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Demonstrating critical analysis in academic assignments

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Aims and intended learning outcomes

Registered nurses and other qualified healthcare professionals engage in critical thinking in their day-to-day work activities to ensure that they take an analytical approach to clinical decision making. Critical thinking, and the closely related concept critical analysis, are skills learned over time in the practice setting, as well as in the classroom. However, some professionally competent staff who attend post-registration courses, and some pre-registration student nurses, can take a while to develop the skill of articulating critical analysis in academic assignments. Others achieve it only to a certain extent. This article will detail critical perspectives and guide students on the skill of critical thinking. After reading this article you should be able to:

- Locate critical thinking in a hierarchy of learning levels.
- Identify what constitutes critical thinking in an academic assignment.
- Discuss various instances where nurses use critical thinking in day-to-day decision making.
- Discuss why critical thinking and associated terms are important in the delivery of nursing care.
- Demonstrate critical thinking in your own academic assignment writing.

Two practical examples of when a nurse uses critical thinking are as follows:

- An 11-year-old child has been in hospital for two weeks for medical investigations. The time for the child's discharge is approaching, but he states that he has a severe headache and suggests that he should stay in hospital for longer. The nurse needs to consider the various reasons why the child is making this statement.
- A semi-conscious patient is brought into the emergency assessment unit following a car crash. The nurse responds to this situation by considering a range of possible actions that could be taken and their likely consequences.

Introduction

There are instances when students' assignments are given low marks by academic staff because they have not demonstrated the required level of critical analysis for the particular level of study. Alongside critical analysis, students are also expected to demonstrate synthesis, another term with which most nursing or midwifery students should be familiar. All students have to address these issues if they are to progress and satisfactorily complete the course.

It could be argued that experienced nurses already engage in substantial levels of critical analysis and synthesis in daily clinical functions (Docking 1994, Miller 1992). Brown and Sorrell (1993) suggest that critical analysis is a skill that nurse education (directly and indirectly) aims to help students develop. For these reasons, this article examines these concepts and highlights how nursing students can demonstrate these skills in their academic scripts.

Critical thinking is 'the rational examination of ideas, inferences, assumptions, principles, arguments, conclusions, issues, statements, beliefs and actions' (Bandman and Bandman 1988). This notion and critical analysis are explored in more detail in

In brief

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Summary
Nurses use critical analysis skills in their day-to-day practice, but many find it difficult to transfer these skills to academic course work. The author offers advice on how these skills can be developed and applied to academic assignments.

Key words
- Education: assessment
- Professional development
- Study skills

These key words are based on subject headings from the British Nursing Index. This article has been subject to double-blind review.

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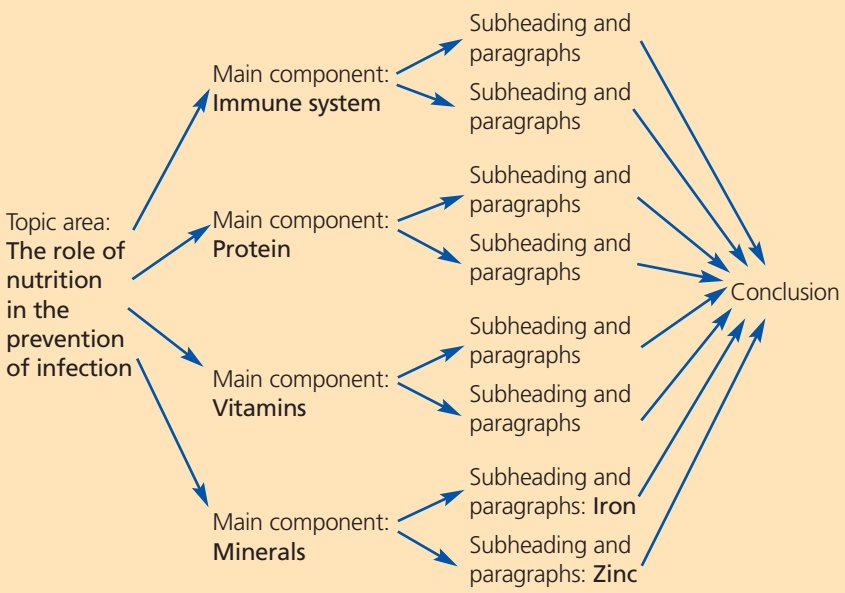
Study skills

