

**The design of a support framework for education  
about dementia and its application within an  
e-learning environment**

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in partial fulfillment of the requirements for the degree  
of Master of Science in Health Informatics**

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## ***Declaration***

I declare that the work described in this dissertation is,  
except where otherwise stated, entirely my own work, and  
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# ***Summary***

## **Background**

With our ageing population, dementia is set to become a significant health problem in Ireland in the future. G.P.s play a key role in early diagnosis and effective management of dementia, but this is hampered by a number of barriers, including a lack of education about the disease. E-learning is well placed to accommodate this education, offering the flexibility, accessibility and adaptivity required by G.P.s. Previous research has indicated that Irish G.P.s would like to receive education about dementia and that there is a potential role for e-learning in this education (Cahill et al., 2006). This study built on this research.

## **Aim**

The aim of this study was to investigate the educational requirements of Irish G.P.s in the area of dementia and to design a framework to support these needs. It also investigated the role of e-learning in implementing this framework.

## **Methodology**

A literature review was conducted which explored G.P. educational requirements relating to dementia. It also investigated the necessary components for a support framework; this included a consideration of appropriate teaching and learning activities and supports and the need for adaptivity. The review also incorporated the use of e-learning in continuing medical education. 20 semi-structured interviews were also conducted to ascertain the educational requirements and preferences of Irish G.P.s in the area of dementia.

The above review and data were used to design a framework to support the educational requirements of Irish G.P.s in the area of dementia. Its implementation within an e-learning environment was then discussed.

## **Findings**

This study revealed a strong interest amongst Irish G.P.s for education about dementia and identified a range of relevant topics and issues in the area of diagnosis and management. It also indicated a high interest in using e-learning for this education. It emphasised a G.P. need for fast, flexible access to education and adaptivity in relation to prior knowledge, topics, learning preferences and time available. There was a strong demand for teaching and learning activities which involve interaction, authenticity and peer collaboration. A support framework was designed to meet these requirements and this can be adapted for use in both formal and informal educational environments and in other subject domains. This incorporates a variety of teaching and learning activities and supports. A number of recommendations were made for its implementation within an e-learning environment. These accommodate the G.P. requirements for usability, interactivity and adaptivity identified in this study.

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## ***List of abbreviations***

<b>Abbreviation</b>	<b>Explanation</b>
AD	Alzheimer's Disease
ADL	Activities of Daily Living
ALT	Adult Learning Theory
CBA	Case-Based Analysis
CME	Continuing Medical Education
CT	Computed Tomography
DLB	Dementia with Lewy Bodies
FTD	Frontal-temporal Dementia
IADL	Incidental Activities of Daily Living
ICGP	Irish College of General Practitioners
ICT	Information and Communication Technologies
IT	Information technology
MCI	Mild Cognitive Impairment
MCQs	Multiple Choice Questions
MEQs	Modified Essay Questions
MMSE	Mini-Mental State Examination
PC	Personal Computer
TLAs	Teaching and Learning Activities
VaD	Vascular Dementia

# **Chapter 1 Introduction**

## **1.1 Introduction**

Dementia is a devastating disease and its prevalence increases dramatically with age (O'Shea, 2007). In Western societies such as Ireland, people are living longer than before and this population ageing means that dementia is set to become a major health problem in the future, as Table 1.1 below shows:-

**Table 1.1 Projected growth in number of persons with dementia in Ireland**

Year	Persons with Dementia
2006	37,746
2011	42,441
2016	49,153
2021	58,044
2026	70,115
2031	85,847
2036	103,998

Source: (O'Shea, 2007)

Projections based on European prevalence rates and population ageing figures compiled by the CSO (2004) (cited in O'Shea, 2007) suggest that the total number of people with dementia in Ireland in 2006 was 37,746 and that this will rise to 103,998 by the year 2036. This represents an increase in the incidence of dementia of just over 270% in 30 years. This has major implications for health care systems in terms of healthcare costs; estimates from the year 2000 suggest there were approximately 31,000 people with dementia in Ireland at that time and that annual care costs were eur 474 million (O'Shea, 2000). There

are further implications in terms of increased demand for resources; in 1992 it was estimated that people with cognitive impairment (including dementia) occupied 18% of acute hospital beds (Clinch and Hickey, 1992) and it is estimated that 5000 of people with dementia in Ireland live in residential care (Department of Health and Children, cited in O'Shea (2007)). Given the predicted increases in dementia, these figures are set to increase sharply.

## ***1.2 Motivation for study***

Early diagnosis of dementia is extremely important for many reasons. An increasing number of therapies are available to treat dementia and these are most effective when administered at the early stage. Early diagnosis is also important to allow patients and carers to plan for the future (Geldmacher et al, 2003, cited in (Cahill et al., 2006). G.P.s are key figures in this diagnosis as they are often the first medical contact for people with dementia. However, there are a number of barriers to early diagnosis and effective management of dementia, including a lack of education amongst G.P.s (Cahill et al., 2006).

What is the best means of delivering this education? An appropriate solution must obviously provide effective teaching methods but it must also be tailored to the different educational needs of the learner based on attributes such as their role, experience and availability. There is a growing emphasis on adult learning methods within medical education (Ruiz et al., 2006) which promote self-directed learning and active involvement through activities such as problem-based and collaborative learning (Knowles et al., 1998). Research indicates an important role for e-learning in facilitating such activities and in providing adaptivity to learners requirements (Ruiz et al., 2006).

A survey of Irish G.P.s on issues relating to dementia within primary care indicated that they would like to receive Continuing Medical Education (CME) in dementia and that there is a potential role for e-learning in this education (Cahill et al., 2006). This study built on these findings, focussing in detail on the issue of CME for dementia and the role of e-learning.

### **1.3 Study Objectives**

The objectives of this study were to examine the need for dementia education for G.P.s in Ireland and to design an appropriate framework to support these needs. It also investigated the potential role for of e-learning within this framework. The specific research questions were:-

- What are the educational needs and preferences of G.P.s in Ireland in the area of dementia?
- What type of framework is required to support these needs?
- What role does e-learning have in implementing this framework?

To achieve these objectives, this study explored the nature of dementia and potential problems in its diagnosis and management. The design of a support framework required a consideration of learning theories, the pedagogical approaches advocated by them and the effectiveness of these approaches in CME. To determine the potential role of e-learning in dementia education, the study explored the use of e-learning in medical education, the different formats used and its effectiveness. Research was also conducted to elicit the views and requirements of Irish G.P.s in these matters.

### **1.4 Methodology**

A literature review was conducted which comprised of:-

- a. the educational needs of G.P.s in the area of dementia.
- b. the requirements for a support framework; these included a review of appropriate theories of learning, pedagogical approaches and effective Teaching and Learning Activities (TLAs) in CME.
- c. The use of e-learning in CME.

20 semi-structured telephone interviews were conducted with G.P.s to ascertain their educational requirements and preferences for how this education should be delivered.

The above review and data were used to design a framework to support the educational requirements of G.P.s in the area of dementia. Its implementation within e-learning was then discussed.

## ***1.5 Thesis Outline***

Chapter 1 provided the background, motivation and objectives for this research study. It also indicated the methodology to be used. The remaining chapters are broken down as follows:-

Chapter 2 provides background information on dementia including the causes of dementia, the diagnostic process and management issues. It discusses the role of the G.P. in these areas and highlights implications in terms of educational needs.

Chapter 3 provides a literature review of CME and e-learning. This includes a review of the educational needs of G.P.s in the area of dementia. Consideration is then given to the requirements for a support framework; this involves a review of learning theories and their impact on pedagogical approaches and the effectiveness of these approaches. The use of e-learning in CME is then investigated, including the advantages offered by e-learning, its effectiveness and the different forms and approaches available.

Chapter 4 presents the research aspect of this study. It discusses the methodology used, presents and analyses the research findings and discusses their implications.

Chapter 5 presents a support framework for dementia education based on the research findings and the research literature. It discusses its implementation in an e-learning environment and validates it.

Chapter 6 presents a summary of the research study and highlights future research to be done.



## ***Chapter 2 Background information on dementia***

### ***2.1 Introduction***

This chapter outlines the causes and course of dementia. It discusses issues in diagnosing and managing the disease and the role of the G.P. in these processes. It also highlights implications in terms of educational needs for G.P.s.

### ***2.2 What is dementia***

Dementia is a broad term covering a range of diseases which cause brain cells to die resulting in a progressive deterioration in cognitive functioning. It produces impairments in many areas including language, memory, judgment, orientation and comprehension. This deterioration is usually irreversible and is often accompanied by impairments in motivation, emotional control and social behaviour (Foster, 2006). Although it can occur at any age, dementia is more prevalent in older people (Hofman et al., 1991). The prevalence rate for 65 year olds is 5%, for 80 year olds it is 20%, increasing to 25% at 85 years of age.

### ***2.3 Causes of dementia***

There are many causes of dementia but the most common ones are detailed below:-

#### **Alzheimer's disease (AD)**

Alzheimer's disease (AD) is the most common form of dementia accounting for almost 50% of cases (O'Shea, 2007). The biggest risk factor is age. AD is characterised by the presence of abnormal proteins which destroy brain cells. Loss of memory is the most common early symptom and may be accompanied by behavioural disturbances e.g. apathy or depression.

#### **Vascular dementia (VaD)**

Vascular dementia (also known as multi-infarct dementia) is the next most common form of dementia, accounting for approximately 20% of cases (Miller and Morris (1993) cited by O'Shea, 2007). With VaD, cell damage results from lack of oxygen caused by restricted blood flow to the brain. Risk factors include high blood pressure and advanced age. Challenging behaviours are common with VaD, in particular depression and apathy.

Incontinence, balance problems and impaired mobility are more common with VaD than AD (Scottish Intercollegiate Guidelines Network, 2006).

#### Dementia with Lewy bodies (DLB)

This form of dementia can account for up to 20% of all cases (Perry et al (1990) cited by (O'Shea, 2007)) and is caused by abnormal protein structures in the brain. It has symptoms similar to Parkinson's disease. Other symptoms are visual and auditory hallucinations and falls (Scottish Intercollegiate Guidelines Network, 2006).

#### Frontal-temporal dementia (FTD)

This fairly rare form of dementia can occur in people as young as 21. It initially manifests itself in dramatic behavioural and personality changes, including reduced inhibitions and disturbances in speech and mood (Scottish Intercollegiate Guidelines Network, 2006).

#### 'Mixed' dementia

Some people suffer from mixed dementia e.g. VaD and AD with one or the other usually being more dominant (Scottish Intercollegiate Guidelines Network, 2006). This complicates diagnosis and management as medication may elicit unusual reactions in patients.

#### 'Reversible' dementia

Dementia can result from toxic states, brain lesions and metabolic disorders. Intervention can produce stabilisation, improvement and sometimes recovery.

In summary, dementia is a complex disease with diverse and often non-specific symptoms. Effective diagnosis requires knowledge of the particular patterns of behaviour and symptoms associated with the different forms of the disease.

## **2.4 Course of dementia**

Dementia generally progresses through three stages (mild, moderate and severe) but these may not be clear-cut and may differ from person to person:-

- **Mild stage dementia** may produce memory problems or problems making decisions which may affect performance at work.

- **Moderate stage dementia** involves difficulties recognizing familiar people or places. Difficulties arise performing the Activities of Daily Living (ADL) (e.g. personal grooming) and the Instrumental Activities of Daily Living (IADL) (e.g. managing money). Challenging behaviours such as agitation and wandering become more common.
- At **severe stage dementia**, incontinence and more pronounced deteriorations in memory, reasoning, physical and language abilities usually result in a need for complete nursing care.

Death normally occurs approximately 3-5 years following diagnosis but can be up to 10 years later (Reisberg, 1981, Schneck et al., 1982).

The picture which emerges is one of uncertainty with a need for G.P.s to be aware of different patterns of progression and the implications for patient and carers.

## ***2.5 Diagnosing dementia***

The presence of dementia is determined by clinical diagnosis. This involves the establishment of cognitive deficits in more than one domain which result in impaired social and occupational functioning and represent a decline from a previous level of functioning (Foster, 2006). Diagnosis requires ruling out other conditions such as normal ageing losses, depression, delirium and Mild Cognitive Impairment (MCI), (a stage between normal cognition and dementia). To aid diagnosis, various diagnostic instruments may be used e.g. ICD-10, (World Health Organisation, 1993). New research may provide additional methods for detecting the presence of dementia (Ewers et al., 2008), however at present, the following processes are involved:-

- A full patient history is required with input from a knowledgeable informant to establish changes in memory, functioning etc.
- A full physical examination is necessary.
- A cognitive assessment is required. The most commonly used tool in general practice is the Mini-Mental State Examination (MMSE)(Folstein et al., 1975). This questionnaire tests a broad range of cognitive functions and the score indicates the probable presence and stage of dementia (see Appendix A).

- A differential diagnosis must be made to establish the cause of the dementia. This indicates the likely course of the disease and aids treatment (Foster, 2006).
- Brain imaging scans e.g. Computed Tomography (CT) or neuropsychological testing may help to establish the presence of dementia or aid differential diagnosis (Scottish Intercollegiate Guidelines Network, 2006).

The diagnosis of dementia normally takes place over an extended period of time. This suggests a need for intermittent bursts of education and indicates a potential role for accessible forms of education such as e-learning.

## ***2.6 Managing Dementia***

### **Pharmacological Interventions**

Although recent studies have attempted to find new interventions for dementia (O'Connell, 2008), at present, there is no cure for most dementias. Current interventions e.g. anti-cholinesterase inhibitors can slow the decline (Foster, 2006) and treat associated symptoms. Interventions are most effective if administered at the early stage of dementia (Scottish Intercollegiate Guidelines Network, 2006, Eccles et al., 1998).

### **Non-Pharmacological Interventions**

Person-centred models of dementia (Kitwood, 1997) highlight how knowledge of the individuals' personal history may help in understanding and managing challenging behaviours. They promote the use of non-pharmacological interventions to address challenging behaviours and improve quality of life. These include interventions such as Reality Orientation Therapy (to address disorientations) and reminiscence therapy to engage the person in meaningful social activities (Scottish Intercollegiate Guidelines Network, 2006).

## **Medico-Legal Issues**

### Legal and Financial Affairs

A person with dementia will eventually lose the ability to manage their legal or financial affairs. An Enduring Power of Attorney should therefore be completed at an early stage in the disease. This requires medical certification of their mental fitness and testamentary capacity (<http://www.alzheimer.ie/eng/Alzheimer-Dementia/I'm-a-Carer/Useful-Publications>).

### Driving

As dementia progresses, the ability to drive safely is lost. In Ireland, drivers with conditions such as dementia must undergo a medical assessment to establish their fitness to drive safely and this is usually performed by a G.P.

In the area of medico-legal issues, it is therefore necessary for G.P.s to be aware of the legal implications of the disease and how to assess patient testamentary and driving capacity.

## ***2.7 The role of the G.P. in diagnosis and management***

In straightforward cases, dementia diagnosis can be dealt with by the G.P. Referrals for diagnosis may occur for a variety of reasons e.g. referrals to memory clinics may be necessary to confirm early stage dementia. Patients may also be referred to specialists for CT scans or neurological testing (see section 2.5) to aid diagnosis.

Once diagnosis is made, the G.P. will manage the case but subsequent referrals may be necessary from time to time. The G.P.'s role includes managing the ongoing medical and psychosocial needs of the patient, coordinating support services and providing capacity assessments for legal and driving purposes. G.P.s also play an important role in attending to carers needs (Downs, 1996). This role places a heavy burden of responsibility on the G.P which can be exacerbated by a lack of appropriate services. A further problem is G.P. lack of experience; U.K. estimates indicate that in a practice of 2000 patients, on average 1.6 new patients will present with dementia each year and 3.6 patients with dementia will consult the G.P. (Eccles et al., 1998). This indicates a need for education to provide exposure to a wide range of cases to provide more 'experience'. Clinical guidelines e.g.

(National Institute for Clinical Excellence, 2001) may provide some guidance for the G.P. in diagnosis and management but they may not always be appropriate.

## ***2.8 Conclusion***

Dementia is a complex disease involving ambiguities and uncertainties. The range of causes and symptoms indicates that CME should help G.P.s recognise underlying patterns and provide exposure to different types and stages of dementia. It also requires consideration of the legal responsibilities of G.P.s relating to making wills and driving. Chapter 3 will now review the literature and discuss more specific G.P. educational needs relating to dementia. It will then consider the requirements for a framework to support these needs. The role of e-learning in CME will then be discussed to explore the potential part it may play in CME for dementia.

## ***Chapter 3 Literature Review: Continuing Medical Education and e-learning***

### ***3.1 Introduction***

Chapter 2 identified a number of potential educational requirements for G.P.s in the area of dementia. This chapter reviews the literature to identify more specific needs. It then discusses the requirements for a support framework for this education, including appropriate learning theories and pedagogical approaches and their effectiveness. It moves on to consider the potential role of e-learning in CME for dementia, exploring the advantages offered, different forms of e-learning and their effectiveness. Barriers to e-learning will finally be discussed.

### ***3.2 Goals of CME***

In medicine as in many other professions, education is a lifelong process. CME aims to maintain or develop the knowledge, skills and attitudes required by physicians in order to improve clinical performance, thereby improving patient care outcomes (Lloyd and Abrahamson, 1979). In Ireland at present, CME is compulsory for G.P.s on the specialist register and recommended as best practice for all other G.P.s. It will become compulsory for all G.P.s in the near future (Medical Practitioner's Act, 2007), requiring quotas of accredited CME to be undertaken over specific time periods. As it requires a time commitment which busy G.P.s can ill afford, it is imperative that CME is highly accessible, effective and financially viable (Thomas et al., 2006).

### ***3.3 The requirements for CME in the area of dementia***

Chapter 2 identified the potential role of the G.P. in dementia care. There is a plethora of evidence suggesting that G.P.s require education to perform this role effectively. Effective education must be targeted towards the learner's needs (Knowles et al., 1998), so it is important to identify these. In general, there is a need to increase G.P. confidence in dementia diagnosis and management (Manthorpe et al., 2003). More specifically, education is required in the following areas:-

- **how to diagnose dementia in the early stages** (Downs, 1996, Iliffe et al., 1999, O'Shea, 2007). G.P.s must be aware of 'diagnostic triggers' such as cognitive problems which may not be explicitly mentioned by patients or carers (Foster, 2006).
- **how to differentiate between dementia and other conditions** e.g. stress and depression and between dementia and normal ageing losses (Cahill et al., 2006).
- G.P.s require education in the **use of screening tools for dementia** (Downs, 1996)(Cahill et al., 2006), (O'Shea and O'Reilly, 1999).
- **disclosing the diagnosis**- reports from patients and carers indicate that G.P.s sometimes deliver the diagnosis of dementia in a very negative manner (Iliffe et al., 1999), (Iliffe and Manthorpe, 2002). This may indicate a requirement for communications training for G.P.s. Although communication skills are a core competency in medicine (Kurtz et al., 2005), they are often neglected but are especially important in dealing with older people (ASGM, 2006).
- **pharmacological interventions** - G.P.s require education on when to change or discontinue medication etc. and research has indicated that clinical guidelines may be helpful in this area (Cahill et al, 2006). This suggests that clinical guidelines may be a useful learning support for CME in dementia.
- **Non-pharmacological interventions** - there is a lack of awareness of non-pharmacological interventions for managing challenging behaviours associated with dementia (Iliffe et al., 1999), (Iliffe and Manthorpe, 2002). This may explain the therapeutic nihilism of G.P.s who report feeling powerless in the face of dementia (Cahill et al., 2006).
- **Referrals** - G.P.s may be unsure when to refer patients to specialists or memory clinics (Downs, 1996).
- **Support services** - G.P.s may be unaware of the support services available for patients and carers and how to access them (Cahill et al, 2006), (Manthorpe et al., 2003). This is very important as services such as day-care can delay institutionalisation (Eccles et al., 1998).
- **Carers needs** - G.P.s are often poor at eliciting and supporting carer's informational and emotional needs (Scottish Intercollegiate Guidelines Network, 2006), (Hunter et al 1997) cited in (Iliffe et al 1999). Although G.P.s may not perceive a problem in this area (Iliffe et al., 1999, Iliffe et al., 2002), it is important to address it as carer support may delay institutionalisation (Eccles et al., 1998).



- **Medico-legal issues** - G.P.s require guidance on the legal situation regarding driving and in assessing testamentary capacity (Cahill et al, 2006).

CME should additionally attempt to counter ageist or negative attitudes about dementia which can hinder diagnosis (Cahill et al., 2006) and negatively impact on carers satisfaction with G.P. performance (Iliffe et al., 1999). This may be facilitated by advocating a more person-centred approach towards dementia (Kitwood, 1997) rather than the more prevalent medical model (O'Shea, 2007, Maguire and Pitceathly, 2002).

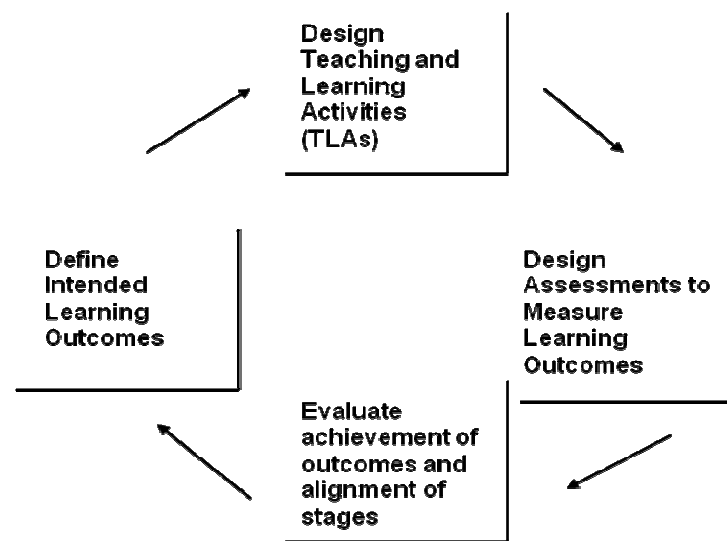
Having outlined the educational requirements for dementia, the issues involved in designing a support framework will now be discussed. This requires a consideration of suitable and effective TLAs and the need for adaptivity.

### ***3.4 The requirements for a support framework***

#### ***3.4.1 The curriculum design cycle***

To achieve educational alignment, the selection of appropriate TLAs for an educational intervention must be made within the context of a Curriculum Design Cycle (see Figure 3.1 below)(Mayes and de Freitas, 2007).

**Figure 3.1 The Curriculum Design Cycle**



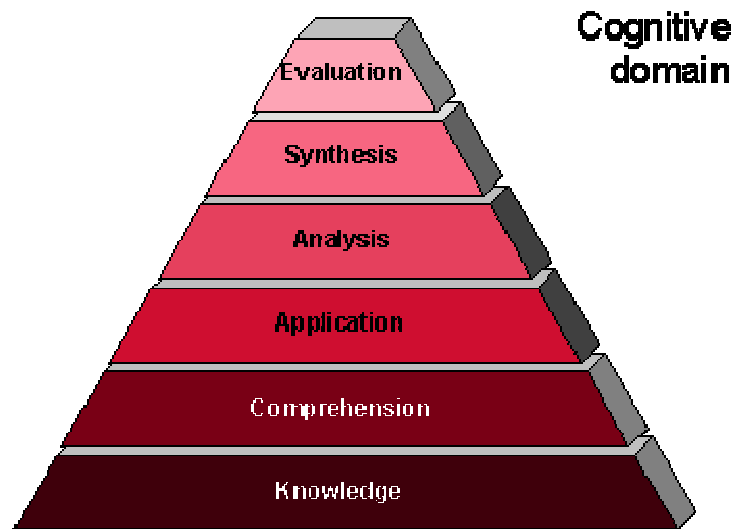
Source: (Mayes and de Freitas, 2007)

This cycle involves an alignment of stages to ensure that learning outcomes are met. The driving force is the intended learning outcomes (which are derived from learning goals and objectives). Learning outcomes indicate appropriate theories of learning which in turn determine the appropriate pedagogical approaches (TLAs) and assessments to use. To identify suitable TLAs for CME in dementia, it is therefore necessary to first consider potential learning outcomes.

### **3.4.2 Potential Learning outcomes for CME in dementia**

The high degree of uncertainty and complexity associated with dementia indicates that it is not enough for G.P.s to merely acquire formal knowledge of dementia; they must be able to apply that knowledge. This is likely to require analysis, synthesis and evaluation of patient circumstances. These learning outcomes reside at the higher levels of the cognitive domain within Bloom's taxonomy (see figure 3.2 below) (Bloom, 1956) and involve the acquisition of higher order thinking skills. This taxonomy includes two other domains (affective and psychomotor) and has become a standard for classifying learning outcomes in education. Section 3.3 highlighted a potential need for communications training for G.P.s and attitudinal changes relating to dementia, indicating that learning outcomes within the affective domain are also relevant for CME in dementia. We will now consider what learning theories are appropriate for attaining these outcomes.

