universities and polytechnics, together with sixth- form course in an FE college.*	*UK: England, Wales, Scotland and Northern Ireland*	Learning styles	Course Other: *researcher's experiment (how students read an academic article).*
Fung Kee Fung (2000)	HEI	*Obstetrics and gynaecology*	*Residents training*	*Canada*	Portfolios Self-direction	Work-based
Gould (1997)	Other: *Defense Systems Management College - US Department of Defense*	*Defense*	*Programme Management Course*	*USA*	Action planning Learning logs / journals / diaries	Course
Higgins (2000)	Secondary	*Geography*			Action planning Goal setting Learner training Self-assessment/evaluation Self-regulation	Course
Knoff (1990)	HEI	*Dentistry*	*Dental Research Methods Course*	*USA*	Learning logs / journals / diaries Learning styles Reflective practice	Course
Kramarski (2001)	Secondary	*Mathematics*	*High school*	*Israel*	Other: Metacognitive feedback Reasoning	Course
Lan (1996)	HEI	*Students were from a range of disciplines:* *Education (n=42)*	*Post-graduate statistics course*	*USA*	Self-regulation Self-monitoring, using a 10 point scale to rate their self-efficacy in	Course

First author and date	Educational setting(s)	Discipline	Course / qualification	Country/countries	Main features of PDP intervention	Context of learner using PDP
		Human Sciences (n=16) *Nursing (n=6)* *Arts and Sciences (n=5)* *Interdisciplinary programme (n=3)*			solving problems related to a specific concept	
Lan (1998)	HEI	*Statistics*	*Graduate level introductory statistics course*		Other: Self-monitoring	Course
Lizarraga (2001)	Other: *First Level Vocational Training Centres*	*Vocational training*	*First level vocational training*	*Spain*	Action planning Learner training Self-assessment/evaluation Self-motivation Cooperative learning between student(s)/teacher(s)	Course
Lonka (1995)	HEI	*Psychology*	*Various undergraduate and postgraduate psychology courses*	*Finland*	Learning logs / journals / diaries Reflective practice	Course
Lunsford (1997)	HEI	*Anatomy and physiology*	*Community College Course*	*USA*	Other: Concept mapping Metacognitive writing Assignments	Course
Masui (1999)	HEI			*Belgium*	Independent / autonomous learner Problem-based learning Reflective practice Self-regulation	Course
McCrindle (1995)	HEI	*Biology*	*BSc*	*Australia*	Learning logs / journals / diaries Reflective practice	Course
McInerney (1997)	HEI	*Computing*	*Introduction to computing*	*Australia*	Learner training Cooperative learning between student(s)/teacher(s)	Course
Paterson (1996)	Secondary	*Biology*	*High school*	*South Africa*	Self-regulation	Course
Ridley (1991)	HEI	*Not stated*	*University course*	*USA*	Reflective practice Self-awareness Self-motivation	
Ridley (1992)	HEI	*Education*	*Degree*	*USA*	Goal setting	Course

First author and date	Educational setting(s)	Discipline	Course / qualification	Country/countries	Main features of PDP intervention	Context of learner using PDP
Rush (1988)	Post-compulsory	*Vocational training*	*Post-secondary diesel automotive training course*	*USA*	Reflective practice Self-awareness Self-direction Self-regulation	Course
Schunk (1999)	HEI	*Computing*	*Introduction to Computers in Education/Undergraduate degree course*		Self-assessment/evaluation Self-regulation	Course
Simpson (1990)	HEI	*Mixed disciplines*	*Study skills course*	*USA*	Learning styles Self-assessment/evaluation Self-regulation	Course
Tillema (2000)	HEI *teacher training college* Primary	*Primary education*	*Teacher-training*	*Netherlands*	Reflective practice Self-direction Self-regulation	Course Work-based
Travers (2000)	Post-compulsory	*Mathematics*	*Community College: mathematics courses for adults*	*USA*	Goal setting Reflective practice	Course

APPENDIX 4.1: In-depth review – contextual information for the 25 studies: country, population sample details, educational setting, PDP features/context/implementation

Author(s), date and name of study	Country	Population sample: age	Population sample: sex	Educational setting	Main features of PDP intervention	Context of using PDP	PDP implementation
Agran M, Blanchard C & Wehmeyer ML (2000) Promoting transition goals and self-determination through student self-directed learning	USA	14 - 21	Mixed sex *12 male 7 female*	Post-compulsory *Post-secondary special education programme.* Secondary school - *Middle school and High school*	Goal setting Learner training Self-regulation	Work-based	Directed ('prescriptive')
Bielaczyc K, Pirolli PL & Brown AL (1995) Training in self-explanation and self-regulation strategies - investigating the effects of knowledge acquisition activities on problem-solving	USA	18 and over *assumed as university students*	Not stated	HE: *university*	Self-regulation Self-exploration	Course	Directed ('prescriptive')
Corno L, Collins KM & Capper J (1982) Where there's a way there's a will: self-regulating the low-achieving student	USA	11 and over *Students mean age was 16. The 12 teachers in the study had a mean years of experience = 16 years.*	Mixed sex *Teachers: 2 male 10 female Students: n = 124 60% male 40% female*	Secondary school: *'summer school based in an inner-city high school Oakland, California, USA'*	Self-regulation	Course	Directed ('prescriptive')
Entwistle NJ & Ramsden P (1983) Approaches to reading academic articles (Chapter 6 – pp 96-110 only)	UK *(assumed)*	18 and over *Students are in their first year at university.*	Not stated	HE: *university*	Learning styles	Course	Negotiated ('emergent')
Fung Kee Fung M, Walker M, Fung Kee Fung K, Temple L, Lajoie F, Bellemare G & Bryson, SCP (2000). An internet-based learning portfolio in resident education:	Canada *(assumed)*	21 and over *(assumed)*	Not stated	HE: *four Canadian universities*	Portfolios Self-direction	Work-based	Directed ('prescriptive')