Figure 1. Connections between the topic area, its components, subheadings and paragraphs



A recently published CPD article (Ward 2002) provides a good example of how a topic area connects with its main components and subheadings. There are nine main components: immune system, protein, vitamins, minerals, other nutrients, over-nutrition and infection, increased risk of poor nutritional status, nutrition in hospital, and immunosuppression. The subheadings under minerals include iron and zinc, as shown

the section entitled 'Analysis, critical analysis and critical thinking' on page 48.

Critical analysis in academic assignments

Critical analysis is one of several aspects that need to be incorporated in an academic script. Other crucial elements include ensuring that the script focuses wholly on the question to be answered or the title of the assignment, correct construction of the introduction and conclusion, paragraphing and arguing the points being made, referencing, and the general presentation of the script. It should also demonstrate knowledge, understanding and the application of the topic to nursing situations, as well as synthesis and evaluation.

The notion of an academic assignment or essay is derived from the Latin word *exagium*, which means 'weighing' (a concept or topic area) and essay, which means an attempt to do this; this is subsequently constructed and presented as a case. When incorporating these concepts in academic assignments, the student needs to present a good range of arguments that focus on the inherent components of the topic area in an analytical and reflective manner. These aspects are usually composed in the main body of the script, as paragraphs grouped under subheadings. General guidance on paragraph construction (University of Central England 2001) indicates that a paragraph comprises between five and eight sentences wherein a new idea or aspect of an argument is developed. It consists of:

- A sentence stating the main idea.
- A definition or explanation of any new terms used.
- Critical analysis of the idea.
- Evidence of assertions, statistics, etc.

The components argued in the paragraphs under a heading lead to conclusions being drawn from them, synthesis of something new and possibly evaluation. Maslin-Prothero (1999) suggests that: 'an argument is a claim or proposition put forward with reasons or evidence supporting it'. For example, nurses should always wash their hands using the correct procedure because not doing so can result in a raised incidence of hospital-acquired infections.

Maslin-Prothero adds that the student needs to put forward a point of view in a structured way and offer evidence to persuade the reader that the point of view is the correct one. Hart (1998) notes that an argument involves putting forward reasons to influence someone's belief that what is being proposed is in fact the case. This is similar to the concept of critical reasoning which Thomson (1996) suggests 'is centrally concerned with giving reasons for one's beliefs and actions, and with analysing and evaluating one's own and other people's reasoning'.

Figure 1 illustrates the connections within an essay between the topic area, the main components and relevant headings. The script needs to be critically analysed at the level of the whole topic area, the main components and the subheadings or subsections, depending on the word limit set for the script. Fuller guidance on structuring essays is provided by Booth (1996) and Fairbairn and Winch (1996), and guidance on referencing using the Harvard method is offered by Gopee (1999).

The weakness at times reported in academic scripts at higher education levels 1, 2 and 3, however, tends to be in critical analysis. Lecturers' feedback comments on scripts given low marks include terms such as 'descriptive' and 'not critically analysed'. Thus, a script that includes critical analysis goes beyond being descriptive to being analytical and reflective. Furthermore, the critical analysis of the topic area needs to be demonstrated at a specified level, consistent with the academic level of study being undertaken. Jones and Brown (1991) indicate that the difference between diplomates and graduates is in the different levels of critical thinking.