**Figure 3.2 Bloom's taxonomy - Levels of Learning Outcomes in the Cognitive Domain**



Source: (Atherton, 2005)

### ***3.4.3 Appropriate Theories of Learning and TLAs for CME in dementia***

Section 3.4.2 indicated that CME in dementia should promote the attainment of higher order cognitive learning outcomes. These require the creation of conceptual frameworks of dementia rather than the acquisition of formal textbook-based knowledge such as the pathology of dementia (Wilcock et al., 2002). This indicates that **Constructivist theories of learning** (Piaget, 1970) are appropriate for CME in dementia. Constructivism views learning as a process involving the construction /adaptation of internal cognitive structures by the learner through activity. It advocates pedagogical approaches which involve ill-structured problems and reciprocal teaching. Suitable TLAs are ones such as problem-based learning where the teacher's role is that of a facilitator, providing feedback and coaching to scaffold student efforts.

However, medicine is not practiced within a vacuum. G.P.s are part of a community of practice (Wenger, 1998) defined by shared practices and understandings (Iliffe and Wilcock, 2005). This suggests that **Social Constructivist** (Vygotsky, 1978) and **Situative learning theories** (Brown et al., 1989) are also relevant for CME in dementia as these emphasize the role of the social context and collaborative activities in shaping understanding. They emphasize the importance of collaborative learning using context-relevant activities such as problem-based learning. The application of these learning theories in the medical domain is validated by research which indicates that local norms and peer opinions are strong influences in instigating performance change in doctors (Connelly et al, 1990) cited by (Marshall et al., 2001).

**Experiential learning theory** (Kolb, 1984) is also relevant in helping achieve the learning outcomes within the affective domain identified in section 3.4.2. i.e. those pertaining to attitudinal changes regarding dementia and the acquisition of communication skills. This theory advocates TLAs such as role-play which provide hands-on lifelike experiences. The learning process is facilitated by reflection on experience to integrate new knowledge (Kolb, 1984), (Schon, 1983).

In consideration of the fact that the support framework is intended for use by adult learners, it is essential to consider the TLAs recommended by Adult Learning Theory (ALT) (Knowles et al., 1998). This promotes a learner-centred approach involving self-directed learning via interactive, context-based, meaningful activities to achieve deep levels of understanding and

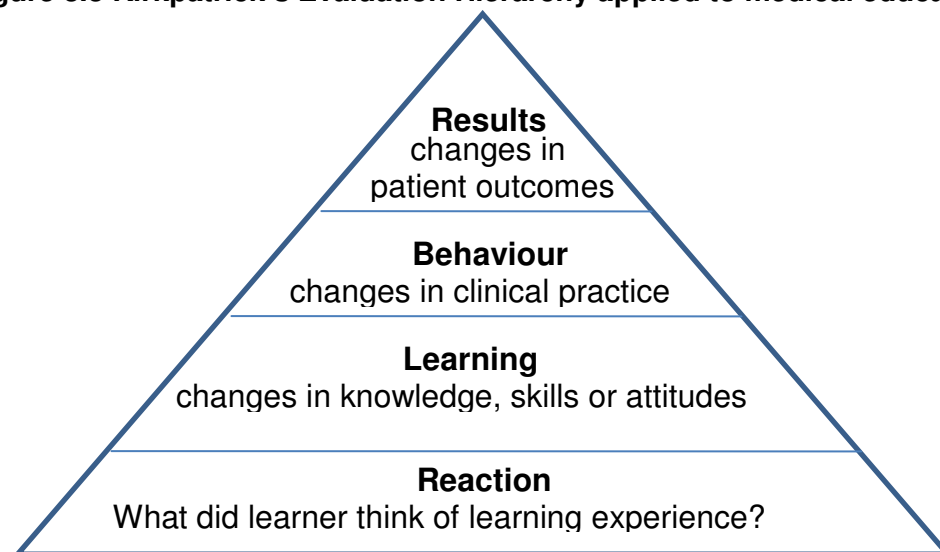
the development of higher order thinking skills. ALT (and its associated TLAs) is therefore congruent with the learning theories and TLAs already discussed.

In conclusion, the complex, ill-structured and emotionally-charged problems posed in diagnosing and managing dementia indicate a requirement for affective and higher order cognitive learning outcomes in CME. These demand TLAs which are interactive, collaborative, experiential and context-based, in line with ALT and complementary theories such as Constructivism, Social Constructivism, Situated Learning and Experiential and Reflective approaches. Having identified appropriate TLAs for CME in dementia, we will now examine their effectiveness in CME generally and in CME for dementia to assess their suitability for use in the support framework.

### **3.4.4 The effectiveness of CME**

Before exploring the effectiveness of TLAs used in CME, it is necessary to consider the evaluation metrics used. The effectiveness of educational interventions can be measured at 4 levels (Kirkpatrick, 1998) and figure 3.3 below portrays these within the context of medical education.

**Figure 3.3 Kirkpatrick's Evaluation Hierarchy applied to medical education**



(adapted from diagram available at [http://www.wipp.nhs.uk/tools\\_G.P.n/unit6\\_education.php](http://www.wipp.nhs.uk/tools_G.P.n/unit6_education.php)  
accessed on 6/6/08)

## **General CME**

Although many studies measure effectiveness at the lower levels of this hierarchy (i.e. user satisfaction and knowledge gains), there is some evidence that the TLAs promoted by ALT, Constructivist, Situative and Experiential theories of learning (e.g. case-solving, collaborative learning and role-play) can be effective at the higher levels of evaluation i.e. changing physicians behavior and improving patient care outcomes (Davis et al., 1999), (Thomas et al., 2006). Strong reminder systems, multifaceted interventions, tailored feedback, and sequential learning sessions also facilitate positive outcomes. The weakest interventions are those depending solely on didactic methods e.g. seminars (Cantillon and Jones, 1999).

## **CME for dementia**

A number of small-scale studies in CME for dementia which used interactive, self-directed learning methods have been effective in achieving user satisfaction and knowledge gains. The combination of seminars and role-play in the use of screening tools produced knowledge gains in Japan (Shigeta, 2006). However, these were based on self-reports which are not reliable forms of assessment (Waldorff et al., 2003). A further limitation is that there was no measure of subsequent performance change. Self-directed learning involving a toolkit for G.P.s which provided information on dementia and driving and sample questions for patient assessment (Byszewski et al., 2003) resulted in improved knowledge, confidence and user satisfaction. However, although G.P.s reported anticipated improvements in assessment skills, there was no actual measurement of same. Despite these limitations, this study indicates that background information on driving and dementia and sample questions for assessment may be useful learning supports for CME in dementia.

TLAs involving collaborative, context-based learning have been effective in achieving performance changes in G.P. behavior regarding dementia. Workshops based on group analysis and discussion of real-life cases resulted in improved detection rates of dementia (Downs et al., 2006). This study offers methodological rigour in providing an objective measure of improved behaviour and patient outcomes. The positive results may be partly attributed to the use of collaborative learning as peers can be effective educators especially in mixed ability groups (Nowlem, 1988) cited by (Wilcock et al., 2002). The experiential aspect of this intervention (i.e. solving cases) and the use of complex, ill-structured real-life problems may have enabled the application of learning to real life situations.

In summary, whilst there may be some role for didactic TLAs such as seminars to provide background information, the evidence suggests that interactive TLAs such as Case-Based Analysis (CBA), role-play and collaborative learning may provide effective CME for dementia. Effectiveness may be enhanced via the use of multifaceted interventions with tailored feedback. Sequential learning sessions may also facilitate effective learning and this indicates an important role for e-learning as it accommodates repeated access to information based on individual requirements.

### ***3.4.5 The need for adaptivity in CME***

This study has considered a number of educational requirements and appropriate TLAs for CME in dementia. However, all learners are not the same; differences arise in terms of prior knowledge and competence and this is likely to be relevant in this study as research indicates a wide range of knowledge about dementia amongst G.P.s (Rubin et al 1987, cited by (Iliffe et al., 1999). Differences are also likely in terms of skill levels required, time constraints and learning preferences and styles (Honey and Mumford, 1986). It is difficult for conventional CME to accommodate these varying requirements. However, e-learning has the capability to provide “just-for-you” educational experiences tailored to the users requirements. We will now examine the potential role for e-learning in CME for dementia. This involves exploring its advantages, different forms of e-learning and the effectiveness of e-learning. Barriers to e-learning will then be considered.

### **3.5 The role of e-learning in CME**

#### **3.5.1 What is e-learning**

*‘The spread of the internet and new Information and Communication Technologies (ICT) has transformed the way people communicate, the way industries operate, the way governments interact with their citizens, and, significantly, the way people learn’ (European Commission, 2003 cited by (Harden, 2006)*

As the above quote indicates, the advent of the internet has brought many changes, one of which is the introduction of e-learning. There are many definitions of e-learning but as this study considers it in the context of online learning, the following definition is relevant “e-learning is the use of internet technologies to deliver educational solutions” (Ruiz et al., 2006). E-learning may also be called internet-based learning, web-based learning or online learning. It incorporates distance learning and computer-based learning/computer-assisted instruction (traditionally delivered via postal services or cd-rom). Blended learning occurs when e-learning is combined with more traditional teacher-led activities (Zimitat, 2001).

E-learning is becoming increasingly common in undergraduate education (Greenhalgh, 2001, Choules, 2007) and is gaining ground in CME. In 2003, 46% of physicians in the US and 23% in Canada used the internet for formal CME (Bennett, Casebeer et al, 2004, cited by (Sargeant et al., 2004). Within the UK, e-learning is a key element within the National Health Service’s National Lifelong Learning Strategy (Department of Health, 2001) and is already a popular educational format; between 2001 and 2005, 40,000 UK doctors completed 250,000 e-learning modules using the website <http://www.doctors.net.uk> (Lacey Bryant and Ringrose, 2006). In Ireland, e-learning in CME is slowly becoming more popular; an interview with a representative from the Irish College of General Practitioners (ICGP) indicated that in 2003, 76 G.P.s took part in ICGP e-learning courses; in 2007 this figure rose to 409. This increasing emphasis on e-learning for CME suggests that it may provide an acceptable solution for CME in dementia for Irish G.P.s. A key issue is likely to be the advantages offered by e-learning and these will now be considered.

### ***3.5.2 Advantages of e-learning***

E-learning offers a number of advantages over traditional educational methods. A key advantage relevant to this study is that it facilitates the learner-centred, interactive educational approaches which are appropriate for CME (Ruiz et al., 2006).

E-learning empowers the learner, putting them in control of their learning, in line with ALT. It offers education anytime, anywhere at the learners own pace. This can be via formal CME programs or informal just-in-time learning (Godin, Hubbs et al 1999 cited by (Curran and Fleet, 2005). E-learning facilitates just-in-time learning by offering up-to-date knowledge which G.P.s can target according to their specific needs (Casebeer et al., 2002). This flexibility is valued by doctors (Sargeant et al., 2004, Dickmann et al., 2000) and is likely to be relevant for CME in dementia where there may be a wide range of prior knowledge amongst G.P.s. E-learning provides adaptivity to the learner's role and experience (Wiecha and Barrie, 2002) and caters for different learning approaches and styles(Honey and Mumford, 1986) via the wide range of available tools and formats.

E-learning enables the educational process to be streamlined thus providing efficiencies via immediate feedback, evaluation and automatic accreditation (Horn K.D et al., 1997). Section 3.2 highlighted the importance of ensuring that CME is financially viable and e-learning offers advantages in this area; it provides economies of scale, thus allowing content to be delivered to large numbers at relatively low costs. However, these cost savings must be offset against increased costs in other areas (e.g. the additional resources required to produce e-learning materials (Childs et al., 2005).

Having established the advantages that e-learning offers for CME in dementia in providing a flexible, learner-centred, interactive approach to education which is likely to be cost-effective we will now consider the components of e-learning and the different forms available.

### ***3.5.3 Components of e-Learning***

#### ***3.5.3.1 E-learning tools***

E-learning uses a wide variety of tools and technologies to provide engaging learning resources. Some may incorporate multimedia (e.g. text, audio, video) to enhance content



thus providing interactive life-like learning experiences of the kind advocated by ALT. Resources can be combined to create re-usable learning objects (Choules, 2007). A variety of tools facilitate peer collaboration and online communication which may be synchronous (e.g. web-conferencing) or asynchronous (e.g. discussion boards and e-mail).

### **3.5.3.2 Content Management**

E-learning interventions must be managed and systems such as Blackboard or WebCT may be used within educational institutions to deliver and track e-learning (Ruiz et al., 2006). Portals such as MedEdPortal (at <http://www.aamc.org/mededportal>) provide access to peer-reviewed learning objects. The increasing emphasis on shareability within e-learning necessitates the adoption of standards to ensure compatibility. The general industry standard is the Advanced Distributed: Learning Shareable Content Object Reference Model (SCORM). The MedBiquitous consortium promotes this standard for developing medical e-learning content (Ruiz et al., 2006).

### **3.5.4 Forms of e-learning**

There are many forms of e-learning but this review focuses on ones relevant to CME in dementia. These include interactive case-based analysis (CBA), video-based communications training, adaptive simulations and forms which accommodate didactic approaches to education. The following section takes each form and illustrates how they have been successfully applied in the medical environment.

#### **Case-Based Analysis (CBA)**

CBA promotes active student-centred learning within authentic clinical environments and is an effective means of strengthening problem-solving skills (Schuwirth, Verheggen et al, 2001 cited by (Wilson et al., 2006). CBA is a popular form of e-learning used on sites such as <http://www.BMJLearning.com> and <http://www.doctors.net.uk>. Given the limited experience of some G.P.s in dementia, online CBA is likely to be very relevant to CME, offering easily accessible exposure to a wide range of patient cases.

E-learning offers different CBA formats ranging from simple to complex. On <http://www.BMJLearning.com>, presentation is fairly simple; doctors are presented with different clinical scenarios and answer Multiple Choice Questions (MCQs), obtaining immediate feedback on answers (see Appendix B (i) and B (ii)). Didactic elements are

incorporated by providing key information at appropriate stages (see Appendix C). Other interventions are more complex e.g. a study on e-learning in rheumatology presented medical students with various patient details in multimedia format (Wilson et al., 2006). Students could ask the patient questions; perform 'examinations' and order investigations before making diagnosis and treatment decisions using MCQs. This provided opportunities for realistic diagnostic role-play which students found helpful for integrating knowledge. The authors highlighted the advantages of the design e.g. learners can see the effect of different approaches and direct their own learning by revisiting certain aspects or zoning in on particular areas. This makes learning personally meaningful in line with ALT.

CBA involving collaborative learning can be achieved using tools such as e-mail or discussion boards. One study replicated small group learning by providing moderated discussion of cases via e-mail (Marshall et al., 2001). This provided an enjoyable and meaningful learning experience for those involved. Given the value placed by G.P.s on peer collaboration for CME, a similar format may be appropriate for CME in dementia.

### **Video-based communications training**

In face-to-face educational environments, participant role-play with simulated or real patients is an effective means of teaching communication skills (Kurtz et al., 2005). However it is very time-consuming and resource intensive. E-learning offers an alternative approach which often involves video modelling of communication skills e.g. one study taught patient-centred communication skills to cancer specialists covering areas such as how to break bad news (Hulsman et al., 2002). A similar solution may be relevant to CME in dementia for providing experiential training on how to disclose the diagnosis. The videos incorporated didactic elements e.g. key aspects of communication theory and comments on the displayed skills. Interactivity was provided by MCQs. This study was effective in achieving positive changes in knowledge and attitudes. The authors note that this type of learning environment may be less threatening than face-to-face group settings for certain learners. The flexibility provided may also appeal to G.P.s with many demands on their time.

The above example involved solitary learning but collaborative learning can be accommodated using discussion boards. One study involving medical students used a discussion board to host online discussions about communication behaviours depicted on

video (Wiecha et al., 2003). This promoted reflection and led to self-reported knowledge gains.

### **Adaptive Simulations**

Although peer collaboration and the use of MCQs increase the level of interactivity of video-based communications training, it can nonetheless be criticised for being too passive. It may not appeal to those with a pragmatic learning style who require a more hands-on approach (Honey and Mumford, 1986). In answer to this criticism, adaptive dialogue-based simulations deliver 'hands-on' education for communication skills (Dagger et al., 2007) whereby learners perform online role-play using simulated patients. There are some limitations with this type of e-learning solution compared to face-to-face training; role-play is most effective if it incorporates feedback on the student's videotaped performance (Maguire and Pitceathly, 2002), but this is not facilitated within adaptive simulations. Nonetheless, simulations have been successfully used for undergraduate medical students to teach communication skills for psychiatry and can be adapted for different subject matter and target audiences. It may have a potential role in CME in dementia for G.P.s; however, further research is required to investigate its suitability for this student group.

### **Didactic forms of education**

E-learning is well placed to accommodate didactic forms of education. Most e-learning interventions link the learner to supplementary reading materials and online journals and databases, indicating a role for these types of learning supports for CME in dementia. These provide opportunities for self-directed learning and are important in the current medical climate which promotes evidence-based practice (Gluud and Gluud, 2005). Although didactic learning on its own is a weak form of education (Cantillon and Jones, 1999), e-learning provides opportunities to enhance it by incorporating interactive, reflective and experiential elements as on <http://www.BMJlearning.com>. This website offers learning modules which provide information about medical issues, using vignettes of patient experiences (sometimes involving videos) and probing questions to encourage experiential learning and reflection (see Appendices D, E and F). Such a strategy may be relevant in CME for dementia e.g. in helping to promote a patient-centred approach and in providing insight into patients and carers needs and emotions. Other modules incorporate 'just-in-time' overviews of issues using MCQs to provide interactivity.

In conclusion, e-learning offers many different approaches likely to be appropriate for CME in dementia. These include online CBA, communications training and didactic forms of e-learning, ranging from simple to complex solutions and facilitating solitary or collaborative learning. These can be enhanced using various strategies and tools to provide higher levels of interactivity, reflection and experiential learning relevant to CME in dementia. The question now arises as to what forms of assessment are used in e-learning.

### ***3.5.5 Assessment of e-learning***

Assessment is a core part of any learning offering and this of course holds true for e-learning. Although a detailed consideration of forms of assessment is outside the scope of this study, a brief examination will be made.

In many cases e.g. <http://www.BMJlearning.com>, online assessment is based on knowledge gains measured by pre and post-test MCQs. These provide automated assessment with immediate feedback, which motivates learning (see Appendix G). Modified Essay Questions (MEQs) offer a more elaborate means of assessment. Although they cannot provide automated assessment, they can be submitted online, as on the e-learning courses offered by the ICGP. However, neither method evaluates learning in terms of improved clinical performance or patient outcomes; although these are the ultimate goals of CME (see section 3.2). Such measures are difficult to achieve in practice but Portfolio-Based assessments offer a possible solution (Chablis (1999) cited by (Zimitat, 2001)) and are used on all CME courses run by the ICGP. These support reflective learning by acting as a diary where the G.P. assesses their own learning and provides examples of application in their daily practice. In line with ALT, they enable learners to take responsibility for their own assessment (Harden, 2006). As with MEQs, Portfolio-Based assessments are not automated, but e-learning can facilitate their completion e.g. they can be submitted online and online model portfolios can guide G.P.s in the completion process.

Now that we have considered how e-learning may be assessed, it is necessary to consider its effectiveness as this is an important criterion of any CME intervention (Thomas et al., 2006).

### **3.5.6 The effectiveness of e-learning**

*“E-learning will be, almost certainly, one of the most important developments in the delivery of postgraduate medical education. It is not simply a method which uses information communications technology to deliver a more effective and streamlined system, it is also a tool for potentially transforming postgraduate medical education” (Harden, 2006)*

The above quote takes it as given that e-learning offers effective education. Various studies have sought to test this claim. A review of studies involving online CME applied a criterion that at least one level of evaluation in Kirkpatrick's model (see figure 3.3) was used for summative evaluation (Curran and Fleet, 2005). Of the 31 studies which qualified for inclusion, most evaluated outcomes based at the lower levels i.e. learner satisfaction or knowledge gains. In terms of promoting knowledge gains, e-learning has been shown to be as effective or superior to face-to-face methods (Chumley-Jones et al., 2002, Wutoh et al., 2004). E-learning generally provided satisfaction due to its universality, flexibility, accessibility and low cost. The provision of realistic, context-based learning opportunities was another important feature. Poor quality materials, unreliable software and lack of technical support detract from user satisfaction (Greenhalgh, 2001). Such problems may be addressed by establishing quality assurance standards for e-learning content to address issues such as usability, user satisfaction and educational effectiveness (Ruiz et al., 2006). A further solution is the establishment of centres of excellence such as the Consortium of e-learning in Geriatrics Instruction (Ruiz et al., 2007) to produce high quality, shareable e-learning content.

There is limited evidence of the effectiveness of e-learning at the higher levels of evaluation i.e. improvements in clinical practice or patient care outcomes. Nonetheless, one review found 2 studies which reported improved professional skills and practice behaviours (Curran and Fleet, 2005). However, both were small scale studies and outcomes were based on self-reports of participants which may be unreliable (Waldorff et al., 2003). Another study involving a randomized controlled trial indicated that e-learning was superior to face-to-face interactive workshops in improving clinical performance related to cholesterol management (Fordis et al., 2005). It incorporated didactic presentations of information, interactive case studies with feedback and support materials (a risk assessment calculator and clinical guidelines). Access to expert advice was provided via e-mail or web conferencing. A review of e-learning studies involving G.P.S found only 2 which resulted in improved clinical

performance or patient care; one was an online course in diabetes linked to a discussion group; another involved prevention of Chlamydia infections which included interactive case studies, performance feedback and patient leaflets (Sandars and Walsh, 2006).

The above findings indicate that e-learning can be effective in securing improved knowledge, practice and patient outcomes in some situations but it is necessary to pinpoint the determinants of this effectiveness. A key requirement is sound educational design; effective e-learning depends, not on the tools used per se, but how they are used (Zimitat, 2001). This view is supported by others who argue that e-learning is not intrinsically superior to other methods of learning and impressive presentation cannot make up for poor educational design (Chumley-Jones et al., 2002); *“technology may be queen but pedagogy is king”* (Harden, 2006). Some of the studies and reviews discussed above incorporate elements of sound educational design e.g. interactivity and peer collaboration which have proven effectiveness. However, their multifaceted nature prevents determination of which elements and approaches are most effective. In the Fordis study for example, the authors suggest that results may be due to the online nature of the study allowing self-pacing and targeting of learning to learner's needs. However, change may also be attributed to sequential reinforcement of learning (Davis et al., 1999) via the ability to revisit topics and to participate in web conferences which facilitated integration of learning. More stringent research is required to tease out the best approaches to e-learning and this should include comparisons of different communication delivery methods e.g. synchronous versus asynchronous (Curran and Fleet, 2005).

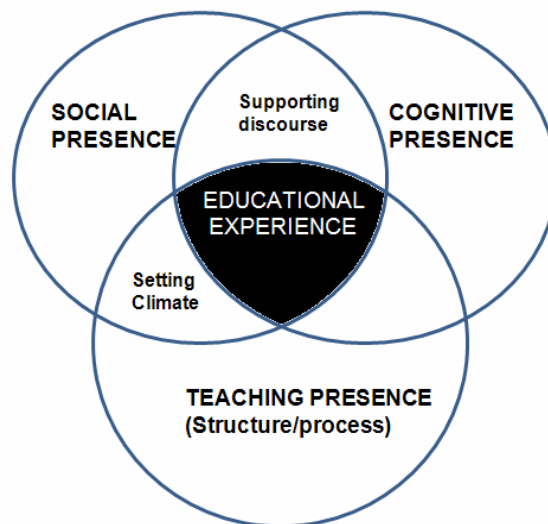
In conclusion, more research is needed to establish the effectiveness of e-learning particularly in relation to practice change and improved patient outcomes. More methodological rigour is necessary (Sandars and Walsh, 2006) and research should attempt to identify the most effective designs and delivery methods for e-learning. A key consideration is what underlying pedagogy to use and decisions must be informed by best evidence. The BEME collaboration (<http://www.bemecollaboration.org>) facilitates such decisions by providing access to available evidence (Harden, 2006). It is also necessary to investigate and harbour the educational advantages afforded by new tools e.g. blogs, podcasts and wikis (Sandars and Schroter, 2007, Boulos et al., 2006). These are used more by younger doctors than older ones, so it is important to incorporate them where possible in e-learning to engage younger learners.

This section has highlighted the importance of sound educational design in promoting effective e-learning. It is therefore an important consideration in implementing a support framework for CME in dementia within an e-learning environment. The issue of what underlying pedagogy to use has already been explored in section 3.4.3. We will now consider research which sheds light on the design elements necessary for creating an effective e-learning environment.

### **3.5.7 Educational Design Issues for e-learning**

The ultimate goal of higher education is to bring together communities of learners and e-learning is uniquely placed to accommodate this goal (Garrison and Anderson, 2003). This goal is very relevant to this study as social dialogue and collaboration within CME is highly valued by G.P.s (Parboosingh, 2002). The use of models or frameworks provides guidance for designing effective educational interventions to achieve this goal. One such model relevant to this study is the '*Community of Inquiry*' model (see figure 3.4 below).

