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The Effects of Test-Wiseness Training on Nursing Students' Achievement Scores and Attitudes Towards Multiple Choice Tests

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Abstract

The Effects of Test-Wiseness Training on Nursing Students' Achievement Scores and Attitudes Towards Multiple Choice Tests.

Elizabeth Carswell

This study analyzed the effects of test-wiseness training on students' achievement scores and attitudes towards test-taking on multiple choice tests.

Thirty-nine second year Nursing (diploma) C.E.G.E.P. students were assigned to one of three treatment groups. The two independent variables were the two different types of specific instruction and a control (lecture, self-instructional module and control), and time. The dependent variable was measured by test score results on quiz 1 (pretreatment), and quiz 2 (immediately posttreatment) and the final exam (delayed test). The lecture format and programmed instructional module contained identical information, the only difference being in mode of delivery, i.e., verbal vs. print. The control group was offered the programmed instructional module following quiz 2. Attitude questionnaires were completed by all students prior to quiz 1 and immediately following quiz 2 in order to elicit attitudes towards test-taking.

Results revealed that although the module group achieved slightly higher scores on quiz 2, the lecture group did not. Furthermore, the effect was short-term. Students who attained high scores maintained them and appeared to already possess test-wiseness skills whereas low-scoring students reported difficulties with anxiety and indecision. Attitudinal data reflected some fundamental concerns related to the curriculum, and they expressed the need to view tests and test-taking in relation to teaching and learning.

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Last but by no means least, I am indebted to the nursing students of John Abbott College, past, present and future without whom this research would not have been possible and to whom of course, this study is dedicated.

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CHAPTER ONE

RATIONALE

Introduction

It is often argued that marks are not always a true reflection of the student's academic ability; not because of knowledge deficiencies but because of an apparent inability to communicate knowledge via the standardized evaluation process, e.g., the multiple choice examination. This seems to be the case in the nursing programme at John Abbott College, where a significant number of students receive lower test scores than they expect (although they are not necessarily failing the examinations).

In a recent study, Condon (1986) developed a method of exam analysis described as "a diagnostic and prescriptive procedure" (p. 6). This endeavour was introduced in order to identify reasons for poor performance on multiple choice tests in nursing students. Four main problem areas were delineated:

1. inadequate English language skills
2. inadequate knowledge of subject matter
3. exam anxiety
4. ineffective exam-taking skills.

These factors are certainly evident to varying degrees within our student population. For example, approximately 60% of students entering the nursing

programme come directly from high school and there is an increasing number whose mother tongue is not English. These difficulties are compounded when one notes that a greater number of individuals are now studying on a part-time basis. Finally the interrelatedness of the above factors becomes even more of a problem for those who have been away from the traditional educational setting for several years as they may suffer significantly from all of the above. It is also interesting to note that while many of our students appear to have good study habits, are able to answer questions when asked verbally, and perform satisfactorily in clinical situations, they achieve only low/average scores on multiple choice tests. Part of this problem as identified by Condon (1986) is due to the fact that a large proportion of the questions on nursing tests consist of situational types of problems designed to "measure application of information to practice" (p. 3). This becomes problematic for the student who has difficulty in using learned material in a new situation. The student may have the requisite knowledge involved in taking a temperature but when asked to apply that knowledge to a more complex set of circumstances such as taking the temperature of an unconscious patient, the student may have difficulty

with processing the information.

As a personal observation, last semester I helped a student to incorporate test-wise strategies into her examination skills. She subsequently raised her mark from a C to a B+ average. After failing two previous tests, she received an 88% on the final examination. She later told me that she was no longer so "scared" of tests. Her strategies for the final examination were:

1. study very thoroughly before the test
2. organize time
3. answer all of the questions
4. never change any answers.

She also commented that she now felt challenged and motivated in test situations.

Multiple Choice Tests

Why do we use multiple choice tests? The most important advantage of this method of testing is that it permits reliable measurement of an extensive sample of course material. Multiple choice tests consist of specific questions which require brief answers. They are flexible and thus can be adapted to a variety of teaching goals and subject areas. They can be used to measure different levels of skills and abilities. Some items assess the ability to recall facts i.e., knowledge, while others measure more complex concepts, subtle discriminations and creative problem-solving.

Often termed "objective" tests because equally competent scorers can score them independently and obtain the same results, the development of test items is less objective because it incorporates some of the bias of the item writer(s).

Multiple choice tests are the primary (cognitive) evaluation tool used by the nursing department at John Abbott College. In order to progress through each semester, students must achieve a passing grade of 60%. Upon completion of this three-year (six-semester) programme, they become eligible to take the national registration examination. These are purchased by the Order of Nurses (Québec), the provincial professional association, from the Canadian Nurses Association, which is the national professional association. The format of the examination is multiple choice. Thus the ability to do well on multiple choice tests is a pivotal factor in goal attainment for the nursing student; to achieve a licence to practice nursing in Canada.

Within this context, the present study attempted to address the disparities between apparent knowledge and examination performance. One potential remedy is the implementation of test-wiseness training for the students. To achieve this end, training was offered in a lecture form to one group of nursing students and a

self-instructional module was provided to a second group at nursing students.

The objectives of this study were to determine if this instruction would lead to:

1. an increase in the subjects' test scores on multiple choice tests relative to the two instructional delivery methods (module versus lecture) and a control group.

2. a more positive attitude toward and perceptions related to multiple choice tests as per the above treatments.

CHAPTER TWO

LITERATURE REVIEW

Cognition - Learning

Weinstein (in press), theorizes that there are an increasing number of students entering postsecondary settings "with an inadequate academic background", many of whom are "disadvantaged and under-prepared" (p. 25). Piaget (1970), Perry (1978) among others, have contributed to an understanding of the intellectual development in children and adolescents. According to Piaget, the most advanced cognitive ability developed during adolescence is the stage he termed, 'formal thought'. Piaget saw 'formal operational thought' as the final stage in maturing cognition. It has been suggested in a recent paper by Potter (1986) that many college students do not appear to have achieved the formal operational stage. Potter proposed that these students reason formally at times, particularly in areas in which they are motivated to do so, e.g., areas they perceive as being more interesting or in which they have more knowledge and/or expertise. However "when presented with new ideas and information they may regress to a more concrete level" (p. 5). Piaget described the development of logical thinking (cognition) as progressing in maturational stages. More recently,

Perry (1978) has offered a theory outlining the intellectual and ethical development of college students. It is a hierarchical schema ranging from dualism through multiplicity and relativism, to the upper position of commitment to relativism. Thus the intellectual growth of the student develops from a simple categorical view of the world to a realization that knowledge is a much more complex process involving integration, problem-solving, a commitment to learning and a value system that supports it.

At a recent workshop, Dr. Stephen Ender (1987) suggested that College students have problems "with thinking", i.e., they are still at Perry's dualistic stage. These students view the world and their knowledge of it, in terms of, "concrete and absolute categories." Problems requiring some degree of decision-making, involving options or multiple points of view create confusion. Alternative arguments are not acceptable for the student; therefore they are unable and/or have a reduced ability to reason through a problem. Thus it follows that when confronted with a test item which requires the ability to reason logically (deductive reasoning), some students will have difficulty. This is especially true of questions on nursing tests which ask the student to apply knowledge to a given

(clinical) situation where discrimination among several options is necessary in order to make a correct choice.

Test Anxiety

Davies (1986) describes anxiety as, "a diffuse, affective condition which can be maladaptive in its functions" (p. 39). Test anxiety is a problem for many students thus examinations appear to discriminate against the easily stressed personality. Unfortunately for the anxious student the prevailing view in education is that test anxiety is something which is inevitable.

The relationship between anxiety and performance has been the subject of extensive research by psychologists for many years. McKeachie (1977) describes the classic studies of Yerkes and Dodson (1908) which investigated anxiety and its effects on performance. The Yerkes-Dodson Law predicts that, "an increase in anxiety results in improved performance and effectiveness up to a point and that further increases in anxiety result in a decrement in performance" (p. 3). Performance improves up to an optimum after which there is a decline. Thus the Yerkes-Dodson Law postulates that the relationship between anxiety and performance can be depicted on an inverted U-shaped curve with both high and low levels associated with mediocre performance. It is however generally agreed by current researchers

that this position is an oversimplification (Spielberger, 1977). While the relationship between anxiety and performance is usually curvilinear, the exact relationship in any specific situation is dependent upon other variables which can interact with one another. Spielberger goes on to suggest that earlier studies failed to take into account the complexities associated with learning strategies and situational factors which may influence anxiety levels.

Research done by Mandler and Sarason (1952, 1953) demonstrated that test anxiety invariably results in a deterioration in performance in test evaluative situations. Another study by Deffenbacher and Deitz (1978) found that highly test anxious students consistently revealed higher levels of stress and lower levels of performance than did the low test anxious group. Welford (1968) theorized that performance improves as the anxiety level increases because impulses from the brain increase sensitivity and responsiveness of the cortex. Decline of performance at high levels of anxiety are probably due to overload, "an intense stream of impulse from the brainstem causing cells in the cortex to fire which results in the signals becoming blurred" (p. 46). Welford concludes that high anxiety may impair the intense concentration required for doing

well on examinations.

For students the reality is that examinations represent an estimate of performance under stress because they almost always exert pressures which call for varying degrees of increased effort not solely related to intellectual abilities. Condon (1986) notes that extreme anxiety has a negative effect on performance resulting in irrelevant, and nonproductive thinking. Examinations not only measure knowledge and skills but also stamina and resilience. High levels of anxiety generally tend to be associated with feelings of insecurity and indecision. Thus, in the examination room the overanxious student has a high probability of making inaccurate decisions in multiple choice items. These are often simple errors atypical of the student's usual abilities but very distressing when the computer printout of test scores is posted several days later.

Test-Wiseness

Thorndike (1949), Ebel and Damrin (1960), and Vernon (1962), among others, write that there may be sources of variance in educational test sources other than item content and random errors. Originally described by Thorndike (1951), in a very general way, the term test-wiseness was viewed as a possible effector of reliability and source of variance in test scores; it

was seen as a "persistent general trait of the test taker" (cited in Millman, 1965). Gibb (1964) also provided an operational definition of test-wiseness and developed an instrument to measure the construct. In the classic article, "An Analysis of Test-Wiseness", Millman, Bishop and Ebel (1965) continued to work in this area, producing a taxonomy of test-wiseness intended to serve as a framework for further study. They went on to propose a definition of test-wiseness as, "a subject's capacity to utilize the characteristics and formats of the test and/or test-taking situation to receive a high score" (p. 707).

The inference is that test-wiseness suggests a cognitive ability (or abilities) that the student can use in a positive way. Sarnacki (1979) describes the aforementioned taxonomy as, "a synthesis of the literature of test-construction principles and problem styles of examinees" (p. 254). Often viewed negatively, i.e., equated with guessing, test-wiseness should function as a tool, a guide, a skill, an approach to improve the chances of legitimate success on examinations. Empirical evidence relating to student difficulties is somewhat sparse. Many texts of the "how to" variety are to be found in bookstores but there is a paucity of information on test-wiseness and methods that

would enable students, educators and researchers to more fully understand this phenomena. Several researchers, Wahlstrom and Boersma (1968), Callenbach (1973), Gaines and Jongsma (1974) conducted studies which showed that subjects are able to demonstrate test-wiseness abilities acquired through previous instruction. An example of further research is Brozo's study (cited in Condon, 1986) which found that students who have learned effective test-taking techniques do better than their peers on examinations. Good exam skills were cited as being:

1. effective use of time
2. focusing on key words
3. reading and analyzing stem and options carefully
4. second-guessing the answer.

Concern over lack of test-taking sophistication and overall test-taking abilities among minority students has also received some attention. Frierson (1986) debates the problem and argues that disadvantaged students' comparatively low test scores "can be improved substantially through effective intervention methods" (p. 40). In several previous studies Frierson (1982, '83, '84) observed that a successful approach for increasing test scores is "the provision of instruction and reinforcement of acquired skills" (p. 42).

According to Condon (1986) specific problems relating to a lack of test-wiseness are:

1. failure to focus on what the question is asking
2. failure to consider options carefully
3. unwise use of exam time
4. changing answers
5. carelessness.

On a more general level, there are several other factors which contribute to poor performance on multiple choice tests. As a rule student nurses hesitate to seek help during the test. Furthermore they rarely take the initiative and ask to review the questions in order to clarify misconceptions regarding their incorrect answers after the scores are posted.

Secolsky (1983) and Frierson (1984) agree on the value of student input in the evaluation of examinations. Frierson stresses the importance of "helping students diagnose and correct problems of test-taking" so that their performance on examinations will "accurately reflect their acquired levels of knowledge" (p. 42). Many teachers discourage students from writing on their test papers thus they cannot highlight/underline "key points". This is particularly deleterious with the case study format used on nursing exams where details such as, age, vital signs and medications are crucial information and valuable cues to the correct answer. Most teachers are relatively unskilled at test construction and lack expertise in the measurement and evaluation process. Furthermore verification of test

reliability, validity, item difficulty and discrimination is hampered by time and economic constraints; thus in reality many tests may contain poorly constructed items.

Given that the educational technologist has a mandate to improve the efficiency and the effectiveness of the process of learning, this study addressed the need to investigate reasons for student underachievement on multiple choice tests and examine attitudes students hold in relation to these tests.

CHAPTER THREE

METHODOLOGY

Subjects

Subjects consisted of 39 second-year (diploma) CEGEP nursing students in their fourth semester of a six-semester nursing programme at John Abbott College. Subjects are predominantly female, 5% are male, ranging in age from 18 to 52 years, and the majority have been educated on the West Island of Montréal, Québec. In recent years, the nursing programme at John Abbott College has seen an increase in the percentage of students whose primary language is French; there has also been an increase in the number of students from varied ethnic backgrounds. Thus there is an increased number of variables amongst the students' educational characteristics due to a diminished degree of homogeneity and a wide age range. Most of the subjects are single, some are married, divorced and/or single parents. Approximately 40% are self-supporting and living away from family of origin. Thus, many students have part-time work in order to support themselves and/or families.