TIME OUT 1

We have referred to different levels of challenge – those associated with study at university levels 1, 2 and 3. It is assumed that as you progress up through the levels, so your thinking will deepen. Choose a nursing topic (for example, 'the heart and blood pressure') and then try to write three statements about it, each of which demonstrates a deeper form of critical thought and, by inference, learning. Why is your last statement deeper than the first?

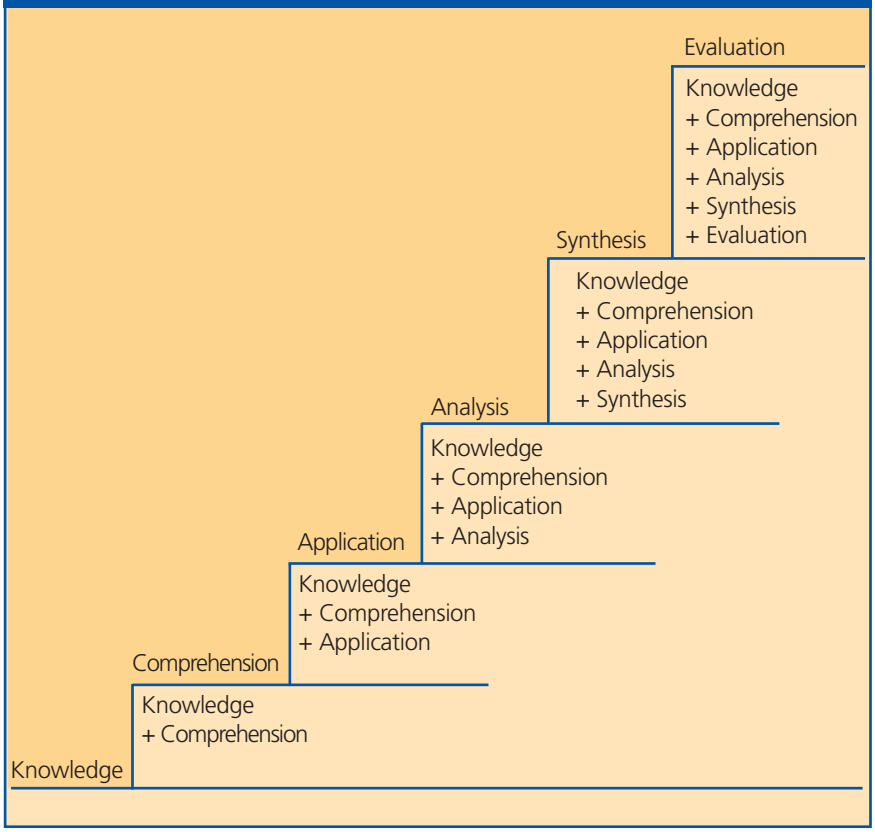
Bloom's (1956) hierarchy of learning – that is, knowledge, comprehension, application, analysis, synthesis and evaluation – is illustrated in Figure 2. Other ways of looking at levels of learning include the degree of detail in which a topic is discussed, or the 'surface' and 'deep' learning concepts suggested by Ramsden (1988).

Marton *et al* (1997) explain that the deep approach refers to the student understanding ideas for him- or herself by relating ideas to his or her previous knowledge and experience, becoming actively interested in the course content, and examining logic and arguments critically. Surface approach, on the other hand, is more a matter of coping with course requirements by studying without reflecting on the purpose of the lecture or course, memorising facts and procedures routinely, and treating the course as unrelated bits of knowledge.

An adaptation of Bloom's (1956) levels of learning needs to be evidenced by students in their academic scripts.