Author(s), date and name of study	Country	Population sample: age	Population sample: sex	Educational setting	Main features of PDP intervention	Context of using PDP	PDP implementation
the KOALA-super ™ multicentre programme							
Gould JWI (1997) Practitioners' application of self-directed learning: education of the department of defense's program managers under the Defense Acquisition Workforce Improvement Act	*USA*	21 and over *senior* *personnel*	Mixed sex	*Defense Systems Management College, US Department of Defense.*	-Action planning -Learning logs / journals / diaries	Course	Directed ('prescriptive')
Higgins BA (2000) An analysis of the effects of integrated instruction of metacognitive and study skills upon the self-efficacy and achievement of male and female students	*USA*	14-16	Mixed sex *17 male (42%);* *23 female* *(57,5%)*	Secondary school: *large suburban high school' USA*	Action planning Goal setting Learner training Self-assessment/ evaluation Self-regulation	Course	Directed ('prescriptive')
Knoff E, Rugh JD & Littlefield JH (1990) Comparing learning logs and note summaries in a dental research methods course	*USA (assumed)*	18 and over *undergrad, pre and post-doctoral students*	Mixed sex *10 female* *35 male*	HE: *university*	Learning logs / journals / diaries Learning styles Reflective practice	Course	Directed ('prescriptive')
Kramarski B & Zeichner O (2001) Using technology to enhance mathematical reasoning: effects of feedback and self-regulation learning	*Israel*	17 to 20	Mixed sex *no numbers given*	Secondary school: *four Israeli secondary schools*	Metacognitive feedback, Reasoning	Course	Directed ('prescriptive')
Lan WY (1996) The effects of self-monitoring on students' course performance, use of learning strategies, attitude, self-judgement ability, and knowledge representation	*USA*	17 and over U*niversity students*	Mixed sex *32 male* *40 female*	HE:*'university in the southwestern United States'*	Self-regulation Self-monitoring, using a 10 point rating scale	Course	Directed ('prescriptive')
Lan, WY (1998) Teaching self-monitoring skills in statistics	*USA (assumed)*	17 and over *'graduate students'*	Mixed sex *38 male* *31 female*	HE: *'major state university'*	Self-monitoring	Course	Directed ('prescriptive')

Author(s), date and name of study	Country	Population sample: age	Population sample: sex	Educational setting	Main features of PDP intervention	Context of using PDP	PDP implementation
		(assumed)					
Lizarraga M & Iriarte MDI (2001) Enhancement of cognitive functioning and self-regulation of learning in adolescents	*Spain*	14-16	Mixed sex *27 male 82 female*	Secondary school: '*First level vocational training centre'*	-Action Planning Learner training Self-assessment/ evaluation Self-motivation Cooperative learning between student(s)/ teacher(s)	Course	Directed ('prescriptive')
Lonka K & Ahola K (1995) Activating instruction: How to foster study and thinking skills in higher education	*Finland*	17 and over *(assumed)*	Not stated	HE: *'University of Helsinki'*	Learning logs / journals / diaries Reflective practice	Course	Directed ('prescriptive')
Lunsford BE & Herzog MJR (1997) Active learning in anatomy and physiology: student reactions and outcomes in a non-traditional a&p course	*USA*	21 and over *(assumed as av. age given as 27.8)*	Mixed sex *11 female 1 male*	Post-compulsory: *'small community college in rural western Carolina'* USA	Concept mapping Metacognitive writing assignments	Course	Directed ('prescriptive')
Masui C & De Corte E (1999) Enhancing learning and problem solving skills: orienting and self-judging, two powerful and trainable learning tools	*Belgium*	17 and over *(assumed)*	Mixed sex *Selection in conditions was based on sex*	HE: *'Flemish University'*	Independent / autonomous learner Problem-based learning Reflective practice Self-regulation	Course	Directed ('prescriptive')
McCrindle AR & Christensen CA (1995) The impact of learning journals on metacognitive and cognitive processes and learning performance	Australia *(assumed)*	17-19 years *mean age 17.8*	Mixed sex *16 female 24 male*	HE: *university*	Learning logs / journals / diaries Reflective practice	Course	Directed ('prescriptive')
McInerney V, McInerney DM & Marsh HW (1997) Effects of metacognitive strategy training within a cognitive group learning context on computer achievement and anxiety	Australia	17 and over *(av. age given as 20)*	Mixed sex *Study 1: 17 male, 14 female Study 2: 14 male, 16 female*	HE: *'regional university in New South Wales, Australia'*	Learner training Cooperative learning between student(s)/teacher(s)	Course	Directed ('prescriptive')

Author(s), date and name of study	Country	Population sample: age	Population sample: sex	Educational setting	Main features of PDP intervention	Context of using PDP	PDP implementation
Paterson CC (1996) Self-regulated learning and academic achievement of senior biology students	*South Africa (assumed)*	16 to 18 *School year 12*	Not stated	Secondary school: *'school in upper middle to high SES area of Cape Town, South Africa'*	Self-regulation	Course	Directed ('prescriptive')
Ridley DS, Schutz PA, Glanz RS & Weinstein CE (1992) Self-regulated learning: the interactive influence of meta-cognitive awareness and goal-setting	*USA*	17 and over	Mixed sex	HE:*'large southwestern university'*	Reflective practice Self-awareness Self-motivation	Course	Directed ('prescriptive')
Ridley DS (1991) Reflective self-awareness: a basic motivational process	*USA (assumed)*	18 and over *median age of 23.5 years and students were undergraduate and postgraduates*	Mixed sex *87 female 2 male*	HE: *'large southwestern university'*	Goal setting	Course	Directed ('prescriptive')
Rush RT & Milburn JL (1988) The effects of reciprocal teaching of self-regulation of reading comprehension in a postsecondary technical school program	*USA (assumed)*	17 and over	Single sex *male*	Post-compulsory: *'Post-secondary training institution'*	Reflective practice Self-awareness Self-direction Self-regulation	Course	Directed ('prescriptive')
Schunk DH & Ertmer PA 1999) Self-regulatory processes during computer skill acquisition: goal and self-evaluative influences	*USA (assumed)*	17 and over *age range 18-39 (for Study 1, no info for Study 2)*	Mixed sex *Study 1: 40 female 4 male Study 2: 29 female 4 male*	HE: *university*	-Self-assessment/ evaluation Self-regulation	Course	Directed ('prescriptive')
Simpson ML & Nist SL (1990) The effects of PLAE upon students' executive control, self-regulation, and test performance	*USA (assumed)*	18 and over *University students*	Mixed sex *45% male 55% female*	HE: *'large southern university'*	Learning styles Self-assessment/ evaluation Self-regulation	Course	Directed ('prescriptive')
Tillema HH (2000) Belief change towards self-	*Nether-lands*	21 and over	Mixed sex	HE: two *teacher training colleges in Netherlands*	Reflective practice Self-direction	-Course	Directed ('prescriptive')