The requisite ability for the nursing programme is completion of Québec secondary V (including chemistry and physics) with a minimum of 60% or an academic standing deemed equivalent by the Order of Nurses of

Québec (professional licencing body). The majority of nursing students are highly motivated, particularly at 2nd year level; achieving the status of R.N. is a part of their life/career goal, it also means social approval and the influence of the faculty as role models appears to be important.

Design

The two independent variables in this design were the two different types of specific instruction with a control (lecture, self-instructional module and control) and time, (pre and posttreatment). The subjects were divided into three groups based on placement limitations for each of the three hospital sites. While group composition was based on several factors such as personal/individual student requests, programme requirements and pedagogical restraints, overall group membership evolved by chance, yielding equivalent, if haphazard distribution. Treatment assignment to each group was arbitrary (see Figure 1).

The dependent variable was measured by the test score results of quiz 1 (pretreatment), quiz 2 (posttreatment) and the final examination, all administered as normal parts of their programme of study. Attitude questionnaires were administered both prior to quiz 1 and immediately following quiz 2.

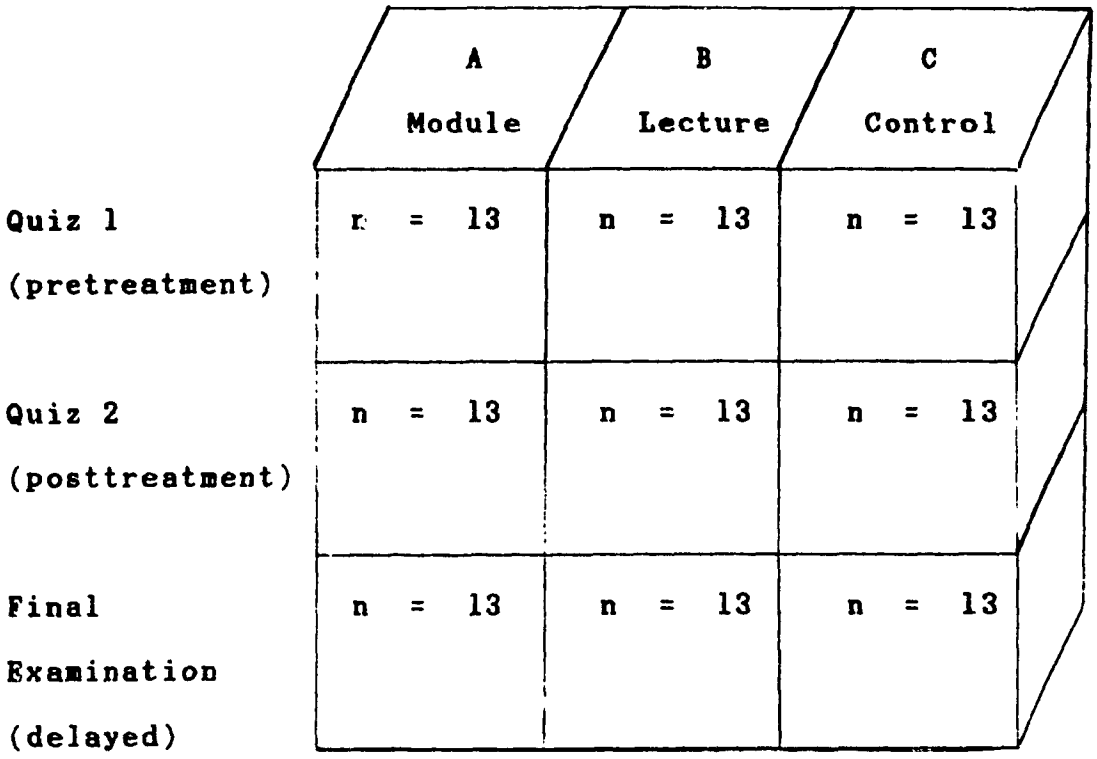

Figure 1.

The design is thus a two-treatment strategy on two groups, the third group being a control.

Materials

A self-instructional module was designed for this study by the author (see Appendix A). The objective was to assess and increase the test-taking skills of the subjects. General guidelines with specific strategies and techniques were included with practice and feedback. The module required approximately 45 minutes for completion and was evaluated by the subjects (see Evaluation of Instructional Materials, pp. 44, 45 and

Attitudes Toward Instructional Materials, p. 57).

Standard formative evaluation procedures were utilized (Dick and Carey, 1978). Following the first draft of the module a one-to-one evaluation procedure was utilized in order to identify any major problems in the materials. Participants included a group of three nursing students of varying academic abilities who were in the fifth semester of the nursing programme. Based on the students' criticisms, some areas of the instruction were modified. The module was then evaluated by content experts who consisted of two teachers from the Learning Centre plus two teachers from the Nursing Department at John Abbott College. Their contributions to the formative evaluation of the module resulted in further changes which were subsequently incorporated into the final version of the module.

The lecture included content identical to that of the module; the only difference was in the mode of delivery i.e., verbal vs. print.

Attitude questionnaires 1 and 2 were designed by the author using a format of scaled items (Likert five-point scale) (see Appendix B). These questionnaires were directed to assessing student attitudes and perceptions towards test-taking. Field testing consisted of several revisions based on

evaluation by content experts in order to obtain content validity and clarity.

Quiz 1 and quiz 2 each consisted of 75 multiple choice questions, the final examination contained 130 questions. All questions were written by nursing teachers following a blueprint based on the objectives of the course and the number of hours taught. Individual teachers were responsible for questions relating to the specific content that they taught. The Nursing Department at John Abbott College uses a modified Bloom's taxonomy, i.e., a) knowledge/comprehension, b) application and c) analysis (critical thinking). At the 401 (4th semester) level where the subjects were drawn from, there was an increased level of difficulty; the ratio of test items was as follows:

a. knowledge/comprehension 25%
b. application 50%
c. analysis (critical thinking). . . 25%

All questions used in both quiz 1, quiz 2 and the final examination followed this hierarchy but the content was changed somewhat in accordance with the content and objectives addressed.

The majority of the situations on the tests were of a case study format. Thus the content was comprehensive in nature, designed to test the students' ability to assess a nursing situation, i.e., analyze data and apply

knowledge appropriately in order to solve nursing/client problems.

Content validity of the test was established by the teaching team and the fact that the test items had been used before. Approximately 5-10% of the test items are changed, either added or deleted per semester.

Internal consistency was established through comparisons of the upper criterion group with the lower criterion group on each question.

Procedure

All phases of the experiment were carried out during class time (classroom setting at John Abbott College). Introduction and discussion regarding a rationale for the study was provided. Questionnaire 1 was given first to all subjects in order to elicit students' attitudes to test-taking. Quiz 1 (pretreatment) was taken by all students 12 days later. Subjects were assigned to 3 groups. The clinical (hospital) component of the subjects' experience plus hospital space constraints necessitated that students were divided into groups of 13 students per group, per hospital. Treatment was carried out 5 weeks following quiz 1. Group A received information via self-instructional module. Group B received information via a lecture format. Group C (control) did not receive

any instruction at this time but were offered the self-instructional module prior to the final exam. Quiz 2 (posttreatment) was taken by all students one week following the treatment.

Questionnaire 2 was completed by all students two days later in order to assess any changes in student attitudes towards test-taking. All subjects sat the final examination four weeks later.

Subjects were informed that the purpose of this research study was to learn more about how students think, feel and do when completing multiple choice tests. It was explained that in order to obtain this information completion of two questionnaires would be necessary and that all students would have access to all information including the results of the study.

CHAPTER IV

RESULTS

Introduction

The purpose of this quasi-experimental research study was to look at the effects of test-wiseness training on student achievement scores and attitudes towards taking multiple choice tests. This chapter looks initially at the quantitative data in order to evaluate the effects of the two methods of instruction, Group A (module) versus Group B (lecture) when compared with Group C (control) and their relationship over time; (Quiz 1, Quiz 2 and Final Exam). Lastly, the affective nature of the study is analyzed in order to explore students' attitudes and perceptions related to multiple choice tests. All three achievement tests consisted entirely of multiple choice items (Quiz 1 = 75 items; Quiz 2 = 75 items; Final Exam = 130 items), and no items were in common. Achievement scores were generated by the total number correct. Although difficulty levels across tests were considered comparable, care would have been taken in interpreting effects among tests although none arose.

Analyses

Four separate one-way analyses of variance using raw scores were performed on quiz 1, quiz 2 and the

final exam respectively. The fourth analysis involved using quiz 2 with quiz 1 as covariate. None of these analyses yielded significant results although the use of quiz 1 as covariate was statistically significant in this and subsequent analyses. Further analyses utilizing a 3 x 2 repeated measures design with quiz 1 and quiz 2 (raw scores) produced no statistical significance. In order to assess the effect of the experimental versus control groups immediately following treatment, a Dunnett's t statistic was completed. A statistically significant result between Group A (module) and Group C (control), $t\ (6,40) = 2.44$, $p < .05$ (one-tailed) was found. A second 3 x 2 repeated measures design analysis using quiz 2 and the final exam (% scores) with quiz 1 as covariate failed to produce statistical significance except as previously mentioned, i.e., the significance of quiz 1 as covariate. The final analysis was a 3 x 3 repeated measures design (% scores) on quiz 1, quiz 2 and the final exam which again yielded no statistical significance. Table 1 contains the raw score and percentage score means and standard deviations for all groups and measures.

Table 1.

Achievement (Percentage) Scores

Groups	n	Module	Lecture	Control
QUIZ 1	13			
M		72.13	70.96	68.90
SD		13.65	8.74	6.90
QUIZ 2	13			
M		80.25	73.86	75.29
SD		9.03	9.98	9.26
FINAL EXAM	13			
M		70.59	68.46	71.65
SD		11.80	6.98	8.32

Achievement (Raw) Scores

Groups	n	Module	Lecture	Control
QUIZ 1	13			
M		52.76	51.53	49.50
SD		9.98	6.29	5.37
QUIZ 2	13			
M		58.53	53.92	54.78
SD		6.53	7.28	6.38
FINAL EXAM	13			
M		91.76	89.00	93.15
SD		15.35	9.08	10.81

Questionnaire Data

Although overall outcomes of this study are somewhat inconclusive, some interesting effects did emerge from the attitudinal data. All items were measured on a 5-point scale, with one (1) indicating agreement or high use, and five (5) indicating disagreement or no use. Questionnaire items were grouped around four (4) main categories:

A. Study Habits
B. Test Anxiety
C. Test-Taking Strategies
D. Attitudes Towards Multiple Choice Tests and Quiz 2.

Using analysis of variance and covariance with repeated measures, thirteen (13) comparisons were performed, four (4) of which were statistically significant. Of the remaining questions several produced interesting subjective information.

All findings will be discussed under the above headings. Means and standard deviations for pooled responses appear in Tables 2 and 3. Results from items which could be compared are provided in Table 4. Noncomparable item results are in Tables 5 and 6, and a breakdown of Yes/No responses by group to the noncomparable items is found in Table 7 (Other).

The labels used are read as follows: the first number after "Q" refers to the question on questionnaire 1,

the second number refers to the question on questionnaire 2.

A. Study Habits

The questions were asked in order to elicit information about the students' perceived level of preparedness, the accuracy of their predictions in choosing specific content to study and whether or not they crammed for tests.

Q 2/1: I select(ed) specific content to study.

Although there was no statistical significance among groups or over time, the module group did show the most change by increasing their use of selecting specific content to study. Interesting but contradictory feedback was expressed in terms of knowing what to study. Several students from all levels of achievement and representative of all groups expressed strong feelings related to the difficulties of knowing what to study and the frustration they experienced when materials that they had studied and felt they understood were not evaluated on the test. Conversely two students expressed more positive comments relating to study habits such as reading the recommended material before class and attending to areas emphasized by teachers and described in course outlines. These two students were of above average achievement (control group).

Q 3/2: I consciously try(tried) to predict what questions would be on the test.

The majority of students do try to predict to some degree, however, there was no apparent change in student behaviour. The mean response was 2.95 before and 2.94 after treatment.

Q 4/3: I predict(ed) fairly accurately what will (would) be on the test.

Student predictions yielded no significant differences with the mean remaining at 2.94. The inference is that most students habitually perceive themselves as "sometimes" predicting accurately. However, as noted in Q 2/1, they tend to feel insecure and let down because their expectation of content covered and content tested do not mesh.

Q 5/4: I study(ied) for (this) test(s) by cramming.

Student responses disclosed that the majority do cram for tests, however, the comparison revealed a reduction in cramming. (Pooled) mean responses were 3.10 before and 3.42 after treatment. The analysis revealed statistical significance F (2, 31) = 2.24, $p < .04$.

B. Test Anxiety

The students were asked to rate their anxiety level and indicate whether or not they perceived it as

interfering with their test performance. They were also asked about the use and usefulness of relaxation techniques. As expected, subject's responses indicated that most students experienced some level of anxiety ranging from "very high" 14%, "high" 30.5%, "average" 53% and low 5.5%. None responded to "very low".

Q 6/6: Anxiety interfere(s)(d) with my performance.

The comparison between students' perception of the degree of interference caused by anxiety showed a reduction with a mean of 2.91 before and 3.14 after treatment. Analysis also revealed statistical significance, F (2,31) = 5.97, $p < .02$.

Responses to the use of relaxation techniques revealed very little difference between groups. Overall 56% did not and 44% did use relaxation techniques. Of this latter group their comments suggested a more positive attitude towards handling stress. For example, "I prepare myself mentally prior to the exam, do deep-breathing, psych myself up."

C. Test-Taking Strategies

The questionnaire data produced very little evidence of behavioural change in the students' use of test-taking strategies. Several of these strategies were already familiar to the students and they had been using them for some time, e.g., eliminating options.

Other skills were unknown thus they may have had difficulties in utilizing this new knowledge. Furthermore, the relatively short period of instruction provided by the module/lecture would not necessarily have changed previous test-taking habits.

Q 8/8: I budget(ed) my time during a(this) test.