Demonstrating the six levels of learning Knowledge is the most basic level of learning, in which students show recall of specific facts, classifications, categories and sequences or methods in the topic area they are learning about. It is a significant component of student assessment, for example, when they have to demonstrate knowledge of human biology or research methods. Comprehension refers to understanding and interpretation of the topic area, and can be shown by students explaining this knowledge in their own words, or paraphrasing or summarising it, while maintaining the intent of the original writing. It answers the question 'why' certain things happen or certain actions are taken, and their possible implications and consequences. Application occurs when students apply knowledge and understanding to 'real life' situations such as patient care. Analysis entails the ability to break down information into its component parts and explain the relationships between elements and the whole. Its purpose is to separate the important aspects of information from the less important ones, thus clarifying their meanings. Synthesis requires students to re-combine various components of the topic area into a newly reconstructed whole. Students thereby use creativity in producing something unique, such as a plan, a design or a proposal. Evaluation implies the ability to make judgements regarding the value of material. These can be quantitative or qualitative (Bloom 1956) and could involve the use of criteria.

Figure 2. Six hierarchical levels of learning in the cognitive domain (Bloom 1956)



Assessment criteria Box 1 gives an extract showing how students are expected to demonstrate these levels of learning in their assignments. It includes most of the assessment criteria for higher education level 2 scripts. Levels of learning are related to the marking criteria of assignments: diploma level scripts, for instance, are marked against diploma level marking or assessment criteria. At their simplest, marking criteria are devised to reflect the challenge set at each academic level. At higher academic levels the critical thinking challenges are more difficult. It is important, therefore, to read assignment guidelines carefully and to work with the teaching offered during the module. This should illustrate forms of critical thought that are valued.

Students who wish to attain a clear pass in their assignments need to comprehend fully the appropriate assessment criteria. It might not be immediately apparent, but, as well as other assignment expecta-

Study skills

Box 1. Extract from assessment criteria for achieving 70 per cent at level 2 (higher education) in a nursing script

- Clear demonstration of analysis and reflection
- Clearly demonstrates critical understanding of literature and relevant research, which are used effectively
- Theory and practice are clearly integrated
- Ability to analyse theories, concepts and principles and incorporate them in the practice of nursing
- Demonstrates how the material presented contributes to the practice of nursing
- Ability to analyse own assumptions, values and ideas in a constructive argument
- Ability to assess the strengths and weaknesses of the points of the arguments presented
- Conclusions lead to appropriate recommendations

(Coventry University 2001)

tions set by the particular university, the criteria firmly reflect Bloom's levels of learning. For example:

- 'Theory and practice are clearly integrated' signifies the 'application' level of learning.
- 'Ability to analyse and incorporate theories, concepts and principles to the practice of nursing' signifies application, analysis and synthesis.
- 'Demonstrates how the material presented contributes to the practice of nursing' signifies application and synthesis.
- 'Conclusions lead to appropriate recommendations' signifies synthesis.

Analysis, critical analysis and critical thinking

Analysis is one of Bloom's (1956) six levels of learning within the cognitive (knowledge) domain of learning; the other two domains being psychomotor (skills) and affective (attitude). Analysis involves breaking down information into its component parts and examining the relationships within those parts and with the whole. By doing this, the student shows the ability to differentiate and distinguish between components or elements of the topic area.

Docking (1994) suggests that critical analysis constitutes: 'the use of critical thinking for a particular task'. If this is so, what is critical thinking? Jones and Brown (1991) assert that critical thinking entails an orientation based on reflective thought and 'a tolerance for ambiguity rather than on linear problem-solving'. Booth (1996) indicates that demonstrating critical thinking involves:

- Presenting a range of alternative viewpoints and appreciating that there can be many equally valid interpretations of the issue.
- Challenging accepted knowledge, practice and values.
- Ascertaining the argument's relevance to the context.
- Offering new possibilities and explanations.
- Making an informed commitment to one perspective in relation to the context.

Quinn (1995) notes that unlike criticism, critical thinking is a positive activity that is necessary for growth and development. English dictionaries refer to the word critical as meaning 'decisive, crucial' or 'a turning point'. Furthermore, both Miller (1992) and Quinn (1995) indicate that critical thinking seeks to consider other possibilities and new ideas.