Author(s), date and name of study	Country	Population sample: age	Population sample: sex	Educational setting	Main features of PDP intervention	Context of using PDP	PDP implementation
directed learning in student teachers: immersion in practice or reflection on action		*Teacher trainees (assumed)*		Primary school: *teaching practice sites*	Self-regulation	-Work-based	*two types: 'immersion-reflection' and 'reflection-immersion'*
Travers NL & Sheckley BG (2000) Changes in students' self-regulation based on different teaching methodologies	*USA*	21 and over *Mean age is 31.7 described as 'adult learners'*	Not stated	Post-compulsory education: *'New England Community college with several sites'*	Goal setting Reflective practice	Course	Directed ('prescriptive')

APPENDIX 4.2: Details on discipline and nature of PDP intervention

Author(s), date and name of study	Discipline	Please describe in more detail the specific phenomena, factors, services or interventions with which the study is concerned.
Agran M, Blanchard C & Wehmeyer ML (2000) Promoting transition goals and self-determination through student self-directed learning	*Various*	*The Self-Determined Learning Model of Instruction was developed based on the Adaptability Instruction Model forwarded by Mithaug et al (1987). The Self Determined Learning Model of Instruction is a mode of teaching designed to teach students to become self-regulated problem-solvers.*
Bielaczyc K, Pirolli PL & Brown AL (1995) Training in self-explanation and self-regulation strategies: investigating the effects of knowledge acquisition activities on problem-solving	*Not stated but includes computer programming*	*'A structured one-to-one intervention between the experimenter and each participant' with intervention activities which included: 1/ introducing and motivating self-explanation 2/ modeling the strategies on videotape 3/ verifying the strategies to instructional materials*
Corno L, Collins KM & Capper J (1982) Where there's a way there's a will: self-regulating the low-achieving student	*Various*	*An pilot intervention in which experienced teachers were trained to help low-achieving students become more self-regulated learners. 1/Teachers trained in 3 sessions lasting for half a day each. 2/Teachers discussed theory and research on self-regulated learning and were advised on strategies for teaching low-achievers. 3/Teachers designed 10 class lessons and taught these two times a week for 5 weeks with low achieving black students. 4/Ddata were obtained on student response variables before and after instructor.*
Entwistle NJ & Ramsden P (1983) Approaches to reading academic articles (Chapter 6, pp 96-110 only)	*Various - this study draws its sample from a broad population of the following disciplines: English, Physics, Engineering, History, Economics, Psychology and '6th form*	*Intervention in which students were sent three short articles of under 200 words, the final article was a 'summary of research on styles of learning and thinking, intended to have personal relevance to the students as it monitored some of the tests they had taken during the previous year'.*
Fung Kee Fung M, Walker M, Fung Kee Fung K, Temple L, Lajoie F, Bellemare G & Bryson SCP (2000) An internet-based learning portfolio in resident education: the KOALA-super ™ multicentre programme	*Obstetrics and Gynecology*	*The KOALA programme is a computer based 'learning portfolio' for resident doctors to: 1/ record critical incidents from encounters with patients; 2/ reflect on encounter to pose clinical question; 3/ answer question using online resources; 4/ recording of what was learned.*
Gould JWI (1997) Practitioners' application of self-directed learning: education of the department of defense's program managers under the Defense Acquisition Workforce Improvement Act	*Defense*	*Project KAIZEN is a model of self-directed learning containing 8 activities:* *1/Students accomplish a literature search to define adult learning and then proposed their concept in the form of a learning contract. 2/Students define a number of relevant research questions on the subject of acquisition reform currently under Congressional scrutiny. 3/From this list of research questions, students select a subject matter area of personal*

Author(s), date and name of study	Discipline	Please describe in more detail the specific phenomena, factors, services or interventions with which the study is concerned.
		interest and formed study teams. Teams were concerned with solving real problems contributing to the discipline of acquisition reform rather than attacking problems with known solutions or past case histories where lessons learned provided a ready answer. *4/Each student is required to prepare and present a one hour lesson based on their education and experience for other members of the Section* *5/Each student is required to maintain a learning log reflecting their individual learning experience as a function of all classroom and research activities* *6/Each student is required to develop means to display their learned knowledge to others in their assigned study groups (six persons) - each student required to receive five peer votes that s/he had achieved the Bloom's Taxonomy Level of 132 desired learning objects defined by the Program Management Functional Board display could be in the form of a group discussion, presentation, work group, planned activity, or report on research group efforts* *7/Each research working group is to produce a report, an article for publication, and render a briefing up the chain of command on their research findings* *8/Eeach student is to take the same final referenced examination as other students in the remaining 13 sections, which indicates those areas of potential academic weakness that may require additional emphasis in a life-long learning plan; examination is similar to the entrance examination.*
Higgins BA (2000) An analysis of the effects of integrated instruction of metacognitive and study skills upon the self-efficacy and achievement of male and female students	*Geography*	*The intervention under study is an integrated metacognitive instructional programme comprising seven learning objectives:* *1/ expectancy for success* *2/ test anxiety* *3/ rehearsal* *4/ elaboration* *5/ organization* *6/ metacognition* *7/ self-effort*
Knoff E, Rugh JD & Littlefield JH (1990) Comparing learning logs and note summaries in a dental research methods course	*Dentistry*	*Comparison of two interventions designed to influence students' performance in critical thinking and recall:* *1/ log writing* *2/ summarizing* *Interventions undertaken during 'intense 5-week summer course of 24 class hours' introducing dental research concepts*
Kramarski B & Zeichner O (2001) Using Technology to enhance mathematical reasoning: effects of feedback and self-regulation learning	*Mathematics*	*Comparison of two interventions:* *1/ Metacognitive feedback: group received explanation of importance of using MF (metacognitive questions that serve as cues for understanding the problem) for Self Regulated Learning.* *2/ Result feedback: group received an explanation of the importance of using RF (cues pertaining only to the final outcome, provided by computer).*