The response was that all students do this to some degree with a mean of 2.16 before treatment and 2.13 after treatment. However, the module and lecture groups both reported a somewhat greater inclination to do this after treatment. Students concerns centred around the fear of running out of time and the perceived effect this had on performance. It was interesting but not entirely unexpected to note that low achievement score students cite that they budget their time "sometimes", and that this habit was not subject to change.

Q 9/10: Answering all the questions and guessing.
Q 10/9:

Almost every student agreed that answering all of the questions (98%) and guessing when the answer is unknown (73%) were test strategies that they used. This was to be expected given that multiple choice format includes the correct answer and that there is no penalty for guessing. However, as in Q 8/8, students who responded "sometimes" were almost all in the low achievement score bracket and there were no evident

changes in their behaviour.

Q 11/11: I highlight(ed) and/or underline(d) important points on my test paper.

Overall, students reported using this strategy most of the time. Results showed that the module group showed a definite increase in the use of this strategy with a mean of 2.16 before and 1.69 after treatment. Lecture group remained the same, control group increased usage slightly.

Q 12/12: I asked the teacher for an explanation of a question e.g., not understanding a word.

The analysis yielded a somewhat surprising result in that all students were less inclined to ask the teacher for an explanation. The mean was 2.51 before and 2.83 after treatment with all three groups showing less inclination. There was a statistically significant change, F (2,31) = 4.54, $p < 0.4$.

Q 13: Use of mnemonic aides.

The response to the use of this memorizing technique was somewhat lukewarm. Thirty-two percent of the students reported using mnemonic aides "a lot", 38% "sometimes", and 30% "never", with the control group using them the most and the module group the least. With regard to their perceived usefulness subjective responses centred around the fact that students who use

these memory aides do so "because they work".

Q 13/14: Q -/14(a): Rereading the test after completing it and organization of time.

The majority of students do organize their time in order to read over a test at the end. About 83% responded that they planned their time in order to accomplish this.

Q 14/15: I change(d) my answer by "second guessing", my original answer.

Although the majority of students do not change their original answers there was a statistically significant positive movement away from doing so after the treatment, $F(2,30) = 10.16$ $p < .003$. A change in behaviour was evident across all three groups. Reasons for these results are somewhat obscure. Perhaps the test questions were clearer and/or the students' understanding greater thus requiring less "second guessing". Also, the general feeling that changing answers produces lower scores may have increased.

D. Attitudes Towards Multiple Choice Tests and Quiz 2.

Q 1: I know as much as anyone else about what content will be on the test.

Students' perceptions about knowing as much as other students in relation to their own knowledge, produced very positive responses with 73% of them in the

"all" to "most of the time" groups, and 17% responding to "sometime".

Q 15/16 }
Q 16/16a} Reviewing tests after marks are posted.
Q 17/16b}

Ninety-four percent of the students expressed a desire to review their test papers and of these 88% preferred to do this with the teacher in a group situation. The remainder chose to review on a one-to-one basis and one student elected to do it "by myself".

Subjective comments were very mixed. Several students found the exercise helpful,

e.g., "it increased my understanding of the knowledge"
"helped me to understand the nursing priorities and why I got the answer wrong."

However, there were several negative comments expressing feelings of futility:

e.g., "going over test did not help at all."
"it was a waste of time."
"the time was too short. . . .I still don't understand my answer."

Q -/17: How easy was this test./How would you rate
Q -/18: your performance?

The majority of the class 69% described the test as "average", 9% "easy" and 21% "difficult". Approximately 55% rated their expected performance to be

"good" to "excellent", 27% forecast a "fair" result and only 15% anticipated a "poor" score. Because the majority evaluated the test as relatively easy, it was to be expected that they would predict good test results.

Some final words from the students' attitudinal data cited their reasons for liking/disliking multiple choice tests. "I like multiple choice tests because I am reassured by a familiar word or phrase which helps to put me back on track." "I like multiple choice tests because I have been taught to write them", "I don't like them because I find that I am inhibited and doubt what I actually know."

Table 2.

Questionnaire 1 (Pooled Responses)

		M	SD
Q1:	I know as much as anyone else in the class about what will be on a test.	2.07	.75
Q2:	I select specific content to study.	2.45	1.19
Q3:	I consciously try to predict what will be on a test.	2.95	1.10
Q4:	I predict fairly accurately what will be on a test.	2.94	.78
Q5:	I study for tests by cramming.	3.10	1.12
Q6:	Anxiety interferes with my performance.	2.91	.92
Q7:	I use relaxation techniques.	3.64	1.13
Q8:	I budget my time during a test.	2.16	.95
Q9:	I answer every question.	1.00	.36
Q10:	I guess when I don't know.	1.45	.93
Q11:	I highlight and/or underline important points in a test.	2.16	1.19
Q12:	I ask the teacher for an explanation of questions during a test when necessary, e.g., not understanding a word.	2.51	1.42
Q13:	I reread a test after completing it (when I have time).	2.05	1.12
Q14:	I change answers by "second-guessing" my original answer.	3.43	.76
Q15:	I review the test after the marks are posted.	2.83	1.36

		M	SD
Q16:	If given the opportunity I would prefer to review a test with:		
	a. Teacher only.	2.17	1.00
	b. Teacher and student group.	2.48	1.26
Q17:	Reviewing a test helps me to:		
	a. Understand the content.	1.91	.88
	b. Understand why I got a wrong answer.	1.55	.69

Table 3.

Questionnaire 2 (Pooled Responses)

		M	SD
Q1:	I selected specific content to study.	2.22	1.20
Q2:	I consciously tried to predict what questions would be on the test.	2.94	.80
Q3:	I predicted fairly accurately what was on the test.	2.94	.80
Q4:	I studied for this test by cramming.	3.42	1.31
Q5:	My anxiety level was. . . .	2.44	.77
Q6:	My anxiety interfered with my performance.	3.14	.90
Q7:	I used relaxation techniques.	1.55	.50
Q7(a):	If yes, these relaxation techniques were. . . .	2.87	.88
Q8:	I budgeted my time during this test.	2.13	.99
Q9:	I guessed when I did not know the answer.	1.58	.93
Q10:	Number of questions left unanswered.	0	0
Q11:	I highlighted and/or underlined important points on my test paper.	1.69	1.21
Q12:	I asked the teacher for an explanation of a question when I needed it. e.g., not understanding a word.	2.83	1.68
Q13:	I used mnemonic aides.	2.97	1.38
Q13(a):	If you used mnemonics did you find them.	2.25	1.11
Q14:	Did you have time to reread the test?	1.16	.37

		M	SD
Q14(a):	If yes, how much of the time did you use?	2.56	.97
Q15:	I changed my answers by "second-guessing" my original answer.	3.97	.92
Q16:	I reviewed the test after the marks were posted.	1.00	.23
Q16(a):	If yes I did this with		
	a. Teacher only.	1.88	.32
	b. Teacher and student group.		
Q16(b):	Reviewing the test has helped me to		
	a. Understand the content.	1.90	.94
	b. Understand why I got a wrong answer.	1.63	.82
Q17:	How easy was this test for you?	3.00	.60
Q18:	How would you rate your performance?	2.53	1.05

Table 4.

Attitude Questionnaires

Part A. Comparisons

	Questionnaire 1		Questionnaire 2	
Keywords	M	SD	M	SD
Specific Content	(#2)*		(#1)*	
Module	2.76	1.36	2.38	1.44
Lecture	2.36	.80	2.18	.98
Control	2.22	1.48	2.22	1.30
Predicting	(#3)*		(#2)*	
Module	3.00	1.35	2.92	1.03
Lecture	2.90	.94	2.81	.75
Control	3.00	1.15	2.80	1.13
Accuracy of Prediction	(#4)*		(#3)*	
Module	3.00	.70	2.84	.55
Lecture	3.18	.60	3.18	.98
Control	2.77	.97	2.88	.92
Cramming	(#5)*		(#4)*	
Module	3.61	1.12	3.84	1.21
Lecture	3.00	.89	3.36	1.20
Control	2.70	1.15	3.20	1.47

*Item number of questionnaire.

	Questionnaire 1		Questionnaire 2	
Keywords	**M**	**SD**	**M**	**SD**
Anxiety	(#6)*		(#6)*	
Module	2.92	1.00	3.61	.96
Lecture	3.00	.77	3.27	1.00
Control	2.90	.99	3.20	.78
Budgeting Time	(#8)*		(#8)*	
Module	2.15	.89	1.76	1.01
Lecture	2.45	.93	2.09	1.04
Control	2.00	1.15	2.60	.84
Answering Every Question	(#9)*		(#10)*	
Module	1.15	.55	N/A	
Lecture	1.09	.30	N/A	
Control	1.00	0	N/A	
Guessing	(#10)*		(#9)*	
Module	1.53	1.19	1.69	1.03
Lecture	1.18	.40	1.45	.82
Control	1.70	1.05	1.70	1.05
Highlighting/ Underlining	(#11)*		(#11)*	
Module	2.15	1.28	1.69	1.03
Lecture	2.27	1.34	2.27	1.34
Control	1.90	1.10	1.80	1.39

* Item number of questionnaire

	Questionnaire 1		Questionnaire 2	
Keywords	M	SD	M	SD
Request for Explanation	(#12)*		(#12)*	
Module	2.69	1.60	3.30	1.75
Lecture	2.90	1.30	3.27	1.55
Control	1.80	1.31	2.10	1.52
Second-Guessing	(#14)*		(#15)*	
Module	3.58	.79	4.00	.95
Lecture	3.36	.50	3.90	1.13
Control	3.20	.91	3.90	.73
Reviewing - Understanding Content	(#17a)*		(#16(b)1)*	
Module	2.16	1.11	2.00	1.12
Lecture	1.80	.78	1.90	.87
Control	1.10	.81	1.71	.48
Reviewing - Reason(s) for Incorrect Answer	(#17b)*		(#16(b)2)*	
Module	1.45	.52	1.45	.68
Lecture	1.80	.78	1.90	1.10
Control	1.33	.70	1.66	.70

*Item number of questionnaire.

Table 5.

Part B. Noncomparison Items

Questionnaire 1

		M	SD
Q1:	Module	1.92	.94
	Lecture	2.50	1.42
	Control	1.80	.76
Q7:	Module	3.53	1.19
	Lecture	4.18	.98
	Control	3.10	1.10
Q13:	Module	2.30	1.00
	Lecture	2.54	1.12
	Control	1.30	.94
Q15:	Module	2.60	1.19
	Lecture	3.00	1.44
	Control	3.00	1.56
Q16(a):	Module	2.27	1.10
	Lecture	2.30	.82
	Control	2.22	1.20
Q16(b):	Module	2.18	.98
	Lecture	2.55	1.42
	Control	2.90	1.59

Table 6.

Part C. Noncomparison Items

Questionnaire 2

Q5:	M	= 2.44	SD	=	.77
Q7:	Yes	= 44.4%	No	=	55.6%
Q7(a):	M	= 2.87	SD	=	.88
Q13:	M	= 2.83	SD	=	1.11
Q13(a):	M	= 2.25	SD	=	.97
Q14:	Yes	= 83.3%	No	=	16.6%
Q14(a):	M	= 2.56	SD	=	.97
Q16:	Yes	= 94.4%	No	=	5.5%
Q16(a):	Teacher	= 11.7%	Teacher/Group	=	88%
Q17:	M	= 3.00	SD	=	.60
Q18:	M	= 2.53	SD	=	1.00

Table 7.

Questionnaire 2: Other

Q7: "I used relaxation techniques."

	YES	NO	NO RESPONSE
Module	31%	69%	0
Lecture	54%	38.5%	7.5%
Control	38%	46%	15%

Q14: "Did you have time to reread the test?"

	YES	NO	NO RESPONSE
Module	84.6%	15.4%	0
Lecture	77%	15.4%	7.6%
Control	69%	15.4%	15.4%

Q16: "I reviewed the marks after they were posted."

	YES	NO	NO RESPONSE
Module	92%	7.6%	0
Lecture	85%	7.6%	7.6%
Control	85%	0	15.4%

Q16(a): "I reviewed the test with . . ."

	TEACHER	TEACHER/GROUP	NO RESPONSE
Module	0	92%	7.6%
Lecture	15%	69%	15%
Control	15%	69%	15%

Evaluation of Instructional Materials.

The materials/presentation used in this study were evaluated by the students.

Module

A self-instructional module was given to Group A subjects (n = 13) during regular class time. Completion time ranged from 35 minutes (2 subjects), 40 minutes (1 subject), 45 minutes (4 subjects), 60 minutes (4 subjects), to 90 minutes for the remaining 2 subjects. i.e., average time = 54 minutes.

The module was evaluated using an attitudinal questionnaire. Items 1, 3, 4, 5 and 6, using a Likert scale covered responses from very positive to very negative. All subjects responses were positive. Difficulty level was "average" 46%, "easy" also 46% and "too easy" 8%. Length of the module, "in depth" 23%, "satisfactory" 69%, "too short" 8%. Content was described as being "satisfactory" 62%, "in depth" 38%. Number of examples were judged to be "satisfactory" 46%, "too many" 38% and "too few" 15%. Clarity and directions were also highly rated.

Items 2, 7, 8, 9 and 10 provided descriptive information with subjects expressing the following comments:

e.g., "I liked the variety - the comics and different sized print",

"it allowed me to evaluate myself in the skill of taking multiple choice questions",

"it helped to point out where I make mistakes and how to correct them."

This latter comment was made by several subjects. One subject found the module, "too long", another commented that, "there were too many words."

Lecture

Group B subjects (n = 13) received a lecture which had content identical to that of the module. Time was approximately 90 minutes.

Evaluation of the lecture used a similar format to that of the module. An attitudinal questionnaire consisted of Items 1, 3, 4, 5 and 6 using a Likert scale and covered responses from very positive to very negative. The outcome was almost identical to that of the module, i.e., subjects responses were positive.

Difficulty level was "average" 31%, "easy" 54% and "too easy" 15%. Length was overall "satisfactory", content was evaluated as being "satisfactory" 62%, "too in depth" 38%, number of examples "satisfactory" 54%, "too many" 38% and "too few" 8%.