Jones and Brown (1991) report on a study of perceptions of critical thinking by senior academic nursing staff, and conclude that they viewed it as a variant of the scientific method. Docking (1994) notes that critical thinking is one of the skills required for systematic enquiry and research critiques. She observes that critical thinking overlaps with critical analysis and critical evaluation. Edwards (1998) notes that critical thinking can also be referred to as reflective thinking.

'Critical practice' is another term related to an open-minded reflective approach, which Brechin *et al* (2000) discuss, with reference to clinical practice. They indicate that critical practice is built on a sound skills and knowledge base, which has taken account of different perspectives, experiences, assumptions and power relations. It acknowledges, therefore, that there are no 'right' answers and entails respect for alternative ways of seeing things.

Edwards (1998) distinguishes between the terms critical thinking and critical analysis, and notes that the literature refers mostly to critical thinking. She argues that the absence of widely available agreement on the interpretation of the concept of critical analysis can make it difficult for students to comprehend and demonstrate it in their scripts.

Brechin *et al* (2000) suggest that critical analysis 'can be seen as the critical evaluation of knowledge, theories, policies and practice, with an in-built recognition of multiple perspectives and an orientation of ongoing enquiry'. Docking (1994) notes that the end result of critical analysis is a decision that can be fully justified professionally. It is based on the notion that critical analysis goes further than 'analysis' in that the analyser has to consider 'all' components, which the word analysis does not necessarily indicate. It is more focused and more thorough and leads to new understanding, and a possible action plan or synthesis.

TIME OUT 2

Reflect on a clinical episode of your choosing. Evaluate what you think was happening and then invite a colleague to reflect on the same incident. What within your subsequent discussion might lead you to conclude that you were both thinking critically, in the academic sense described above? What distinguishes critical thought from opinion in such circumstances?

Critical thinking in clinical practice

There are many benefits to critical thinking – an activity that is also part of the general aims of higher education (NCIHE 1997). Girot (2000) observes that 'critical thinking is a requirement for nurses to be safe, competent and skilful practitioners'. Conger and Mezza (1996) also indicate that critical thinking relates to thinking and reasoning skills that are needed to make clinical decisions. Booth (1996) explored the literature and concluded that critical thinking relates to higher order thinking, which encourages organised thinking and a reasoned point of view. These skills are vital for nursing practice. However, Edwards (1998) acknowledges that nurses do not have to study in higher education to develop the ability to think critically.

TIME OUT 3

What do you deduce might be the specific benefits of critical thinking in your area of clinical practice? You could think of this in relation to a particular patient with an actual or potential health problem.

Jones and Brown (1991) note that nursing decisions are often made after consideration of alternative points of view and contradicting lines of reasoning – activities consistent with the notion of critical thinking. Referring back to the activity in Time Out 1, a simplistic and brief example of levels of learning related to 'the heart and blood pressure' is presented here to illustrate how cognitive levels of learning – that is, the development of intellectual abilities or skills (Bloom 1956) – could be acquired:

- Knowledge – knowing the anatomy and physiology of the heart and that pressure is exerted on the blood vessels each time the heart pumps a certain volume of blood through them.
- Comprehension – essential ingredients such as glucose and oxygen need to be transferred to every tissue in the human body; to do this, the heart beats rhythmically at approximately 60 beats a minute, generating a blood pressure (BP) of approximately 110/70mmHg.
- Application – awareness that the BP level can change for a variety of reasons, which might include diseased organs, and of its significance for patient care.
- Analysis – when a person has high BP, the nurse needs to consider the whole range of reasons for this.
- Synthesis – designing, and advising the individual on, a set of actions to take to reduce the BP, and explaining the effects of unstable or high BP on the basis of the individual's unique aetiology and perceptions of high BP.
- Evaluation – ascertaining the value of these actions, the skills required and the compliance of the patient.