**Figure 3.4 The Community of Inquiry Model**



Source: (Garrison and Anderson, 2003)

This model is congruent with the principles of ALT and complementary theories such as Constructivism and Situative learning. It incorporates 3 key mutually reinforcing elements designed to facilitate collaborative, interactive learning which will promote higher order thinking, shared understandings and reflection. These are:

- **social presence** (which requires activities to build personal networks of trust),
- **cognitive presence** (which requires activities to stimulate interaction, reflection and higher order thinking)
- **teaching presence** (which requires activities such as feedback, coaching and support)

This model may help to interpret the findings of studies regarding the effectiveness of e-learning. In line with Social Constructivist and Situative learning theories, it places social interaction at the heart of the educational process. This may help explain why a self-directed interactive e-learning intervention using CBA (delivered via CD-Rom) failed to increase dementia detection rates amongst G.P.s, whereas a non e-learning approach using similar material delivered via small group workshops and group discussion did improve detection rates (Downs et al., 2006).

### **Issues regarding online interpersonal interaction**

The above model specifies the ingredients necessary for effective e-learning within an online Community of Inquiry but these can be difficult to achieve. A particular problem lies in securing satisfactory levels of online interpersonal interaction. Discussion forums or boards have been used in some e-learning solutions to facilitate interaction. These can promote lively online conversations and collaborations which are a valued learning activity for clinicians (Lacey Bryant and Ringrose, 2006). The text-based form of communication supported by discussion boards can facilitate reflection and higher order critical discourse (Wiecha et al., 2003) (Winifred and Ellenchild, 2000), which in turn contributes to cognitive presence. However, online discussions often result in a lack of engagement and a superficial sharing of information (Sandars and Walsh, 2006, Sandars and Langlois, 2006). This detracts from the 'cognitive presence' necessary for effective learning. There may be a number of reasons for this. In the Sanders and Langlois study some topics generated more discussion than others. This may be because they were especially relevant as relevancy



motivates adult learning (Knowles et al., 1998). However, the level of discussion activity may also have been influenced by the time of the year (Marshall et al., 2001).

In addition to problems with a lack of engagement, other research indicates that satisfaction ratings for online interpersonal interaction are often low (Curran et al., 2003). A possible explanation is that ratings are mediated by previous experiences. A study by Curran et al 2004 cited by (Sargeant et al., 2004) found that doctors with previous positive experiences of online interpersonal interaction were more likely to be satisfied than those with previous negative ones. Those with positive experiences valued the social element of interaction which facilitated effective sharing of ideas and experiences. They also found that the use of discussion boards promoted reflection and experiential learning. However, low satisfaction rates were linked to feelings of social discomfort and a lack of trust suggesting that e-learning failed to create an online community of practice where users felt able to share ideas. Trust is an important element of online communication (Walther, 1996 cited by (Sandars and Langlois, 2006); a lack of trust may impair 'social presence' thus preventing meaningful engagement and undermining the cognitive aspects of the intervention.

The above problems of lack of trust and cognitive engagement indicate the importance of a strong teaching presence in e-learning interventions. E-tutors play an important role in promoting social presence by making online learners feel welcome and drawing learners into online communications. Model messages and responses posted by e-tutors provide learners with examples of appropriate online behaviour, helping to create an atmosphere of trust (Garrison and Anderson, 2003). Cognitive presence can be stimulated by providing model answers to questions to guide learners in critical discourse. This is complemented by skilful moderation of online discussions involving activities such as summarising main points and conclusions and highlighting discrepant views. This highlights the importance of training e-tutors in relevant skills (Murphy, 2006). For the purposes of this study, there is some indication that G.P.s may prefer if online discussions are moderated by fellow G.P.s rather than specialists (Marshall et al., 2001). In either case, it is important that moderators receive proper training for their role.

A further solution to increase social presence in e-learning interventions (and produce corresponding improvements in cognitive presence) is the use of synchronous communication methods such as live videoconferencing (Locatis et al., 2006). Blended

learning environments may provide an alternative solution. The face-to-face contact provided by them may contribute to social presence, thus promoting more effective engagement with online communication in the e-learning component (Garrison and Anderson, 2003).

In summary, the Community of Inquiry Model indicates the requirements for effective e-learning design. However, there may be difficulties creating a suitable online environment to nurture these elements. Although asynchronous text-based communication can contribute to cognitive presence, it can be difficult to create the necessary accompanying social presence. This can be facilitated by an effective teaching presence, but other approaches such as synchronous communication methods may help ameliorate the difficulties involved. A further possibility is the use of blended learning which may help build social presence, thus promoting more effective online learning.

This section has considered elements necessary for effective e-learning design. However, even if these are in place, there are still a number of barriers which may prevent G.P.s from participating in e-learning. These will now be discussed.

### ***3.5.8 Other barriers to e-learning***

Although e-learning is growing in popularity within CME, there are a number of barriers to its use. These must be addressed to ensure that e-learning provides a viable educational alternative for all G.P.s. These barriers are detailed below:-

- **Lack of skills**

A lack of competence and confidence in using Information Technology (IT) are barriers to using e-learning (Curran and Fleet, 2005, Childs et al., 2005) indicating a need for training and support for novice users. This may be more relevant for older physicians who are less likely than younger ones to have access to or use IT (Mamary and Charles, 2000). However, this picture is likely to change over time. Recent research indicates that 78% to 85% of U.S. physicians use the WorldWide Web and the fastest growing user group is those aged 60 and over (American Medical Association, 2002 cited by (Fordis et al., 2005).

- **Lack of acceptance**

E-learning is not always accepted by teachers or learners, who may be reluctant to embrace change (Greenhalgh, 2001, Childs et al., 2005). Some doctors also eschew e-learning because they prefer face-to-face education (Curran and Fleet, 2005). One way to overcome this barrier may be through the use of blended learning which offers a combination of e-learning and face-to-face formats.

- **Lack of time**

Time constraints have been cited as a barrier to e-learning (Curran and Fleet, 2005), reflecting the attitude towards self-directed methods in general (Sandars and Langlois, 2006, Mamary and Charles, 2003). The problem may be exacerbated by poor time management skills and lack of student self-discipline. This can be addressed by time-management training and tutor support (Docherty and Sandhu, 2006).

- **Lack of access to technology**

Lack of access to technology and slow connection speeds create barriers to e-learning (Sandars and Walsh, 2006) (Wilson et al., 2003, Childs et al., 2005, Chumley-Jones et al., 2002). However, these are culturally relative e.g. lack of access is less of a problem in the U.S. (American Medical Association, 2002 cited by (Fordis et al., 2005). The situation in Ireland is unclear. A research study involving Irish G.P. practices indicated that three quarters of them used computers (Cahill et al., 2006) but the extent of internet access was not indicated.

### ***3.6 Conclusion***

This chapter indicated a number of G.P. educational requirements in the area of diagnosis and management of dementia. It suggested that a support framework must incorporate peer collaboration and TLAs which are interactive, context-based and learner-centred. Relevant learning supports include clinical guidelines, sample questions for patient capacity assessment, research journals and background reading material. Adaptivity is required in terms of prior knowledge and user preferences. E-learning is well placed to accommodate these requirements, offering a range of formats and advantages which are relevant for time constrained G.P.s such as easily accessible current medical information. A key requirement

for effective e-learning is sound educational design, requiring the creation of cognitive, social and teaching presence. This raises a challenge relating to the establishment of satisfactory online communication. Further challenges to e-learning are barriers such as a lack of acceptance and poor user IT skills.

Chapter 4 now discusses the research element of this study which explores the requirements and preferences of G.P.s in Ireland relating to dementia education and the potential role of e-learning in this education. It discusses the methodology used, presents and analyses the findings and discusses their implications.

## **Chapter 4 Methodology**

### **4.1 Introduction**

Chapter 3 indicated that G.P.s require CME in a number of areas within dementia diagnosis and management. It suggested that the most appropriate and effective TLAs for this education include interactive, learner-centred approaches which provide opportunities for peer collaboration. Despite a number of barriers, e-learning is growing in popularity within CME and offers a range of approaches to deliver such TLAs. This study considered the situation with regard to G.P.s in Ireland and posed the following research questions:-

- What are the educational needs and preferences of G.P.s in Ireland in the area of dementia?
- What type of framework is required to support these needs?
- What role does e-learning have in this framework?

Answering these questions required an exploration of a number of issues with an emphasis on the need for adaptivity. It was first necessary to gather background information, including G.P. demographics, to inform upon study findings and possible effects of variables such as age upon results. Information regarding prior experience in IT and e-learning and prior education in dementia was also relevant as it could provide ideas for a suitable framework. It was necessary to investigate if G.P.s wanted CME in dementia and if so, in what areas. The design of a support framework required an exploration of G.P.s preferred TLAs and supports and their preferred delivery format.

### **4.2 Selection of Methodology**

It was decided to conduct 20 semi-structured interviews to answer the research questions. The research interview is defined as "*an interview, whose purpose is to gather descriptions of the life-world of the interviewee with respect to interpretation of the meaning of the described phenomena*"(Kvale, 1983). This method was chosen because of its flexibility; the inclusion of predetermined questions ensures that key areas are addressed. Additional questions can be added as necessary to allow for a fuller investigation of the relevant issue

than that afforded by a more restrictive method such as a questionnaire. Although focus groups offer similar benefits, they require significant co-ordination in gathering participants together at one time and it was felt that this would not be achievable in this study.

An informal discussion with a G.P. contact indicated that it would be difficult to recruit G.P.s for this study because of heavy demands on their time. For this reason, it was decided to conduct the interviews by telephone rather than face-to-face to gain extended access to this 'hard to reach' population (Mann and Stewart, 2000). This would allow interviews to be easily conducted at a time most convenient to the G.P. with as little intrusion into their daily schedule as possible. The removal of the need to travel to conduct interviews also meant that this methodology was more viable for the interviewer. Although telephone interviews have a disadvantage compared to face-to-face methods in reducing the number of social cues available e.g. body language, other cues such as voice and intonation are captured. A further problem with the use of telephone interviews is that it prevents standardisation of the interview situation as the interviewer has no control over the participant's environment. However, even if face-to-face methods were used in this study, it is most likely that the interview location would be the G.P.s office, thus limiting the level of standardisation possible. It was therefore felt that telephone interviews were the best and most practical choice for this study.

### ***4.3 Recruitment of participants***

The sampling method used to recruit participants was purposive sampling whereby the interviewer handpicks the participants based on particular characteristics. This was chosen as it enables information-rich cases to be targeted thus providing meaningful data in the area of study. In this study, key areas of interest were experience of dementia (to inform on the need for adaptivity in education) and experience of e-learning (to inform on potential e-learning solutions). An attempt was made to include G.P.s with varying levels of experience in each area. The author had no medical background so potential participants were identified by talking to people with contacts in this field (an example of 'snowball' purposive sampling, (Patton, 1990)). Potential participants were contacted by phone, post or e-mail and asked if they would like to participate in the study. A flyer was sent (see Appendix H) explaining the study purpose and outlining the interview areas. This was done to allow participants reflect on the questions, thus maximising the chance of obtaining meaningful data during the interview.

#### ***4.4 Interview protocol***

An interview protocol was designed which contained a number of questions broken down into six areas (see Appendix I). The first half of the interview (parts 1, 2 and 3) gathered information on the G.P.'s background and their experience of IT and dementia. This was required to place the rest of the findings in context, to inform on the need for adaptivity and to identify possible educational solutions and problems to be avoided. The second half (parts 4, 5 and 6) gathered the key information for this study i.e. the educational requirements and preferences of G.P.s. The questions were kept as short as possible and biased and leading questions were avoided (Robson, 2002). Most of the questions were open but in some cases participants were asked to respond based on predetermined choices e.g. use of the internet. In each section, there were a number of main questions, sometimes followed by sub-questions. Follow on or probe questions were added as necessary for clarification and elaborative purposes.

The interview protocol was tested on a pilot participant who was a G.P. Following this, some changes were made and the amended protocol was tested on another G.P. No further changes were necessary. There were six parts to the interview as follows:-

##### ***Part 1: G.P. background information***

The goal of this section was to gather information to describe the participant sample and to help interpret results.

##### ***Part 2: IT skills and experience of e-learning.***

The goals of this section were to ascertain the level of IT skills of G.P.s and any barriers that prevented them from using computers. This section also gathered information on previous e-learning experience to identify possible acceptable solutions for this study.

##### ***Part 3: Experience of dementia and prior training***

The goals of this section were to investigate the G.P.s level of experience in dementia and previous postgraduate training as it is expected that this may impact on their educational needs. An assumption was made that their experience level can be measured by the number of patients they manage with dementia.

#### Part 4: Dementia Education – relevant topics

The goal of this section was to investigate G.P.s need for education in dementia and to identify relevant topics.

#### Part 5: Preferred TLAs and supports

The goal of this section was to determine G.P.s preferred TLAs and learning supports in the area of dementia education.

#### Part 6: E-Learning and Dementia Education

The goal of this section was to investigate G.P.s preferred delivery format for dementia education and their views on adaptivity within e-learning.

### **4.5 Interview procedure**

Twenty interviews were conducted in total; 19 were performed by telephone on a one-to-one basis. The average time taken was 25 to 30 minutes. Each began with an introduction where the interviewer explained the purpose of the study. Participants were assured of confidentiality and told that they could withdraw from the interview at any time. The interview findings were recorded by the interviewer on the interview protocol sheet. Where relevant, predefined answer boxes were ticked and additional notes were written for each question. One interview followed a different format (at the request of the participant); the protocol was sent by post, completed by them and returned to the interviewer. A follow-up telephone conversation provided any necessary clarifications.

### **4.6 Interview results**

The interview data was transferred to Microsoft Word as soon as possible after each interview to ensure accurate and adequate representation. It was then copied to a Microsoft Excel spreadsheet for analysis.

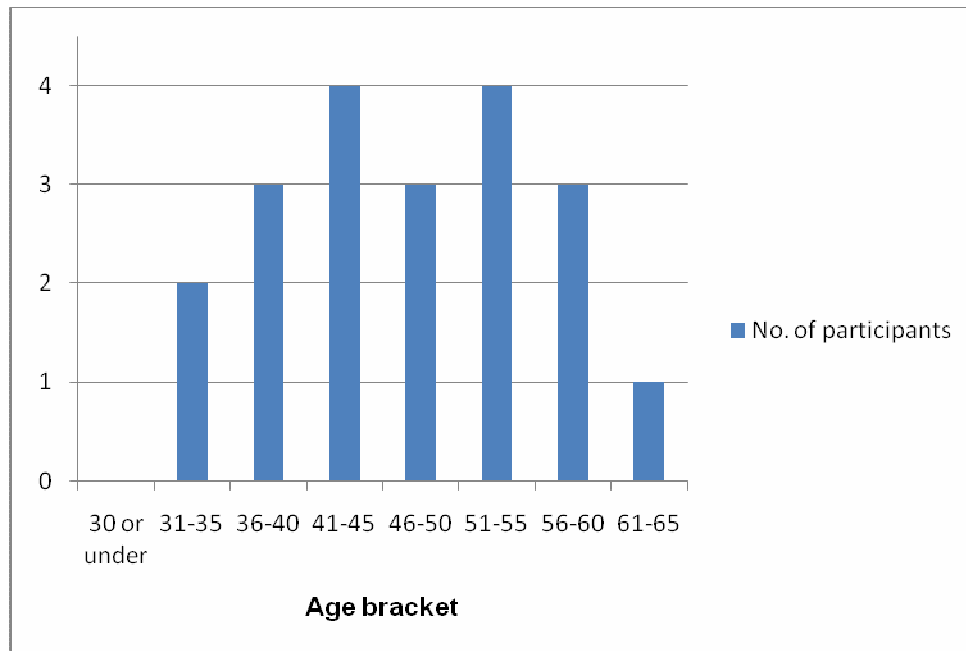
#### **4.6.1 Part 1: G.P. background information**

Of the 20 participants, 15 were male and 5 were female. Two participants were part-time G.P.s. One participant was no longer a practising G.P. but was included in the study because of their e-learning experience. Of the 19 practising G.P.s, 9 worked in single



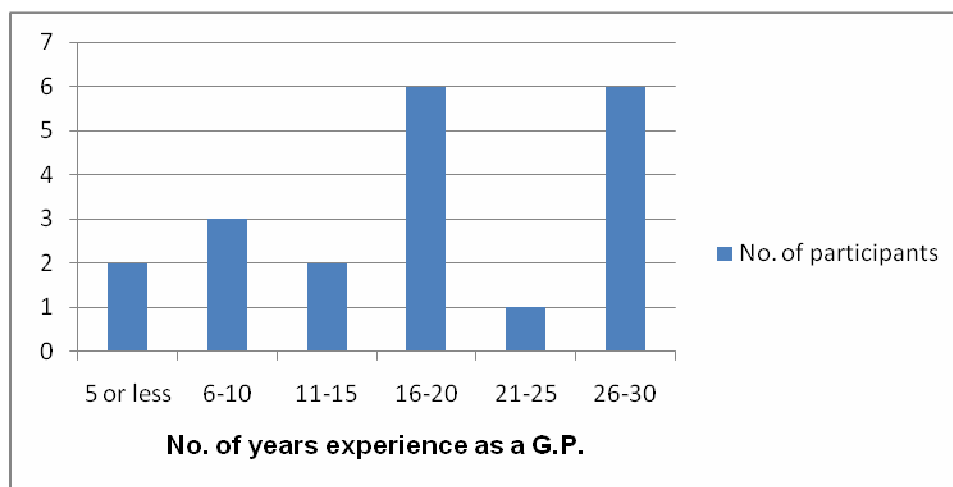
practices and 10 worked in group practices. The age profile of all participants is depicted in figure 4.1 below:-

**Figure 4.1 Age profile of participants**



Participant's ages were fairly evenly distributed. The youngest participants were in the 31-35 age-group and the oldest was aged 61-65. Their number of years experience as a G.P. are summarised in figure 4.2 below:-

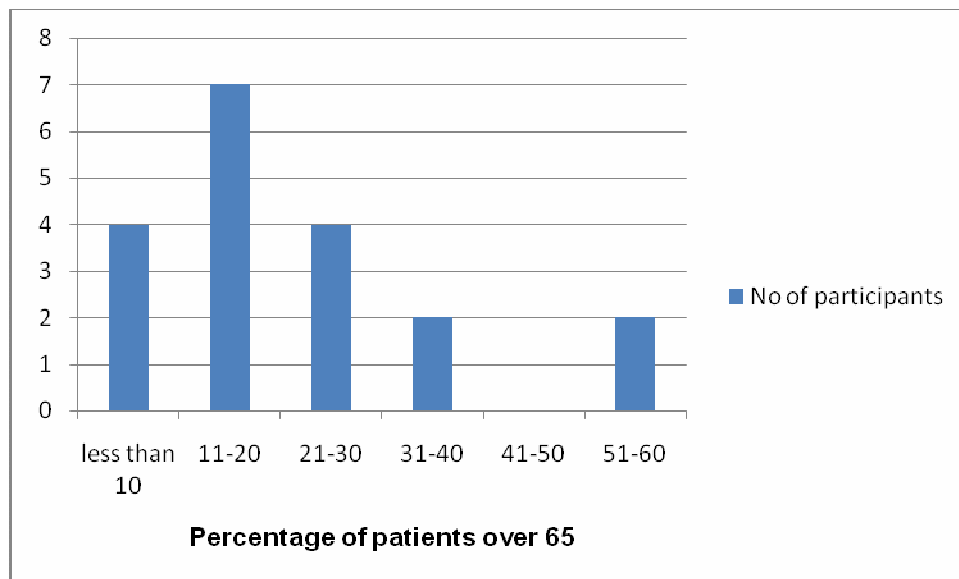
**Figure 4.2 Number of years experience as a G.P.**



Year's experience as a G.P. ranged from 2 to 30 years. The highest frequencies (6 participants) occurred in the categories 16-20 years and 26-30 years.

The percentage of patients over 65 for the 19 practicing G.P.s is summarised in figure 4.3 below:-

**Figure 4.3 Percentage of patients over 65**

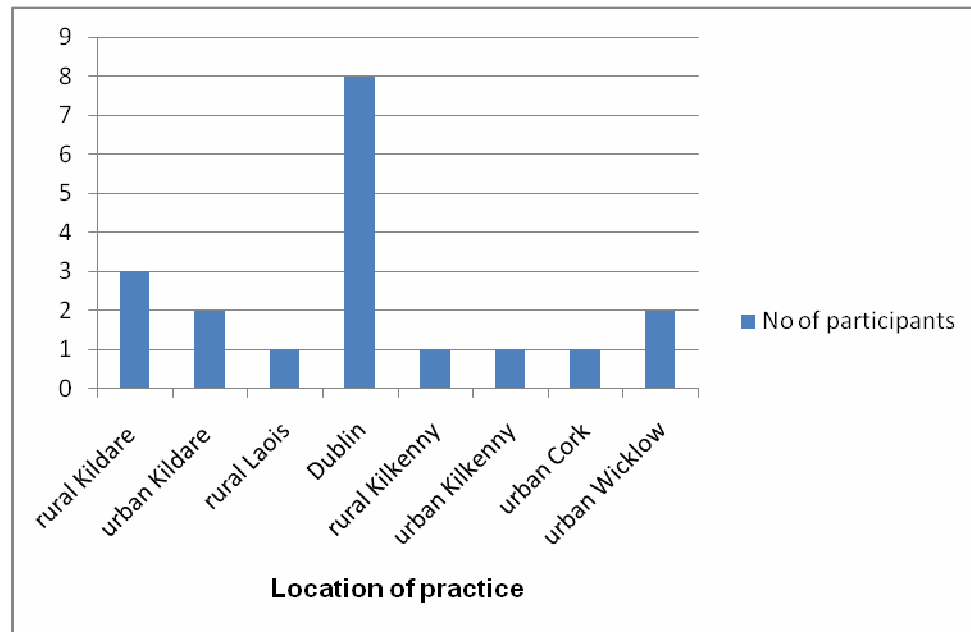


The percentage of patients over 65 ranged from 2% to 60%. The latter figure related to a Dublin practice which covered a number of nursing homes. The highest frequency was in the 11-20% category (7 participants).

All 19 practising G.P.s attended regular CME training, although some said it was not as often as they would like. Particular value was placed on small group learning and opportunities to discuss issues and personal cases with other G.P.s and specialists.

G.P. practices were located in a number of areas within Ireland as figure 4.4 indicates:-

**Figure 4.4 Location of G.P. practices**



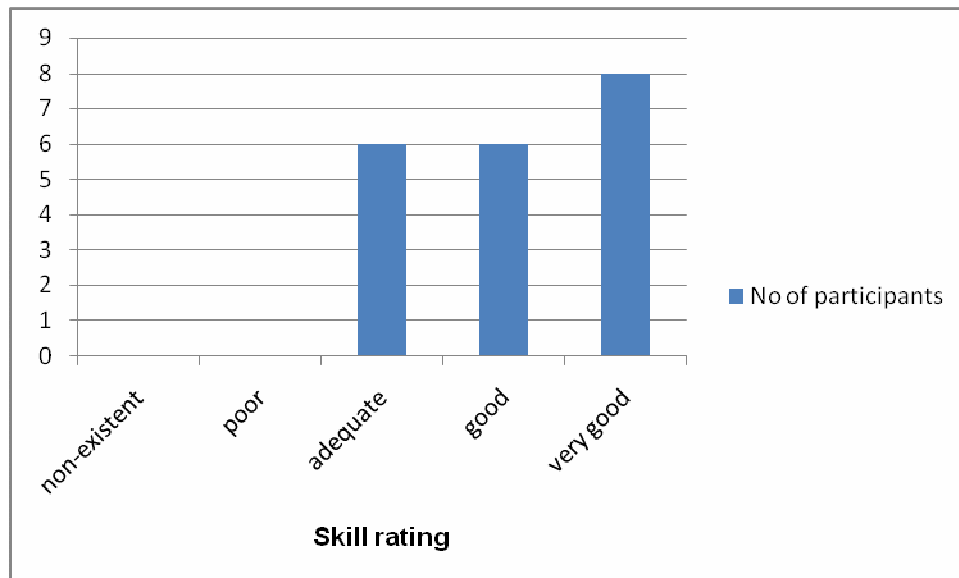
The most frequent location of G.P. practices was Dublin (8 participants). The rest were fairly evenly distributed throughout a number of other regions including urban and rural areas within counties Kildare, Laois, Kilkenny, Cork and Wicklow.

#### **4.6.2 Part 2: IT skills and e-learning experience**

##### **IT skills**

All of the participants used a Personal Computer (PC); 18 used one both at home and work and 2 used a PC at home only. In one case, this was because the G.P. disliked technology. The other G.P. was in a single practice and did not have time to keep records up-to-date etc. IT skills were generally high with 14 participants rating their IT skills as either good or very good as figure 4.5 indicates:-

**Figure 4.5 IT skill ratings for participants**



All of the participants used the internet. Table 4.1 below indicates the nature of use:-

**Table 4.1 Participants use of the internet**

Use	No. of participants
e-mail	20
access to medical websites	20
access to journals, databases	17
web conferencing	1
discussion forums	3
social networking	3
downloading patient results from hospitals	3
patient information leaflets	4
Other (banking, booking events or holidays, looking up information for personal use)	20

All the participants used e-mail and accessed medical information via websites. 17 used online medical databases and/or journals, although 3 said their use was infrequent. 8 G.P.s sometimes used the internet during consultations for 'just in time' learning e.g. for looking up

travel vaccine information. One participant highlighted the importance of access speed in this situation. Another G.P. stated that it was often difficult to find the required information. 3 G.P.s received patient hospital results online and 4 G.P.s occasionally used the internet to print medical information for patients.