All subjects agreed that discussion time was

adequate and that they had received satisfactory answers to their questions. Descriptive responses compared favourably with those of the module. One subject's response to Q 9, "what did you like least" was "that it was not at the beginning of the semester." Another stated, "it should be done more than once, it's too easy to panic and forget - reinforcement helps gain test-wiseness" and, "I think it's important to talk about multiple choice exams since I only have recent experience with them at this College, before I never took multiple choice exams."

CHAPTER FIVE

DISCUSSION

Achievement

The results of this study are on the whole inconclusive. The specific instruction had only a minimal effect, with the module group achieving slightly higher scores than the other two groups on quiz 2. In addition, there was an overall improvement in almost all students' scores regardless of group on quiz 2. The inference is that while the exposure to and possible experience with test-taking strategies when presented in modular format can be effective in producing an increase in knowledge and successful examination behaviours, the effect appears to be short-term. Unfortunately, although the module group achieved the best performance on quiz 2, they were unable to maintain it on the final exam.

Several other issues relative to this discussion became apparent as a result of this study. First, it was confirmed that high achievement students maintain their high level of performance (those who attained high scores on quiz 1 regardless of group and/or instruction) across all tests. This consistently high performance suggests that these students may not require test-wiseness training as they already have the skills. There

is abundant demonstration of this, not only from their achievement scores but also from their written comments. Second, it appears that the students who need test-wiseness strategies the most do not use them. It is easier to affect change in factual knowledge and cognition than in behaviour. Habits may be difficult to change, and merely exposing students to instructional strategies, i.e., module/lecture, may not promote sufficient change in attitude and test-wiseness skills. For example, very few students had previous knowledge of the use of mnemonics, a new skill introduced to the module/lecture groups. Several students across all groups were evidently comfortable using this memory aid but the majority were not, and as this skill requires some practise, the lack of effect, in retrospect, should be expected. It is interesting to note that more than 50% of the module group reported that they used this strategy however they did not necessarily obtain better scores.

A third issue is that this study was integrated into a real class. Thus, the quizzes were of necessity varied in length and difficulty. A certain degree of internal validity was thus lost to considerations of external validity. Effect size is often compromised when data are collected outside the laboratory thus

valid comparison is threatened.

Study Habits

Study habits are an integral part of the learning process. Without the effectiveness of study skills and sufficient knowledge, test-wiseness strategies will produce only limited results in academic achievement. The attitudinal data in this study were therefore directed at obtaining information about students' study habits in relation to test-taking. As reported in the results section, all groups displayed uniformly noncommittal responses to most questions, e.g., predicting what would be on a test and the perceived accuracy of this remained at "sometimes." This was also true of selecting specific content to study, an exception being the module group which showed a small increase towards doing this "most of the time." The anecdotal data, although interesting, shed very little light on these findings. Not entirely unexpected, many of the high achievement students reported an ability to study content by attending to what the teacher(s) emphasized in class. They also practiced making up their own questions and actively made predictions about exam content. However, in general, students reported feelings of frustration because classroom content was not necessarily included in test questions. As these

comments are closely linked with attitudes towards test-taking, they are discussed later, in greater depth, with data relating to attitudes.

Preparing for tests by cramming produced interesting though somewhat inconclusive results. In their initial overall response, most students described cramming as a fairly well-established habit but the response to questionnaire 2 yielded a somewhat surprising result: that of a statistically significant change in the direction away from cramming as a study habit. As there were no subjective comments regarding cramming, it is difficult to interpret these findings, particularly those of the control group. The module and lecture group outcomes might possibly be explained by the fact that instruction via these methods provided specific students with alternative ways of learning. Consequently, they may also have decided that cramming was no longer an effective study habit. Second year nursing tests contain more complex situational types of questions. Thus factual knowledge alone does not guarantee sufficient information to understand questions at the application and/or critical thinking level. Furthermore, because of the control group's responses, students may in general have learned from the previous quizzes that cramming no longer works as well as it had

in the (nonsituational) past. They are therefore engaging in greater distributed, as opposed to massed, practice in response to the new test format. Finally, because students tend to feel guilty about cramming as a legitimate skill, they may not have wanted to admit that it was a study habit they used.

Anxiety

Coping with anxiety presented problems for many students as they had little exposure and/or time to practise anxiety-altering techniques, e.g., relaxation. Results showed that the module group perceived a definite reduction in their anxiety levels with a resultant reduction in anxiety interfering with their test performance. However, they reported using relaxation techniques less than the other two groups. It could be deduced that this reduction in anxiety arose from other factors such as increased confidence in knowledge and an ability to maximize their test-wiseness skills.

Test-Wiseness Strategies

As previously stated, results of the questionnaire data yielded minimal evidence that students' test-taking behaviours had changed. It was apparent that several of the test-wiseness strategies taught were already part of many students' repertoire. Thus, some of the most

potent techniques required no additional instruction, and of course were not subject to change. As a result, the overall potential impact of the module was greatly reduced due to the students' prior knowledge. For example, virtually all students reported rereading their tests at the end of an exam and they always answered all of the questions.

Another strategy that produced consensus was that of not changing answers and very few students reported doing this. Most faculty members advise students against changing answers unless they have very strong feelings that their original answer is incorrect and so the module/lecture instruction only reinforced this th ory. Curiously, results showed that there was a further reduction in the incidence of changing answers after treatment and this was evident in all groups. Although most research studies are inconsistent in their findings, Penfield and Mercer (1980) revealed that it is advantageous for high-scoring students to change their answers but not so for low-scoring students. Also many students reported some hesitancy in "marking", i.e., underlining areas on their test papers, possibly because this is a relatively new idea and one that has, in the past, been discouraged.

Yet another interesting but not entirely unexpected

result was that high-scoring students reported using specific strategies to their advantage. Responses centred around processing of information as an effective test-taking skill which these students described as, "eliminating options." It was also interesting to note that three students who reported using the above strategies only "sometimes" were below average (borderline) students, two of whom subsequently failed the course. A consistent trait of the low-scoring student was revealed in the ambivalence of their replies to several questions. For example, budgeting time, guessing, highlighting and underlining were invariably given a "sometimes" response by the weaker student. Furthermore, the instructional strategies contained in the module/lecture had little or no apparent effect on their achievement or attitude.

Attitudes and Perceptions Towards Tests

Obtaining input from students about the way in which they think and feel in relation to test-taking was important to this study because attitudes towards tests can have a strong influence on student performance.

When students were asked if they felt that they knew as much as anyone else in the class about what would be on the exam, their overall response was one of confidence and a positive attitude. Unfortunately, this

knowledge seemed not to be of much use as indicated by anecdotal evidence on questionnaire 2. Students' feedback focused around the fact that much of their knowledge of content taught in class was not evaluated (tested) on the exam.

It was expected that students might use this questionnaire as a forum for unloading negative feelings about tests. Their input merits discussion particularly as the comments came from students across all levels of achievement and across all three groups. These responses may be attributable to a combination of interrelated factors. First, at the 401 (4th semester) level, there is a larger proportion of questions which require increasing ability to apply and analyze knowledge. Therefore, even though the student appears to understand the content given in class, many of the exam questions are at a higher level i.e., application and/or critical thinking. Thus, if students only memorize material as they had earlier in the program, it is difficult if not impossible to apply concepts based on more complex clinical situations. Second, because so much course time is spent covering content at a basic level, e.g., anatomy and physiology, there is often insufficient time and/or emphasis placed on the application of theory to practical situations. This

is further aggravated if the teacher neglects to provide and/or demonstrate appropriate scenarios, and the student has had no exposure to a specific situation during hospital experience. Thus the student will have no frame of reference to assist with integration and internalization of knowledge, and this becomes evident at exam time. The weaker student is especially disadvantaged under these circumstances due to their difficulty in determining what is important. Furthermore, given the number of comments (8 students), relating specifically to this perceived problem, a need for further investigation and possibly some curriculum revision appears called for.

The questions regarding reviewing tests also produced some fundamental concerns. Questionnaire 1 revealed a somewhat neutral response with 43% responding to "all. . . .most of the time", 21% "sometimes", and 37% "rarely . . . .never." However, on questionnaire 2, 94% of students wished to review their exam questions and of these, 88% requested a review of them with the teacher in a small group situation. This apparent change in behaviour could be interpreted that reviewing exams was not a habit utilized by students in the past and/or the need to review was accelerated following quiz 2.

With regard to whether or not reviewing an exam

helped students to understand the content and/or obtain reasons for an incorrect answer, the overall response was positive. However, subjective comments were quite diverse, including several negative descriptions that centred mainly around time constraints and lack of clarification. Thus, this feedback reinforces the author's belief that reviewing exams can be a very productive way of helping students understand not only course content but also management of anxiety and test-wiseness strategies.

The perceived need by students to increase their test-taking skills was expressed several times. They felt that practising multiple choice questions in class would reinforce new knowledge and nursing priorities while increasing their test-wiseness skills in a less-threatening environment.

Finally, it seems that many students either like or dislike the multiple choice question format. Liking them is closely related to familiarity, i.e., students who had been exposed to this method since high school. Disliking multiple choice questions appeared to be strongly linked with feelings of insecurity and inhibition. They view this method of testing as unfair because it prevents them from demonstrating their knowledge and/or does not address the knowledge they

feel they have.

Attitudes Towards Instructional Materials

The overall response to both instructional methods (module and lecture) was positive and there was virtually no difference in affective attitudes between these two treatment groups. Students' comments suggest a need for continued assistance with test-taking skills and at an earlier level in the nursing program.

Summary

In summary, the results of this study revealed only a minimal and transitory effect from the specific module instruction on use in test-wiseness strategies. As expected, students who obtained good scores appear to also have good study habits and use test-wiseness strategies with comparative ease. Students who make lower scores report difficulties with anxiety and indecision.

Some interesting findings gleaned from the attitudinal data have implications for teaching and learning. Many students expressed a basic need for help related to increasing their test-taking skills, specifically in the realm of test-wiseness strategies. There is an obvious need to identify students at risk as early as possible in the nursing programme so that remediation in content and skills together with test-

taking strategies can be implemented. This study has demonstrated a need to align instruction with the higher forms of knowledge being tested. Teachers must help students not only have factual knowledge but also develop an ability to apply and analyze content in specific situations in order to make appropriate decisions.

Given that the primary function of the educational technologist is to improve the efficiency and effectiveness of the process of learning, the following recommendations are suggested.

Recommendations

This research study has raised more questions than it has answered. Obviously, further efforts to clarify the essential aspects of teaching and learning related to test-taking are needed. Although the test-wiseness training had a relatively minor effect on achievement scores, it served the purpose of directing attention to the students who need help related to test-taking. Overall, students who attained good scores were relatively skilled in all aspects of test-taking and maintained a high achievement level throughout the three tests. Furthermore, as this study showed, some test-wiseness strategies were well-known and used by most students. Attitudinal data further clarified some areas of concern, particularly the perceived need to align

content with evaluation and review tests after marks are posted. It was obvious that many students experienced extreme anxiety which undoubtedly interfered with test performance and it was clear that students' familiarity and experience with multiple choice questions had an effect on their perceived ability to do well on these tests.

The question remains: what skills and knowledge do nursing students need in order to improve their test-wiseness abilities and how do educators help them to achieve their learning goals? Within the context of these findings, the author's familiarity with the factors involved in the instructional system, and the students' open comments, recommendations fall into three broad categories: 1) timely diagnosis and intervention for the student; 2) faculty roles in the testing process; and 3) the educational technologist's role in the overall process.

Students

The first recommendation involves the students' need to be made aware of a commitment to become cognizant of their abilities. All students should be assessed for test-wiseness in the 1st semester because students who are not test-wise for whatever reason need to be identified early in the nursing programme.

Appropriate assessment and specific interventions will allow students time to develop test-taking skills, particularly those strategies that are new and/or involve changes in behaviour. Additional factors such as poor reading/math skills may mean that students have a weak understanding of basic concepts which becomes increasingly evident as the student progresses through the programme due to the amount and complexity of nursing/medical information and terminology. Techniques such as the Learning Assistance Program (Condon, 1986), can be used to analyze students in order to diagnose specific test-related problems. Thus, inadequate study habits, poor knowledge, high anxiety and/or weak test-wiseness skills can be classified and specific interventions planned according to individual needs. For example, students may benefit from professional help such as Counselling for anxiety and/or the Learning Centre which offer group and one-to-one assistance in designated areas, e.g., study/test-taking skills. Once students are aware of problem areas they can assume some personal commitment for success in the realm of test-taking and the enhancement of test-wiseness skills.

Faculty

Clearly, for student initiative to succeed, faculty must offer appropriate systemic support. Faculty must

be able to identify students who have difficulty communicating knowledge on multiple choice tests. Students who have weak study skills, language difficulties and/or reading/math problems with resultant high anxiety are usually relatively easy to identify because of their low scores and concomitant lack of progress. However, there are students whose scores are simply not a true reflection of their academic ability, e.g., when compared with clinical performance, classroom discussion and/or written assignments. It is this group which must also be identified at an early stage so that less effective test-taking skills can be strengthened in order to provide a true reflection of their cognitive abilities.

It is important to recognize that test-wiseness is a skill that is needed by nursing students not only to perform to their full potential while in the nursing programme, but also in order to successfully pass the National/State Board Licensing examinations and thus realize a professional goal, the license to practise nursing. Furthermore, this ability has repercussions for personal and professional growth because it is the most important criteria upon which a student nurse is evaluated. Successful completion of the programme does not necessarily guarantee entry into practice. A final

consideration is that of continued professional growth through further education at the Baccalaureate level which may be threatened due to a low G.P.A.

The results and subsequent interpretation of this study provided data which suggest a need to streamline the amount of information given to students, many of whom complain bitterly about being overloaded with paper and information. This is particularly frustrating for students when they are unclear about what is important, i.e., what do they need to know in order to pass the test and what in fact is tested relative to what they have been told to read/study. Clearly it is the weaker student whose problems are compounded in this instance.