To develop a critical analysis approach to learning about 'the heart and blood pressure' in the cognitive domain, the nurse should undertake the activities listed in Box 2. These points constitute inherent components of critical analysis. Moreover, it was indicated earlier that clinicians use critical thinking and reflection-in-action quite regularly in their day-to-day patient care activities. Docking (1994) presents a good example of critical analysis in relation to a patient who had undergone an uncomplicated surgical procedure five days earlier and was complaining of a great deal of wound pain. Following critical analysis, the clinical decision made to resolve the pain might still include administering analgesia, but this decision would be a more informed professional decision in contrast to reacting with the assumption that if a patient has pain then administering analgesia will automatically resolve the problem.

TIME OUT 4

Falls in older people are currently identified as a major health issue in the UK. Do a critical analysis of this topic area using the seven components inherent in critical analysis presented in Box 2. Alternatively, a BBC news item in January 2002 reported on a survey identifying a marked increase in alcohol intake among British women. Do a critical analysis of this topic, again using the components in Box 2.

Several perspectives on falls in older people have been presented by Biley (2001), for example, as well as in the National Service Framework for Older People (DoH 2001). But how does the student demonstrate critical analysis in academic scripts?

Box 2. Activities involved in critical analysis

1. Identify and examine all component parts or elements of the topic or situation. In this case it might be high blood pressure (BP)

2. Identify and select existing knowledge and information about high BP and the particular patient

3. Examine and recognise the relationship between the elements and their functions

4. Ascertain the context in which the topic is being explored – that is, the particular patient and his or her lifestyle, beliefs, and understanding about health

5. Identify and challenge assumptions for accuracy and validity – for example, BP might be expected to be a little higher with age

6. Imagine and explore alternatives – for example, the different ways in which the patient can keep his or her BP at a reasonable level

7. Draw conclusions about the situation and make a (clinical) decision

Study skills

Developing critical thinking and critical analysis skills

Brookfield (1987) suggests that critical thinking is a skill that the individual acquires over a period of time. Critically analysing any nursing situation incorporates several critical thinking skills or competencies. According to Niedringhaus (2001), these competencies are interpretation, analysis, evaluation, inference, explanation and self-regulation.

TIME OUT 5

Discuss two instances when nurses use critical thinking in day-to-day decisions. This does not have to be a hands-on patient care situation. Then ascertain the reasons why critical thinking was necessary.

Nurses engage in critical thinking when teaching patients (health education), in critically evaluating research, and when managing and organising care.

A framework for critical analysis Sullivan and Decker (1997) propose a model for critical thinking, which encompasses problem-solving, decision making and creativity. It constitutes a systematic approach inherent within the problem-solving approach to nursing, a feature also identified by Jones and Brown (1991). To transfer the skills to an academic assignment, students might first need to recognise that they are already able to exercise these skills during day-to-day nursing activities, and then begin to articulate these within the academic script.

The discussion so far also indicates that demonstrating critical analysis involves taking into account Bloom's (1956) six levels of learning. This holistic nature of critical analysis was suggested by Edwards (1998) in a ten-point model, which appears to signify that critical analysis goes beyond Bloom's analysis, and incorporates application and possibly synthesis along with knowledge, comprehension and evaluation. Mottola and Murphy (2001) present a four-item critical thinking framework entitled 'antidote dilemma activity', which does not seem to articulate how the student demonstrates critical analysis in academic scripts. Jones and Brown (1991) found that there was no standard model for critical thinking, despite it being seen as part of a standard reasoning process in clinical decision making.

On critically reviewing the nursing and general literature on critical thinking and critical analysis, including published research and the writings of key thinkers, it emerges that the exact activities involved in critical analysis consist of the components identified in Box 2. A seven-factor framework of critical analysis was developed using Bloom's (1956) taxonomy, the competencies identified by Niedringhaus (2001) and Brookfield's (1987) components of critical thinking (Box 3). This is also a usable model for demonstrating critical analysis in academic scripts, as illustrated in Figure 3. Factors 1 and 2 focus predominantly on knowledge of the topic area, factors 2 and 3 on comprehension, factors 4 and 5 on application, factors 5 and 6 on analysis, and factor 7 on synthesis.