Author(s), date and name of study	Discipline	Please describe in more detail the specific phenomena, factors, services or interventions with which the study is concerned.
Lan WY (1996) The effects of self-monitoring on students' course performance, use of learning strategies, attitude, self-judgement ability, and knowledge representation	*Statistics*	*The self-monitoring cue used in the statistics course was a protocol that was designed to direct students' attention to their learning activities and understanding of the learning materials.*
Lan WY (1998) Teaching self-monitoring skills in statistics	*Various - Students were from a range of disciplines:* *Education (n=42)* *Human Sciences (n=16)* *Nursing (n=6)* *Arts and Sciences (n=5)* *Interdisciplinary programme (n=3)*	*Intervention involving self-monitoring: students recorded the frequency and intensity of learning activities. Specifically, students in a statistics course monitored their own learning activities with a self-monitoring protocol.*
Lizarraga M & Iriarte MDI (2001) Enhancement of cognitive functioning and self-regulation of learning in adolescents	*Vocational training*	*The Portfolio program consists of activities extracted from three programs:* *1/The Instructional Enrichment Program* *2/ The Philosophy for Children Program* *3/ The Project Intelligence Program* *Although the aim of each of these programs is to stimulate thinking operations in general, they differ with respect to specific goals, the methodological strategies employed and the didactic materials offered.*
Lonka K & Ahola K (1995) Activating instruction: how to foster study and thinking skills in higher education	*Psychology*	*Intervention named 'activating learning' to enable students to view the act of writing as an aid to their learning, a tool to be used in acquiring mastery over new information, and a means of revealing their present understanding of a given subject. It is intended to support the process of writing with the help of peer groups. Learning-by-writing exercises are based on the idea that not just any writing fosters study and thinking skills; exercises aimed at enhancing knowledge transforming are the means that may best help the development when carried out in meaningful social interaction.* *The framework of activating instruction is a synthesis of various theoretical ideas based on:* *1/ diagnosing and activating;* *2/ fostering the learning process and reflective thinking;* *3/ giving feedback and challenging misconceptions.*
Lunsford BE & Herzog MJR (1997) Active learning in anatomy and physiology: student reactions and outcomes in a non-traditional A&P course	*Anatomy & Physiology*	*Intervention comprising two components:* *1/ concept mapping - organizing devices generated by students to connect normally isolated information;* *2/ metacognitive writing- assignments which enable students to reflect on their learning processes by writing about how they learn*
Masui C & De Corte E (1999) Enhancing learning and problem solving skills: orienting and self-judging,	Business economics	*Four metacognitive or regulative processes were the focus of the intervention:* *1/ orienting;* *2/ planning;*

Author(s), date and name of study	Discipline	Please describe in more detail the specific phenomena, factors, services or interventions with which the study is concerned.
two powerful and trainable learning tools		*3/ self-testing;* *4/reflecting.* *The authors selected four activities related to these factors. Implementation was through 10 sessions of 90 minutes each and a number of exercises aimed at practising and transferring knowledge and skills.*
McCrindle AR & Christensen CA (1995) The impact of learning journals on metacognitive and cognitive processes and learning performance	*Biology*	*Comparison of the impact of two interventions on metacognitive awareness and control, conceptions of learning, use of cognitive strategies, structuring of acquired knowledge and academic achievement* *1/ learning journals* *2/ scientific reports*
McInerney V, McInerney DM & Marsh HW (1997) Effects of metacognitive strategy training within a cognitive group learning context on computer achievement and anxiety	*Computing*	*Comparison of two treatments:* *1/ direct instruction (practice on computer individually – calling on instructor for help as required);* *2/ cooperative self-regulated learning (students received modeling from the instructor and practice in the use of higher order questions in groups).* *This study is concerned with cooperative learning and theory that it has cognitive and affective benefits, and with self-regulation and meta-cognition, which, in theory, increases effective learning by enabling students to take charge of their own learning*
Paterson CC (1996) Self-regulated learning and academic achievement of senior biology students	*Biology*	*Self-regulation as a method of learning intervention. Intervention includes:* *1/ strategic planning for lesson;* *2/ implementing learning strategies;* *3/ monitoring understanding;* *4/ evaluating success of the learning effect.*
Ridley DS, Schutz PA, Glanz RS & Weinstein CE (1992) Self-regulated learning: the interactive influence of meta-cognitive awareness and goal-setting	*Education*	*Study to test interactive influence of two self-regulatory processes:* *1/ goal setting;* *2/ metacognitive awareness;* *Individuals were placed into one of four conditions based on their level of metacognitive awareness (high or low) and their participation in either goal setting intervention or a filler activity.*
Ridley DS (1991) Reflective self-awareness - a basic motivational process	*Not stated*	*The study investigated a new conceptual model of self-regulation, reflective intentionality, in which motivation to act is based heavily on one's conception of self and on higher order processes – specifically:* *1/ reflective self-awareness;* *2/ emotion;* *3/ volition.*
Rush RT & Milburn JL (1988) The effects of reciprocal teaching of self-regulation of reading comprehension in a postsecondary technical school program	*Vocational training*	*Intervention involving reciprocal teaching as a method of instructing students in a metacognitive reading comprehension procedure. Reciprocal teaching is a tool for enhancing the text comprehension of junior high school remedial readers.* *The intervention group received instruction using a 4-part reading comprehension strategy including:*

Author(s), date and name of study	Discipline	Please describe in more detail the specific phenomena, factors, services or interventions with which the study is concerned.
		1/ self-questioning; *2/ summarizing;* *3/ predicting;* *4/ critical evaluation of the text.* *The method requires students to demonstrate participational learning.* *Two comparison groups, one received conventional teacher-centred instruction involving demonstrations and practice, and another received routine course-related reading activities.*
Schunk DH & Ertmer PA (1999) Self-regulatory processes during computer skill acquisition: goal and self-evaluative influences	*Computing*	*The study is concerned with how goals and self-evaluation effect:* *1/ self-efficacy;* *2/ achievement;* *3/ self-regulation.* *A distinction is made between process goals (e.g. learning to compute square rota) and product goals (e.g. completing 100 addition problems in five minutes).* *The interaction between the different types of goals and self-evaluation is investigated.*
Simpson ML & Nist SL (1990) The effects of PLAE upon students' executive control, self-regulation, and test performance	*Various*	*PLAE is a recursive teaching model involving students in 4 stages of test preparation:* *1/ Pre-planning;* *2/ Listing;* *3/ Activating;* *4/ Evaluating.* *The method is aimed at increasing the ability of students to monitor and control their learning and be more effective learners.*
Tillema HH (2000) Belief change towards self-directed learning in student teachers: immersion in practice or reflection on action	*Primary education*	*Study tested whether student teachers change their initial beliefs as a result of reflective inquiry prior to immersion in practice or as a result of their immersion into practical teaching situations.* *Students involved in a course of self-directed learning seminars involving three phases (a three month reflection period, a three month immersion period and a three month teaching practice period).* *Two groups* *1/ reflection-immersion (received reflection seminars followed by immersion seminars)* *2/immersion-reflection (received immersion seminars followed by reflection seminars)*
Travers NL & Sheckley BG (2000) Changes in students' self-regulation based on different teaching methodologies	*Mathematics*	*Instruction is an integrated model of self-regulated learning based on current research in this are. Five key instructional practices were identified and embodied into a maths curriculum:* *1/ guided self-beliefs, goal setting and expectations;* *2/ promotion of reflective dialogue;* *3/ provision of corrective feedback;* *4/ connection of abstract concepts;* *5/ linking to new experiences.*