There is an obvious need to help students identify productive ways of managing course content. (Condon, 1986) suggests that, "lack of knowledge of subject matter is one of the main reasons that students do poorly on exams," and that this weak knowledge base is due to a number of interrelated factors. These include; limited reading skills, inadequate note-taking during lectures and poor application of concepts. Given that educators have a mandate to help students achieve their learning goals it follows that a variety of instructional techniques could be utilized. For example, ensuring that the required texts are at an

appropriate reading level would be a good place to start. Also the use of vocabulary lists and key concepts as advance organizers plus study guides to highlight important content areas are different ways of enabling students to learn subject matter more effectively. Individual learning styles also deserve consideration and instruction based on a learning module which fosters independent learning, thus allowing students to progress at their own pace, is a useful instructional alternative.

The above recommendations have assumed that the tests themselves are valid. The teachers must be vigilant that they are. There is a need to establish well-defined objectives for teaching content which reflects the test blueprint. Thus concepts would be taught in relation to the objectives and the test items would align with those specific objectives. Increased use of situational examples in class/clinical time and the utilization of realistic case studies would also help students to internalize knowledge through practise and thus increase problem-solving abilities. A further recommendation related to classroom teaching is the inclusion of some multiple choice questions during and/or towards closure of the lecture.

Familiarity with multiple choice test items in a

non-threatening environment can assist students to apply and analyze the material. We need to create links and build bridges for students, particularly when dealing with abstract concepts and the surfeit of constantly-changing and increasing amounts of nursing/medical knowledge.

Yet another area of concern under category two expressed by students was related to the reviewing of tests. According to the Canadian Nurses Association, an advantage of multiple choice exams is that both teacher and student should be able to diagnose strengths and weaknesses from exam results (C.N.A. Testing Service, 1987). Review sessions can be used as a positive reinforcement to increase students' understanding of subject matter and to provide reasons for an incorrect answer. Many nursing students, especially low-scoring students tend to be nonassertive and thus often miss the opportunity to augment their knowledge base and clarify reasons for "missing" the answer. In this regard it would seem to be incumbent upon individual teachers to provide both time and opportunity for reviewing tests so that content areas and test-wiseness skills could be discussed in a constructive manner.

Final recommendations to faculty are concerned with test construction and evaluation, again an issue central

to validity. Item-writing demands a high level of expertise and characteristics of a good item-writer include the following; in-depth knowledge of content and student characteristics, excellent communication and writing skills plus creativity, patience and perseverance. Although hampered by time and economic restraints, teachers must use item analyses for deriving test reliability, validity, item difficulty and discrimination. These data, when used to revise items, will lead to higher quality items in the test bank. To the degree that teachers have internalized these skills is reflected in their ability to model, diagnose and create appropriate test situations for learning and evaluation.

Educational Technologists

The third category involving recommendations emanating from this study revolves around the role of the educational technologist whose focus would be to assist in increasing the efficiency and effectiveness of the teaching/learning process as it relates to test-taking. The implications for an educational technologist in this context would be to suggest practical applications to determine how nursing students and faculty can realize their educational goals. These include:

1. Faculty attendance at training/workshop sessions in order to augment expertise in curriculum design and development, instructional strategies as well as measurement and evaluation. For example, the test services of the Canadian Nurses Association will provide a test development officer to work with faculty on all aspects of testing e.g., item-writing.
2. Exam analysis (Learning Assistance Program, Condon 1986).

   This diagnostic tool would be utilized by the teacher and student using the students' test paper to dissect and classify problem areas i.e., why/how did the student lose marks.
3. Individualized interventions could then be recommended to help students strengthen specific skills.
4. Utilization of resources within the Nursing Department and the College, for example,
   a. Learning Centre for remedial and counselling expertise.
   b. Nursing Department should increase availability of test books for practise. These would contain items that reflect specific content at varying levels of difficulty.

      i.e., 101 through 601.
   c. The Library should include a variety of

instructional media relating to study habits, test-taking and test-wiseness skills.
e.g., texts, periodicals, film, video and computer-assisted learning.

5. The teaching of test-wiseness needs to be integrated into the curriculum and as such, given adequate class time, throughout the Nursing Programme.
6. Students could be offered the option of modular instruction for teaching test-wiseness skills. Results of the field evaluation of the module used in this study revealed a need to revise certain aspects of the material.
   i.e., several strategies were well-known to some students at the 401 level so the format could be expanded and provision for enrichment added in order to increase the effectiveness of the materials.

Revised modular instruction with the use of an algorithm to clarify appropriate problem areas could be implemented and offered to students as an adjunct to learning test-wiseness.

If faculty are sensitized to the fact that test-wiseness skills need to be taught as an integral part of the curriculum, then operationalization of these recommendations will be realized. Thoughtful planning,

preparation and processing of examinations will make them a vital part of teaching and learning.

Conclusion

In conclusion, the fundamental issue remains, which is, that in order to achieve optimum scores, students must be able to demonstrate their nursing knowledge on multiple choice examinations. Accomplishment of this involves a process whereby attention is focused on students' individual educational needs as early as possible in the nursing programme. Thus students who need help are assessed, diagnosed and provided with specific interventions in order to maximize their test-taking performance. Finally, given that, "Educational technology is a way of thinking about and determining which educational goals are worth pursuing for particular learners in a given setting." (Stakenas and Kaufman 1981), it follows that educational technologists have a fundamental role to play in providing the, "holistic integrative process", by which learners are able to realize their educational goals.

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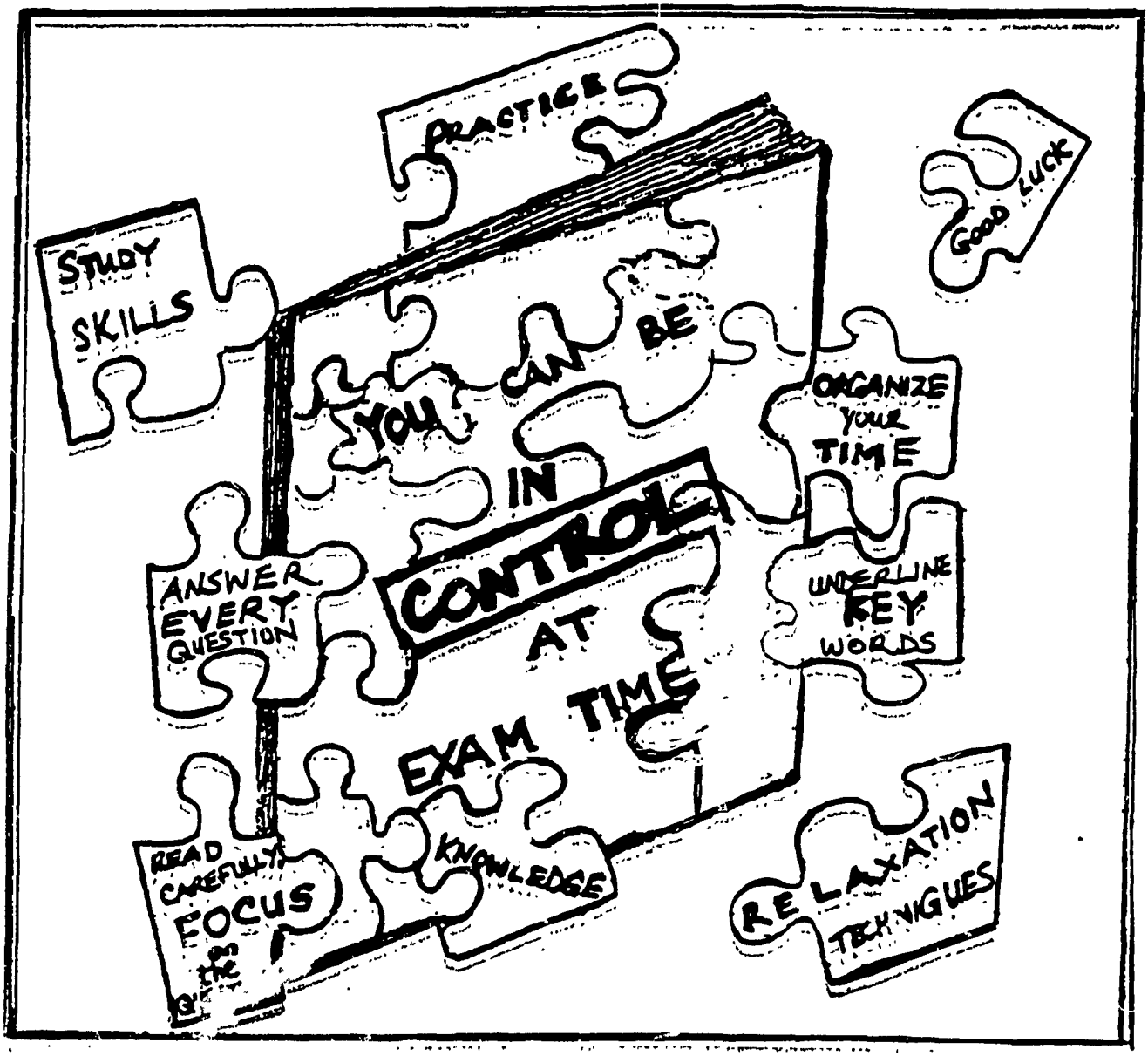
Appendix A

Self-Instructional Module



A MODULE TO HELP YOU HELP YOURSELF WITH MULTIPLE CHOICE TESTS

TABLE OF CONTENTS

OBJECTIVES

When you have completed this module, you will be able to:

1. Identify your strengths and weaknesses related to test-taking.

2. Use specific study skills.

3. Use relaxation techniques to reduce your test anxiety.

4. Use specific test-taking strategies.

5. Achieve higher scores on multiple choice tests.

6. Express increased self-confidence related to taking multiple choice tests.

INTRODUCTION

For most of us taking a test is not a pleasant experience and rarely does anyone really enjoy being in a test situation. However, the reality is that there are a number of circumstances under which there is no option but to TAKE THE TEST. Also there is usually something important dependent on a successful test performance; it may be a driver's licence, a language requirement, or a passing grade for a course.

All candidates, including successful performers, experience anxiety and concern about their performance when taking tests. A recommended solution is to LEARN MORE about taking tests.

Everytime you take a test you are really being tested on TWO things:

1. Knowledge of the content (subject matter).
2. Your test-wiseness (test-taking skill).

This self-instructional module has been written to help you increase your test-taking skills. General suggestions are proposed and specific test-taking strategies are listed.

REMEMBER

1. This module is proposed as an aide to ENHANCE your test-taking skills.

2. This module is NOT a substitute for knowledge of content (subject matter).

The KEY to successful test-taking lies in being 'well-prepared'.

Knowledge of the subject is important AND your attitude and the way in which you approach the questions can made a significant difference.

There are many reasons for not doing well on multiple choice tests and to some degree they are all interrelated.

The 3 main areas are:

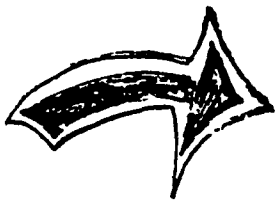
A. LACK OF KNOWLEDGE (of subject matter).

B. EXAM PANIC.

C. LACK of KNOWLEDGE of TEST-TAKING SKILLS (test wiseness).

Think about which one(s) affect you most at the moment.

Now TURN the page.



A. LACK OF KNOWLEDGE (of subject matter)

It is important to be HONEST with yourself! Did you really understand the content for the last quiz? Remember at the beginning of this module it says, that when you take a test you are being tested on TWO things. HOW MUCH KNOWLEDGE you have about the SUBJECT and HOW MUCH you know about TAKING TESTS (test-wiseness).

If you are having trouble with study skills, managing your time, difficulty taking notes, etc. etc...PLEASE make an appointment with LEARNING CENTRE TODAY.

Tel. Gail Booth - 380

Also perhaps talk with your clinical teacher.

Some BASIC and EFFECTIVE STUDY HABITS INCLUDE the FOLLOWING:

1. Prepare for class, ie. preclass reading preparation.
2. Attend every class. If for some reason you are unable to be there, organize a "BUDDY" system so that you can get notes, handouts and other information.

3. ASK QUESTIONS ALL THE TIME

In class/clinical areas

Quiz your friends

Have them Quiz YOU

Form a STUDY GROUP

You can learn a lot from your FRIENDS maybe even more than from the teacher(s)!

'Bug' your teacher over areas which confuse you.

GO OVER class notes and reading as soon as possible after class - preferably the same night.

Find out what works for YOU and

and DO IT

DO IT

DO IT

B. TEST ANXIETY

Research indicates that a certain level of anxiety is important; it sharpens our senses and increases the ability to FOCUS. However, a high level of anxiety or test 'panic' has a negative effect on test performance. Anxiety can interfere with memory, causing poor concentration or mental block. You can even forget information and facts that you REALLY do know. Anxiety may prevent you from using your test-taking skills!!

RELAXATION techniques can be very helpful. Try this simple exercise - practice until you can recall it at any time.

STOP!

AN EMERGENCY QUICK RELAXATION TECHNIQUE

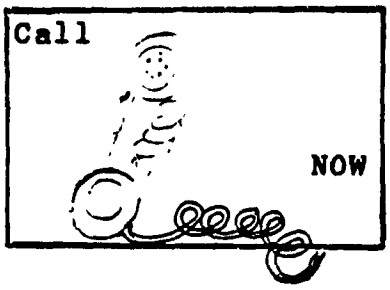
1. Say sharply to yourself, aloud if the situation permits, "STOP!". This means stop fussing, getting so worked up.
2. Then BREATHE IN and hold your breath for a moment (generally you should not pause between inhaling and exhaling, but in this sort of emergency it may help). But don't hold it for more than a moment.
3. Then BREATHE OUT SLOWLY and, as you do, Relax your shoulders and hands.
4. Pause for a moment then BREATHE IN again.
5. As you BREATHE OUT SLOWLY, this time Relax your forehead and jaw.
6. Stay quiet for a few seconds then go on with whatever you were doing, but MOVE SMOOTHLY AND SLOWLY. If you have to talk, speak a little more slowly and with your voice a little lower than usual.

If you feel that ANXIETY is really becoming a problem the COUNSELLING DEPARTMENT and/or LEARNING CENTRE are available for YOU.

Take advantage of this help.

Call them at...