A full critical analysis would depend on the use of all or most of these factors. The knowledge referred to in item 2 would be derived from several sources, as identified by Carper (1978), who argues that nursing knowledge consists of scientific, technical or factual knowledge, personal knowledge, aesthetic knowledge, and ethical or moral knowledge. These categories of theoretical knowledge would already exist in the practitioner's repertoire of professional expertise, or they might be available in protocols, guidelines, learning resources or reference material in the clinical setting itself and from appropriate experts.

TIME OUT 6

Consider the activity in Time Out 4 when you critically analysed 'falls in older people' or 'alcohol intake among women'. Try to see how well the seven-factor framework enables you to do a critical analysis of the topic area.

In relation to falls in older people, the following components could be considered under the seven factors:

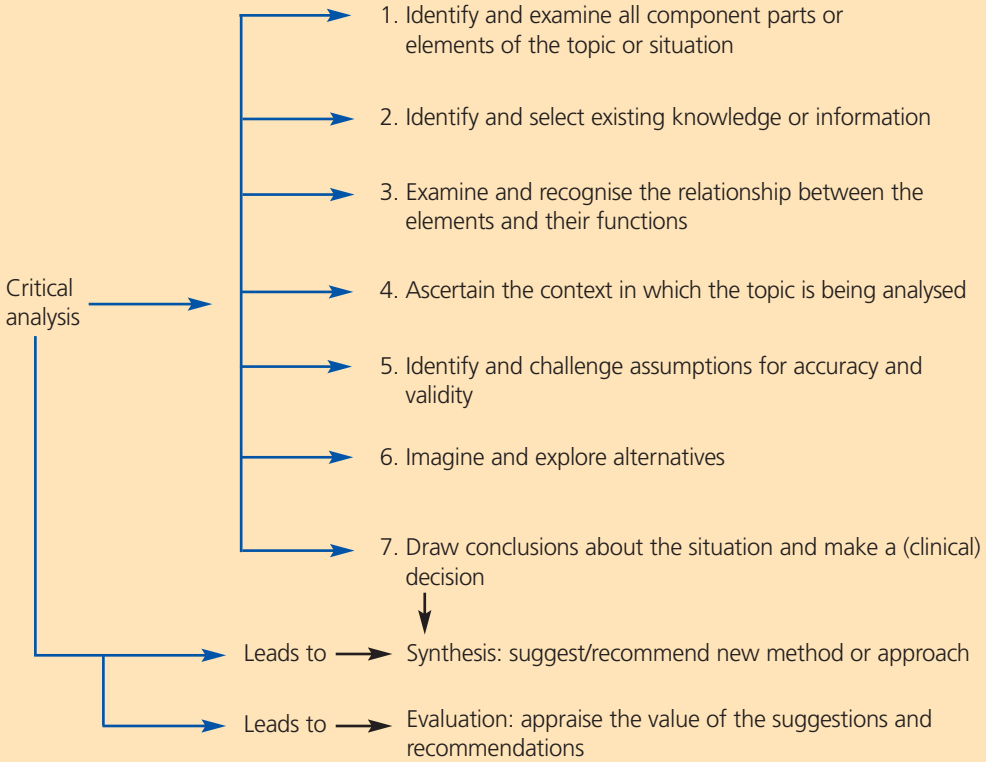
1. The notion of 'falls in older people' can interface with various elements, including weaker bones, uneven pavements and so on.
2. The literature – for example, the *National Service Framework for Older People* (DoH 2001) – shows that more than 400,000 older people attend A&E departments following an accident each year in the UK. This is a large number, but the document asserts that most falls do not result in injury.
3. Do the elements within items 2 and 3 influence each other?
4. The context could entail caring for older people in their own homes, their general safety in public places, shorter-term problems such as breathlessness, or possible chronic illnesses.
5. It might be assumed that many older people can be expected to have weaker bones and weaker eyesight.