Very few participants used web conferencing or discussion forums. Only 1 participant (originally from Canada) regularly used web conferencing to discuss medical issues with colleagues from Canada. 3 participants used discussion forums regularly; one was an e-tutor who facilitated an e-learning discussion board, the other 2 accessed a discussion forum for practical issues facing young G.P.s. 3 participants used social networking tools (facebook) on an irregular basis. Participants also used the internet for looking up information for personal use, banking, and booking events or holidays.

### E-learning experience

9 participants had e-learning experience, 11 had none. Details are presented in Table 4.2 below:-

**Table 4.2 Participant's experience of e-learning (displayed by format and age range)**

Format		Interpersonal interaction?	Number of participants
Exclusive e-learning	( <a href="http://www.BMJLearning.com">www.BMJLearning.com</a> ) Interactive case-based analysis	No	2 (age range 41-45)
	Interactive - multiple choice questions – links to more information if required	No	1 (age range 41-45) 1 (age range 51-55)
	Interactive – multiple choice questions	No	1 (age range 31-35)
	(Open University) Information provided online/hard copy - assignments submitted online	Yes (online discussion board)	1 (age range 51-55)
Blended learning	(ICGP) Information provided online/hard copy - assignments submitted online Face-to-face workshops	Yes (face-to-face)	1 (age range 51-55)
		Yes (face-to-face and online discussion board)	2 (age range 41-45, 61-65)

### **Participant's views of e-learning**

5 participants completed formal certified courses (3 were blended learning courses with the ICGP, 2 were non medical exclusive e-learning courses). 4 participants took part in informal e-learning. A variety of formats were involved. In 4 cases, the e-learning aspect involved the provision of online material and online submission of assignments. Other formats provided more online interactivity e.g. answering MCQs with links to more information. In one case, links to MCQs were embedded in online journals delivered by e-mail. The participant liked this as it enabled them to incorporate CME within their daily routine.

2 participants completed interactive case-based modules on <http://www.BMJlearning.com>. They liked this because it was quick, engaging and provided immediate feedback. It also emphasised key points, which they found very useful given the information overload of most G.P.s. Pre/post test assessment questions were considered useful for identifying unrealised knowledge gaps and for motivating learning by providing proof of knowledge gains. However, there were some drawbacks, including the lack of interpersonal interaction and the UK slant on the course material.

Participants were generally enthusiastic about e-learning and the flexibility it offers. In one case, this was a key issue as the participant could not have done the course unless it had been through e-learning. 2 participants who completed ICGP blended learning courses stated that their courses had directly led to practice improvements; in one case to the introduction of a proper diabetes register and in another to a full practice audit of therapeutics. However, there were some negative comments. 2 participants thought e-learning could be somewhat isolating and anonymous and one noted the importance of discipline and of making time for e-learning.

### **Interpersonal interaction**

4 participant's courses incorporated interpersonal interaction. In one case, this involved face-to-face sessions only. The other 3 participants used an asynchronous discussion board and 2 of them also had some face-to-face workshops. Only 1 of the 3 participants who used a discussion board had a positive experience of it (his course was an IT exclusive e-learning course); he found the discussion board very helpful for teasing out difficult problems and indicated that the high quality of the interaction motivated further participation.

The other 2 participants reported that the level of activity on their discussion boards was initially quite good but tailored off dramatically. One of these participants (age range 61-65) was an eager contributor but indicated a number of problems; he felt that some of his fellow-learners didn't contribute because they wanted the course qualification but were not really interested in the topic. There was also a lack of understanding about how to use the board; in one case another student on the course posted a fully referenced answer to a clinical problem being discussed, thus curtailing further contributions. This participant would have liked some web conferencing sessions with topic experts to ask questions and bring the 'learning to life'. The third participant who used a discussion board didn't like it because of the delay in getting a response which might then be unsatisfactory. He was not interested in web conferencing as it was too 'fancy' a solution but would prefer to use the phone to obtain immediate responses to questions.

### **Barriers to e-learning**

There were a number of reasons for non participation in e-learning (in some cases, participants cited more than one reason). These are summarised in Table 4.3 below:-

**Table 4.3 Barriers to e-learning**

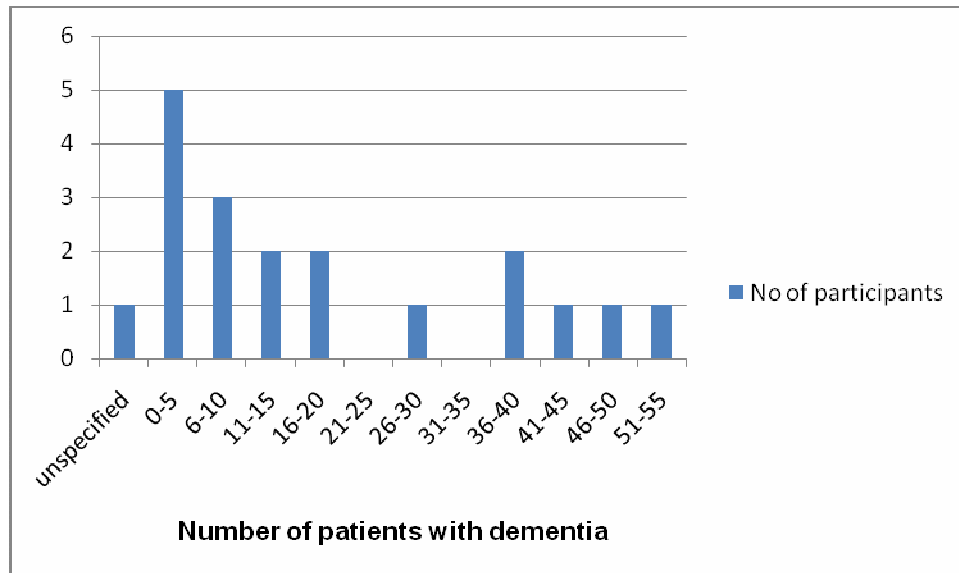
<b>Barrier to e-learning</b>	<b>No. of participants</b>
lack of time	6
poor IT skills	1
no broadband access	1
Cost	2
lack of suitable course	2
happy with current CME format	4
effectiveness not proven	1

The most common barrier to e-learning was 'lack of time' (6 participants). This was followed by 'happy with current CME format' (4 participants).

### **4.6.3 Part 3: Experience of dementia and prior training**

The 19 practising G.P.s completed the remaining parts of the interview. There was a wide range of experience of patients with dementia, as figure 4.6 indicates:-

**Figure 4.6 Number of patients with dementia**



The number of patients with dementia ranged from 0 to 55, with the highest frequency (5 participants) occurring in the category 0-5 patients. The unspecified category related to a part-time G.P. who had no regular patients.

18 G.P.s had been involved in diagnosing dementia. 2 of these always referred the patient to a memory clinic or specialist to confirm the diagnosis (in one case because the memory clinic was close by, in the other case because of a lack of experience). A brief discussion indicated that diagnosis sometimes occurred in the early stages, where families brought the patient in because they noticed something was wrong. In other cases, diagnosis occurred in the middle or late stages, often because this was when the patient presented to the G.P.

### **Postgraduate training in dementia**

14 G.P.s had received informal postgraduate training in dementia via ICGP CME group sessions, hospital based study days or training sponsored by drug companies. This included lectures, overviews, group based workshops (often involving CBA) and round table



discussions. Lectures were often given by specialists (e.g. old age psychiatrists) and included follow-up question and answer sessions.

Participants generally found the training helpful, although there were mixed opinions of lectures. 2 G.P.s thought they were very useful, but 1 found them unengaging. Another G.P. said lectures could be hard to relate to general practice. The importance of discussing issues and personal cases with other G.P.s and specialists was mentioned by a number of participants.

2 participants received regular reading material on dementia which they found helpful e.g. the Alzheimer's Society quarterly newsletter.

#### **Non professional experience of dementia**

9 G.P.s had non professional experience of dementia, in 2 cases; close family members had the disease.

#### ***4.6.4 Part 4: Dementia Education – relevant topics***

18 of the 19 practising G.P.s wanted to receive education about dementia, although this was not a high priority for 2 as they had few patients with dementia. One G.P. did not want education in dementia as he was satisfied with his current knowledge level and felt that education would not make much difference as there was little which could be done anyway.

Table 4.4 below presents the topics where G.P.s require education summarised according to the number of their patients with dementia. The figures in brackets beside the topic name denote the number of G.P.s who rated this topic as the most important one for them (in some cases, G.P.s listed a number of topics as having equal importance):-

**Table 4.4 Educational requirements for participants (summarised by number of patients with dementia)**

<b>Educational Topic</b>	<b>unspec-ified</b>	<b>0-5</b>	<b>6-10</b>	<b>11-15</b>	<b>16-20</b>	<b>21-25</b>	<b>26-30</b>	<b>31-35</b>	<b>36-40</b>	<b>41-45</b>	<b>46-50</b>	<b>51-55</b>	<b>total</b>
Early signs and diagnostic triggers (5)	1	5	2						2		1	1	12
differentiation between dementia and delirium etc. (3)	1	4	3	1					2		1	1	13
screening tools (4)	1	4	2				1		2		1	1	12
differential diagnosis (3)	1	4	2	1					2		1	1	12
Disclosing the diagnosis (2)	1	2	1		1				2				7
referral criteria (3)	1	4	3				1				1	1	11
pharmacological interventions (6)	1	4	2	2					2	1	1	1	14
non-pharmacological interventions (5)	1	5	3	2			1		2	1	1		16
medico-legal and driving issues (13)	1	5	3	2	1		1		2	1	1	1	18
carers needs/support services (4)	1	3	3	1	1				1		1	1	12
handling other medical problems in patients with dementia		1											1

Education was required in a number of areas involving dementia diagnosis and management. The most popular topic was medico-legal and driving issues (required by all 18 G.P.s who wanted education and rated by 13 of them as their most important requirement). The second most popular topic was non-pharmacological interventions (16 participants). Education on pharmacological interventions was also a popular choice (chosen by 14 participants and rated as the second most important area for education). Participants referred to different levels of experience e.g. one G.P. (with 4 years experience and 6 patients with dementia) said they knew very little about referral criteria, whereas another G.P. (with 40 patients with dementia and 29 years experience) stated that they knew a fair bit about this topic but a bit more education 'wouldn't go amiss'.

There was generally some discussion around the relevant educational topics, providing detail on specific areas of concern. These are summarised in Table 4.5 below:-

**Table 4.5 Issues to be addressed within educational topics**

<b>Topic</b>	<b>Issues to be addressed</b>
Early signs and diagnostic triggers	<ul style="list-style-type: none"> <li>• What to look out for in patients history</li> <li>• Does early diagnosis have a real benefit medically?</li> </ul>
Differentiation between dementia and other conditions	<ul style="list-style-type: none"> <li>• Can be very difficult in some cases – even experts not always sure</li> </ul>
Differential diagnosis	<ul style="list-style-type: none"> <li>• How to differentiate between the different forms of dementia</li> <li>• Procedures and tests to outrule potentially reversible causes of dementia e.g. vitamin B12 deficiencies.</li> </ul>
Screening tools	<ul style="list-style-type: none"> <li>• Should G.P.s be using other tools besides the MMSE? If so, what tools?</li> <li>• What tools are suitable for specific situations e.g. for illiterate patients</li> <li>• What tools are most sensitive (for use in early stages)</li> <li>• Some communications training is required in how to approach screening – it can be embarrassing for the patient</li> </ul>
Disclosing the diagnosis	<ul style="list-style-type: none"> <li>• how to frame the diagnosis in a more positive manner as it is a very sensitive and difficult issue for patients and families (current education on dementia never really addresses this issue)</li> <li>• How to decide whether to disclose or not</li> </ul>
Referral criteria	<ul style="list-style-type: none"> <li>• When to refer patients to specialists or memory clinics</li> <li>• Criteria relating to referrals for changing/stopping medication</li> </ul>
Pharmacological interventions	<ul style="list-style-type: none"> <li>• When to discontinue or change a patient's medication if it is not working or is having serious side-effects.</li> <li>• Need for unbiased evidence-based information on the merits of medication e.g. Aricept to balance against the claims made by drug companies.</li> <li>• The use of sedation for dementia patients – this can be a contentious issue as families often want it to control challenging behaviours.</li> </ul>
Non -pharmacological interventions	<ul style="list-style-type: none"> <li>• Education is important but there is a lack of available services.</li> <li>• G.P.s tend to medicalise dementia so it's important to have more information about these</li> <li>• Dementia has a very negative stigma and there is little to offer medically. It is therefore important to know more about these interventions to enhance the quality</li> </ul>

	<p>of life of the patient and to keep them active and engaged.</p> <ul style="list-style-type: none"> <li>• Access to evidence based research is important to identify what interventions are effective.</li> <li>• How to advise carers on issues such as completion of ADL, dealing with challenging behaviours such as night wandering etc..</li> </ul>
Carers needs/Support services	<ul style="list-style-type: none"> <li>• Carers needs are very important – they can sometimes be forgotten</li> <li>• Need for localised information on all the services (social and health-related) together in one place as current information is very fragmented</li> </ul>
Medico-legal and driving issues	<ul style="list-style-type: none"> <li>• What is the legal situation regarding living wills and Enduring Power of Attorney</li> <li>• How to assess a patient's testamentary and driving capacity. Lack of clear legal guidance</li> <li>• How to deal with the situation when driving is no longer permitted (strategies for imparting the news and handling the reactions)</li> <li>• Lack of clear guidance and consensus amongst specialists as to whether people with dementia should continue to drive. Need evidence based research to guide G.P.</li> </ul>
Handling other medical problems in patients with dementia	<ul style="list-style-type: none"> <li>• Should you proceed with investigations if you suspect a problem (e.g. stomach ulcer) if the person is very difficult to manage?</li> </ul>

#### **4.6.5 Part 5: Preferred TLAs and educational supports**

The participant's preferred TLA's are indicated in Table 4.6 together with the relevant topic areas. Results for question (b) about peer collaboration are included in this table.

**Table 4.6 Participants preferred TLAs for CME in dementia**

<b>TLA (and relevant topic)</b>	<b>No. of participants who require TLA</b>	<b>Comments (positive and negative)</b>
Lectures (all topics)	7	<ul style="list-style-type: none"> <li>• Helps consolidate knowledge</li> <li>• Can learn a lot if lecturer is good</li> <li>• Question and answer session afterwards very important to discuss issues and cases with specialists and other G.P.s</li> <li>• Boring – too much information, not all relevant to you</li> <li>• Would prefer overview – quick synopsis of key points</li> <li>• Not necessary - you need a didactic component in learning but you can look up information yourself</li> <li>• Too dry – hard to remember</li> <li>• Too abstract – sometimes hard to relate to general practice</li> </ul>
Cased-based analysis (all topics)	18	<ul style="list-style-type: none"> <li>• Basis for most CME – makes learning realistic</li> <li>• Very relevant to general practice – it's what we do every day</li> <li>• Should cover different aspects of diagnosis and management</li> <li>• These should cover a number of issues and not just focus on one - as a G.P., anything can be thrown at you</li> <li>• Good to see how cases might unfold over time – what's important at different stages of dementia</li> <li>• Use of personal cases helpful</li> <li>• Real life cases best – more complicated than simulated ones</li> <li>• Group discussions of cases are a great way of learning – the use of difficult or controversial cases gets a good debate going</li> </ul>
Participant role-play (early signs and diagnostic triggers, screening tools, disclosing diagnosis)	6	<ul style="list-style-type: none"> <li>• Good fun</li> <li>• The only way to learn communication skills</li> <li>• You can read about it or watch others doing it but the only real way to learn is to try it out for yourself</li> <li>• "I am allergic to role-play"</li> <li>• Don't like role-play – would prefer to discuss issues re disclosing diagnosis etc. using case-based discussions or other group discussions</li> </ul>

Videos of others performing role-play (early signs and diagnostic triggers, screening tools, disclosing diagnosis)	5	<ul style="list-style-type: none"> <li>• Could be useful</li> <li>• Some actors can be terrible</li> <li>• Too passive – need to do it yourself</li> </ul>
Peer collaboration (all topics)	17	<ul style="list-style-type: none"> <li>• Helps identify knowledge gaps</li> <li>• Learn from each other e.g. G.P.s with patients at different stages, different types of dementia</li> <li>• Share skills - other G.P.s may have different skills to you (e.g. psychology) which they can advise you on</li> <li>• Helpful for practical advice – other G.P.s may know of a service or contact you are not aware of</li> <li>• Find out what other G.P.s are doing – what works for them</li> <li>• This is very important for G.P.s in single practice</li> <li>• Helpful in different scenarios e.g. case-based discussions, role-plays, question and answer sessions</li> <li>• Talking to other G.P.s is important but it's even more important to have access to specialists</li> <li>• Round table discussions or small group learning is best way to learn – discuss cases or general issues with other G.P.s</li> </ul>
Focus Groups with carers (carers' needs/support services)	1	<ul style="list-style-type: none"> <li>• Would be good to have group discussions with carers about their needs</li> </ul>

The most popular TLA was case-based analysis (18 participants). Peer collaboration was important for 17 participants and this could be incorporated within all other TLAs mentioned (including case-based analysis). Access to specialists (e.g. old age psychiatrists) was also mentioned as an important factor, to ask questions and check that learning was on track. Lectures (chosen by 7 participants) and role-play were less popular TLAs (6 participants chose live role-play, 5 modelled role-play), as was the focus group with carers (mentioned by only 1 participant).

There were a number of learning supports required by the participants (see Table 4.7 below). Some of these were independently identified by the participants but in other cases, they were selected after prompting by the interviewer.

**Table 4.7 Participants preferred learning supports for CME in dementia**

<b>Learning support (relevant topic)</b>	<b>No. of participants who require it</b>	<b>Comments (positive and negative)</b>
Background reading material (all topics)	18	<ul style="list-style-type: none"> <li>• Must be evidence-based</li> <li>• Must be focussed to general practice</li> <li>• Must be able to easily target what you need</li> </ul>
Research databases and journals (all topics)	11	<ul style="list-style-type: none"> <li>• “very useful – I like to research topics myself”</li> <li>• no time or need for this (information overload)</li> <li>• would like this to be integrated with clinical guidelines</li> </ul>
Clinical guidelines (all topics)	16	<ul style="list-style-type: none"> <li>• Must be up-to-date – they change frequently</li> <li>• Should be adapted for use in general practice</li> <li>• Must be easy to find required guideline</li> <li>• Referral guidelines would be useful</li> <li>• Guidelines re pharmacological treatments would be useful</li> <li>• Guidelines are useless – they are very often out of touch with general practice</li> <li>• Not helpful – these are based on ‘typical’ cases but there are no ‘typical’ cases with dementia</li> </ul>
Sample questions (early signs and diagnostic triggers, medico-legal and driving issues (assessment of driving and testamentary capacity)	17	<ul style="list-style-type: none"> <li>• Would be very useful</li> <li>• May be difficult to draw up because of vagueness of legal situation regarding mental capacity</li> <li>• Must be pitched to different levels of experience</li> </ul>
Information on support services (carers’ needs/support services)	11	<ul style="list-style-type: none"> <li>• Would be useful to have information on all services (health-related and social) under one umbrella</li> <li>• Needs to be done per region</li> </ul>

All 18 participants who required education wanted access to background reading material and 17 of them wanted sample questions (to identify early signs and to assess driving and testamentary capacity). G.P.s displayed different attitudes to educational supports. 16 wanted access to clinical guidelines but 2 stated that they did not find them useful as very often they were hard to relate to general practice. One G.P. said they were often based on 'mythical' best practice and typical cases and with dementia this was not useful as there were no typical cases. 11 G.P.s required access to research databases and journals. 1 G.P. said he liked doing his own research from time to time. However, other G.P.s said they had no time for this and were overloaded with information already.



#### 4.6.6 Part 6: E-learning and Dementia Education

Table 4.8 below presents the educational format preferences for the 18 G.P.s who wanted CME in dementia. This is grouped by format type and includes comments from the participants regarding their preferences. It also displays the TLAs and supports required by the participants in each group.

**Table 4.8 Participants preferred educational format for CME in dementia (grouped by format type)**

Format	No of participants	Preferred TLAs and supports (from part 5 of interview – see section 4.6.5)	Comments
Face-to-face	1	<ul style="list-style-type: none"> <li>• Lectures</li> <li>• Q&amp;A sessions with specialists</li> <li>• Case –based analysis</li> <li>• Peer collaboration</li> <li>• Videos of others performing role-play</li> <li>• Background information on dementia issues</li> <li>• Access to journals, databases and clinical guidelines</li> <li>• Information on support services</li> <li>• sample questions</li> </ul>	<ul style="list-style-type: none"> <li>• Likes social aspect of face-to-face CME</li> <li>• Effectiveness of e-learning not yet proven – if proved as effective as face-to-face, would be happy to participate</li> <li>• Lives in Dublin so wide range of face-to-face CME available</li> </ul>
e-learning	8 (4 had previous experience)	<ul style="list-style-type: none"> <li>• Lectures</li> <li>• Q&amp;A sessions with specialists</li> <li>• Case –based analysis</li> <li>• Peer collaboration</li> </ul>	<ul style="list-style-type: none"> <li>• Dementia education not major priority so e-learning would increase the likelihood of doing it especially if prompted by e-mail</li> <li>• Dementia only 1 aspect of G.P. practice –</li> </ul>

	of e-learning - 1 blended, 3 exclusive e-learning)	<ul style="list-style-type: none"> <li>• Videos of others performing role-play</li> <li>• Background information on dementia issues</li> <li>• Access to journals, databases and clinical guidelines</li> <li>• Information on support services</li> <li>• sample questions</li> </ul>	<p>need to fit in with other things so e-learning makes it easy</p> <ul style="list-style-type: none"> <li>• Face-to-face learning only really necessary if topic very complex or theoretical</li> <li>• Flexibility is important - access what you want when you want</li> <li>• No need to take time off work</li> <li>• Good to be able to go back over topics – reinforce learning</li> <li>• Essential to have up-to-date information – e-learning gives you this</li> <li>• Interactivity (e.g. using multiple choice questions) is important – learning has to be fun</li> <li>• Usability is important – must be easy to use and not unduly complicated</li> </ul>
Blended learning	9 (4 had previous experience of e-learning - 2 blended, 2 exclusive e-learning)	<ul style="list-style-type: none"> <li>• Lectures</li> <li>• Q&amp;A sessions with specialists</li> <li>• Case –based analysis</li> <li>• Peer collaboration</li> <li>• Videos of others performing role-play</li> <li>• Participant role-play</li> <li>• Focus groups with carers</li> </ul>	<ul style="list-style-type: none"> <li>• E-learning can be isolating and anonymous. Face-to-face sessions can help establish sense of community</li> <li>• Need some face-to-face CME for discussing issues and for participant live role-play.</li> <li>• Face-to-face group discussions may be less threatening than online ones where your name is up in print</li> </ul>

		<ul style="list-style-type: none"> <li>• Background information on dementia issues</li> <li>• Access to journals, databases and clinical guidelines</li> <li>• Information on support services</li> <li>• sample questions</li> </ul>	<ul style="list-style-type: none"> <li>• Need face-to-face sessions for good debates – people get drawn in especially if controversial issues – harder to emulate online</li> <li>• Would like 'learning' to be done face-to-face e.g. via small group workshops. E-learning could provide materials (e.g. case studies) and up-to-date, easily accessible, information</li> </ul>
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17 of the 18 participants who wanted CME in dementia chose e-learning (9 chose blended, 8 chose exclusive e-learning). Only 1 participant chose face-to-face CME. This was because of the wide choice available (the location was Dublin) and the social aspect. A further consideration was the lack of proven effectiveness of e-learning; if proven, the participant would be happy to try it. For some participants, blended learning was preferred to exclusive e-learning because of practical reasons e.g. to facilitate live role-play. Others preferred it as they thought face-to-face discussions would be of a higher quality than online ones. One participant wanted blended learning to provide online material; 'learning' could then take place in face-to-face workshops using the online material. For those who chose exclusive e-learning, flexibility and accessibility were key factors in their choice.

Despite their interest in e-learning, some participants stressed the importance of face-to-face CME. Even those who preferred exclusive e-learning suggested that although they were happy to receive dementia education online, face-to-face learning would always be important for social reasons and to discuss issues with other G.P.s.

### **Online interaction**

14 participants (7 blended learning, 7 exclusive e-learning) said that they would like online interaction. Asynchronous methods e.g. discussion forums were deemed suitable for all because of their flexibility. All 14 participants wanted moderated communication; in general either trained G.P.s or specialists were acceptable as moderators, although one participant said that a G.P. moderator would 'know where you are coming from' i.e. they would have a different perspective to that of a specialist used to seeing very severe cases. One participant highlighted the usefulness of being able to send questions to specialists via discussion boards as they are increasingly difficult to access. Another participant said this was the only reason he would use a discussion board.

6 of the 14 participants who wanted online interaction indicated they would also like live web conferencing for discussions with specialists and other G.P.s.