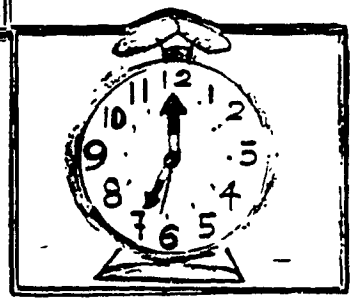
Counselling Loc. 292. Learning Centre Loc. 380



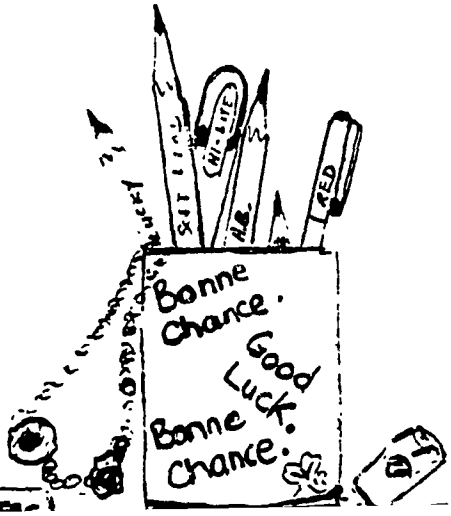
Remember that PREPARATION and ORGANIZATION are important:

1. Get a good night's sleep.

2. Set the alarm so you won't be late.



3. Have sharp pencils, eraser, good luck charm, candy and whatever with you.



HINT GET EVERYTHING READY THE NIGHT BEFORE.

These are all very IMPORTANT techniques that YOU can use in order to reduce your anxiety.

ON THE DAY OF THE TEST

DON'T WASTE VALUABLE ENERGY.

Keep contact with friends to a minimum.

BE ON TIME.

Find a comfortable place (for YOU) when you enter the examination room.

As soon as you sit down... ORGANIZE

If you use any specific memory aids, WRITE them on your exam sheet. Do this as soon as possible. Once the test has started you may have difficulty or even be unable to remember them especially if you are very anxious about a particular question.

There are many ways of RECALLING information. These memory 'cues' are called MNEMONIC (pronounced NEMMONIC) aids and can be very useful in helping you to remember specific information . It may be a formula, a rhyme, anything which will help you to C-O-N-N-E-C-T facts and information. Whatever aids you use, they need to be written on your examination paper (the back page is good) as soon as you sit down, this will help you to organize your thoughts, relax you and REDUCE your anxiety.

N.B. See page 27 for more information on MNEMONIC AIDS.

So you KNOW the SUBJECT MATTER and your ANXIETY is under CONTROL.

NOW is the time to learn some Test-Taking SKILLS.
You need to be able to use some SPECIFIC STRATEGIES.

The remainder of this module will provide you with new ideas, information and some techniques all geared to help you

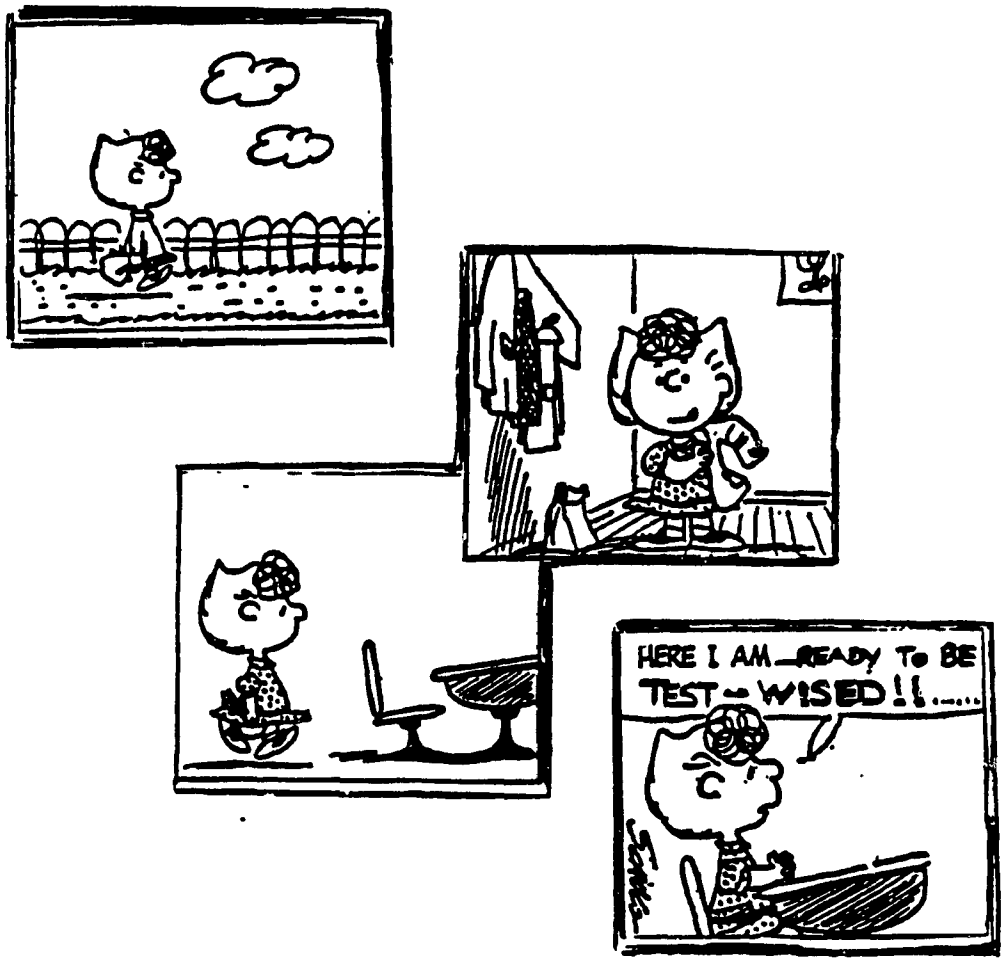
INCREASE

YOUR

TEST-WISENESS

LET'S GO... EN AVANT....

C. TEST TAKING SKILLS for MULTIPLE CHOICE TESTS

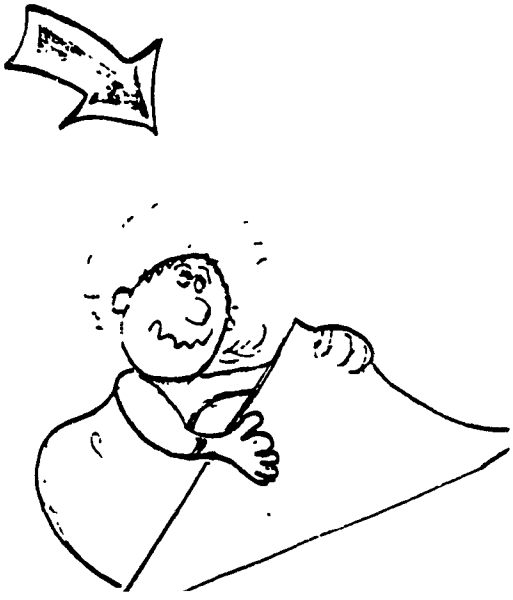


Research has shown that the most common problems contributing to low marks on multiple choice tests are:

1. Poor organization of time
2. Failure to <u>focus</u> on <u>what</u> the question is asking
3. Not ACTIVELY thinking through the question
4. Changing answers
5. Recopying inaccurately
6. Lack of attention to "KEY" words eg. EXCEPT
7. Omitting questions

If you have made any of the above "mistakes" in the past you are now going to learn some ways to <u>avoid</u> these problems.

TURN the PAGE and LET'S GO



Because multiple choice questions are so widely used on nursing exams, it is important that you learn, develop and EMPLOY certain test-taking strategies. This section of the module has been designed to introduce you to some of these strategies.

Look at this list - DO YOU use any or ALL of these strategies?

1. Organize TIME.
2. Answer easier questions first.
3. Leave more difficult questions - return later...
4. Focus on KEY words, underline and/or highlight.
5. Second-guess the teacher - ANTICIPATE answers.
6. Actively reason through the questions.
7. Reread the test at the END.
8. Answer ALL questions and GUESS if you don't know.

If you use ALL of these strategies.... GO TO page 30 and test yourself.

If you would like to find out more about multiple choice questions and how to answer them, then TURN the page and learn how to get an "A" on your next multiple choice test.

First let's look at the ANATOMY of a multiple choice question:

Multiple choice questions usually consist of 2 parts.

1. **STEM**

   An introductory statement which poses the problem.

2. **OPTIONS**

   There are usually 4. 1 = correct answer

   3 = distractors

eg.

During pregnancy a major dietary problem is:

a. weight gain above 20 lbs.
b. iron deficiency anemia
c. frequent voiding
d. excessive thirst

Option b is the correct answer. You could be tempted by Option a. as too large a weight gain can be a potential problem, however, 20 lbs. is not too much weight to gain and the stem does not give information about gestation which could have made a difference.

Option c. is a true statement during pregnancy BUT voiding is not a dietary problem.

Option d. would only be a problem if some other (medical) condition eg. diabetes was present - again there is no mention of this in the stem. Therefore you are left with OPTION b.

Now turn the page for an example of a different type of multiple choice question. ⟶

Some multiple choice questions are constructed so that the correct answer indicates more than one action. These questions are testing

1. Your knowledge of specific facts
2. Your understanding of the relationships between different aspects of information.

They are called combination multiple choice questions. Here is an example:

eg.

Which of the following best describes examples of medical asepsis?

1. using lubricant when taking a rectal temperature
2. washing hands well between patient contact
3. washing the thermometer with soap and cool water
4. shaking down the thermometer before inserting it

a. 1, 3
b. 1, 4
c. 2. 3
d. 2. 4

Option c. 2, 3 is the correct answer. You must choose your answer from the LAST set of choices ie. letters a, b, c, or d. They always refer to a combination of the numbered responses and you should choose the best combination.

In the above example responses 2 and 3 are correct because they are medical asepsis practices. Responses 1 and 4, although correct nursing procedures, do not

directly relate to the practice of asepsis so they can be eliminated.

HINT

Be careful that you do not treat this type of item like a standard multiple choice question and mark one of the numbers instead of choosing one of the lettered responses which follows it.

NOW LET'S TAKE

A 5-MINUTE S-T-R-E-T-C-H BREAK

Before moving on to some TEST-TAKING STRATEGIES

TEST-TAKING STRATEGIES

1st STRATEGY. BUDGET YOUR TIME

Look at the test...

How MANY questions are there?

How much TIME do you have?

Put your WATCH in front of you and/or ask the TEACHER to WRITE the TIME on the blackboard at 1/2 hourly intervals.

For each multiple choice question you are generally allowed 1 1/2 minutes, therefore for a quiz of 75 questions you will be allowed 2 hours.

You will be able to answer some questions VERY quickly, you can answer them as soon as you have read the question, others may take longer Keep an eye on your WATCH. . . . .

KEEP MOVING. . . . . .

When you come to a DIFFICULT question.

Eliminate the choices you know are wrong. If you still can't decide on the correct answer LEAVE IT. * MARK IT CLEARLY in the margin so that you will be able to find it easily after you have finished the total exam. By that time you will be more relaxed and another question or answer may have sparked your memory.

DON'T PANIC. . . . . and

Whatever you do don't get bogged down by a difficult question. You will only get more anxious AND waste time. Remember that with multiple choice tests EVERY question has equal weight so use your precious time and energy to work on the questions/answers you are sure of.

LEAVE enough time at the end to return to the unanswered questions and if you still can't decide on the remaining answer - GUESS. . . . . .

There are no penalties for GUESSING and you could get LUCKY. . . . . .

Sometimes tests start with easy questions, sometimes they don't.

HINT

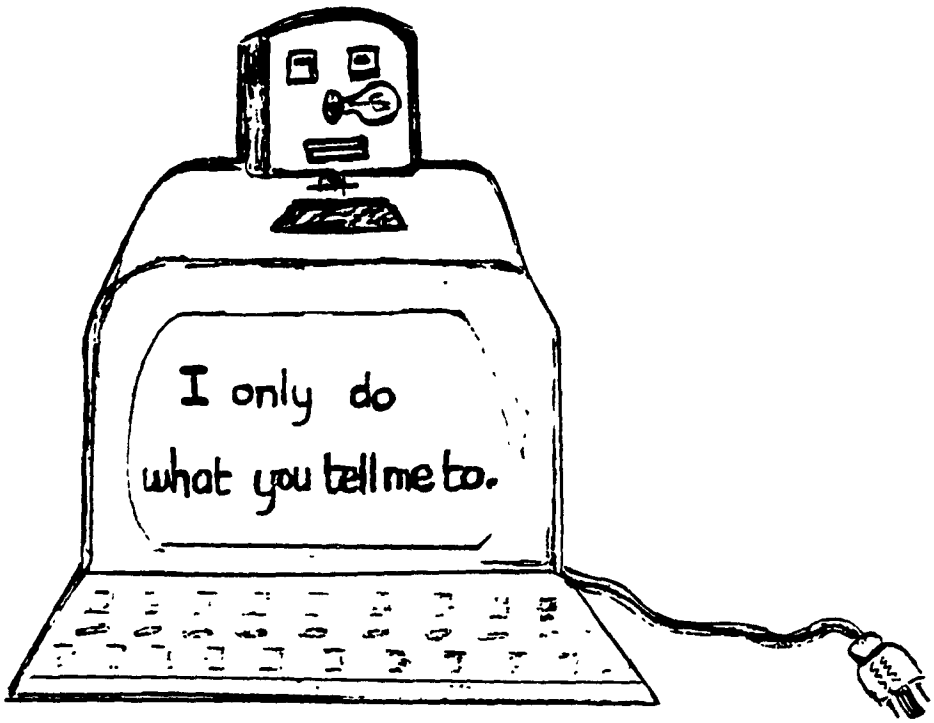
Look for a "situation" that you know and feel good about and do it FIRST. This will calm your anxiety and at the same time get your memory working SMOOTHLY.

Use ALL of your TIME

ALWAYS reread the test AT THE END in case you have missed a question or an answer.

ALWAYS check your Abscan sheet very CAREFULLY - making sure that it is complete and accurately reflects your choices. This is especially important if you left any questions unanswered on your first round.

Remember this test is marked by a MACHINE.



