ABSTRAK

Kajian ini bertujuan untuk (1) mengukur kebolehan pemikiran kritikal pelajar sains tulen Tingkatan IV; (2) menentukan sejauh mana pelajar memperolehi kemahiran proses sains; dan (3) menyiasat pertalian antara kebolehan pemikiran kritikal pelajar dan pemerolehan kemahiran proses sains mereka. Sampel kajian terdiri daripada 163 orang pelajar sains tulen Tingkatan IV (89 lelaki dan 74 perempuan) dari sebuah sekolah menengah yang terletak di bandar Kota Bharu, Kelantan.

Dua jenis instrumen digunakan untuk mengumpul data. Ujian Pemikiran Kritikal Watson-Glaser (WGCTA) digunakan untuk menilai kebolehan pemikiran kritikal pelajar. WGCTA mempunyai lima subujian yang mengukur kebolehan pelajar membuat inferens, mengenal pasti andaian, membuat deduksi, menginterpretasi data dan menilai hujah. Pemerolehan kemahiran proses sains pelajar ditentukan dengan menggunakan Ujian Kemahiran Proses Sains Bersepadu II (TISPS II), TISPS II direkabentuk oleh Tan (1993) untuk mengukur lima jenis kemahiran proses sains, iaitu membina hipotesis, mendefinisi secara operasi, mengawal variabel, mereka bentuk eksperimen dan menginterpretasi data.

Dapatan penting kajian adalah seperti berikut:

1. Min skor dan sisihan piawai pencapaian pelajar-pelajar dalam Ujian Pemikiran Kritikal Watson-Glaser ialah 48.53 dan 5.85 masing-masing. Urutan mengikut penurunan min skor pelajar dalam subujian WGCTA ialah membuat deduksi > mengenal pasti andaian > penilaian hujah > menginterpretasi data > membuat inferens.
2. Seramai 5 1.50% pelajar mendapat skor sama atau di atas titik persentil-50 (49 mata).

3. Peratus min pelajar-pelajar dalam Ujian Kemahiran Proses Sains Bersepadu II ialah 67.17. Pemerolehan kemahiran individu proses sains mengikut pertambahan kesukaran ialah menginterpretasi data > mereka bentuk

. eksperimen > mengawal variabel > mendefinisi secara operasi > membina hipotesis. Menginterpretasi data adalah paling mudah manakala membina hipotesis ialah kemahiran yang paling sukar diperolehi oleh pelajar.

4. Seramai 60.10% pelajar telah menguasai keseluruhan kemahiran proses sains yang diuji dalam TISPS II. Peratusan pelajar yang menguasai kemahiran menginterpretasi data adalah tertinggi (90.20%) manakala peratusan penguasaan pelajar dalam kemahiran membina hipotesis adalah paling rendah (39.30%).

5. Hanya 20.20% pelajar menguasai kelima-lima jenis kemahiran individu proses sains manakala 0.60% pelajar gagal menguasai sebarang kemahiran individu proses sains.

6. Terdapat pertalian signifikan antara jurnlah skor WGCTA dan jumlah skor TISPS II yang dipcrolehi oleh pelajar-pelajar.

7. Kekuatan pertalian antara kemahiran membina hipotesis TISPS II dan penilaian hujah WGCTA adalah paling kuat; kekuatan pertalian antara kemahiran mendefinisi secara operasi TISPS II dan kebolehan menginterpretasi data WGCTA paling lemah.

8. Kemahiran membina hipotesis TISPS II merupakan perarnal terbaik terhadap skor pelajar dalam WGCTA. Sebaliknya, kebolehan penilaian hujah WGCTA bertindak sebagai variabel terbaik untuk meramal skor pelajar dalam TISPS II.

Critical Thinking Ability among Form IV Science Students and Its Relationship with the Acquisition of Science Process Skills

ABSTRACT

This study attempts (1) to measure the critical thinking ability of the Form IV pure science students; (2) to determine the extent the students have acquired the science process skills; and (3) to investigate the relationship between critical thinking ability and the acquisition of science process skills of the students. The sample of this study consisted of 163 Form IV pure science students (89 males and 74 females) from a secondary school situated in Kota Bharu town, Kelantan.

Two instruments were used in the collection of data. Watson-Glaser Critical Thinking Appraisal (WGCTA) was used to assess the students' critical thinking ability. WGCTA consisted of five subtests, which measure students' abilities in making inferences, recognition of assumptions, deduction, interpretation and evaluation of arguments. The acquisition of science process skills of the students was determined by using the Test of Integrated Science Process Skills II (TISPS II). TISPS II was designed by Tan (1993) to measure five science process skills, which include formulating hypotheses, operationally defining, controlling variables, designing experiment and interpreting data.

The main findings of the study are as follows:

1. The mean score and standard deviation of the students' performance in the Watson-Glaser Critical Thinking Appraisal are 48.53 and 5.85 respectively. The order, in term of decreasing mean scores obtained by the students in WGCTA subtests is deduction > recognition of assumptions > evaluation of arguments > interpretation > inference.

2. Slightly half, 5 1.50% of the students scored as same as or above the 50th percentiles (49 marks).

3. The percentage mean of the students in the Test of Integrated Science Process Skills is 67.17. The acquisition of science process skills in order of increasing difficulty is interpreting data > designing experiment > controlling variables > operationally defining > formulating hypotheses. Interpreting data is the easiest while formulating hypotheses is the most difficult skill to be attained by the students.

4. About 60.10% of the students have mastered the overall science process skills tested in TISPS II. The percentage of students who have mastered the skill of interpreting data is the highest (90.20%) while the percentage of students mastering the skill of formulating hypotheses is the lowest (39.30%).

5. Only 20.20% of the students have mastered all the five individual science process skills measured while 0.60% failed to master any of the individual skills.

6. There is a significant relationship between the total scores of WGCTA and the total scores of TISPS II obtained by the students.

7. The strength of relationship between formulating hypotheses in TISPS II and evaluation of arguments in WGCTA is the strongest; the strength of relationship between operationally defining in TISPS II and the ability of interpreting data in WGCTA is the weakest.

8. The skill of formulating hypotheses in TISPS II is the best predictor for the students' total scores in WGCTA. On the other hand, the ability to evaluate arguments in WGCTA is the best variable to predict the students' scores in TISPS II.