### **E-learning and adaptivity**

All of the participants indicated that the adaptivity provided by e-learning would be very helpful. In particular, participants valued adaptivity to their experience level and individual

learning requirements. When asked if adaptivity on time was likely to be helpful, 5 participants suggested that learning slots of 30 to 40 minutes would be most manageable. One female participant suggested that slots of between 10 and 15 minutes would be useful.

### **Other issues**

There were 2 issues raised during the interviews which deserve mention. 2 participants suggested that a decision support system would be helpful for improving dementia diagnosis and management. Research conducted in the UK indicates an important role for such systems in this area (Downs et al., 2006). Future research should examine the potential role for decision support systems in Irish general practices.

2 G.P.s highlighted the need for education about dementia for the public to increase the chances of patients being brought to them at the early stages, thus facilitating early diagnosis.

## **4.7 Analysis of results**

### **4.7.1 Part 1: G.P. background information**

The age categories of participants ranged from 31-35 years to 61-65 years. The lack of younger participants could indicate that G.P. positions are not generally open to younger doctors. However, a comparison of results for age and years experience suggests that some participants became G.P.s in their late 20's. It is likely therefore that the lack of younger participants is due to a selection bias because of the sampling method used.

It was expected that the results for G.P. age would roughly correspond with their years experience (Figures 4.1 and 4.2 respectively) but this was not the case. This may be attributed to a number of causes. The non-practising G.P. was in the 51-55 age-group but had relatively few years experience (10 years) for his age. There was a wide range of years experience within some of the age-group categories e.g. the 4 participants within the 41-45 group had 16,10,7 and 18 years experience. This variability may arise because some participants within the same age categories are at the lower or higher end of their categories, potentially pushing them into different years of experience categories. It also indicates that some doctors become G.P.s at a later stage in their career than others (perhaps because of the nature of the role).

The results for the question “percentage of patients over 65” may reflect the population demographics in the various practice locations. It was expected that very rural practices would have older populations. The Laois practice for example had 30% of patients over 65. In some cases however, high percentages may arise because practices are linked to one or more nursing homes (this was the case for 2 Dublin practices with 30% and 60% of patients over 65). The majority of the practices (13/19) were based in Kildare or Dublin which reflects the sampling method chosen for the study. It is likely that a cohort drawn from more rural locations or older parts of Dublin would reveal a different pattern of patient ages.

#### ***4.7.2 Part 2: IT skills and e-learning experience***

The high level of PC and internet usage amongst the participants and their relatively high skill levels suggest e-learning is a viable option for CME in dementia. Although research suggests that age may be a barrier to PC use and e-learning (Curran and Fleet, 2005, Childs et al., 2005), this was not the case in this study; indeed the oldest participant was very enthusiastic about e-learning. However, it must be noted that this study sample may be biased; participants may have taken part because of an interest in PCs and e-learning. It is also likely that a different sample would reveal different patterns of internet usage e.g. younger participants may be higher users of tools such as facebook.

In support of previous research (Dickmann et al., 2000, Sargeant et al., 2004), participants valued the internet for providing up-to-date knowledge for “just-in-time” learning, including access to clinical guidelines. This suggests a need for such a facility for education in dementia, with an emphasis on fast access to relevant information. The fact that participants experience included a mix of formal and more informal learning indicates a need to include both types of options in CME for dementia.

Participants who had participated in e-learning or blended courses valued the flexibility that e-learning offers. This makes sense in the light of the heavy demands on their time (a recurring theme within the interviews). This indicates that an e-learning course on dementia should provide time-based adaptivity, offering smaller or larger ‘chunks’ of education as required.

The fact that 2 participants evaluated the effectiveness of their course at the third level of Kirkpatrick's hierarchy (i.e. practice change) bodes well for e-learning. In both cases, change involved practical measures (a new diabetes register and a practice audit). This suggests that CME for dementia (delivered either via e-learning or traditional means) is likely to be more effective if it equips G.P.s with practical methods for improving their performance in dementia care. This could be (as one participant suggested) via the development of a practice management strategy for dementia.

In line with the research literature (Sandars and Langlois, 2006, Sandars and Walsh, 2006), a recurring criticism of e-learning was the poor level of engagement on discussion boards. One reason given was a possible lack of interest in the course topic, highlighting the need to motivate learners to use such tools. One possible strategy is to make their use part of the course assessment requirement (Thornett and Davey, 2006); however, this was unsuccessful for this particular course. The positive experience of one participant (on an IT e-learning course) indicates that motivation may increase if learners perceive benefits accruing from use. In the case of dementia education, this research study indicates that G.P.s may find discussion boards beneficial for discussing issues and personal cases with both peers and specialists. Such discussions are likely to lead to cognitive engagement and higher quality online interactions, which may in turn (as one participant experienced), motivate further participation in online discussions. This higher participation level may in turn positively impact on social presence (Garrison and Anderson, 2003).

Although the research suggests that a blended learning solution may contribute to social presence (Garrison and Anderson, 2003), thus promoting more satisfactory online communication, this did not happen with the ICGP blended learning courses. This may be due to a lack of other elements. The comment from one participant on the inappropriate use of the discussion board indicates that the teaching presence on his course may not have been sufficiently strong. This highlights the need to nurture cognitive, social and teaching presence for effective online communication and education.

In support of the research literature (Curran and Fleet, 2005), one of the highest barriers to e-learning in this study was a lack of time. This indicates an important role for e-tutors to help learners manage their time well. It also indicates a role for time-based adaptivity, as discussed earlier. A further barrier to e-learning was a reluctance to change from current

educational formats, supporting research which highlights a reluctance amongst learners to embrace change (Greenhalgh, 2001, Childs et al., 2005). This barrier is likely to be less important for future G.P.s as e-learning becomes more popular at undergraduate levels.

#### ***4.7.3 Part 3: Experience of dementia and prior training***

It was assumed that the results for the number of patients with dementia would indicate the range of knowledge of dementia amongst participants. The highest frequency occurred in the 0-5 patients category suggesting a relatively low level of experience and subsequent important role for CME in dementia. The wide range of patient numbers suggested a broad variation of knowledge levels amongst G.P.s. and a subsequent need for adaptivity in the level of education offered. However, this assumption is limited to some extent as knowledge levels may be influenced by additional factors such as non-professional experience of the disease; 2 participants had close family members with dementia, suggesting they may possess a higher level of knowledge about the disease than that indicated by their patient numbers. A further issue is that patient numbers are not static; G.P.s with fewer patients are not necessarily less knowledgeable about dementia as they may have had more patients in the past with dementia. A more useful measure may have been to ask participants to self-rate their knowledge level against a predefined scale, although this would be limited also, depending on subjective self-ratings. Despite these limitations, the results suggest a need for adaptivity in the level of education offered. This is likely to be particularly relevant in topics such as medico-legal and driving issues, where all participants required education.

#### ***4.7.4 Part 4: Dementia Education – relevant topics***

The high level of G.P. interest in education for dementia in this study supports previous research indicating the need for education in this area. However, the small study numbers prevent any generalisation being made. It must also be noted that the sample may have been biased; participants are likely to have taken part because of an interest in dementia.

The range of topics identified is broadly in line with previous research e.g. (Iliffe et al., 1999, Iliffe and Manthorpe, 2002, Manthorpe et al., 2003, Downs, 1996, Cahill et al., 2006). However, it must be noted that the results may have been biased due to the interview protocol used. In some cases, participants found it difficult to identify relevant topics or



specified a small number of areas but added to these when prompted by the interviewer with a list of other potential topics. It is difficult to see how this effect might be avoided – not prompting them may have lead to incomplete responses. It is also possible that the list of topics reported is not exhaustive. There was only 1 instance where a G.P. mentioned a topic that was not on the interviewer's list (handling other medical problems in patients with dementia). Some G.P.s wanted education in all topics, but some were more specific, highlighting a small number of topics. The results indicate a need for adaptivity in the range of topics offered and in the level of education offered within each one.

Although diagnosis is seen as an important issue, comments from a number of participants indicated that management issues were more of a priority for them. This may be because diagnosis often involves referrals to third parties for final confirmation, whereas management is seen as a G.P. issue. Education on how to deal with the ongoing problems of patients and carers is seen as particularly important. However, comments from participants indicate that this must be backed up by appropriate services in order to make a positive difference.

In line with previous Irish-based research (Cahill et al., 2006), a major concern for all G.P.s was medico-legal issues and driving, in particular the lack of clear legal guidelines and expert consensus in these areas. This places a heavy burden on G.P.s and indicates a need for change in this area. For its part, education can help by providing key information in relevant areas and evidence-based research to inform G.P. decisions. Collaboration with peers and specialists to discuss ways forward on particular cases is also likely to be of benefit.

Although research indicates that G.P.s might benefit from education in how to frame disclosure of the diagnosis in a better light (Iliffe et al., 1999, Iliffe and Manthorpe, 2002), the topic of 'disclosing the diagnosis' was selected by only 7 participants. Although the study sample may already be performing well in this area, this nonetheless suggests a need to highlight awareness of possible shortcomings in this area to G.P.s in general. This is important because ALT indicates that adult learners are motivated to learn if they feel that education is relevant to them and has a benefit. Within the area of carers needs, G.P.s in general did not express a wish for communications training to elicit carer's needs, although research indicates this type of training may be beneficial (Scottish Intercollegiate Guidelines

Network, 2006). The emphasis in this study was on identifying carer's needs in general and available support services.

#### ***4.7.5 Part 5: Preferred TLAs and educational supports***

In support of the research literature, this study indicates that G.P.s value peer collaboration in education (Parboosingh, 2002), particularly in the form of group learning or round table discussions. This highlights the importance of learning theories such as Social Constructivism in designing TLAs for CME. Comments from participants indicate that such collaboration provides cognitive conflict, which stimulates learning. This was held to be particularly important for G.P.s in single practices. Collaboration also brings benefits in the form of advice on practical issues e.g. service availability. Although G.P.s recognise the need for a didactic component in education e.g. lectures, such traditional methods can result in an overload of irrelevant information which is hard to relate to general practice. This highlights an important role for e-learning in adapting information to the needs of the learner and targeting relevant information. It also explains the enthusiasm for more engaging, interactive activities (e.g. case-based analysis, role-play) which provide realistic learning environments to make learning relevant to daily practice. The fact that role-play (either live or video-based) was a less popular TLA may be due to the lower emphasis placed by participants on the need for communications skills training in CME for dementia. A TLA involving focus groups with carers was required by one participant. His deep interest in carer's issues may stem from his non-professional experience of dementia; a close family member had the disease.

The differing attitudes of participants to TLAs (e.g. role-play is "good fun" versus "I am allergic to role-play") indicate a need for adaptivity to support different learning preferences and styles. Adaptivity is also required in the area of educational supports e.g. to provide localised information on support services to and to pitch sample questions for assessing patient testamentary at the correct G.P. experience level. This need for adaptivity further highlights the important role for e-learning in CME for dementia.

#### **4.7.6 Part 6: E-Learning and Dementia Education**

There was a high degree of interest in e-learning for CME in dementia, with 17 of the 18 participants who required education choosing either blended or exclusive e-learning solutions. Even the participant who chose a face-to-face format would be happy to try e-learning if its effectiveness was proven. Although this study was very small, it nonetheless suggests that e-learning is a viable option for CME in dementia for G.P.s in Ireland. In line with previous research (Curran and Fleet, 2005) the flexibility and accessibility of e-learning are key elements in this choice, which is unsurprising given the time demands on G.P.s. The value placed by participants on e-learning's capability for providing up-to-date medical knowledge fits in with the current medical climate of expanding knowledge and the emphasis on evidence-based practice (Gluud and Gluud, 2005). Participants also like the ability to refer back to online information when necessary, indicating the value of e-learning for 'just-in-time' learning. The requirement of quick, easy access to information and the emphasis placed by one participant on usability suggests that e-learning solutions for CME in dementia should be quick and fairly straightforward (as on <http://www.BMJLearning.com>).

All of the participants with previous experience of e-learning specified a preference for either exclusive e-learning or blended learning for CME in dementia. This may be due to the advantages listed above but it also suggests that the participant's satisfactory earlier experiences (as revealed in Part 2 of the interview) have paved the way for further e-learning. This emphasises the need to ensure that e-learning experiences in general are of a high quality, to ensure repeat involvement. Comments from participants indicate that important criteria are usability and interactivity (e.g. via MCQs) to ensure that learning is 'fun'.

Online interpersonal interaction is an important element of e-learning for G.P.s (even for blended learning formats), with 14 participants stating an interest in it. This reflects the value placed on peer collaboration by G.P.s. The preference for asynchronous methods such as discussion boards is unsurprising given the time demands on G.P.s and the need for flexibility. However, synchronous methods e.g. live web conferencing were also chosen by 6 participants, in one case because it would 'help bring it (*i.e. e-learning*) to life'. This highlights the need to offer choice in this area.

Participants valued the adaptivity that e-learning can offer to accommodate different levels of experience and learning requirements and this supports the findings in Part 3 and 4 of the interview which suggest varying degrees of knowledge about dementia. The interest in time-based adaptivity fits in with the recurring theme within the interviews of time constraints on G.P.s.

#### ***4.8 Discussion and conclusions***

This study used 20 semi-structured telephone interviews to investigate the requirements of G.P.s in Ireland for CME in dementia and the potential role of e-learning in this education. There was very little new material gathered in the last 4 interviews; these mainly involved a repetition of themes or issues already raised in previous interviews. This suggests that the number of interviews conducted was appropriate. There was 1 exception to this i.e. the requirement of 1 participant to include the topic 'handling other medical problems in patients with dementia'. This topic may be considered to be ancillary to CME in dementia possibly explaining why it had not been mentioned by other participants.

In general, the methodology worked well. Interviews ran smoothly although in 2 cases, the participant was interrupted very briefly and then returned to the interview. It could be argued that this is a disadvantage of telephone interviews but this could equally happen in a face-to-face interview. For some interviews, there was some repetition in the answers given by participants e.g. some of their comments in relation to prior education in dementia in Part 3 of the interview were very similar to comments made about preferred TLAs in Part 5. This could have been avoided by excluding the question on prior education in Part 3, but this may have led to less complete results. Question d) in Part 6 regarding participants views on the adaptivity provided by e-learning was intended to prompt a brief discussion about the kinds of adaptivity required by them (see Appendix I). However, this did not work very well as most participants had little idea of the potential of e-learning, so answers depended almost entirely on prompts by the interviewer.

The results of this study indicate a strong requirement for G.P. education in a number of areas relating to dementia diagnosis and management. This education should incorporate adaptivity based on prior knowledge levels, TLAs, supports and time available and e-learning is well placed to deliver this. The high level of interest in e-learning shown by

participants across all age categories and their accompanying high PC skill levels and levels of internet usage suggest that e-learning (and in particular blended learning) is a viable option for CME in dementia for Irish G.P.s. A larger study, using a more representative sample is necessary to test this finding.

The results suggest that e-learning should offer a range of learning environments to accommodate both a formal course in all aspects of dementia and a more informal option where G.P.s can target specific areas of need or access 'just-in-time' learning. Solutions must incorporate fast access to concise information to accommodate evidence-based practice. Usability is an important issue as is making learning 'fun' e.g. by incorporating interactive, context based TLAs such as CBA with MCQs.

A particular challenge exists for e-learning in promoting satisfactory online interpersonal communication. This is an important element of CME in dementia and although some participants have drawbacks concerning the quality of online communication, there is a general openness to it (in particular via asynchronous methods such as discussion boards). However, this study supports previous research regarding learner dissatisfaction in this area. It is important to motivate learners to use these tools and this study indicates that they may be useful for discussing cases and issues with peers and in particular with specialists. The inclusion of controversial, difficult cases may facilitate good quality debate and cognitive engagement. An effective teaching presence is also essential to create a satisfactory social presence and to stimulate reflection and debate, thus helping to create a high quality cognitive presence.

Another potential solution for promoting satisfactory online communication is to use synchronous communication methods such as web-conferencing. Although some participants indicated that these would be too inflexible, 6 expressed an interest in using them. Previous research has indicated a preference for this type of communication over asynchronous methods (Fordis et al., 2005) and highlighted its usefulness in consolidating learning. Synchronous communication may also improve social presence (Locatis et al., 2006), which in turn impacts on cognitive presence and the resultant quality of online communication (Garrison and Anderson, 2003). A key factor in increasing the attractiveness of this option is to provide a number of time slots for conferences (as in the Fordis study), thus increasing access opportunities.

This study indicated a slight preference for blended learning over exclusive e-learning, supporting research which indicates that this form of e-learning may be more acceptable to G.P.s than exclusive e-learning solutions (Childs et al., 2005). In providing face-to-face sessions, blended learning environments may help build social presence, which may in turn enhance the quality of online communication and the learning experience (Garrison and Anderson, 2003). However, as this study indicated, this will not magically happen; this must be nurtured by providing a strong teaching and cognitive presence within the online component of the learning solution.

In support of previous research e.g. (Cahill et al., 2006), this study has indicated that education is only a partial solution for achieving effective diagnosis and management of dementia. Other issues must be addressed such as the lack of available support services, lack of clear legal and medical guidance in the area of medico-legal and driving issues and a need for public education to increase early detection of dementia. This study also indicated an interest by Irish G.P.s in using decision support systems for dementia diagnosis and management. Such systems have shown promising results in the U.K. (Downs et al., 2006) and future research should examine their potential use within the Irish context.

This chapter has outlined the requirements of G.P.s in Ireland for CME in dementia, providing details of the relevant topics, TLAs and supports and preferred delivery formats. It indicates an important role for adaptivity and for e-learning in this education. Chapter 5 now presents a framework to support this education and discusses its implementation using e-learning.

## ***Chapter 5 The Support Framework***

### ***5.1 Introduction***

Chapter 4 indicated a high degree of interest by G.P.s in Ireland for CME in dementia and e-learning. Their requirements for CME are varied in terms of preferred topics and TLAs, prior knowledge and preferred delivery formats. This chapter first presents a summary of these requirements (based on the data gathered in chapter 4). It then proposes and discusses a framework to support these requirements. This is informed by the data gathered in Chapter 4 and the literature review of CME and e-learning presented in Chapter 3 of this thesis. The implementation of this framework within e-learning is then discussed and the framework is validated.

### ***5.2 Summary of G.P. requirements for CME in dementia***

This study indicates that education for dementia is important for G.P.s in Ireland in the following topic areas:-

#### Diagnosis

- Early signs and diagnostic triggers
- Differentiation between dementia and other conditions
- Differential diagnosis
- Use of screening tools
- Disclosing the diagnosis
- Referral Criteria (diagnosis and management)

#### Management

- Interventions (pharmacological and non-pharmacological)
- Carers needs/Support services
- Medico-legal issues
- Handling other medical problems in patients with dementia

G.P. preferred TLAs can be categorised as didactic, interactive/experiential and interpersonal. These categories overlap e.g. CBA may be carried out in a group setting.

The requirements for each TLA are laid out in Table 5.1 which also specifies the required learning supports:-

**Table 5.1 Summary requirements for CME in dementia – preferred TLAs and supports**

<b>TLA category</b>	<b>TLA</b>	<b>Relevant topics</b>	<b>Requirements</b>
Didactic	Lectures	All	<ul style="list-style-type: none"> <li>• Focus on general practice</li> </ul>
	Brief Overviews – presentation of key-Information	All	<ul style="list-style-type: none"> <li>• Focus on general practice</li> <li>• Concise</li> <li>• Evidence-based</li> </ul>
Interactive /experiential	Case-Based Analysis	All	<ul style="list-style-type: none"> <li>• Use personal and real-life cases where possible</li> <li>• Cases should not be too narrow in scope - cover a number of different issues in diagnosis and management</li> <li>• Cases should cover different stages in dementia</li> <li>• Summarise key information at appropriate points in cases</li> <li>• Should be fun e.g. use MCQs for interactivity</li> </ul>
	Participant Live role-play	<ul style="list-style-type: none"> <li>• Early signs and diagnostic triggers (history taking)</li> <li>• Screening tools</li> <li>• Disclosing the diagnosis</li> </ul>	<ul style="list-style-type: none"> <li>• Summarise key information at appropriate points</li> </ul>
	Videos of others performing role-play (skills modelling)	<ul style="list-style-type: none"> <li>• Early signs and diagnostic triggers (history taking)</li> <li>• Screening tools</li> </ul>	<ul style="list-style-type: none"> <li>• Summarise key information at appropriate points</li> </ul>



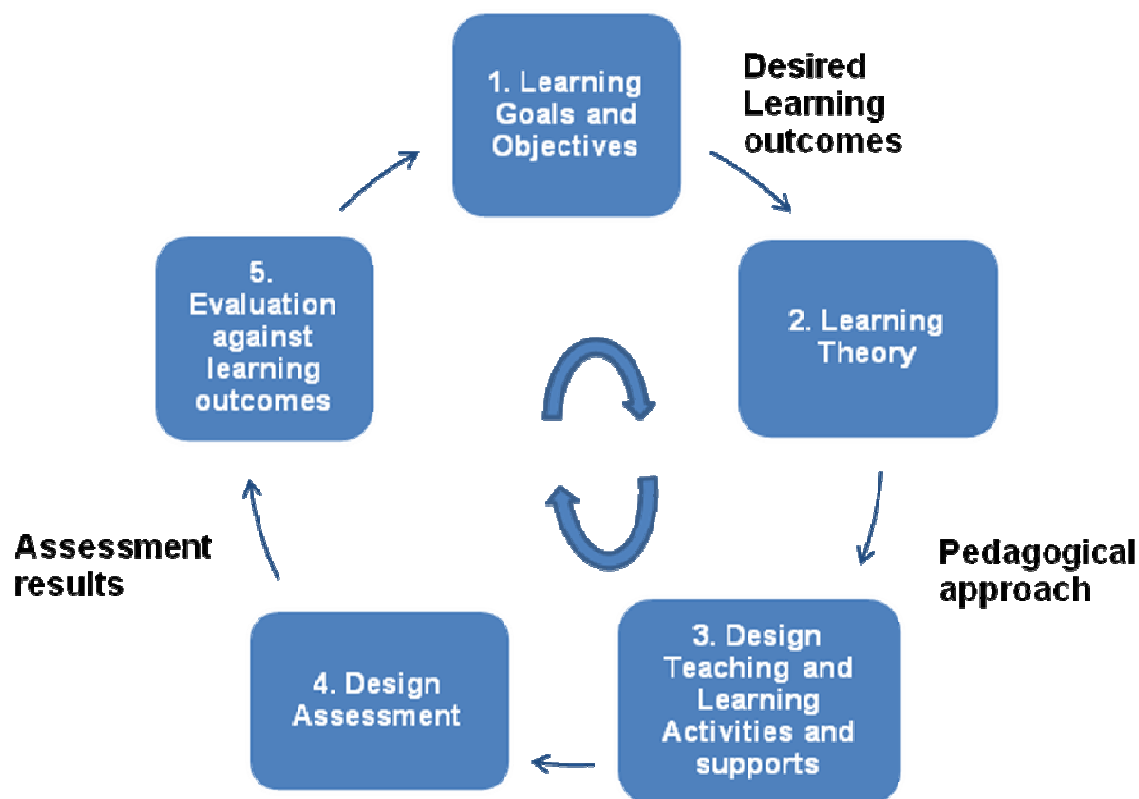
		<ul style="list-style-type: none"> <li>• Disclosing the diagnosis</li> </ul>	
	Focus groups with carers	<ul style="list-style-type: none"> <li>• Carers needs/support services</li> </ul>	<ul style="list-style-type: none"> <li>• Discussion of carers situations in order to ascertain their needs and how G.P.s can help</li> </ul>
<b>Interpersonal</b>	Small group learning/round table discussions	<ul style="list-style-type: none"> <li>• All</li> </ul>	<ul style="list-style-type: none"> <li>• Group discussion of cases or issues in dementia with peers</li> <li>• Group work on role-play</li> </ul>
	Discussions with specialists	<ul style="list-style-type: none"> <li>• All</li> </ul>	<ul style="list-style-type: none"> <li>• Question and answer sessions after lectures or overviews</li> <li>• Specialist presence at round table discussions/group learning sessions for question and answer sessions</li> </ul>
<b>Learning support</b>			
Background information		<ul style="list-style-type: none"> <li>• All</li> </ul>	<ul style="list-style-type: none"> <li>• Must be easily searchable</li> <li>• Must be evidence-based</li> </ul>
Clinical guidelines		<ul style="list-style-type: none"> <li>• All (special mention to referral and pharmacological guidelines)</li> </ul>	<ul style="list-style-type: none"> <li>• Must be easily searchable</li> <li>• Must be focussed on general practice</li> </ul>
Research Journals and databases		<ul style="list-style-type: none"> <li>• All</li> </ul>	<ul style="list-style-type: none"> <li>• Integrate with clinical guidelines</li> </ul>
Sample Questions		<ul style="list-style-type: none"> <li>• Early signs and diagnostic triggers (history taking), Medico-legal and driving issues (assessment of driving and testamentary capacity)</li> </ul>	<ul style="list-style-type: none"> <li>• Must be adapted to experience level of G.P.</li> </ul>
Information on support services		Carers needs /support services	<ul style="list-style-type: none"> <li>• Must be adapted per region</li> <li>• Include all services i.e. health-related and social</li> </ul>

Having identified the summary requirements for CME in dementia, a proposal will now be made for a framework to support them.