2nd STRATEGY. **READ THE QUESTIONS CARREFULLY and FOCUS on "KEY" WORDS**

Certain "key" words in the stem, the options or both should alert you to the need for caution in making your answer choice. Some of these "key" words are all, never, only, must, none, always and except.

HINT How to cope with the EXCEPT question.

This type of question may take a little more time but is easy when you use the following strategy.

Look at this example:

eg.

To assess integumentary changes associated with nutritional status. the nurse would examine all of the following except the

a. hair
b. skin
c. nails
d. tongue

STEPS

1. X out "all" and "except"
2. Replace "all" with "3"

The question now looks like this -

eg.

To assess integumentary changes associated with nutritional status, the nurse would examine 3 of the following, the

a. hair
b. skin
c. nails
d. tongue

Now you have a more straightforward question BUT you still need KNOWLEDGE in order to choose the CORRECT answer.

d. tongue = the answer because it is an organ. Hair, skin and nails are all integument.

Now practice with some 'except' questions.

Q.1. Common health hazards during young adulthood include all of the following EXCEPT

a. drug and alcohol abuse
b. accidents
c. cancer
d. obesity and hypertension

Q.2. Anorexia nervosa is characterized by all of the following EXCEPT

a. drastic reduction of food intake
b. induced vomiting or use of laxatives and/or diuretics
c. excessive consumption of food followed by self-induced purging
d. irrational need to be thin

Check your answers on page 28.

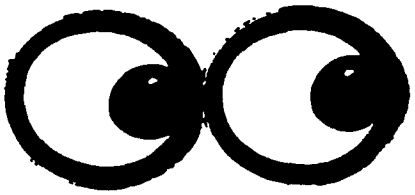
You got them right - CONGRATULATIONS!

You are increasing your TEST-WISENESS.

If not - TRY AGAIN. Return to page 18 and PRACTICE.

Remember to X out 'all' and 'EXCEPT' then replace 'all' with 3.

Now let's look at another way to improve your Test-Taking Strategies...



for relevant information from earlier questions. Sometimes teachers "slip-up" and occasionally information from one question may provide you with a clue for answering another.

eg.

Mrs. Smith has a nasogastric suction "in situ" following major intestinal surgery. This medical intervention can result in excessive loss of

a. vitamins and minerals
b. energy
c. protein
d. water and electrolytes

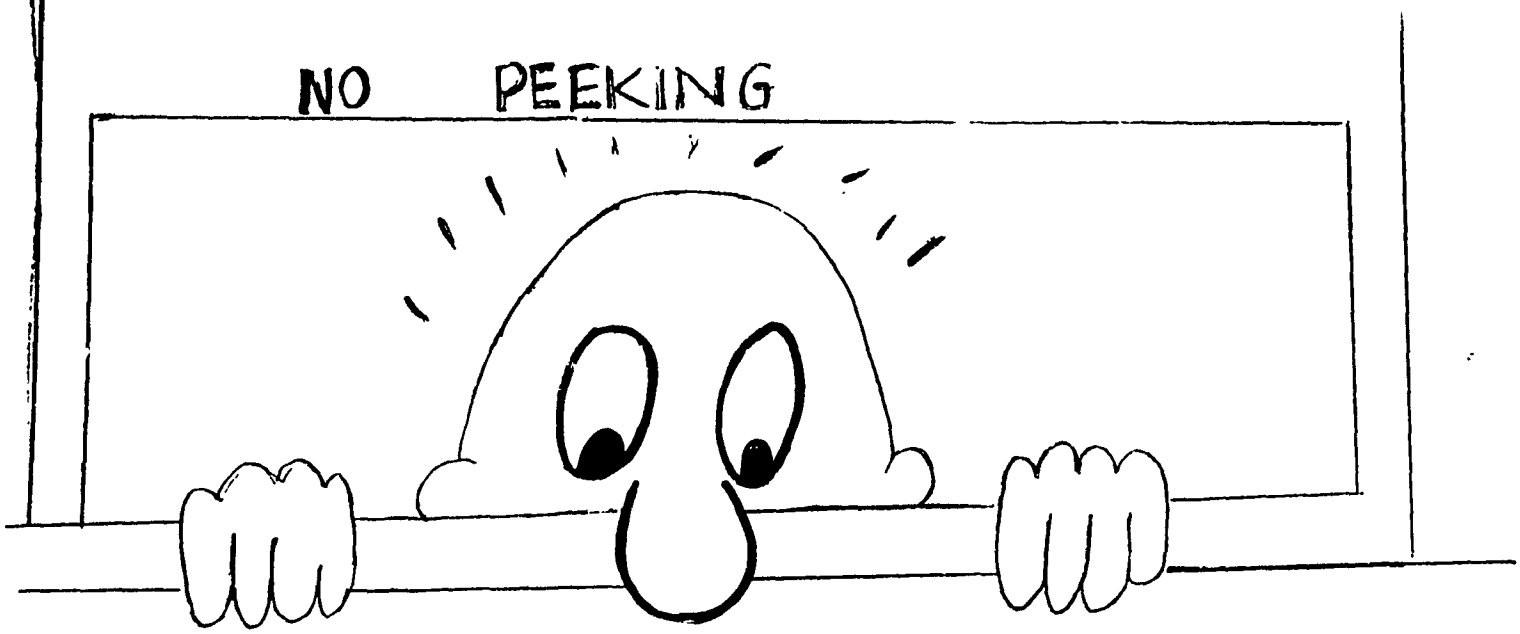
If you know that the correct answer is option d. water and electrolytes it can help you to answer the next question.

eg.

Assessment of Mrs. Smith would include observation for

a. diaphoresis
b. bradycardia
c. dehydration
d. nausea

The correct answer is option c. dehydration. If you knew that excessive loss of water and electrolytes may lead to dehydration, then you could have used the clue provided in the first question to help you in answering the second question.


NO PEEKING

3rd STRATEGY. **ANTICIPATE the ANSWER and place the QUESTION(S) in CONTEXT**

As you read the question, try to relate it to what you have read in your text or heard during class. Perhaps you had a patient in the clinical area who fits this description.

Do not fall into the trap of answering a question with your own personal opinion or what has been said in another course.

Even if you think the answer is wrong, it may be the BEST answer that is THERE.

Consider the concepts which relate to your semester.

eg. In 401 the 2 main concepts are NUTRITION and ELIMINATION.

Therefore the answer to a question will usually be related to nutrition and/or elimination.

eg.

When obtaining a nursing history from Mrs. Brown who has been admitted with a possible diagnosis of hyperthyroidism, you would anticipate that she will complain of

a. nocturnal diuresis
b. weight loss
c. vertigo
d. pruritis

Although a patient who has hyperthyroidism (an increased secretion of thyroid hormones) may suffer from all or several of these options, the most common one is that of weight loss, it is also important from a nutritional point of view. Thus option b. weight loss is the correct answer.

Another useful strategy is 2nd-guessing the teacher(s) (who made up the questions!)

HINT

Before reading the stem of the question COVER THE ANSWER(S)

Then try to guess what the answer will be...

WHAT do YOU think the teacher wants?

Try this example. (Use the cover provided)

Q.3. You are assigned to ASSESS Mrs. Jones immediately following her delivery of a 7 lb. 6 oz. baby girl. Which of the following nursing actions is the MOST important?

a. checking vital signs
b. palpating the fundus
c. giving a backrub
d. calibrating the intravenous

Turn the page to find out if you are correct -

If you answered <u>option c. palpating the fundus</u>

YOU ARE RIGHT - BRAVO!

Practice with the next 2 questions below or move to the next page.

If you got a wrong answer or are not SURE then <u>PRACTICE</u> the following questions. Remember to COVER the answers and 2nd-guess the teacher.

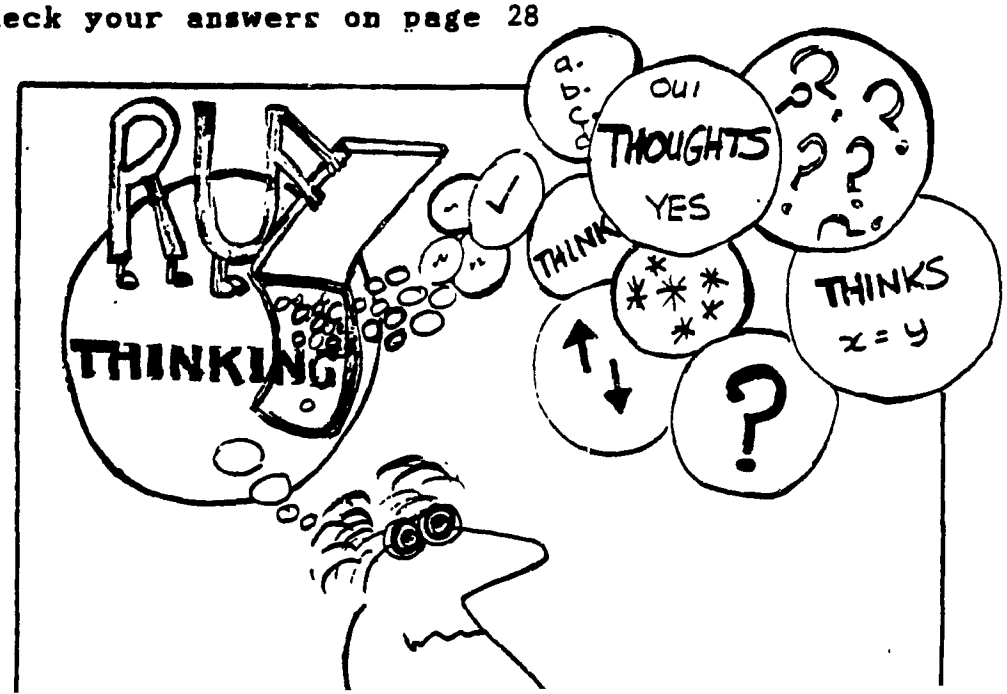
Q.4. When palpating the newborn's anterior fontanel it should be

a. depressed
b. bulging
c. tense
d. soft

Q.5. The taking-in phase of puerperium occurs during the first 2-3 days after delivery. During this time the mother is most concerned with?

a. infant care
b. details of her delivery and herself
c. discharge plans
d. postpartal exercise for herself

Check your answers on page 28



4th STRATEGY. **ACTIVELY REASON THROUGH THE QUESTION. ELIMINATE OBVIOUSLY WRONG ANSWERS.**

ACTIVELY THINK through the question. When you do not know the specific facts called for in the question use your skills of REASONING. Multiple choice questions are not purely tests of factual recall. They also test your comprehension and interpretation of information. One statement is going to be closest to the truth. By ELIMINATING the answers you know to be wrong you will limit your choice and improve your chance of answering correctly. Eliminating OBVIOUS distractors also allows you more time to FOCUS on the options that appear to be potentially sound answers to the question.

eg. Your plan of care for Mr. Jones includes increasing his fluid intake. Which of the following nursing orders would you write?

a. fruit juice 150 ml, 9:00, 11:00, 15:00, 18:00
b. fluids as tolerated per M.D. order
c. provide extra fluids ac, pc, meals
d. encourage fluids with meals, 8:00, 12:00, 17:00

Option b is clearly inappropriate since the stem is asking for a nursing order. Option c is also incorrect, it is too vague. Both a and d are plausible but option d is not specific enough. Offering fluids between meals (option a) is generally more successful than offering

fluids with meals. Therefore the correct answer is option a. By reducing the plausible options, the material to consider is reduced and the probability of selecting the correct option is increased.

5th STRATEGY. **REREADING THE TEST and CHANGING ANSWERS**

It is very important to save some TIME at the end of the test in order to CHECK that you have answered ALL the questions, remember those * you put in the margin earlier. Before you turn your paper in, ALWAYS read through to check for careless mistakes such as putting down an unintended answer or simply forgetting to answer a question. If you have some spare time and are not 100% happy about those calculation questions NOW is the time to recheck your Math. When you reread the text you may be tempted to change some answers. Research has shown that FIRST choices are usually correct and that by changing answers, most students lose marks. DO NOT hastily change any answers. Your instinctive first choice was probably right. If you feel STRONGLY that an answer should be changed, then do it but if you have difficulty making a decision - LEAVE IT.

6th STRATEGY. GUESSING

When you are unsure about the correct answer to a question, it makes sense to guess - it may be the right answer and anyway you have nothing to lose! Therefore GUESS whenever you are confronted with lack of time or too difficult a question. Of course it is much better to make an educated guess so where possible, eliminate options and make your guess an 'informed' one. This elimination process increases your chances for selecting the correct option from remaining ones. Elimination of TWO distractors on a FOUR-option multiple choice question increases your probability of choosing the correct answer from 25% to 50%!

7th STRATEGY. MNEMONICS

$\frac{\text{T.V. X D.F.}}{\text{T.I.T.}}$ = Formula for calculating I/V drops/minute

ie. $\frac{\text{Total Volume X Drop Factor}}{\text{Total Infusion Time}}$ = dr/min.

R	Redness	
E	Eccymosis	
E	Edema	= Assessment of Incision
D	Drainage	
A	Approximation	

H	Hemorrhoids	
E	Episiotomy	
B	Breasts	
U	Uterus	= Assessment of Postpartum Status
B	Bladder	
B	Bowels	
L	Lochia	
E	Emotional	

These are examples of MNEMONIC aids which many students use. If you find that these help you to learn and recall facts - USE them. Make up your own...

N.B.

Mnemonic aids need to be **USED**. In other words you must **practice** using them. Repeat, recite them so that you can recall them easily.

WALKING TO SCHOOL

IN THE TUB

Have formulae, rhymes, etc., written in LARGE PRINT

- on the 'fridge door
- above your desk/study area
- in the bathroom, on the door, on the mirror.

ANSWERS

Q. 1. c. cancer

Q. 2. c. excessive consumption of food followed by self-induced purging

Q. 3. b. palpating the fundus

Q. 4. d. soft

Q. 5. b. details of the delivery and herself

SUMMARY

OF TEST-TAKING STRATEGIES

1. Watch the TIME.
2. UNDERLINE 'key' words.
3. READ all choices before choosing answer. Use your power of REASONING.
4. Leave difficult questions - * in margin then RETURN later.
5. ANTICIPATE answers.
6. Answer all questions, GUESS if you don't know.
7. Use MNEMONICS.