APPENDIX 4.3: Study, study design summary, method for allocation into groups and actual sample

Author(s), date and name of study	Study design summary	If prospective allocation into more than one group, which method was used to generate the allocation sequence?	Total number of participants in the study (the actual sample)
Agran M, Blanchard C & Wehmeyer ML (2000) Promoting transition goals and self-determination through student self-directed learning	*A 'delayed multiple baseline design across three groups' was used to evaluate the efficacy of the Self-Determined Learning Model of Instruction. A single-subject design was used to enable evaluation of the efficacy of the above model of inclusion with students with more significant cognitive disabilities.*	Non-random *Teachers identified students who they believed needed to become more self-determined.*	*19*
Bielaczyc K, Pirolli PL & Brown AL (1995) Training in self-explanation and self-regulation strategies: investigating the effects of knowledge acquisition activities on problem-solving	*Quasi-experimental design: Following introductory lessons, participants received intervention involving explicit training in the strategies (self-regulation and self-regulation). Instructional group received a similar set of interventions but no explicit training (control group).*	Not stated	*24 treatment group = 11 control group = 13*
Corno L, Collins KM & Capper J (1982) Where there's a way there's a will: self-regulating the low-achieving student	*A 2 x 2 factorial design was used with teachers assigned either to a reading or writing class with training or non-training groups.*	Random *Twelve teacher educators were assigned at random from a pool identified by a principal to either reading or writing classes and training or no training groups.*	*12 teachers 124 students*
Entwistle NJ & Ramsden P (1983) Approaches to reading academic articles (Chapter 6, pp 96-110 only)	*'Learning experiment' described as the design; involving two groups of students*	Random *Students were assigned randomly to two conditions.*	*48*
Fung Kee Fung M, Walker M, Fung Kee Fung K, Temple L, Lajoie F, Bellemare G & Bryson SCP (2000) An internet-based learning portfolio in resident education: The KOALA-super ™ multicentre programme	*Quasi-experimental design. Four groups all received the same prospective intervention of the KOALA programme. One group had previous experience of the prototype KOALA programme.*	Non-random *Other factors (not stated) determined group's membership.*	*41 1: 15 prototype + pilot intervention 2: 8 pilot intervention only 3: 11 pilot intervention only 4: 7 pilot intervention only*
Gould JWI (1997) Practitioners' application of self-directed learning: education of the department of defense's program managers under the Defense Acquisition Workforce Improvement Act	*Cross-sectional design: three groups experienced the same curricula delivered through different instructional techniques. The researchers retrospectively wanted to find out levels of satisfaction between the groups in regard to their differing educational experience.*	Not applicable (no prospective allocation) *Cross-sectional rather than prospective*	*Overall sample is unclear Section C = 31 students and Section D = 31 students. No figure is given for Section X.*

Author(s), date and name of study	Study design summary	If prospective allocation into more than one group, which method was used to generate the allocation sequence?	Total number of participants in the study (the actual sample)
Higgins BA (2000) An analysis of the effects of integrated instruction of metacognitive and study skills upon the self-efficacy and achievement of male and female students	*A quasi-experimental design was employed. The researcher taught two classes. A treatment condition and a control condition were randomly assigned to each class. Students in the treatment condition received 4 months of metacognitive and study skills instruction along with context curriculum. Students in the control condition received traditional context instruction only.*	Random *Random assignment of intact seminar groups to the treatment/control condition*	*40*
Knoff E, Rugh JD & Littlefield JH (1990) Comparing learning logs and note summaries in a dental research methods course	*Quasi-experimental using two groups: treatment group keeping learning logs and a comparison group writing note summaries*	Quasi-random *Randomly divided study subjects into the groups: 24 students in the log group, 21 in the note-taking group.* *Stratified the subjects into groups based on dental speciality, membership in military vs. civilian community, undergraduate NIH fellowship students, and gender.*	*45*
Kramarski B & Zeichner O (2001) Using technology to enhance mathematical reasoning: effects of feedback and self-regulation learning	*Experimental design with two conditions used (1) to test the effects of two different types of computerised feedback (metacognitive feedback and result feedback) on mathematical achievement and (2) to compare their effects on the ability to explain mathematical reasoning*	Random *Random allocation to one of two conditions:* *(1) studying mathematics with computerised metacognitive feedback (n = 102); and* *(2) studying mathematics with computerised result feedback (n = 84).*	*186*
Lan WY (1996) The effects of self-monitoring on students' course performance, use of learning strategies, attitude, self-judgement ability, and knowledge representation	*Experimental design with three treatment conditions ('self-monitoring', 'instructor-monitoring' and control) employed to test the effectiveness of self-monitoring on learning amongst university students undertaking a statistics course*	Quasi-random T*he researcher decided 'that students enrolled in the first three semesters would be participants in the treatment and alternative treatment conditions, and students in the fourth semester would participate in the control condition. Students enrolled in the course during the first three semesters were assigned randomly to the self-monitoring and instructor monitoring conditions.'*	*81*
Lan WY (1998) Teaching self-monitoring skills in statistics	*Experimental design with three treatment conditions ('self-monitoring', 'instructor-monitoring' and control) used to evaluate the effects of self-monitoring on*	Quasi-random T*he researcher decided 'that students enrolled in the first three semesters*	*73* *treatment condition 1:*