### 5.3 The Design of the Support Framework

The design of an educational support framework requires a consideration of appropriate TLAs. The Curriculum Design Cycle (Mayes and de Freitas, 2007) (discussed in chapter 3, section 3.4.1 and depicted in figure 3.1), indicates that to achieve educational alignment, the selection of TLAs (and assessments) within an educational intervention must be driven by learning outcomes, which derive from learning goals and objectives. Figure 5.1 below portrays this cycle in more explicit terms:-

**Figure 5.1 The Curriculum Design Cycle (2)**  
adapted from (Mayes and de Freitas, 2007)



Chapter 4 identified the TLAs preferred by G.P.s for CME in dementia (see section 4.6.5). However, to achieve educational alignment, it is necessary to validate the inclusion of these

TLAs within the support framework against the required learning outcomes for dementia education. It is therefore necessary to take a step backwards and examine the learning goals, objectives and outcomes for CME in dementia identified in this study.

### ***5.3.1 Definition of learning goals, objectives and outcomes***

Although a detailed specification of learning goals, objectives and outcomes for CME in dementia is outside the scope of this study, some inferences can be made based on the data presented in chapter 4 regarding relevant topics and issues to be addressed (see section 4.6.4). Table 5.2 overleaf portrays this data and identifies potential learning outcomes, although this is not an exhaustive list. These outcomes are mapped onto the relevant levels of Bloom's taxonomy (discussed in Chapter 3, section 3.4.2). Appendix J details the mapping system used.

**Table 5.2 Potential Learning goals, objectives and learning outcomes for CME in dementia**

<b>Topics → Learning Goal</b>	<b>Issues to be addressed → Learning Objective</b>	<b>Potential Learning Outcome</b> (mapped to relevant level of Bloom's taxonomy – see Appendix J)
Learn about early signs and diagnostic triggers for dementia	<ul style="list-style-type: none"> <li>• Be able to recognise early signs and triggers - know how to perform history to elicit these signs</li> <li>• Determine the benefits (medical and other) of early diagnosis</li> </ul>	<p><b>Investigate, Hypothesise</b> (if patient has early signs of dementia) → <b><u>Application</u></b></p> <p><b>Analyse</b> (situation – look for patterns) → <b><u>Analysis</u></b></p> <p><b>Judge</b> (benefits against research evidence) , <b>Give arguments for and against</b> → <b><u>Evaluation</u></b></p>
Learn how to differentiate between dementia and other conditions	<ul style="list-style-type: none"> <li>• Know how to differentiate between dementia and other conditions, especially in vague situations where even experts are not sure</li> </ul>	<p><b>Investigate, Hypothesise</b> (if patient has dementia or depression or both) → <b><u>Application</u></b></p> <p><b>Analyse</b> (situation – match patient patterns against different conditions) → <b><u>Analysis</u></b></p> <p><b>Explain reasons for</b> (deciding that patient has dementia, rather than delirium etc.) → <b><u>Synthesis</u></b></p>
How to perform a differential diagnosis	<ul style="list-style-type: none"> <li>• Know what procedures and tests are used to outrule potentially reversible causes</li> <li>• Know how to differentiate between different causes of dementia</li> </ul>	<p><b>List</b> (tests to perform for differential diagnosis) → <b><u>Knowledge</u></b></p> <p><b>Investigate, hypothesise</b> (based on test results) → <b><u>Application</u></b></p> <p><b>Explain reasons for</b> (deciding that patient has reversible cause of dementia, AD rather than VaD etc.) → <b><u>Synthesis</u></b></p> <p><b>Judge</b> (what the cause of dementia is) → <b><u>Evaluation</u></b></p>
Learn about screening tools	<ul style="list-style-type: none"> <li>• Know what tools should be used in general practice ( other than the MMSE)</li> <li>• Know what tools are suitable in different situations e.g. for illiterate people, for use in early stage dementia</li> </ul>	<p><b>List</b> (screening tools suitable for general practice) → <b><u>Knowledge</u></b></p> <p><b>Analyse</b> (what tools are appropriate in different situation) → <b><u>Analysis</u></b></p>

	<ul style="list-style-type: none"> <li>Know how best to perform screening to minimise patient embarrassment</li> </ul>	Show <b>Awareness</b> (of patient's feelings)-> <b><u>Affective</u></b> Show <b>Responsivity</b> (to patients' needs) -> <b><u>Affective</u></b>
Introduce issues in disclosing the diagnosis	<ul style="list-style-type: none"> <li>Learn how to frame the diagnosis in a more positive manner</li> <li>Decide whether to disclose or not</li> </ul>	Show <b>Awareness</b> (of patient's feelings)-> <b><u>Affective</u></b> Show <b>Responsivity</b> (to patients' needs) -> <b><u>Affective</u></b>  Show <b>Ethical awareness</b> (are you sure about diagnosis, is patient able to understand, does patient/carer want to hear it – will they benefit from knowing?)-> <b><u>Affective</u></b>
Learn about Referral Criteria	<ul style="list-style-type: none"> <li>Know criteria relating to referrals for changing/stopping medication</li> </ul>	<b>Judge</b> (patient situations – do referral criteria apply)-> <b><u>Evaluation</u></b>
Learn about Pharmacological interventions	<ul style="list-style-type: none"> <li>Know when to change/stop medication if it is not working or is having serious side-effects.</li> <li>Evaluate the benefits of medication (based on unbiased research evidence)</li> <li>Understand issues relating to the use of sedation</li> </ul>	<b>Analyse</b> (situation – how has patient performed under medication?) -> <b><u>Analysis</u></b> <b>Judge</b> (if patient needs referral)-> <b><u>Evaluation</u></b>  <b>Judge</b> (advantages and disadvantages of medication)-> <b><u>Evaluation</u></b>  Show <b>Ethical awareness</b> (effect of sedation on patient, what are benefits for carers, what is best practice)-> <b><u>Affective</u></b>
Learn about Non Pharmacological interventions	<ul style="list-style-type: none"> <li>Know how different interventions may be used e.g. engage patient and to deal with issues such as night wandering, completing ADL</li> <li>Know what interventions are effective (evidence based)</li> </ul>	<b>Analyse</b> (particular patient situation – would interventions help) -> <b><u>Analysis</u></b>  <b>Judge</b> (evidence - which interventions are most effective)-> <b><u>Evaluation</u></b>
Learn about issues re Carers Needs/Support	<ul style="list-style-type: none"> <li>Have awareness of carers needs</li> </ul>	Show <b>Awareness</b> (of carers needs), Show <b>Responsivity</b> (to needs)-> <b><u>Affective</u></b>

services	<ul style="list-style-type: none"> <li>Know what services are available locally and how to access them</li> </ul>	<b>Analyse</b> (situation – what services are needed) -> <b><u>Analysis</u></b>
Learn about key Medico-Legal issues	<ul style="list-style-type: none"> <li>Know the legal situation regarding living wills and Enduring Power of Attorney</li> <li>Understand how to assess a patient's testamentary and driving capacity.</li> <li>Know strategies for dealing with the situation when driving is no longer permitted</li> </ul>	<p><b>Specify</b> (the legal situation regarding wills and driving for patients with dementia) -&gt;<b><u>knowledge</u></b>  <b>Understand</b> (the legal situation – what are the implications for G.Ps.) -&gt;<b><u>Comprehension</u></b></p> <p><b>Understand</b> (how to assess patient)-&gt; <b><u>Comprehension</u></b>  <b>Judge</b> (situation – may be unclear how to proceed – is patient competent?)-&gt;<b><u>Evaluation</u></b>  Show <b>Ethical awareness</b> (impact of your decision) -&gt;<b><u>Affective</u></b></p> <p>Show <b>Awareness</b> (of patient and carers feelings) -&gt; <b><u>Affective</u></b>  Show <b>Responsivity</b> (to needs of situation) -&gt; <b><u>Affective</u></b>  <b>Analyse</b> (situation – what strategy will work best) -&gt; <b><u>Analysis</u></b></p>
Key issues in handling other medical problems in patients with dementia	<ul style="list-style-type: none"> <li>Should you proceed with investigations if you suspect a problem (e.g. stomach ulcer) if the person is very difficult to manage</li> </ul>	<p>Demonstrate <b>Ethical awareness</b> (will patient benefit from your actions?) -&gt;<b><u>Affective</u></b>  <b>Explain reasons for</b> (proceeding with investigations in particular circumstances)-&gt;<b><u>Synthesis</u></b>  <b>Judge</b> (situation – is medical problem very serious – what will impact of non-intervention be?)-&gt;<b><u>Evaluation</u></b></p>

The underlined learning outcomes in column 3 of Table 5.2 represent different levels within Bloom's taxonomy. Those identified reside mainly in the cognitive domain, although some affective ones are indicated for ethical and communication issues. Many of the cognitive outcomes identified (e.g. evaluation, synthesis, analysis) reside at the higher levels of the taxonomy, requiring a deeper knowledge of the subject domain and higher order thinking skills than outcomes at lower levels. Although not specifically stated, these higher level outcomes all require reflection. Lower order outcomes e.g. knowledge and comprehension have not been explicitly stated in all cases but it can be assumed that these are pre-requisites for attaining higher order outcomes. Having identified potential learning outcomes, it is now possible to select appropriate TLAs.

### ***5.3.2 Selection of appropriate TLAs***

Learning outcomes which require the acquisition of higher order thinking skills involve deep learning and the acquisition of broad frameworks of understanding. This indicates the relevancy within CME in dementia of learning theories such as Constructivism and Reflective Learning which complement ALT. It is also important to include Experiential Learning approaches to secure the affective learning outcomes which have been identified. Social Constructivism and Situated Learning Theories are also relevant as CME in dementia requires the development of shared understandings and awareness of best practices within the medical community. This is supported by the research findings presented in Chapter 4 which highlight the importance attached by G.P.s to peer collaboration, expert opinion and clinical guidelines.

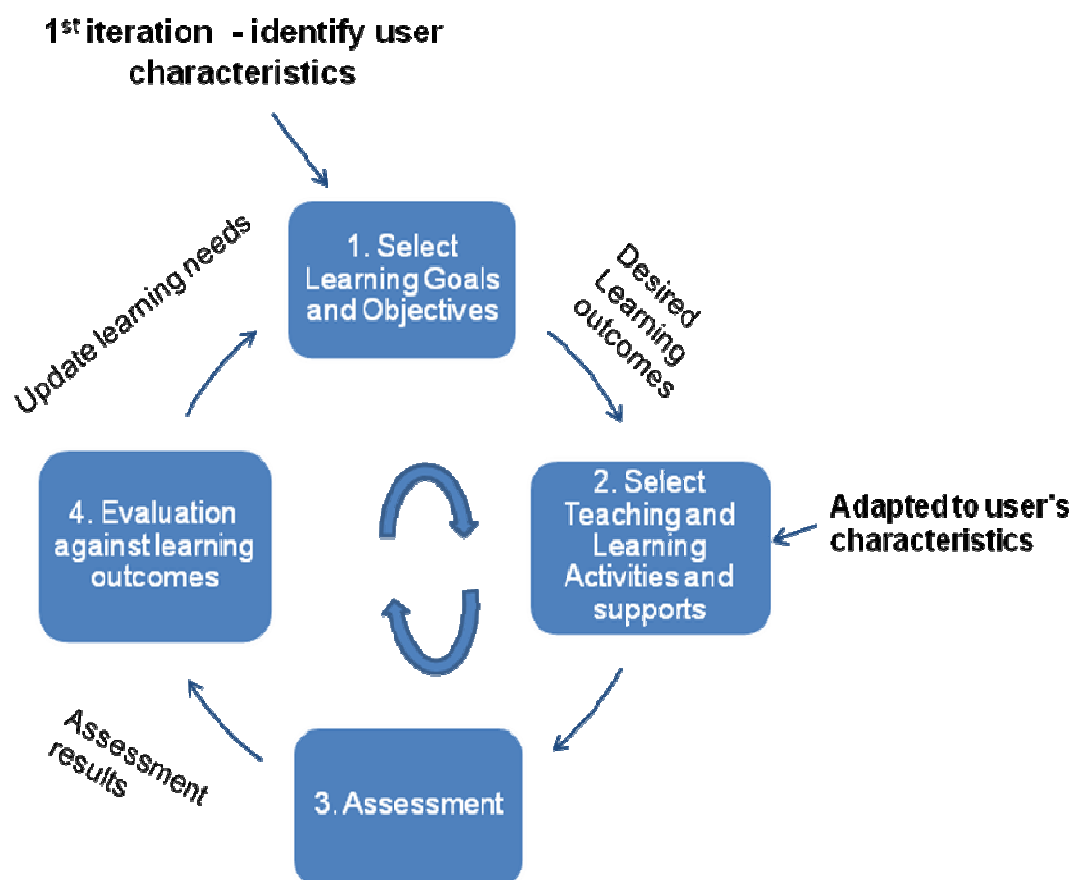
As discussed in section 3.4.3, the pedagogical approaches indicated by these theories include interactive TLAs such as problem-solving in authentic clinical scenarios, peer collaboration and hands-on experience. These are congruent with the preferred TLAs of G.P.s identified in this study. Further support for the inclusion of these TLAs in the support framework is provided by the study findings. CBA provides authentic learning experiences; as one participant noted 'it's what we do all the time'. The comment from one participant regarding role-play suggesting that 'the only real way to learn is to try it out for yourself' is congruent with Experiential and Reflective approaches which emphasise the importance of hands-on experience and reflection on that experience.

Theories of learning which promote a didactic approach e.g. Behaviourism (Skinner, 1968) are also relevant for the support framework. Although didactic methods are weak when used alone (Cantillon and Jones, 1999), they are a source of new information which can be incorporated into learners frameworks of understanding using interactive approaches.

### 5.3.3 The Support Framework

Having identified and validated appropriate TLAs, it is now possible to present the support framework for CME in dementia. This framework incorporates elements of adaptivity and assessment and is depicted in Figure 5.2 below.

Figure 5.2 The Support Framework

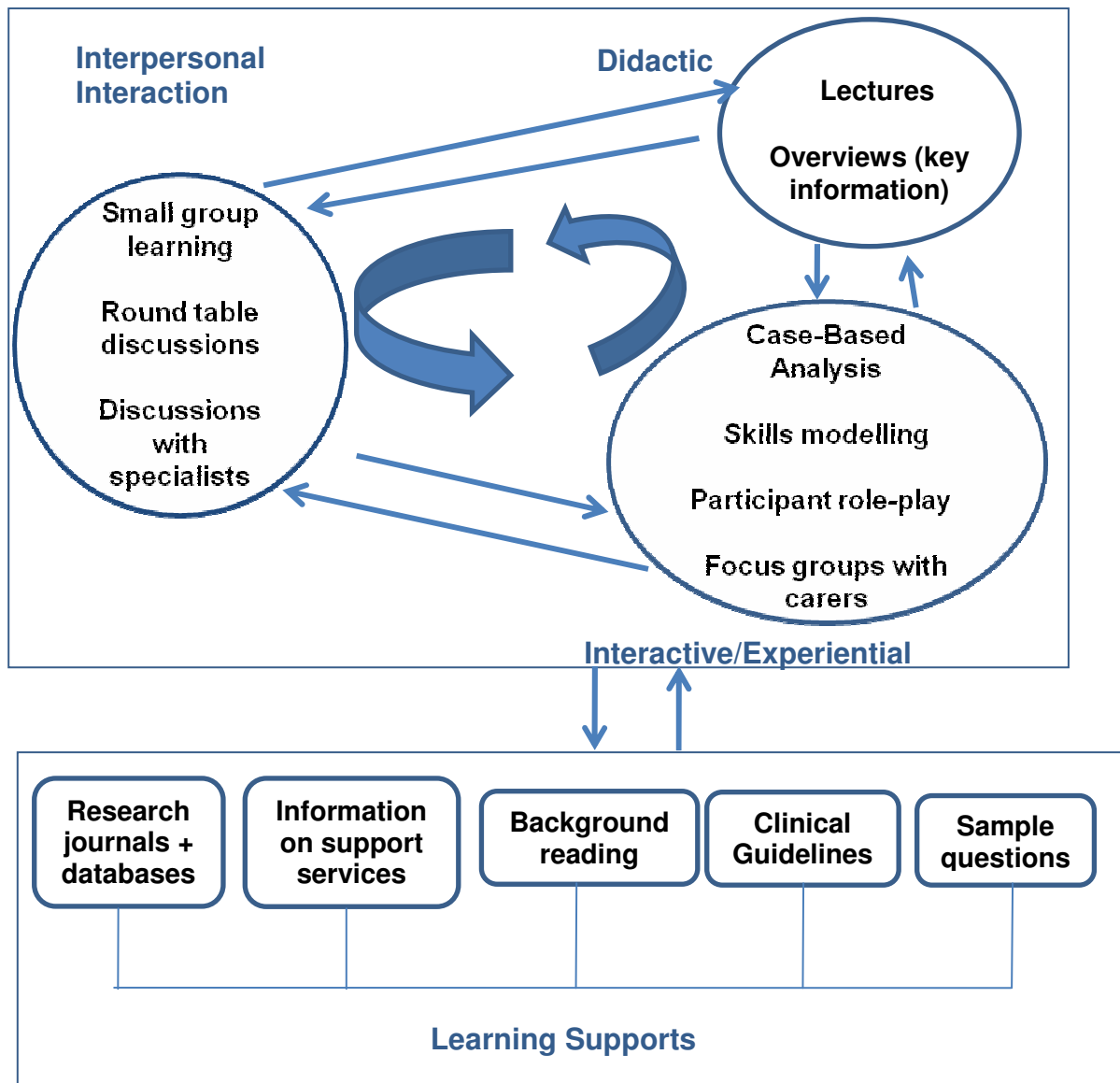


This framework is generic and can be used in any subject domain where adaptivity is required based on user characteristics. The TLAs and supports referred to at stage 2 are



detailed in Figure 5.3 below. These are based on the G.P. requirements specified earlier in Table 5.1.

**Figure 5.3 Teaching and Learning Activities (TLAs) and learning supports for CME in dementia**



The framework is based on a modular format for CME in dementia whereby modules are provided at different competency levels to cater for varying degrees of knowledge in different topics. Although this study has identified relevant topics, more research is required to clarify appropriate competency levels and optimum topic groupings within

modules. Modules contain sets of learning goals and objectives, linked to appropriate learning outcomes.

The framework portrays a learning cycle which is repeated to progress from basic to more advanced levels of knowledge. User characteristics (including location and prior knowledge) are captured at stage 1 of the first iteration of the cycle. An additional user characteristic (time available) may be entered at each iteration of the cycle. Based on these characteristics, the learner is presented with appropriate learning modules each encompassing goals and objectives. The selection of goals and objectives by the learner at stage 1 produces a set of learning outcomes. These are linked to appropriate TLAs and supports which are then selected by the learner (stage 2 in figure 5.2 above). These are adapted to experience level and time available (if required).

As figure 5.3 shows, interactions may occur between different TLA categories e.g. a G.P. may perform a CBA and discuss it with other G.P.s or a specialist (Interactive/Experiential and Interpersonal categories). Multiple TLAs within the same category may be selected e.g. a G.P may perform 2 CBAs or combine a CBA with a Role-Play. Learning supports are linked to TLAs as appropriate e.g. a CBA may have links to background reading and clinical guidelines which in turn may be linked to research journals. Supports such as sample questions are linked into appropriate TLAs. Learners may access learning supports in isolation i.e. without performing a TLA.

Assessments (at stage 3 of the cycle) may be formative or summative (Patton, 2005) e.g. a CBA TLA may incorporate a formative assessment to allow progress to be tracked. A summative assessment is performed when all learning outcomes for a particular competency level have been addressed. If successful, the learners' user profile is updated accordingly. They can then perform another cycle at a higher competency level, selecting higher level learning goals and objectives. If assessment is unsuccessful, the learner must perform additional TLAs at the same competency level to achieve their goals before moving to a higher level.

### **The framework in action**

Let us assume that a G.P. requires CME in dementia. On accessing education for the first time, his user characteristics are captured. He enters his location at stage 1 (see Figure 5.2), allowing localised information on regionalised support services to be identified. Prior knowledge of dementia is gauged via a preliminary assessment which determines his current competency levels within learning module topics. If time-based adaptivity is required, time available is entered at stage 1 also. Following assessment, the G.P. is presented with a number of learning modules each encompassing goals and objectives relevant to his competency level. In this case we will assume that 2 modules are offered; diagnosis and management and that the G.P. is placed at the basic level of the diagnosis module and the intermediate level of the management module.

The G.P. progresses through the diagnosis module, selecting goals and objectives which in turn present a range of appropriate TLAs and supports. He performs a lecture and CBA TLA and receives a satisfactory grade in the formative assessments within each TLA. He also engages in an online discussion (via a discussion board) on distinguishing between dementia and other conditions. He then performs a successful summative assessment, allowing him to proceed to the intermediate level of the diagnosis module. In the same way, he completes the intermediate level of the management module and progresses to the advanced level. He fails to pass the summative assessment and so he performs an additional CBA. He then successfully completes summative assessment.

### **Informal education**

The above scenario describes the framework within a formal learning environment i.e. a full accredited course on dementia. This study has also indicated a role for informal and just-in-time learning for dementia. The framework can be adapted to accommodate these needs e.g. G.P.s may perform a search to retrieve education on a particular topic e.g. medico-legal issues. If they have insufficient time to perform an initial assessment of prior knowledge, they may choose a competency level for the topic. They may then select relevant goals and TLAs to perform, or access learning supports e.g. background reading. A summative assessment is not relevant for informal learning.

## ***5.4 The role of e-learning in implementing this framework***

This study revealed a high level of interest amongst Irish G.P.s in e-learning for CME in dementia (encompassing exclusive e-learning or blended learning). This section discusses key issues relating to the implementation of the support framework within an exclusive e-learning environment. These include the preliminary assessment to identify prior knowledge levels and the implementation of TLAs and learning supports. Brief consideration is given to the issue of formative and summative assessments. Implementation within a blended learning environment is then briefly discussed.

### ***5.4.1 Preliminary assessment***

Within the framework, adaptivity is provided based on the user's prior knowledge of dementia. This can be assessed using MCQs. The results of the assessment indicate appropriate learning modules and competency levels for the learner.

### ***5.4.2 Implementation of Teaching and Learning Activities***

The TLAs contained within the framework are categorized as didactic, interactive/experiential and interpersonal. E-learning offers a range of options to accommodate these and to meet the particular requirements of G.P.s outlined in Table 5.1. Each category is discussed in turn.

#### ***5.4.2.1 Didactic TLAs***

##### ***Lectures***

Online lectures may encompass a choice of multimedia presentations including combinations of video, audio, scrolling text and synchronised slides (Fordis et al., 2005), thus providing adaptivity to different connectivity speeds and learning styles. Lectures can be geared to different knowledge levels, thus providing further adaptivity.

##### ***Overviews***

Online information overviews can contain chunks of key information on various issues, with links to additional reading material. This accommodates G.P.s needs for fast access to

relevant information, providing adaptivity for those who want to know more. Links to sample questions, clinical guidelines and research journals can be provided as appropriate to promote best practice and provide the evidence base required by G.P.s.

#### ***5.4.2.2 Interactive/Experiential TLAs***

##### **Case-Based Analysis**

Participants requested TLAs which are brief, focussed to general practice and easy to use. The high satisfaction expressed by 2 participants who had previous experience of CBA learning modules on <http://www.BMJLearning.com> suggests that a similar format is suitable for CME in dementia. Further support for this recommendation is provided by the fact that the design elements within the BMJ Learning modules are closely aligned with the general requirements of participants within this study. Online CBA should therefore provide the G.P. with various clinical scenarios involving patients with dementia. MCQs should be used throughout (providing the 'fun' element of learning requested by 1 participant); feedback on these questions provide information about dementia to promote learning (see Appendices B (i) and B (ii) ). Key information can be incorporated at appropriate points to reduce information overload and focus the learner (see Appendix C). Cases should cover a number of different stages and types of dementia, thus providing learners with a wide range of 'experience' in the disease. Cases should not be too narrow in scope but should cover a number of issues. Adaptivity can be provided by grading cases to different knowledge levels. Links to learning supports such as reading material, clinical guidelines etc. can provide further adaptivity. Collaborative learning can be accommodated via online interaction (see section 5.4.2.3. below).

##### ***Skills modelling***

Videos can be used within CME for dementia to model communication skills relevant for disclosing the diagnosis, performing screening tests and patient histories. As with CBA, these should incorporate didactic components including communication theory, tips and summaries of key information. Interactivity can be accommodated using MCQs. Hyperlinks can be included to learning supports such as additional reading material, sample questions (for history), clinical guidelines and research.

### ***Live participant role-play***

Adaptive simulations have been used in undergraduate e-learning interventions to emulate live participant role-play (Dagger et al., 2007). Although their suitability for G.P.s has not yet been tested, the fact that they are more accessible and flexible than live role-play sessions may increase their attractiveness to G.P.s. It must be noted however that the participants in this study who selected live role-play indicated that they would enjoy the 'live' aspect of it. This was the very aspect of it which seemed unpalatable to others who claimed to be 'allergic' to role-play, perhaps because of the embarrassment factor. Online adaptive simulations may therefore be best suited to G.P.s who might not otherwise engage in live role-play activities. A key factor in their acceptability is likely to be the time taken by such TLAs; 30 to 40 minutes was an optimum learning slot for a number of participants.