Time

Underline

Reasoning (Read)

Return

Anticipate

Guess

= TURRAG

If you don't like my mnemonic, make up your own!

Now you should be ready to try the POSTTEST.

Allow yourself about 15 minutes.

Answers are on page 37. If you get any incorrect answers - FIND OUT WHY. Return to previous sections to refresh your memory.

BONNE CHANCE - GOOD LUCK!

POSTTEST

1. The main sources of carbohydrates in the diet are:

   a. grains, vegetables, meats
   b. meats, fish, eggs
   c. milk, cheese, bread
   d. fruits, vegetables, grains

2. The best food source(s) for vitamin A are

   a. liver and nuts
   b. dark green vegetables
   c. grains and cereals
   d. milk and cheese

3. The mineral MOST commonly requiring supplementation during pregnancy is

   a. calcium
   b. phosphorus
   c. iron
   d. iodine

4. Mrs. Smith is to have a high-protein, high-vitamin diet. Which one of these dinners would be nutritionally best for her?

   a. creamed chicken, white rice, apple and nut salad, fruitcake
   b. broiled beefsteak, broccoli, tomato and endive salad, 1/2 cantaloupe
   c. lamb loaf, beets, olives and raw celery, fresh pear
   d. pan-broiled bacon and tomato, corn, apple-sauce with ginger cookie

5. The essential steps of the nursing process are

   a. admission, testing, treating, and discharging
   b. analysis, comprehension, internalization, and assimilation
   c. assessment, planning, implementation, and evaluation
   d. anticipation, prevention, curing, and rehabilitation

6. When taking an oral temperature, the nurse promotes the comfort of a client by all of the following <u>except</u>

   a. explaining the procedure to him
   b. talking quietly with the client to pass the time more quickly
   c. interpreting the results of the findings with him
   d. able to assume a comfortable position

7. Lorraine, age 6 months, has a diagnosis of pneumonia. The physician has ordered clear fluids orally. One nursing order listed on her nursing care plan is to, "Give 30-50 cc orally per hour." The main reason for this action is to

   a. prevent crying due to hunger
   b. provide a distraction
   c. avoid cardiac overload
   d. maintain hydration

8. Mr. Smith, 65 years, is a three-day postappendectomy patient. He has an order for the measurement of fluid intake and output and he needs to increase his fluid intake from 800 cc to 1600 cc per day. Mr. Smith is able to walk and seems able to learn how to measure his intake and output accurately himself. An important part of your nursing care should be to

   a. make certain that the staff measures and records his intake and output on every shift
   b. prepare and implement a plan for teaching him the importance of adequate intake, and for recording his own intake and output
   c. see that his fluid intake is recorded on his chart after every meal and snack, and advise him to drink more fluids
   d. teach him to accurately measure and record his intake and output

9. Mrs. Potter is a Gravida 3 Para 2. Which of the following best describes this statement? She is

   a. pregnant for the first time
   b. pregnant for the third time and has had two other viable pregnancies
   c. no longer pregnant having just delivered her third child
   d. pregnant for the third time and has had two abortions

Mary Smith is in the third trimester of her first pregnancy.

Questions 10 to 13 refer to this situation.

10. Factors that promote constipation in pregnant women include all of the following except

    a. pressure on the lower bowel from the growing fetus
    b. iron supplementation
    c. smooth muscle relaxation
    d. interruption of rest and sleep patterns

11. Mary complains of cramplike pains in her legs. Your plan of care would include which of the following?

    1. adequate calcium intake
    2. wearing elastic stockings
    3. regular exercise
    4. pointing toes when stretching

    a. 1, 2
    b. 1, 3
    c. 2, 4
    d. 3, 4

Mary is delivered of a normal, healthy 8 lb. daughter. You are assigned to care for her on the postpartum unit.

12. Before assessing her fundus you would

    a. ask her to void
    b. elevate the head of the bed
    c. massage the uterus
    d. auscultate for bowel sounds

13. Mary plans to breastfeed and asks you, "Will the medications I take hurt my baby?" Which of the following is the most correct statement.

    1. nonprescription drugs are harmless
    2. most drugs taken are secreted in the milk
    3. taking drugs immediately before breastfeeding may minimize the baby's exposure
    4. laxatives containing cascara may cause diarrhea

    a. 1, 2
    b. 1, 3
    c. 2, 4
    d. 3, 4

14. An enema saponis (soapsuds) has been ordered for your patient. Before commencing the procedure you request that she lie on her (L) side. The reason for this is

    a. the stomach lies on the (L) side of the abdominal cavity
    b. she will be more comfortable on her (L) side
    c. it is the most convenient position for a right-handed nurse
    d. the descending colon lies on the (L) side of the abdominal cavity

15. Interpret the following order

    "A.S.A., gr. x, p.r., q.i.d., p.r.n."

    a. "A.S.A. 10 grams, previous to resting x 4 daily as required."
    b. "A.S.A. 10 grains, per rectum, four times a day, whenever necessary."
    c. "A.S.A. 10 drops, by mouth, four times a day, when desired."
    d. "A.S.A. 10 grains, possibly received four times a day."

ANSWERS are on the next page.

ANSWERS TO POSTTEST

1.	(a)	(b)	(c)	[redacted]
2.	(a)	[redacted]	(c)	(d)
3.	(a)	(b)	[redacted]	(d)
4.	(a)	[redacted]	(c)	(d)
5.	(a)	(b)	[redacted]	(d)
6.	(a)	[redacted]	(c)	(d)
7.	(a)	(b)	(c)	[redacted]
8.	(a)	[redacted]	(c)	(d)
9.	(a)	[redacted]	(c)	(d)
10.	(a)	(b)	(c)	[redacted]
11.	(a)	[redacted]	(c)	(d)
12.	[redacted]	(b)	(c)	(d)
13.	(a)	(b)	[redacted]	(d)
14.	(a)	(b)	(c)	[redacted]
15.	(a)	[redacted]	(c)	(d)

If any of your answers were incorrect, READ THE QUESTION AGAIN. Ask yourself WHY and perhaps..... Return to the module and reread the information. For example, if you answered questions 6 and/or 10 incorrectly, you need to review pages 18 and 19. If you require any information or explanation about any of the posttest questions, please contact Betty Carswell, 849-2758 or local 381.

POSTSCRIPT

Learn from your mistakes. Do this by:

1. Asking your teacher to REVIEW tests as soon as possible after the marks are posted. This may be done individually or in a group.
2. Find out WHY you got the question wrong.
3. Classify your error(s). BE HONEST. In which of the following categories does your incorrect answer belong.
   A. Lack of knowledge (subject matter)
   B. Exam anxiety
   C. Lack of knowledge of test-taking strategies
   Your error(s) may be related to all three of the above but it important that you know where your mistakes are being made - only then can you start correcting them.

PRACTICE is very important.

You can do this in several ways:

1. Ask your teacher(s) for HELP... eg. old exams, use classroom, conference time to discuss questions/answers.
2. Contact and USE the Learning Centre - they have old exam copies waiting to be practised on!!
3. Form a study group.
4. Textbooks are available (see Bibliography). They are fairly expensive but you could share. Also check out the libraries - McGill (Wilson Hall) and the O.N.Q. have excellent resources - USE THEM.
5. Make up your own multiple choice questions - try them out on friends, classmates.

Now turn the page for some FINAL LAST WORDS.

A FINAL REMINDER

Remember the 7 TEST-TAKING STRATEGIES

1. Budget your **TIME**
2. **UNDERLINE** 'key' words
3. **ANTICIPATE** answers
4. **REASON** actively
5. **RECHECK** at the end
6. **GUESS**
7. **MNEMONICS** = **TURRAG**

I hope that you enjoyed working through this module and that it will help you to achieve better scores on multiple choice tests.

Last but by no means least please take a few minutes to complete the questionnaire on the last page.

ATTITUDE QUESTIONNAIRE

Please take a few minutes to complete this questionnaire. Your evaluation of the module will help to plan future learning materials. Circle your response to each statement at the appropriate point on the scale.

1. How difficult did you find this module?

Too easy	Easy	Average	Difficult	Too difficult
1	2	3	4	5

2. Where was it too easy or too difficult?

3. How was the length of the module?

Too short	Short	O.K.	In-depth	Too in-depth
1	2	3	4	5

4. Was the content covered in sufficient depth?

Too superficial	Superficial	O.K.	In-depth	Too in-depth
1	2	3	4	5

5. Were there a sufficient number of examples?

Too few	Few	O.K.	Many	Too many
1	2	3	4	5

6. How were the directions?

Very clear	Clear	Average	Confusing	Very confusing
1	2	3	4	5

7. Where were the directions confusing?

8. What did you like most about this learning activity?

9. What did you like least?

10. Any other general comments and/or suggestions. Please cite any additional "test-wiseness" strategies you use (know of) which were not covered in this module.

Your help is much appreciated. Thank you.

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Appendix B

Questionnaires 1 and 2

LAST FOUR DIGITS OF YOUR TELEPHONE NUMBER

_ _ _ _

Questionnaire on Test-Taking #1

Please take a few minutes to complete this questionnaire. We need your feedback. Your impressions are very important in helping to plan future learning materials.

There are no "Right" answers.

Please be honest.

(Circle) your response and feel free to make any additional comments.

Thank you.

		Always	Most of the time	Sometimes	Rarely	Never
1.	I know as much as anyone else in the class about what content will be on a test.	1	2	3	4	5
2.	I select specific content to study.	1	2	3	4	5
3.	I consciously try to predict what questions will be on a test.	1	2	3	4	5
4.	I predict fairly accurately what will be on a test.	1	2	3	4	5
5.	I study for tests by cramming.	1	2	3	4	5
6.	Anxiety interferes with my performance.	1	2	3	4	5
7.	I use relaxation techniques.	1	2	3	4	5
8.	I budget my time during a test.	1	2	3	4	5
9.	I answer every question.	1	2	3	4	5
10.	I guess when I don't know.	1	2	3	4	5
11.	I highlight and/or underline important points in a test.	1	2	3	4	5
12.	I ask the teacher for an explanation of questions during a test when necessary, e.g., not understanding a word.	1	2	3	4	5
13.	I reread a test after completing it (when I have time).	1	2	3	4	5
14.	I change answers by "second-guessing" my original answer.	1	2	3	4	5
15.	I review a test after the marks are posted	1	2	3	4	5

	Always	Most of the time	Sometimes	Rarely	Never
16. If given the opportunity, I would prefer to review a test with:					
a. teacher only.	1	2	3	4	5
b. teacher and student group.	1	2	3	4	5
17. Review a test helps me to:					
a. understand the content.	1	2	3	4	5
b. understand why I got a wrong answer.	1	2	3	4	5

Additional comments on the above questions and/or suggestion, tips which have worked for you? Use the back of the page if necessary.

Your help is much appreciated. Thank you.

LAST FOUR DIGITS OF YOUR TELEPHONE NUMBER

_ _ _ _

Questionnaire on Test-Taking #2

Please take a few minutes to complete this questionnaire. We need your feedback. Your impressions are very important in helping to plan future learning materials.

There are no "Right" answers.

Please be honest.

(Circle) your response and feel free to make any additional comments.

Thank you.

	ENTIRELY		SOMEWHAT		NOT AT ALL
1. I selected specific content to study.	1	2	3	4	5
2. I consciously tried to predict what what questions would be on the test.	1	2	3	4	5
3. I predicted fairly accurately what was on the test.	1	2	3	4	5
4. I studied for this test by cramming.	1	2	3	4	5

	VERY HIGH	HIGH	AVE-AGE	LOW	VERY LOW
5. My anxiety level was.	1	2	3	4	5

	ALL OF THE TIME		MOST OF THE TIME	SOMETIMES	RARELY	NEVER
6. My anxiety interfered with my performance.	1	2	3	4	5	

7. I used relaxation techniques. — YES / NO

	EXTREMELY HELPFUL		VERY HELPFUL	HELPFUL	LITTLE HELPFUL	NOT AT ALL HELPFUL
— (a) If YES, these relaxation techniques were	1	2	3	4	5	

	THROUGHOUT		SOMETIMES		NOT AT ALL
8. I budgeted my time during this test.	1	2	3	4	5

9. I guessed when I did not know the answer. ——————

ALWAYS 1 2 3 4 5 SOMETIMES NEVER

10. If you left any questions unanswered

- HOW MANY ——————
- WHY ——————

11. I highlighted and/or underlined important points on my test paper. —

ALWAYS 1 2 3 4 5 SOMETIMES NEVER

12. I asked the teacher for an explanation of a question when I needed it. ——————
eg. not understanding a word.

1 2 3 4 5

13. I used mneumonics aides. ——————

A LOT 1 2 3 4 5 SOMETIMES NONE

--- (a) If you used mneumonics did you find them? ——————

EXTREMELY HELPFUL 1 VERY HELPFUL 2 HELPFUL 3 LITTLE HELPFUL 4 NOT AT ALL HELPFUL 5

14. Did you have time to reread the test? ——————

YES NO

--- (a) If YES, how much of the time did you use? ——————

ALL 1 2 SOME 3 4 NONE 5

15. I changed my answers by "second guessing" my original answer. ALL 1 2 3 4 5 SOME NONE

16. I reviewed the list after the marks were posted. YES NO

--- (a) If YES, I did this with (1) Teacher only

(please check one or both) (2) Teacher and student group.

--- (b) If YES, reviewing the tests has helped me to

1. Understand the content. ALL 1 2 3 4 5 SOME NONE

2. Understand why I got a wrong answer. 1 2 3 4 5

17. How easy was this test for you? VERY EASY 1 EASY 2 AVERAGE 3 DIFFICULT 4 VERY DIFFICULT 5

18. How would you rate your performance? EXCELLENT 1 GOOD 2 FAIR 3 POOR 4 VERY POOR 5

Additional comments on the above questions and/or any suggestions relating to test-taking are very welcome.

Use back of paper p.r.n.
Thank you for your help.