Author(s), date and name of study	Study design summary	If prospective allocation into more than one group, which method was used to generate the allocation sequence?	Total number of participants in the study (the actual sample)
	behaviour, motivation and metacognition in learning of statistics.	*would be participants in the treatment and alternative treatment conditions, and students in the fourth semester would participate in the control condition. Students enrolled in the course during the first three semesters were assigned randomly to the self-monitoring and instructor monitoring conditions.'*	*self-monitoring = 23* *treatment condition 2: instructor monitoring = 21* *control condition = 25*
Lizarraga M & Iriarte MDI (2001) Enhancement of cognitive functioning and self-regulation of learning in adolescents	*A quasi-experimental pretest-posttest design with two groups was employed. The study was carried out in three phases: pre-test, treatment and post-test.*	Random *Two centres were randomly selected. In turn, one centre was randomly assigned to the experimental condition and the other to the control condition.*	*109*
Lonka K & Ahola K (1995) Activating instruction: how to foster study and thinking skills in higher education	*Longitudinal comparative design. Several groups of psychology students took part in the study between 1986-1992. These students started their courses in 1982 (following a traditional mode of instruction), 1984 (following a mixed traditional/activated learning instructional approach and 1986 (following a activated learning instructional approach). the views and exam scores for each year group were collected over a four year period and then eventually compared.*	Not stated/unclear	*114*
Lunsford BE & Herzog MJR (1997) Active learning in anatomy and physiology: student reactions and outcomes in a non-traditional A&P course	*No further information*	Random	*12*
Masui C & De Corte E (1999) Enhancing learning and problem solving skills: orienting and self-judging, two powerful and trainable learning tools	*Experimental design where the experimental group received the intervention 'embedded in natural context of the university teaching. The first control group (C1) was exposed to the same amount of teaching hours as the experimental group and the second control group (C2) was exposed to the usual instructional and study guidance support.*	Not stated/unclear	131 Experimental group = 46 Control 1 = 41 Control 2 = 44
McCrindle AR & Christensen CA (1995) The impact of learning journals on metacognitive and cognitive processes and learning performance	*Quasi-experimental post-test design in a natural setting. Collecting quantitative and some qualitative data.*	Random	*40*

Author(s), date and name of study	Study design summary	If prospective allocation into more than one group, which method was used to generate the allocation sequence?	Total number of participants in the study (the actual sample)
McInerney V, McInerney DM & Marsh HW (1997) Effects of metacognitive strategy training within a cognitive group learning context on computer achievement and anxiety	*Pre-existing computer classes randomly assigned to two treatment conditions*	Random	*Study 1: = 31 (Direct instruction = 16 Cooperative self-reg = 15)* *Study 2: =30 (Direct instruction = 15 Cooperative self-reg = 15)*
Paterson CC (1996) Self-regulated learning and academic achievement of senior biology students	*Intervention and control treatment conditions. At stage (1) 2 classes randomly allocated to the two conditions. Students matched across groups by IQ and achievement scores. Non-matched students omitted from group by achievement outcome data analysis. At stage (2) treatments to the two groups reversed. All students (included non-matched omitted students) included in correlational analysis.*	Random	*48*
Ridley DS, Schutz PA, Glanz RS & Weinstein CE (1992) Self-regulated learning: the interactive influence of meta-cognitive awareness and goal-setting	*Experimental design using quasi-random allocation into four conditions to test the research hypotheses.*	Quasi-random *Once level of meta-cognitive awareness was established the high/low students were 'randomly' assigned to either a goal setting or a no-goal setting group.*	*89*
Ridley DS (1991) Reflective self-awareness: a basic motivational process	*Experimental design splitting students following an analysis of their responses in a first phase of data collection.*	Non-random *Allocation was based on student responses to self-report questionnaires. The students were given false feedback through individually prepared profiles.*	*269*
Rush RT & Milburn JL (1988) The effects of reciprocal teaching of self-regulation of reading comprehension in a postsecondary technical school program	*The researcher used a repeated measure, multiple-baseline across group experimental design.*	Random *Students were randomly allocated into the four experimental groups.*	*160 - all male*
Schunk DH & Ertmer PA (1999) Self-regulatory processes during computer skill acquisition: goal and self-evaluative influences	*Paper contained two experimental design studies. Experiment 1: Four experimental conditions* *(1) process goal with self-explanation* *(2) process goal w/o self-explanation* *(3) product goal with self-explanation* *(4) product goal w/o self-explanation* *Experiment 2: same but no condition (4).*	Random *Six sections: four randomly by group, last two randomly by individual.*	*Expt 1 =44 Expt 2 =33*

Author(s), date and name of study	Study design summary	If prospective allocation into more than one group, which method was used to generate the allocation sequence?	Total number of participants in the study (the actual sample)
Simpson ML & Nist SL (1990) The effects of PLAE upon students' executive control, self-regulation, and test performance	*Cluster design using four pre-existing groups of students.*	Random *See response to previous question.*	*55 in total* *Intervention group = 26* *Comparison group = 29*
Tillema HH (2000) Belief change towards self-directed learning in student teachers: immersion in practice or reflection on action	*Quasi-experimental design: two groups compared with respect to their consecutive belief changes as well as competence in teaching according to self-directed learning methods.*	Non-random *Convenience/opportunity sample*	*36*
Travers NL & Sheckley BG (2000) Changes in students' self-regulation based on different teaching methodologies	*The study compared gains in self-regulation for two groups of learners: treatment group using combinations of the 5 instructional methods outlined in the paper and mentioned in a previous answer, and a comparison group receiving traditional instruction.*	Not stated/unclear	*139*

APPENDIX 4.4: Studies by outcome measure by quality assessment and weight of evidence

Author(s), date and name of study	Outcome measure	A (quality)	B (relevance of method)	C (relevance of focus)	D (overall weight)
Agran M, Blanchard C & Wehmeyer ML (2000) Promoting transition goals and self-determination through student self-directed learning	Other: teacher observation scores	Medium	Medium	Medium	Medium
Bielaczyc K, Pirolli PL & Brown AL (1995) Training in self-explanation and self-regulation strategies - investigating the effects of knowledge acquisition activities on problem-solving	Other: errors in using an IT package reported automatically	High	High	High	High
Corno L, Collins KM & Capper J (1982) Where there's a way there's a will: self-regulating the low-achieving student	Participant(s) views Psychometric tests Other: interview with headteacher	Medium	Low	High	Low
Entwistle NJ & Ramsden P (1983) Approaches to reading academic articles (Chapter 6, pp 96-110 only)	Participant(s) views Psychometric tests	Low	Medium	Medium	Low
Fung Kee Fung M, Walker M, Fung Kee Fung K, Temple L, Lajoie F, Bellemare G, & Bryson SCP (2000) An internet-based learning portfolio in resident education: the KOALA-super ™ multicentre programme	Psychometric tests	Low	Medium	High	Low
Gould JWI (1997) Practitioners' application of self-directed learning: education of the department of defense's program managers under the Defense Acquisition Workforce Improvement Act	Participant(s) views Psychometric tests	Medium	Medium	Low	Low
Higgins BA (2000) An analysis of the effects of integrated instruction of metacognitive and study skills upon the self-efficacy and achievement of male and female students	Psychometric tests	Medium	Medium	High	Medium
Knoff E, Rugh JD & Littlefield JH (1990) Comparing learning logs and note summaries in a dental research methods course	Examinations Participant(s) views Other: performance on home work	Medium	Medium	High	Medium