### ***Focus groups with carers***

Focus groups with carers can be implemented using live web-conferencing. However, given the reluctance of some participants in this study to engage in synchronous communicative activities, an alternative choice is to video a face-to-face live focus group meeting (with the permission of the participants) and use e-learning to disseminate the findings to G.P.s. This can be followed by online discussion of issues with peers, specialists and perhaps carers themselves (see section 5.4.2.3 below). E-learning can offer additional options in this area; key issues raised by focus groups can be presented online (as part of a didactic TLA); videos showing carers presenting their viewpoints can also be incorporated into didactic TLAs (e.g. lectures, overviews or background reading) to promote reflection and experiential learning. Although this last option lacks the interactivity of live focus groups, it has the advantage that a wider range of carers may be reached, thus bringing a greater range of experience to the learning situation.

### ***5.4.2.3 Interpersonal TLAs***

#### ***(small group learning, round table discussions, discussions with specialists)***

E-learning can accommodate both the asynchronous and synchronous methods of communication preferred by participants. For asynchronous methods, e-mail or discussion boards are appropriate choices. All the participants know how to use e-mail, and although

only 3 had previously used discussion boards, all who expressed a wish for asynchronous communication were willing to use this tool. This indicates a need for training in their use. The study findings indicated a need for moderated communication and a role for both G.P.s and specialists as moderators. Synchronous communication can be accommodated using web-conferencing. The drawback of this technology (i.e. inflexibility) can be overcome to some extent by scheduling conferences on a number of different dates and times.

In the e-learning environment, TLAs can involve elements of online interpersonal communication thus helping to foster an online 'Community of Learners' (Garrison and Anderson, 2003) e.g. an online forum can facilitate discussions around issues raised by TLAs such as online lectures, CBA or overview information.

Alternatively, TLAs can be centred on online interpersonal communication. Web-conferencing can host overview presentations or lectures by specialists, thus affording opportunities for live discussions with specialists or peers to bring 'learning to life'. For TLAs such as CBA, cases can be posted to discussion boards and 'solved' by learners acting in collaboration. Discussion boards can also be used for collaborative work on practical tasks such as designing a practice management strategy for dementia to cover a range of cases. Collaboration can also be facilitated using e-mail (Marshall et al., 2001). However, although e-mail has an advantage in that it allows learners to easily incorporate learning into their daily activities, the use of a discussion board makes the TLA more widely available to others who may not actively take part in the discussion but learn from reflecting on the issues discussed. This accommodates learners with different learning styles (Honey and Mumford, 1986). It also provides opportunities for all learners to review whole discussions as part of a learn-work-learn cycle thus promoting experiential learning.

There are many combinations of TLAs possible; the important thing is to include a range of activities to suit different learning styles and preferences. As (Zimitat, 2001) notes, in education, one size definitely does not fit all.

#### **5.4.2.4 Learning Supports**

The use of hyperlinks and search facilities can accommodate fast access to relevant material for all of the learning supports identified in this study. Background reading material

can be classified according to competence level to accommodate the wide range of knowledge amongst healthcare professionals about dementia (Rubin et al, 1987) cited by (Iliffe et al., 1999). This saves time, allowing learners to zone in on relevant information. Material can be grouped into key issues within topic areas e.g. for pharmacological interventions, a menu can provide access to material on 'starting/stopping medication' and 'the use of sedation'. To enhance the educational impact of this didactic form of learning, links to videos of patients or carers giving their experience of dementia can be incorporated within reading material to promote experiential learning (see Appendix F). Probing questions can stimulate reflection and promote deeper engagement with the material (see Appendix D and E). Links can be provided between all learning supports as required e.g. from reading material to appropriate sections of Clinical Guidelines, Research Evidence, Sample Questions and vice versa. Sample questions can be graded to experience levels and information on support services adapted to user location.

### **5.4.3 Assessment**

Although a detailed consideration of assessments within e-learning is outside the scope of this thesis, section 3.5.5 provided a brief overview of assessment tools used within in e-learning. These can be used in implementing the framework. MCQs can provide automated formative assessment within TLAs. These can be pitched at different levels e.g. MCQs may involve a simple recall of facts (lower order skills) or may require solving clinical problems (e.g. in CBA), thus assessing higher order learning outcomes.

Summative assessments can be conducted using MEQs and/or Portfolio-Based Assessments. For both tools, e-learning can accommodate online completion and submission but effective automatic evaluation is not yet possible. Their use is therefore somewhat limited in adaptive systems which depend on automatic assessments to update the user model. The future challenge for e-learning is to enable automatic evaluations of these types of assessments or provide alternative forms of automated assessment.

Having considered the implementation of the framework within an exclusive e-learning environment, implementation within a blended learning environment will now be briefly discussed.



#### **5.4.4 *Blended learning***

Blended learning may incorporate e-learning activities to a greater or lesser extent. E-learning activities may provide the bulk of the learning experience e.g. learners may progress through the learning cycle (as in an exclusive e-learning environment) selecting learning outcomes and performing online TLAs such as CBA or accessing online supports such as background reading. In this scenario, face-to-face sessions may complement online activities, providing an opportunity to discuss online material within small group formats, or to engage in live role-play sessions.

Alternatively, learners may prefer to 'do their learning face-to-face' as one participant in this study requested. In this scenario, e-learning may become more of an information resource than an active learning experience where learners may not wish to perform online TLAs but may access online material (such as background reading) as required. Comments from a number of participants indicate that indefinite access to such a resource would be very helpful. In this scenario, the material presented within online TLAs may be adapted for use in face-to-face sessions (an example of reusable learning objects) e.g. an online CBA could form the basis for a group discussion on the issues raised within the CBA.

Having presented the support framework and discussed its implementation with an e-learning environment, the framework will now be validated.

### **5.5 *Validation of the Support Framework***

This chapter has presented a support framework for CME in dementia for Irish G.P.s and discussed its implementation within an e-learning environment. The design of the framework was based on the literature review of CME in dementia and e-learning presented in chapter 3 and the G.P. requirements and preferences presented in chapter 4. The framework and its implementation will now be validated against these. User validation is provided by 2 G.P.s who participated in the study.

### ***5.5.1 Validation against research literature and user requirements***

The framework and its implementation within an e-learning environment fulfill the following requirements:-

- The topics included reflect the requirements of the Irish G.P.s included in this study and are broadly in line with the specific educational deficits identified in the research literature. The experiential aspects of the TLAs (e.g. role-play and inclusion of patient viewpoints in didactic TLAs) address more general educational requirements such as promoting a person-centered approach and more positive attitudes towards dementia.
- It offers a range of interactive, context-based, collaborative TLAs which are in accordance with the preferences of the study participants. These TLAs are congruent with the learning theories relevant for CME in dementia (e.g. ALT and Constructivism) and are matched to relevant learning outcomes for CME in dementia thus promoting educational alignment.
- The e-learning environment in which the framework is implemented offers learners sequential learning opportunities. This promotes more effective learning than once-off educational solutions (Davis et al., 1999), (Thomas et al., 2006).
- The TLAs included within the framework have been effective in promoting knowledge gains and user satisfaction (Davis et al., 1999), (Thomas et al., 2006). They may also be effective at higher levels of evaluation e.g. securing positive changes in clinical behaviour (Fordis et al., 2005).
- Effectiveness is likely to be enhanced by elements within the framework which nurture cognitive, social and teaching presence (Garrison and Anderson, 2003). These include the use of interactive TLAs with challenging material, online communication (involving asynchronous, text-based discussions and live discussions), moderated online discussions and automatic feedback on assessments.
- The format recommended for implementing TLAs within an e-learning environment is simple and emphasizes elements such as focusing on key information. This is in

accordance with participant requirements and promotes usability which is an important element in effective e-learning (Ruiz et al., 2006).

- The framework offers CME in dementia adapted to G.P. learning needs and preferences and multiple strategies to encourage participation. In empowering the learner to pace and direct their learning, it makes learning personally meaningful in line with ALT.
- The e-learning implementation provides prompt access to up-date medical knowledge and research which is in line with G.P. requirements and the demands of the current medical environment (Gluud and Gluud, 2005).
- The framework and its implementation can be adapted to cover the formal and informal educational scenarios required by the participants. Blended learning solutions can also be accommodated.
- The preliminary assessment of prior knowledge helps G.P.s identify knowledge gaps. As one participant mentioned, this can be difficult to do without assistance. A further advantage of this assessment is that it activates existing knowledge frameworks, thus priming learning (Piaget, 1970).
- CME solutions must be financially viable (Davis et al., 1999, Thomas et al., 2006) and the e-learning implementation of the framework may help to achieve this aim. Elements such as the automatic preliminary assessment streamline the educational process, thus promoting efficiencies which may reduce costs (Horn K.D et al., 1997).

### ***5.5.2 User validation***

It was decided to contact a small number of participants to provide some degree of user validation for the framework. (The difficulty in accessing G.P.s prevented a larger number of validations being performed). 2 participants agreed to participate in the validation process and were sent a document by e-mail. This provided a brief outline of the elements of the framework and its implementation (see Appendix K). This document was then discussed with each participant by telephone.

Both participants provided positive validation of the framework in terms of the topics, TLAs, and supports included. One G.P. emphasised the importance of including small group learning formats within CME. This highlights the importance of creating an online environment which promotes the type of high quality interpersonal communication crucial to this learning activity.

Both participants were enthusiastic about the e-learning implementation of the framework, in particular the accessibility and flexibility it provides. Some elements were mentioned as being particularly useful; these included the competence-based adaptivity to reduce time-wasting, time-based adaptivity and the modular design to facilitate just-in-time or informal learning where G.P.s can select relevant issues. The need for a fast, flexible, simple solution was again highlighted.

One participant commented how G.P. choice of CME is driven by clinical needs and practice demographics. Given the anticipated increases in the prevalence of dementia, this denotes a growing need for CME in dementia. This participant also emphasised the importance of CME being accredited, particularly when CME becomes compulsory in the near future.

The only real concern raised by one participant was the time taken to complete a course in dementia. He suggested that such a course should not take longer than 6 hours or so to complete. This was supported by the other participant. This indicates a need to keep TLAs as short and as focussed as possible and supports the recommendations made for including key information within TLAs to focus learning.

Having validated the support framework, a number of issues regarding implementation will now be discussed.

## ***5.6 Discussion and conclusions***

This chapter has proposed a support framework for CME in dementia and discussed its implementation within an e-learning environment. This has been validated against the research literature and G.P. requirements gathered in this study and by a small number of the participants. There are a number of general issues which must now be considered,

including how the education will be delivered and possible limitations within the proposed solution.

Online CME for dementia may be delivered via a password-protected website (as used by <http://www.BMJLearning.com> and <http://www.doctors.net.uk>) where G.P.s can sign on as registered users to access education. Delivery and management of this education may be achieved using a tool such as Blackboard (as discussed in Chapter 3, section 3.5.3.2). Courses should be accredited by the ICGP and the material used should be educationally sound and of a high quality to ensure usability and effectiveness. To achieve these aims and produce cost savings, high quality peer-reviewed learning objects can be obtained from online portals and centres of excellence (such as the Consortium of e-learning in Geriatric Instruction, (Ruiz et al., 2007)) and adapted as necessary. Where possible, material should be based on real-life cases to provide challenging educational opportunities and promote authenticity. Material should be very focused to general practice.

Registered users can be notified by e-mail of potential items of interest (e.g. new research findings, interventions or learning modules). Such e-mails can provide appropriate links to the website thus raising awareness of important issues and increasing the chance of G.P.s accessing and participating in CME. This strategy is used by BMJLearning and one participant in this study indicated that CME delivered via e-mail increases her likelihood of access.

IT training may be necessary for some G.P.s to overcome potential barriers to using e-learning. Even G.P.s with good IT skills (as in this study) may need training in the use of tools such as discussion boards. Online support is necessary to solve any technical problems and ensure user satisfaction (Greenhalgh, 2001).

There are a number of limitations within this framework which must be considered. Automatic evaluation of assessment formats such as MEQs and Portfolio-based assessments is not yet possible, thus limiting their use in adaptive systems. Although MCQs offer fully automated assessment, they are more limited in scope. Future research may address these issues.

Online communication is an essential component of the framework (especially when implemented within an exclusive e-learning environment), promoting social and cognitive presence and affording G.P.s valued opportunities to discuss issues with peers. The challenge for e-learning is to encourage high-quality participation. This may be facilitated by providing opportunities for G.P.s to discuss personal cases and to access experts in the field. A strong teaching presence is also important to promote social and cognitive presence and the use of synchronous tools such as web-conferencing may also facilitate this goal. The face-to-face contact provided within a blended learning implementation may also help to promote high quality online communication by establishing an element of trust, thus contributing to social presence.

Chapter 6 is the concluding chapter in this thesis. It provides a brief overview of the study, the research findings and the design of the support framework. It then considers future work to be done.

## ***Chapter 6 Conclusion***

### ***6.1 Introduction***

This chapter reviews the research study. It first presents an overview of the research background and relevant issues in CME and e-learning which informed the study. It then discusses the research findings, their implications and the design of the support framework. It finally considers future work to be done.

### ***6.2 Overview***

#### ***Study background***

With our ageing population, dementia is set to become a significant health problem in Ireland in the future (O' Shea, 2007). New medical interventions highlight the importance of early diagnosis as these are more effective if administered in the early stages. G.P.s play a key role in this diagnosis and in the effective management of dementia but this is hampered by a number of barriers, including a lack of education about the disease. Research indicates that Irish G.P.s would like education in dementia and that e-learning has a potential role to play in this education (Cahill et al., 2006). This thesis built on this finding, using 20 semi-structured telephone interviews to explore the requirements of Irish G.P.s for CME in dementia and the role of e-learning in this education.

#### ***CME for dementia***

CME for dementia should cover a number of issues in diagnosis and management; including how to diagnose dementia, how to disclose the diagnosis, the use of interventions, referral criteria, support services, carer's needs, and medico-legal and driving issues (Iliffe et al., 1999, Iliffe and Manthorpe, 2002, Manthorpe et al., 2003, Downs, 1996, Cahill et al., 2006). The high degree of uncertainty and complexity associated with the disease indicates a need for education to develop higher order thinking skills and broad conceptual frameworks of dementia (Wilcock et al., 2002). These learning outcomes demand TLAs which are interactive, collaborative, experiential and context-based. TLAs of this nature have been effective in promoting knowledge gains and user satisfaction in CME. In some cases, they have been also been effective in securing positive change in clinical behaviour

and improved patient care outcomes, (Davis et al., 1999, Thomas et al., 2006) which are the ultimate goal of CME (Lloyd and Abrahamson, 1979).

### ***E-learning in CME***

The increasing popularity of e-learning in CME (Zimitat, 2001) stems from its flexibility, accessibility and provision of up-to-date medical knowledge which accommodates formal or informal learning (Curran and Fleet, 2005, Casebeer et al., 2002). It also facilitates the learner-centred approach advocated by ALT (Ruiz et al., 2006). E-learning offers a number of formats for implementing the relevant TLAs for CME in dementia and ways of enhancing their educational impact e.g. the use of automated online MCQs provides immediate feedback and the use of patient videos accommodates authentic, experiential learning experiences. However, the effectiveness of e-learning cannot be assumed (Curran and Fleet, 2005, Sandars and Walsh, 2006); it depends on sound educational design which must nurture the key elements of cognitive, social and teaching presence required to build the online communities of learning (Garrison and Anderson, 2003) relevant for CME in dementia. A number of other barriers must also be overcome, including a lack of time, IT skills and acceptance of e-learning (Mamary and Charles, 2003, Childs et al., 2005).

### ***6.3 Research findings***

This study incorporated 20 telephone interviews with G.P.s to ascertain their requirements and preferences for CME in dementia. Participants were very open to CME in dementia and their preferred topics are broadly in line with those identified in the research literature. However, the results indicated a potential lack of awareness of educational deficits on the part of G.P.s. The research literature for example highlights the need for education in how to disclose the diagnosis (Ilfie and Manthorpe, 2002), yet many of the participants did not see this as necessary. This suggests a need to heighten awareness of such issues amongst G.P.s. Management of dementia was seen by many as having a higher priority than diagnosis. This indicates a need to highlight the benefits of early diagnosis to G.P.s and the importance of their role in this diagnosis.

In support of previous research e.g. (Cahill et al., 2006), the results indicate that education for G.P.s is only part of the solution for promoting more effective diagnosis and management of dementia. The findings emphasized the importance of education in medico-legal issues and driving for all participants but this must be complemented by clear



guidance in this area from both the legal and medical viewpoint. Similarly, education is required in the area of support services and carers needs but this must be backed up by service availability, which seems to be lacking at present in some areas.

There was a high requirement amongst participants for interactive TLAs focused to general practice. These should encompass didactic, interactive/experiential and interpersonal elements of learning. In line with previous research, peer collaboration was particularly valued (Parboosingh, 2002) as was access to expert opinion. The study revealed a high level of PC skills and internet usage amongst G.P.s and a high interest in the use of e-learning (both exclusive and blended) for CME in dementia across all age categories. It also revealed a need for adaptivity relating to prior knowledge, topic choices, time constraints and learning preferences, thus indicating an important role for e-learning in CME in dementia to accommodate these requirements.

## ***6.4 The Support Framework***

This thesis presented a framework to support CME in dementia and discussed its implementation within an e-learning environment. This framework is based on the literature findings and the requirements of G.P.s identified within this study. It assumes a modular format for dementia education and encompasses a cycle of learning which can be repeated to progress from basic knowledge of dementia to a more advanced level. This framework empowers the learner, offering opportunities to pace and direct their own learning in line with ALT. It incorporates the required elements to promote educational soundness; it promotes educational alignment as the TLAs chosen are driven by relevant learning outcomes for dementia education (Mayes and de Freitas, 2007). Methods for establishing cognitive, social and teaching presence are also considered within its implementation. The recommendations made for implementing online TLAs promote usability and take into account G.P.s needs for focused, flexible, interactive education which accommodates interpersonal interaction with peers and specialists.

## ***6.5 The way forward***

This study has made a number of important contributions in the area of CME in dementia. It presented the requirements of Irish G.P.s for CME in dementia in terms of the relevant

topics, issues of concern and preferred TLAs and supports. It also indicated a high degree of interest in using e-learning for this education. Although this was a small scale study and had some methodological limitations, it nonetheless points to a need for further research in this area to test the universality of these findings. This should also explore in greater detail the optimum components of learning modules and TLA design, bearing in mind relevant time constraints; this study indicated that a formal course in dementia should take no longer than six hours to perform.

A further contribution is the design of an adaptive framework to support CME in dementia. This framework is generic and can be used in any subject domain where adaptivity is required based on user characteristics. The use of this framework was discussed within a formal exclusive e-learning environment and consideration given to informal and blended learning scenarios. This may form the basis of further research; this should test the viability of the recommended design and consider in more detail how it may be adapted to accommodate informal and blended learning environments. Further research should also explore additional requirements for adaptivity e.g. role-based adaptivity. This could for example investigate the educational requirements and preferences of other members of the primary care team (e.g. practice nurses) and explore the level of adaptivity needed to accommodate these within the support framework.

This study explored the role of CME and e-learning in promoting more effective diagnosis and management of dementia in primary care. However, it also revealed an interest by some G.P.s in using decision support systems in this area. A U.K. study indicated a promising role for such systems (Downs et al., 2006) and future research should explore their potential use in the Irish context.

There are a number of limitations within the proposed support framework. It assumes the availability of fully automated assessments in order to update user learning needs within the user model and although this is achievable with MCQs, it is not yet possible with other more comprehensive assessment tools such as MEQs and Portfolio-based assessments. Future research may address these issues and provide a way forward.

A further consideration is the challenge involved in promoting high quality online interpersonal communication, which is a key requirement of the framework and of effective

online education. A number of solutions were proposed, including the use of synchronous communication tools such as web-conferencing, activities to promote cognitive presence and a strong teaching presence to guide and shape discussions. Future research may shed more light on this issue. It could for example explore the possibility of using Web 2.0 technologies such as blogs and wikis to accommodate online communication and collaborative learning (Sandars and Schroter, 2007, Boulos et al., 2006).

In the meantime, the solution may lie in a blended learning environment which affords opportunities for face-to-face discussion and debate on issues of concern. Indeed, as this study indicated, this face-to-face element may render blended learning a more attractive option than exclusive e-learning for some G.P.s. Blended learning environments may also promote higher quality online communication by helping to create social presence (Garrison and Anderson, 2003).

In conclusion, this study indicated a strong interest amongst Irish G.P.s for CME in dementia and an important role for e-learning in providing an adaptive solution for this education. As one participant noted “e-learning is the way forward for medical education; you have to keep up with it”. The challenge for educators is to deliver an effective e-learning solution that is sufficiently flexible to cater for their needs.

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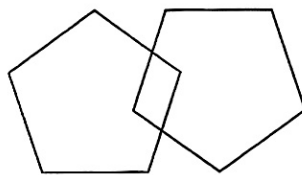
## **Appendix A: The Mini-Mental State Examination (MMSE)**

**Patient** \_\_\_\_\_ **Date** \_\_\_\_\_

**Examiner** \_\_\_\_\_

**Maximum Score**

- |   |     |   |
|---|-----|---|
|   |     | <b>Orientation</b>  |
| 5 | ( ) | What is the (year) (season) (date) (day) (month)?   |
| 5 | ( ) | Where are we (state) (country) (town) (hospital) (floor)?   |
|   |     | <b>Registration</b>   |
| 3 | ( ) | Name 3 objects: 1 second to say each.<br>Then ask the patient all 3 after you have said them.<br>Give 1 point for each correct answer.<br>Then repeat them until he/she learns all 3.<br>Count trials and record.<br>Trials _____ |
|   |     | <b>Attention and Calculation</b>  |
| 5 | ( ) | Serial 7's. 1 point for each correct answer.<br>Stop after 5 answers.<br>Alternatively spell "world" backward.<br>(Do both and take the best score)   |
|   |     | <b>Recall</b>   |
| 3 | ( ) | Ask for the 3 objects repeated above.<br>Give 1 point for each correct answer.  |
|   |     | <b>Language</b>   |
| 2 | ( ) | Name a pencil and watch.  |
| 1 | ( ) | Repeat the following "No ifs, ands, or buts"  |
| 3 | ( ) | Follow a 3-stage command:<br>"Take a paper in your hand, fold it in half,<br>and put it on the floor."  |
| 1 | ( ) | Read and obey the following: CLOSE YOUR EYES  |
| 1 | ( ) | Write a sentence.   |
| 1 | ( ) | Copy the design shown.  |



Total Score \_\_\_\_\_  
 ASSESS level of consciousness along a continuum \_\_\_\_\_  
 Alert Drowsy Stupor Coma

Adapted from Folstein MF, Folstein SE, McHugh PR. Psychiatry Res, (1975)  
 Source: (Scottish Intercollegiate Guidelines Network, 2006)

## Appendix B (i): Sample e-learning formats:use of MCQs

Source: <http://www.BMJLearning.com> - Interactive Case History module

Interactive case history : Dementia: diagnosis and assessment - Windows Internet Explorer

http://learning.bmj.com/learning/flow.html?\_flowExecutionKey=\_c6AC1149-38C9-06AB-5C08-895F206ED8BA\_k648AD47B-75C7-930B-FFD3-F635C1DD3916

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BMJ Interactive case history : Dementia: diagnosis and as...

Interactive case history Section 4 of 16 - Question 1 (of 1)

### Dementia: diagnosis and assessment

1. You are asked to assess a 79 year old man who was admitted to the medical assessment unit three days ago and who has now been transferred to your ward. The man had been referred by his GP after a relative from France visited and was concerned that the patient seemed to be forgetful and unkempt. Also, the house was not as tidy as when the relative had visited six months before and there were piles of unopened letters on the kitchen table.

The man's abbreviated mental test score on admission was 6/10. Physical examination was normal and his full blood count, urea and electrolytes, bone profile, and liver and thyroid function were normal. Urinalysis was positive for blood and protein. Treatment with co-amoxiclav had been started on admission.

In your assessment you find his abbreviated mental test score to be 7/10. Examination is once again normal. Which one of the following statements is correct?

	Your answer	Correct answer
a The abbreviated mental test scores indicate that the patient has dementia		
b The patient has a diagnosis of confusion secondary to a urinary tract infection		
c The most likely diagnosis is late onset psychosis		
d The most likely diagnosis is dementia	<input checked="" type="radio"/>	<input checked="" type="radio"/>
e A CT scan is likely to have an important influence on the immediate clinical management		

Done

start chapter3 Chapter5 v... Chapter 3 v... Document1 ... EndNote X1 ... bmj case ist... Interactive

## Appendix B (ii): Sample e-learning formats: use of MCQs (feedback)

Source: <http://www.BMJLearning.com> - Interactive Case History module  
- feedback on answers

Interactive case history : Dementia: diagnosis and assessment - Windows Internet Explorer

http://learning.bmj.com/learning/flow.html?\_flowExecutionKey=\_cC6AC1149-38C9-06AB-5C08-895F206EDBBA\_k648AD47B-75C7-930B-FFD3-F635C1DD3916

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BMJ Interactive case history : Dementia: diagnosis and as...

once again normal. Which one of the following statements is correct?