Box 3. Four components of critical thinking

- Identifying and challenging assumptions
- Becoming aware of the importance of context in creating meaning
- Imagining and exploring alternatives
- Cultivating reflective scepticism

(Brookfield 1987)

Figure 3. A seven-factor framework for critically analysing a health topic or issue



6. An alternative view might be that they might have perfect eyesight or eyesight that is deficient to an extent that it can be fully corrected and restored through appropriate measures.
7. Ways of resolving this issue might include ensuring that all people who fall are assessed by the specialist falls services or the 'single assessment process for older people' (DoH 2002). The plan of action might include an individually tailored exercise programme.

TIME OUT 7

Critically analyse one healthcare issue that is currently of general interest, such as breast or testicular cancer, or a nursing topic such as the rehabilitation of a stroke patient, using the seven-factor framework presented in Figure 3.

The seven-factor framework should have enabled you to analyse the situation critically and could lead to the formulation of an individualised care plan or care pathway.

Synthesis If the arguments presented above constitute critical analysis, then what is the role of synthesis? The word is derived from the verb to synthesise, which means to put together or combine into a complex whole or to make up by combination of parts or elements. According to Bloom (1956), synthesis entails putting together a number of elements or parts to form an integrated new whole. Rolfe (1997) indicates that synthesis refers to the building up of something new from a variety of components. Rolfe (1997) also suggests that good teaching is a form of synthesis, in that the teacher (for example, the nurse teaching a health education component to a patient) pulls together knowledge and opinion from a variety of sources and offers it as a coherent package. Similarly, articles written by nurses and nurse lecturers also constitute synthesis.

Pinch (1995) found that synthesis is a skill that some students are unable to master. It is, however, an exercise that enables students to engage in creative thinking as they compile or combine various parts into a new kind of whole. The student could therefore demonstrate synthesis by presenting a plan of care using data from the assessment process, or by critically analysing aspects of the *NHS Plan* (DoH 2000) and designing an innovative approach to care delivery for a particular group of patients.

Synthesis is, therefore, not such an unfamiliar activity; students on any course should expect to have to synthesise their learning from the course. It can also be considered as either integral to, or the outcome of, critical analysis.

Study skills

TIME OUT 8

How do you interpret the assignment marking criteria for assessing an academic script for a particular level, such as the one presented in Box 1?

You could think of the criteria in conjunction with the different elements in Figures 1, 2 and 3 in relation to a chosen assignment topic and work with a course peer or a colleague. Pair up, preferably with someone with whom you have not yet discussed your assignment. Evaluate your script by explaining how far you are with the assignment, and how far the marking criteria, or the elements of the seven-factor framework, have been addressed. This should generate further thoughts. After discussion with a peer or colleague, make notes on the course of action you should take next. This might include further literature searching.

The factors inherent in critical analysis need to be demonstrated clearly in the assignment by ensuring that the framework's components have been addressed. However, scripts should be adjusted in accordance with the marking criteria for the relevant academic level of learning. For example, at level 3 and higher, increased critical analysis is expected along with particular orientation towards using research- or evidence-based literature, which according to Bloom (1956) encompasses evaluation.

Conclusion

Demonstrating critical analysis in academic scripts is a skill that individuals can develop over a period of time. Nurses should recognise, however, that they are already using critical thinking skills in day-to-day patient care activities to ensure an informed and professional approach to care delivery. Research reports, for example, are appraised and critically analysed before they are implemented in practice. Understanding the levels of learning developed by Bloom is essential to comprehending the nature of critical analysis. Adopting the seven-factor framework approach to critical analysis should help to ensure that the six levels of learning are achieved. This could enable the development of critical thinking skills and ensure that critical analysis is incorporated in academic scripts

TIME OUT 9

Now that you have completed the article, you might like to think about writing a practice profile. Guidelines to help you write and submit a profile are outlined on page 55.

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