Author(s), date and name of study	Outcome measure	A (quality)	B (relevance of method)	C (relevance of focus)	D (overall weight)
Kramarski B & Zeichner O (2001) Using technology to enhance mathematical reasoning: effects of feedback and self-regulation learning	Examinations Participant(s) views	Medium	Medium	High	Medium
Lan WY (1996) The effects of self-monitoring on students' course performance, use of learning strategies, attitude, self-judgement ability, and knowledge representation	Examinations Psychometric tests Other: self-monitoring protocol	Medium	High	High	Medium
Lan WY (1998) Teaching self-monitoring skills in statistics	Examinations Participant(s) views Psychometric tests	Medium	High	High	Medium
Lizarraga M & Iriarte MDI (2001) Enhancement of cognitive functioning and self-regulation of learning in adolescents	Participant(s) views Psychometric tests	High	High	High	High
Lonka K & Ahola K (1995) Activating instruction: how to foster study and thinking skills in higher education	Examinations Participant(s) views	Medium	Medium	High	Medium
Lunsford BE & Herzog MJR (1997) active learning in anatomy and physiology: student reactions and outcomes in a non-traditional A&P course	Examinations Participant(s) views	Low	Medium	High	Low
Masui C & De Corte E (1999) Enhancing learning and problem solving skills: orienting and self-judging, two powerful and trainable learning tools	Examinations Participant(s) views	High	High	High	High
McCrindle AR & Christensen CA (1995) The impact of learning journals on metacognitive and cognitive processes and learning performance	Examinations Psychometric tests Participant(s) views	Low	High	High	Medium
McInerney V, McInerney DM & Marsh HW (1997) Effects of metacognitive strategy training within a cognitive group learning context on computer achievement and anxiety	Examinations Psychometric tests	Low	Medium	High	Medium
Paterson CC (1996) Self-regulated learning and academic achievement of senior biology students	Examinations	Low	Medium	High	Low

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

122

Author(s), date and name of study	Outcome measure	A (quality)	B (relevance of method)	C (relevance of focus)	D (overall weight)
Ridley DS, Schutz PA, Glanz RS & Weinstein CE (1992) Self-regulated learning: the interactive influence of meta-cognitive awareness and goal-setting	Examinations	Medium	High	High	Medium
Ridley DS (1991) Reflective self-awareness: a basic motivational process	Other: perseverance	Medium	Medium	High	Medium
Rush RT & Milburn JL (1988) The effects of reciprocal teaching of self-regulation of reading comprehension in a postsecondary technical school program	Other: cooperative English Test	Medium	Medium	Medium	Medium
Schunk DH & Ertmer PA (1999) Self-regulatory processes during computer skill acquisition: goal and self-evaluative influences	Participant(s) views Psychometric tests	Low	High	Medium	Medium
Simpson ML & Nist SL (1990) The effects of PLAE upon students' executive control, self-regulation, and test performance	Examinations	Medium	High	Medium	Medium
Tillema HH (2000) Belief change towards self-directed learning in student teachers: immersion in practice or reflection on action	Psychometric tests Participant(s) views Other	High	High	High	High
Travers NL & Sheckley BG (2000) Changes in students' self-regulation based on different teaching methodologies	Psychometric tests	Medium	Medium	High	Medium

A systematic map and synthesis review of the effectiveness of personal development planning for improving student learning

123

APPENDIX 4.5: Study by PDP type, outcomes, results and weight of evidence

Author(s), date and name of study	Main features of PDP intervention	Outcomes	Evidence reported	EPPI weight of evidence (D)
Agran M, Blanchard C & Wehmeyer ML (2000) Promoting transition goals and self-determination through student self-directed learning	Goal setting Learner training Self-regulation	Skills: cognitive Skills: practical Identity/affective	Positive effect on 'attainment' with SDL resulting in higher achievement than predicted by teacher	Medium
Bielaczyc K, Pirolli PL & Brown, AL (1995) Training in self-explanation and self-regulation strategies - investigating the effects of knowledge acquisition activities on problem-solving	Self-regulation Other: self-exploration	Achievement	Positive effect for 'attainment' and 'learning styles' with the group given instruction in self-regulation and self-explanation showing greater use of these strategies with grater performance gains	High
Corno L, Collins KM & Capper J (1982) Where there's a way there's a will: self-regulating the low-achieving student	Self-regulation	Context/learning style/autonomy	Positive effect for 'attainment' – achievement in reading, but mixed results **for** 'learning styles' – in terms of measures on regulated learning	Low
Entwistle NJ & Ramsden P (1983) Approaches to reading academic articles (Chapter 6, pp 96-110 only)	Learning styles	Skills: practical Context/learning style/autonomy	Positive effect on 'learning styles' – for the meaning-oriented group in terms of their personal reinterpretation of the material, and low % of irrelevant detail	Low
Fung Kee Fung M, Walker M, Fung Kee Fung K, Temple L, Lajoie F, Bellemare G & Bryson, SCP (2000) An internet-based learning portfolio in resident education: The KOALA-super ™ multicentre programme	Portfolios; Self-drection	Skills: practical Context/learning style/autonomy Attitudes to learning and reflection	Positive effect on 'attainment' (other outcomes measures by participants' views)	Low
Gould JWI (1997) Practitioners' application of self-directed learning: education of the department of defense's program managers under the Defense Acquisition Workforce Improvement	Learning logs/journals diaries Learning styles Problem-based learning Cooperative learning between students	Attitudes to learning and reflection	Positive effect on 'personal variables': the contract learning approach resulted in increased satisfaction scores.	Low