Your answer Correct answer

- a The abbreviated mental test scores indicate that the patient has dementia
- b The patient has a diagnosis of confusion secondary to a urinary tract infection
- c The most likely diagnosis is late onset psychosis
- d The most likely diagnosis is dementia
- e A CT scan is likely to have an important influence on the immediate clinical management

**a : The abbreviated mental test scores indicate that the patient has dementia**

Abbreviated mental test scores on their own are not diagnostic. There are many reasons why an individual may score poorly, for example having dementia, depression, delirium, or poor hearing, English not being the patient's first language, or having a low IQ.

**b : The patient has a diagnosis of confusion secondary to a urinary tract infection**

"Confusion" is not a diagnosis; it is too vague a term. It may be used like "breathlessness" or "chest pain" but it is a presenting complaint rather than a diagnosis. Blood and protein on dipstick testing suggest a glomerular problem and are not useful predictors of infection, unlike nitrites and leucocytes.

**c : The most likely diagnosis is late onset psychosis**

Late onset psychosis is rare but patients may show cognitive impairment. This diagnosis would be suggested by prominent, persistent, and well formed delusions and hallucinations.

Done

start chapter3 Chapter 5 v... Chapter 3 v... Document1 ... EndNote X1 ... bmj case ist... Interactive ... EN 14:

## ***Appendix C: Sample e-learning formats: key information***

Source: <http://www.BMJLearning.com> : Interactive Case History module - 'learning bites' throughout module

The screenshot displays a web browser window with the address bar showing the URL: [http://learning.bmj.com/learning/flow.html?\\_flowExecutionKey=\\_c6AC1149-38C9-06AB-5C08-895F206EDBBA\\_k95FA05B4-E8F6-F5FC-3A4E-8B5C3B5F2680](http://learning.bmj.com/learning/flow.html?_flowExecutionKey=_c6AC1149-38C9-06AB-5C08-895F206EDBBA_k95FA05B4-E8F6-F5FC-3A4E-8B5C3B5F2680). The browser's menu bar includes File, Edit, View, Favorites, Tools, and Help. The toolbar contains various icons for navigation and search. The main content area features the BMJ Learning logo and a navigation menu with links to BMJ, BMJ Journals, BMJ Careers, BMJ Learning, BMJ Knowledge, and BMJ GROUP. The page title is "Interactive case history : Dementia: diagnosis and assessment - Windows Internet Explorer". The main content area is titled "GP CPD" and "Interactive case history" (Section 5 of 16). The specific module is "Dementia: diagnosis and assessment". A "Learning bites" section contains two paragraphs of text. The first paragraph discusses the results of a CT scan of the brain in the absence of a focal neurological deficit. The second paragraph defines dementia as a chronic decline in cognitive impairment sufficient to cause impairment in personal, social, or occupational functioning. Navigation buttons for "Previous page" and "Next page" are visible. A sidebar on the right contains a "Print" button, a "Save" button, and a "Update your details" section with the text "Signed in as: colette garry" and a "Log out" link. The Windows taskbar at the bottom shows the start button and several open applications, including "chapter3", "Chapter5 v...", "Chapter 3 v...", "Document1 ...", "EndNote X1...", "bmj case ist...", "Interactive ...", and "EN".

BMJ Learning

GP CPD

In association with: Royal College of General Practitioners

Interactive case history Section 5 of 16

Dementia: diagnosis and assessment

Learning bites

In the absence of a focal neurological deficit a CT scan of the brain is likely to be normal or to show non-specific atrophy and white matter changes. But the result can occasionally be unexpected. For example it could show a tumour or a chronic or acute on chronic subdural collection. It is important to remember that such patients do not always have a history of falls and lack focal neurological signs in about 30% of cases.

Dementia is defined as a chronic decline in cognitive impairment sufficient to cause impairment in personal, social, or occupational functioning. As a starting point in the diagnostic process you need information on current and previous cognitive function and decline in function.

Previous page Next page

Print Save

Update your details

Signed in as: colette garry

Log out

Upgrade

## Appendix D: Sample e-learning formats: probing questions

Source: <http://www.BMJLearning.com> - Read, Reflect Respond module  
- Questions to prompt reflection

The screenshot shows a Windows Internet Explorer browser window displaying the BMJ Learning website. The address bar shows the URL: [http://learning.bmj.com/learning/flow.html?\\_flowExecutionKey=\\_cE24BEC6C-D47B-D8FA-6B61-4E3C679E85A0\\_kA634AFFE-4117-072F-F110-0AF14BA77E49](http://learning.bmj.com/learning/flow.html?_flowExecutionKey=_cE24BEC6C-D47B-D8FA-6B61-4E3C679E85A0_kA634AFFE-4117-072F-F110-0AF14BA77E49). The page title is "Read, reflect, respond : Managing the impact of a diagnosis of cancer".

The website layout includes a top navigation bar with links: BMJ, BMJ Journals, BMJ Careers, **BMJ Learning**, BMJ Knowledge, and BMJ GROUP. Below this, the "BMJ Learning" logo is displayed, along with "GP CPD" and "In association with: Royal College of General Practitioners".

The main content area is titled "Read, reflect, respond" and "Section 9 of 19". The specific module is "Managing the impact of a diagnosis of cancer". Under the "Reflect" section, there is a box titled "How to reflect" with the text: "Reflecting isn't just about closing your eyes and having a think. To really reflect you should ask yourself these questions:" followed by a list of five questions:

- What do I think this learning module was about?
- Can I apply it in my work?
- What barriers am I likely to come across?
- How will I manage these barriers?
- How will I know if I'm doing things better?

Below the list, it says: "Work through these case scenarios to help you reflect on the issues covered in this module." and provides "Previous page" and "Next page" navigation buttons.

On the right side, there is a sidebar with "Update your details" and "Signed in as: colette garry" with links for "Log out" and "Upgrade".

The Windows taskbar at the bottom shows several open applications: "start", "Internet", "chapter3", "Chapter 5 v...", "Chapter 3 v...", "Document1 ...", "EndNote X1 ...", "bmj rrr case ...", "Read, reflec...", and "EN". The system clock shows "14:0".



## ***Appendix E: Sample e-learning formats: probing questions and use of patient scenarios***

Source: <http://www.BMJLearning.com> - Read, Reflect Respond module

- Questions to prompt reflection
- Use of patient scenario to promote experiential learning

Read, reflect, respond : Managing the impact of a diagnosis of cancer - Windows Internet Explorer

BMJ [http://learning.bmj.com/learning/flow.html?\\_flowExecutionKey=\\_ce248EC6C-D47B-D8FA-6861-4E3C679E85A0\\_k5A05118C-9521-FEED-8278-16DE1A516DCB](http://learning.bmj.com/learning/flow.html?_flowExecutionKey=_ce248EC6C-D47B-D8FA-6861-4E3C679E85A0_k5A05118C-9521-FEED-8278-16DE1A516DCB)

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BMJ Read, reflect, respond : Managing the impact of a dia...

Tim was a smart and ambitious building society officer. He was 41 and had been finding his feet after a recent divorce. Life had been stressful of late and he did not notice that the mole on his back, which had been present from birth, had started to grow. After swimming with friends, he was prompted to see his GP after several people commented that the mole "looked awful." His GP referred him to a dermatologist and three days later he had the mole excised. He was told that "it could be something nasty."

When Tim went back to the outpatient department, the clinic was hectic and several medical students, nurses, and other visitors were in the room. The clinic was running late. The registrar looked in the notes and saw the comment: "intelligent man, well informed, and sensible." The registrar quickly told Tim that the mole was indeed a melanoma but it was superficial and had now been completely excised. He also told him that he would need regular follow up for the next five years. Tim was devastated: he told his friends and colleagues that his days were numbered. He felt increasingly lonely on his own and started to drink more.

Four months later, after being encouraged by his sister to see his GP, Tim was able to talk about his feelings. Although he had been told that the melanoma was superficial and his prognosis was good, he had not taken in any of this information in the stress of the clinic and had focused on the word "melanoma" without hearing anything else. A simple and thorough explanation reassured him that he had a good prognosis. Seven years later he is well and disease free.

**What could have been done better for this patient?**

We know that during times of great stress, patients remember only small parts of information and this can often be distorted by focusing on unrealistically good news or on the possibility of complications.<sup>2</sup> You can help by providing patients with well written information. The charity Cancerbackup produces booklets about different types of cancer and helpful information on how to tell children about their diagnosis (<http://www.cancerbackup.org.uk>).

You can help patients deal with the isolation they feel and with their need for someone to support them through the early stages of their diagnosis and treatment by referring them to a Macmillan nurse. These nurses are often linked to specific practices. Patients are usually assigned a nurse specialist (for example a nurse who specialises in lung cancer) who is present at outpatient appointments and who can be a contact for patients wanting further information.

start chapter3 Chapter5 v... Chapter 3 v... Document1 ... EndNote X1 ... untitled - Paint Read, reflec... EN

## Appendix F: Sample e-learning formats: use of patient video

Source: <http://www.BMJLearning.com> - Read, Reflect Respond module  
- Use of patient video to promote experiential learning

BMJ

BMJ Journals

BMJ Careers

BMJ Learning

BMJ Knowledge

BMJ Group

Print

Save

Update your details

Signed in as:  
colette garry

Log out

Upgrade

GP CPD

In association with: Royal College of General Practitioners

Read, reflect, respond

Section 1 of 1

Clostridium difficile: in association with the Department of Health

start with the patient


your current practice

outbreak at Royal Devon & Exeter

lessons learnt

managing C difficile

final reflections



Duration 2 minutes

Move on to **your current practice** after you have watched the video.

To complete the module takes about 40 mins. No time to do it all in one go? Come back at any time and spend just a few minutes each to watch some of the video clips or answer questions.

Introduction

This module tells the inside story of the outbreak of Clostridium difficile at Royal Devon and Exeter hospital in 2005. It follows hospital staff as they struggle to cope with a new strain of C difficile.

To complete the module, click on each tab working from left to right, answering the questions and viewing the video clips.

Learning outcomes

On completion of the module you should know

- how to diagnose and treat patients with C difficile infections
- the importance of washing your hands in preventing this infection
- the importance of using antibiotics cautiously in preventing this infection and
- the importance of understanding the patient's experience when they catch a preventable infection

About 40 000 people in England develop C difficile infections every year.

Here is one person's story.

Next page

## Appendix G: Sample e-learning formats: pre-test assessment

Source: <http://www.BMJLearning.com> - Interactive Case History

The screenshot shows a Windows Internet Explorer browser window displaying an interactive case history for dementia diagnosis and assessment. The browser's address bar shows the URL: [http://learning.bmj.com/learning/flow.html?\\_flowExecutionKey=\\_c6AC1149-38C9-06AB-5C08-895F206ED8BA\\_k120087F6-7AF5-34EF-FE99-90DD63DF40A0](http://learning.bmj.com/learning/flow.html?_flowExecutionKey=_c6AC1149-38C9-06AB-5C08-895F206ED8BA_k120087F6-7AF5-34EF-FE99-90DD63DF40A0). The browser's menu bar includes File, Edit, View, Favorites, Tools, and Help. The toolbar contains various icons for navigation and document management. The main content area is titled "Interactive case history : Dementia: diagnosis and assessment" and "Section 2 of 16". The content is divided into two main sections: "Dementia: diagnosis and assessment" and "Pre-test". The "Pre-test" section contains two numbered questions, each with four multiple-choice options. The first question is about a 75-year-old man with a history of cellulitis and memory decline, and the second question is about a 70-year-old woman with a poor memory for two years. The browser's status bar at the bottom shows the "start" button, a taskbar with several open applications (chapter 3, Chapter 5 v..., Chapter 3 v..., Document1..., EndNote X1..., bmj rrr case ..., Interactive ...), and the system clock showing 14:16.

Interactive case history : Dementia: diagnosis and assessment - Windows Internet Explorer

http://learning.bmj.com/learning/flow.html?\_flowExecutionKey=\_c6AC1149-38C9-06AB-5C08-895F206ED8BA\_k120087F6-7AF5-34EF-FE99-90DD63DF40A0

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BMJ Interactive case history : Dementia: diagnosis and as...

Interactive case history Section 2 of 16

**Dementia: diagnosis and assessment**

**Pre-test**

1. A 75 year old man has been in hospital for six days after being admitted for cellulitis. His condition is improving and you are planning to discharge him in about three days' time. As part of the discharge planning process the occupational therapist speaks to the patient's wife, who says her husband's memory has been getting worse over the past year. He is also having trouble dealing with bills and shopping. His wife is concerned that her husband has dementia and asks to speak to you. What is the best course of action?
  - a. Acknowledge her concerns, say you will look into this, then proceed to an abbreviated mental test and screening blood tests including thyroid function and vitamin B12 and red cell folate levels
  - b. Acknowledge her concerns, but say that because the GP has known the patient for longer it would be better if they followed this up
  - c. Reassure her that some memory decline in old age is normal and this is unlikely to be dementia
  - d. Take a more detailed history and then assess cognition, screen for depression, and perform screening blood tests including thyroid function and vitamin B12 and red cell folate levels
2. A 70 year old woman has had a poor memory for two years that has been gradually getting worse. She lives alone. You take a detailed history and rule out depression. You decide you now need to do some cognitive tests. Which one of the following is an appropriate assessment at this stage?

## ***Appendix H: Information flyer for potential participants***

### **MSc. Research Study**

My name is Colette Garry and I am undertaking an MSc in Health Informatics in Trinity College Dublin. My thesis is concerned with dementia education for G.P.s and the potential role of e-learning (if any) in this education.

Research suggests that there are many barriers to early diagnosis and effective management of dementia e.g. lack of access to specialist services, late presentation of patients and lack of available treatment. Lack of relevant education has also been identified as a barrier and G.P.s themselves have expressed a wish for education in this area. Education may be delivered in a number of ways, one of which is e-learning. E-learning is defined as the use of the internet to deliver education (in the past, CD-ROMs may have been used). It is sometimes used in a blended approach i.e. incorporated with traditional teacher-led activities such as workshops or seminars.

**My thesis will explore the educational needs of G.P.s in the early diagnosis and management of dementia. It will also investigate if there is any demand for e-learning in this area.** In order to do this, I would like to conduct **telephone interviews** with G.P.s and would be very grateful if you would agree to participate. **The interview can take place daytime or evening, whichever time suits you best.** It will cover the following areas:-

- your level of computer experience (if any)
- your experience of e-learning (if any), either formal course or informal learning
- your experience of dementia and areas where education would be useful:-
  - e.g. issues in early diagnosis, management, dealing with patients/carers
- your preferences for what this education should entail:-
  - e.g. delivery of information, case-based analysis, communications training, peer collaboration, access to information sources
- how you would like to receive this education:-
  - e.g. attendance at a face-to-face event, e-learning, combination of both

All data collected will be anonymised and used solely for the purpose of my thesis.

If you would like to participate, I would be obliged if you could contact me at:-

Phone:-087-205-6888

Home: 045-892253

e-mail: [garryco@cs.tcd.ie](mailto:garryco@cs.tcd.ie)

Many thanks

Colette Garry

## ***Appendix I: Semi-structured interview protocol***

### **Introduction**

This interview is being conducted as part of an MSc Thesis in Health Informatics in Trinity College Dublin.

Research suggests that there are many barriers to early diagnosis and effective management of dementia e.g. lack of access to specialist services, late presentation of patients and lack of available treatment. Lack of relevant training has also been identified as a barrier and G.P.s themselves have expressed a wish for training in this area. The aim of this thesis is to explore **the educational needs of G.P.s in the early diagnosis and management of dementia**. This interview investigates what topics might be relevant and the preferred teaching and learning activities and supports. **It also explores whether G.P.s perceive a role for e-learning in this area**. E-learning is defined as the use of the internet to deliver education (in the past, CD-ROMs may have been used). It is sometimes used in a blended approach i.e. incorporated with traditional teacher-led activities.

The interview contains a number of questions but participants are encouraged to raise any other issues which they consider relevant. All data collected will be anonymised and used solely for the purpose of my thesis. You are free to withdraw from the interview at any time.

Date:

Participant number:

Time taken:

## **Appendix I (contd.) : Semi-structured interview protocol**

### **Part 1 – G.P. background information**

- a) Gender:-
- b) Practice type (single or group):-
- c) Age bracket :-
  - ☐ 30 or under
  - ☐ 31-35
  - ☐ 36-40
  - ☐ 41-45
  - ☐ 46-50
  - ☐ 51-55
  - ☐ 56-60
  - ☐ 61-65
  - ☐ over 65
- d) Number of years experience as a G.P.
- e) Approximately what percentage of your patients are over 65?
- f) Do you participate in regular CME training programs?
- g) Where is your practice located ?

## **Appendix I (contd.) : Semi-structured interview protocol**

### **Part 2 – IT skills and experience of e-Learning**

a) Do you use a personal computer:-

- ☐ at home?
- ☐ at work?

b) If you don't use a PC, why not (e.g. no need, dislike of technology)

c) How would you rate your computer skills:-

- ☐ non-existent
- ☐ poor
- ☐ adequate
- ☐ good
- ☐ very good

**If PC is not used at all, skip to question f)**

d) Do you use the internet:-

- ☐ at home?
- ☐ at work?

e) If you use the internet, what do you use it for? For example:-

- ☐ e-mail
- ☐ Access to medical information
- ☐ Access to medical journals and databases
- ☐ Discussion forums
- ☐ Web conferencing
- ☐ Social networking e.g. myspace, facebook, bebo
- ☐ Other (please elaborate)

f) Have you ever participated in e-learning (informal e-learning or a formal course)?

- a. If so, could you provide some detail on what it involved?
- b. What did you think of it?

**If G.P. has not participated in e-learning, skip to question i**

g) If not already discussed, did the e-learning include interaction with tutors/other students?

- a. If so, how was this achieved (e.g. via discussion board, e-mail, web conferencing, face-to-face meetings).
- b. What was your experience of this interaction ?

h) Is there anything which might have improved your experience of e-learning? (e.g. better materials, better IT skills, face-to-face sessions)

i) If you have not used e-learning before what have the barriers been?

## **Appendix I (contd.) : Semi-structured interview protocol**

### **Part 3: Experience of dementia and prior training**

- a) Do you manage many patients with dementia? If so, approximately how many?
- b) Have you been involved in the diagnosis of dementia?
- c) Have you had any postgraduate training in dementia? If so:-
  - a. could you briefly describe what this training involved (e.g. lectures, case-based analysis)
  - b. What did you think of it?
- d) Have you any non-professional experience of dementia e.g. do you know someone with dementia?



## **Appendix I (contd.) : Semi-structured interview protocol**

### **Part 4 – Dementia Education – determine what topics are relevant**

- a) Would you like to receive education about the early diagnosis and management of dementia?
- b) If not, why not?

#### **If education is not required, end interview**

- c) In what areas would education be relevant for you e.g. issues in diagnosis, management, dealing with patients and carers (please provide as much detail as possible)

If not mentioned, would you like to receive education in any of the following areas:-

- ☐ Early signs and diagnostic triggers for dementia
- ☐ How to differentiate between dementia and other conditions e.g. delirium, stress, normal aging losses
- ☐ How to perform a differential diagnosis
- ☐ How to use screening tools e.g. MMSE
- ☐ How to disclose the diagnosis
- ☐ Pharmacological interventions
- ☐ Non-pharmacological interventions
- ☐ Referral criteria– when to refer to specialists
- ☐ Carers needs
- ☐ Support services for patients and carers
- ☐ Medico-legal issues

- d) In what area(s) is education most important for you?

## **Appendix I (contd.) : Semi-structured interview protocol**

### **Part 5 – Dementia Education - G.P.s preferred teaching and learning activities and supports**

- a) Bearing in mind the educational topics which are relevant for you, what type of teaching and learning activities would you prefer (e.g. lectures, case-based analysis, role-plays). Please provide as much detail as possible.
- b) G.P. education often involves collaboration with peers.
  - a. What are your thoughts on this?
  - b. Do you think it would be useful in dementia education?
- c) What type of learning support materials would you find useful (e.g. access to reading material, research journals and databases, clinical guidelines, sample questions for testing patient legal or driving capacity).

## **Appendix I (contd.) : Semi-structured interview protocol**

### **Part 6 – eLearning and Dementia Education**

- a) If you would like to receive education in dementia, how would you like it to be delivered e.g. via e-learning, face-to-face education or a combination of both (i.e. blended learning).
- b) Why do you prefer this format?
- c) If e-learning is preferred, would you like online interaction with tutors/follow students? Do you have any preferences for how this should be achieved e.g. real-time versus asynchronous methods?
- d) E-learning can offer adaptivity whereby the learning environment is tailored to your needs e.g. to your preferred educational topics, learning activities and level of experience. What are your thoughts on this?

## ***Appendix J: Mapping of Learning Outcome Verbs to levels of Bloom's (1956) Taxonomy***

### **Outcome Type**

- Affective
  - Aesthetic appreciation
  - Appreciate
  - Awareness
  - Commitment
  - Ethical awareness
  - Listen
  - Moral awareness
  - Responsive
- Cognitive
  - Analysis
    - Analyse
    - Break down
    - Compare
    - Compare and contrast
    - Critique
    - Differentiate between
    - Distinguish between
    - List components of
    - Predict
    - Select
  - Application
    - Apply
    - Assemble
    - Calculate
    - Construct
    - Demonstrate
    - Hypothesise
    - Infer
    - Investigate
    - Produce
    - Select
    - Solve
    - Translate
    - Use
    - Write
  - Comprehension
    - Clarify
    - Describe reasons for
    - Explain
    - Identify
    - Identify causes of

- Illustrate
  - Question
  - Understand
- Evaluation
  - Criticise
  - Evaluate
  - Feedback
  - Give arguments for and against
  - Judge
  - Reflect
- Knowledge
  - Draw
  - Find out/discover
  - List
  - Pronounce
  - Recall
  - Recite
  - Recognise
  - Reproduce
  - Select
  - Specify
  - State
- Synthesis
  - Argue
  - Design
  - Explain reasons for
  - Generalise
  - Organise
  - Summarise
- Psychomotor
  - Draw
  - Exercise
    - Jump
    - Run
    - Swim
    - Throw
  - Make
  - Perform
  - Play

**Source: the DialogPlus Toolkit available at**  
**<http://www.nettle.soton.ac.uk/toolkit/modules/Outcome.aspx> accessed on 1/6/08**

## ***Appendix K: User Validation Form for Support Framework***

### **MSc. Research Study**

#### **Validation of framework for dementia education**

As you know I am conducting a research study to investigate the educational needs and preferences of G.P.s in Ireland in the area of dementia diagnosis and management. I am also investigating the potential role of e-learning in this education. As part of this study, I performed a series of interviews which indicate that education is required in the following areas:-

- Early signs and diagnostic triggers
- Differentiating between dementia and other conditions
- Differential diagnosis
- Screening tools
- Disclosing the diagnosis
- Referral Criteria (diagnosis and management)
- Interventions (pharmacological and non-pharmacological)
- Carers needs/Support services
- Medico-legal issues
- Handling other medical problems in patients with dementia

I am proposing that what is needed is an environment which will offer dementia education “just for you” which is tailored to the G.P.’s competence level, required skills, learning outcomes, current context, etc.

- It will allow the G.P. to identify their learning needs within the area of dementia (i.e. areas where education is required - current level of competency).
- It will then engage the G.P. in a number of learning activities and supports (as outlined below \*\*\*), based on their preferences or the time available to them. These will be appropriate to the G.P.s level of competency.
- Formative assessments will be included where appropriate e.g. after an overview or case-based analysis.
- A summative assessment will be performed when all learning outcomes for a particular competency level have been achieved.
- If passed, the G.P. can stop at that level or move on to a higher level of competence (unless the current level is the highest).

The above scenario describes an environment providing a course of formal accredited CME in dementia. For G.P.s who want a more informal option (e.g. for revision or “just-in-time” education), this environment can be adapted to allow them to select education on specific topics (e.g. medico-legal issues) and complete an assessment afterwards if they so wish.

G.P.s have expressed an interest in receiving education in dementia via exclusive e-learning or blended education (e-learning plus face-to-face sessions). In an exclusive e-learning situation, the environment may be implemented as follows:-

- Initial assessment of learning needs may be done online.
- Activities and supports may be provided online e.g. interactive case-based analysis. Tools such as discussion boards, web conferencing and e-mail may be used to provide interpersonal interaction with other G.P.s on the course and specialists.
- Assessments may be performed online, giving immediate feedback and automatically updating the G.P.s learning needs.

For a blended learning option, face to face activities can be combined with the above (using as much or as little of the e-learning aspect as required) e.g. activities such as case-based analysis may be performed online or e-learning may just provide the learning materials e.g. background reading, case details.

**Do you think that these options provide acceptable solutions for CME in dementia?**

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**Relevant learning activities and supports for dementia education**

\*\*\*

**Activities**

- Didactic
  - Lectures
  - Overviews
- Interactive/experiential
  - Case-based analysis
  - Role-play (skills modelled by others or role play involving G.P.)
  - Focus groups with carers
- Interpersonal
  - Small group learning
  - Round table discussions
  - Discussion with specialists

**Supports**

- Background reading material
- Clinical guidelines
- Research journals and databases
- Sample questions (assessing capacity for driving or making will, patient history)
- Information on Support Services