Author(s), date and name of study	Main features of PDP intervention	Outcomes	Evidence reported	EPPI weight of evidence (D)
Act				
Higgins BA (2000) An analysis of the effects of integrated instruction of metacognitive and study skills upon the self-efficacy and achievement of male and female students	Action planning Goal setting Learner training Self-assessment/evaluation Self-regulation	Achievement Skills: practical Context/learning style/autonomy Identity/affective Attitudes to learning & reflection	No effect for 'attainment', 'learning styles' and 'personal variables': metacognitive group did not do better on achievement or self-efficacy or metacognitive self-regulation.	Medium
Knoff E, Rugh JD & Littlefield JH (1990) Comparing learning logs and note summaries in a dental research methods course	Learning logs/journals/diaries Learning styles Reflective practice	Achievement Context/learning style/autonomy Attitudes to learning and reflection	No effect on 'learning styles' (e.g. critical analysis and application) between log-writers and note-takers. Negative effect 'personal variables': note-takers had better attitude to task – more compliance and so task as more usable in different context.	Medium
Kramarski B & Zeichner O (2001) Using Technology to enhance mathematical reasoning: effects of feedback and self-regulation learning	Other: metacognitive feedback; reasoning	Achievement Skills: cognitive	Positive effect on 'attainment': experimental group gained higher scores on mathematical reasoning and explanations.	Medium
Lan WY (1996) The effects of self-monitoring on students' course performance, use of learning strategies, attitude, self-judgement ability, and knowledge representation	Self-regulation Other: self-monitoring	Achievement Context/learning style/autonomy	No effect for 'attainment' (self-monitoring group did not get better maths scores), but positive effect for 'learning styles' – with self-monitoring groups using strategies more frequently.	Medium
Lan WY (1998) Teaching self-monitoring skills in statistics	Other: self-monitoring	Achievement Context/learning style/autonomy Attitudes to learning and reflection	Positive effect on 'attainment' and 'learning styles': students in self-monitoring condition gained higher course exam scores, and used self-regulation strategies more.	Medium
Lizarraga M & Iriarte MDI (2001) Enhancement of cognitive functioning and self-regulation of learning in adolescents	Action planning Learner training Self-assessment/evaluation Self-motivation Cooperative learning between	Achievement Skills: cognitive Context/learning style/autonomy	Positive effect on 'attainment' and 'learning styles': pre-test / post-test show gains in general intelligence; more reflexive decisions, improved planning.	High

Author(s), date and name of study	Main features of PDP intervention	Outcomes	Evidence reported	EPPI weight of evidence (D)
	student(s)/teacher(s)			
Lonka K & Ahola K (1995) Activating instruction: how to foster study and thinking skills in higher education	Learning logs/journals/diaries Reflective practice	Achievement Skills: practical Context/learning style/autonomy Identity/affective Attitudes to learning and reflection	Positive effect	Medium
Lunsford BE & Herzog MJR (1997) Active learning in anatomy and physiology: student reactions and outcomes in a non-traditional a&p course	Other: concept mapping; metacognitive writing	Achievement	No effect for 'attainment', but better writing	Low
Masui C & De Corte E (1999) Enhancing learning and problem solving skills: orienting and self-judging, two powerful and trainable learning tools	Independent/autonomous learner Problem-based learning Reflective practice Self-regulation	Achievement Context/learning style/autonomy Identity/affective	Positive effect on 'attainment': exptal group acquired more knowledge through orienting and self-judging; other measures used participants' views.	High
McCrindle AR & Christensen CA (1995) The impact of learning journals on metacognitive and cognitive processes and learning performance	Learning logs/journals/diaries	Achievement Skills: cognitive Context/learning style/autonomy	Positive effect on 'learning styles': using learning journals and metacognitive processes resulted in greater awareness of cognitive strategies. Positive effect on 'attainment'.	Medium
McInerney V, McInerney DM & Marsh HW (1997) Effects of metacognitive strategy training within a cognitive group learning context on computer achievement and anxiety	Learner training Cooperative learning between student(s)/ teacher(s)	Achievement Identity/affective	Positive effect on 'attainment': cooperative group higher score than direct instruction group, but more anxiety for high-anxious learners in cooperative learning situation than in direct instruction situation	Medium
Paterson CC (1996) Self-regulated learning and academic achievement of senior biology students	Self-regulation	Achievement	Positive effect on **'attainment',** with self-regulation positively correlated with achievement.	Low
Ridley DS, Schutz PA, Glanz RS & Weinstein CE (1992)	Reflective practice Self-awareness	Skills: practical Context/learning	Positive effect on 'attainment' and 'learning styles'	Medium

Author(s), date and name of study	Main features of PDP intervention	Outcomes	Evidence reported	EPPI weight of evidence (D)
Self-regulated learning: the interactive influence of meta-cognitive awareness and goal-setting	Self-motivation	style/autonomy		
Ridley DS (1991) Reflective self-awareness: a basic motivational process	Goal setting Self-regulation	Skills: cognitive	Positive effect on 'learning style'	Medium
Rush RT & Milburn JL (1988) The effects of reciprocal teaching of self-regulation of reading comprehension in a postsecondary technical school program	Reflective practice Self-awareness Self-direction Self-regulation	Achievement Skills: cognitive Context/learning style/autonomy	Mixed effect on 'attainment' in the form of comprehension measures. Small reciprocal teaching group performed better than whole-group instruction group during intervention but no significant diffs at final follow-up.	Medium
Schunk DH & Ertmer PA (1999) Self-regulatory processes during computer skill acquisition: goal and self-evaluative influences	Self-assessment/evaluation Self-regulation	Achievement Skills: cognitive Context/learning style/autonomy Identity/affective Attitudes to learning and reflection	No effect for 'attainment' (no differences in achievement between groups at post-test with goal and self-evaluative influences.) Positive effect for 'personal variables': increased self-regulation	Medium
Simpson ML & Nist SL (1990) The effects of PLAE upon students' executive control, self-regulation, and test performance	Learning styles Self-assessment/evaluation Self-regulation	Achievement Skills: cognitive Context/learning style/autonomy	Positive effect for 'attainment' **and** 'learning styles': main effect of the intervention on self-regulation and test performance	Medium
Tillema HH (2000) Belief change towards self-directed learning in student teachers: immersion in practice or reflection on action	Reflective practice Self-direction Self-regulation	Skills: practical Identity/Affective Attitudes to learning and reflection	Mixed effect on 'learning style': student-teachers using reflection resulting in more sophisticated results; but condition does not encourage more reflection.	High
Travers NL & Sheckley BG (2000) Changes in students' self-regulation based on different teaching methodologies	Goal-setting Reflective practice	Context/learning style/autonomy	No effect on 'learning styles': with no differences between group trained in self-regulation and a control group in measure of self-reg learning at end of semeste**r**	Medium