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The Schools and Colleges Permaculture (SCOPE) Programme in Zimbabwe.

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AN INVESTIGATION OF THE RELATIONSHIP BETWEEN ACADEMIC PERFORMANCE AND USE OF SELF-REGULATED LEARNING STRATEGIES AMONG FORM IV STUDENTS IN ZIMBABWE

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ABSTRACT

The Relationship between performance of some Zimbabwean 'O' level students and their use of self-regulated learning strategies was examined. Fourteen categories of self-regulated learning strategies were identified from 148 students' responses to a modified self-regulated Learning Interview Schedule (SRLIS). Three measures; total strategy use, total strategy frequency, and total strategy consistency were used to measure students' reported use of self-regulated learning strategies. The scores of these three measures were related to students' performance in mid-year examinations in English and Mathematics. There were no significant sex differences in strategy use as measured by the three composite measures. Also there was no school status difference in strategy use. Regression analysis and factor analysis on the consistency measures of each category of self-regulated learning strategies gave an overall support to the self-regulation/performance function.

An Investigation of the relationship between academic performance and use of self-regulated learning strategies among Form IV students in Zimbabwe

INTRODUCTION

A growing body of research evidence is increasingly documenting the positive effects of self-regulation on human functioning, especially in academic achievement (e.g. Bandura 1982, 1986; Schunk, 1984; Zimmerman 1983). Also, studies of expert performance and first class problem-solving models showed that self-regulation strategies play a significant role in competent performance (Glasser and Bassock, 1989). Glasser and Bassock (1989) concluded that use of self-regulatory strategies vary with individuals and those with performance difficulties have poorly developed self-regulatory skills.
Zimmerman and Martinez-Pons (1986; 1988; 1990) conducted studies on the relationship between students' use of self-regulated learning strategies and their academic performance. Zimmerman and Martinez-Pons (1986) developed a structured interview schedule - Self-Regulated Learning Interview Schedule (SRLIS) - for measuring self-regulated learning. These researchers identified 14 categories of strategies; 13 of which they found positively related to achievement. They also showed that self-regulated learning measures predict standardized achievement test scores better than either the student's gender or socio-economic status.

In 1988, Zimmerman and Martinez-Pons investigated the construct validity of the SRLIS (Zimmerman and Martinez-Pons, 1986). They examined the relationship between students' reports of using strategies and teachers' observations of students' self-regulated learning performance in classroom situations. Teachers' ratings were also correlated with standardized measures of students' achievement.

Zimmerman and Martinez-Pons (1988) argued that, "By combining teachers' observational measures factorially with standardized achievement test outcomes, it is possible to separate student achievement outcomes associated with their use of self-regulated learning strategies from their general ability" (p.285). The results supported the researchers' argument, showing that the SRLIS provides significant control for the biasing effects of student verbal expressiveness and for background knowledge not associated with self-regulated learning.

More importantly, Zimmerman and Martinez-Pons (1988) reported that factor analysis of the teachers' ratings along with students' scores on a standardized achievement test of Mathematics and English revealed a single self-regulated learning factor that accounted for nearly 80% of the explained variance. Students' reports of using strategies during the interview correlated .70 with the obtained teachers' rating factor.

In their more recent study, Zimmerman and Martinez-Pons (1990) considered eight different learning contexts to compare academically gifted and regular school students on their use of the fourteen strategies. They also estimated the students' verbal and mathematical efficacy. The results of this study were that: gifted students displayed significantly higher verbal efficacy, mathematical efficacy and strategy use than regular students. On the three measures of self-regulated learning, 11th grade students performed better than 8th graders, who in turn performed better than the 5th graders. Students' perceptions of both verbal and mathematical efficacy were related to their use of strategies. Analyses of sex differences in
the use of strategies revealed that girls are greater users of strategies but less self-efficacious than boys.

Except a study on learning strategies by Matambo (1982), at the time of writing, no major study on strategies had been carried out in Zimbabwe. The present study examines academic strategies as predictors of school performance in Zimbabwe. The same 14 categories of strategies identified by Zimmerman and Martinez-Pons in the U.S.A. are used to investigate the relationship between performance of some Zimbabwean '0' Level students and their use of the strategies.

**Method**

**Subjects**

Eight-one male and sixty-seven female form four students from Chaplin High School (a Gweru urban, former Group A school) were randomly selected from a school population of about 300. The students who participated belonged to four classes. Of the males, 28 were boarders and 53 day scholars, while 44 females were day scholars and 23 boarders. The subjects ranged from 15.5 to 20 years; with a modal age of 17 years.

**Instruments**

The following instruments were used:

(a) Modified self-regulated learning interview schedule (SRLIS): and

(b) Midyear Mathematics and English tests.

In the present study, Zimmerman and Martinez-Pons' (1990) Self-regulated Learning Interview Schedule (SRLIS) was modified slightly to suit the Zimbabwean circumstances.

In the 1986, 1988 and 1990 studies, Zimmerman and Martinez-Pons found the SRLIS to be a reliable measure of the fourteen categories of strategies. Zimmerman and Martinez-Pons (1988) reported that, while students' reports of using strategies correlated .70 with teachers' ratings; these students' reports of strategy use were negatively related to student verbal expressiveness and achievement factors. Thus it was concluded that self-regulated learning construct has both convergent and discriminative validity.
Since the SRLIS was originally designed for American students, minor changes were done for the instrument to accommodate Zimbabwean '0' Level students. In addition to the changes on the wording of items one and five; an extra item was added, thus bringing the total number of items in the Modified SRLIS to 9. Furthermore, instead of interviewing students individually, in the present study students read the questions for themselves.

To come up with these slight changes in the Modified SRLIS; 3 secondary school teachers, 3 Educational Psychologists and 2 Education Officers were consulted independently. Also, 8 current '0' level students from different schools in Gweru were randomly interviewed.

To assess the utility of group administering as opposed to interviewing students individually and to check the comprehensibility of the items to the current Zimbabwean '0' Level students, a pilot study was done. The pilot study was conducted at Thornhill High School, another Gweru Urban and former Group A school. Nine boys and seven girls participated. The pilot study revealed that the Modified SRLIS reliably taps the 14 categories of strategies from Zimbabwean '0' level students' responses.

**Procedure**

Each subject was given folded double sheet papers with question paper enclosed. The students were asked to take out the enclosed question papers and read number one question quietly. After about one minute the researcher read the question aloud and asked the subjects to answer question one only both part one and two. Subjects were given 5 minutes to answer the question and were further instructed to number their methods or answers using letters a,b,c,d,e and so on. Answers were to be written in point form.

After the subjects had finished answering question one, they were instructed to indicate with the appropriate letter below how often they used each of the methods they had written down in a column headed “How often?” at the right-hand side of their answer sheets as follows: A = Seldom; B = Occasionally; C = Frequently; D = Most of the time. The key was written on the chalk board throughout the experiment for reference by the students.

Finally, the subjects were asked to answer the remaining questions 2 to 9 and to answer the "How often?" part immediately after writing down a method or a way of studying/learning. Three weeks after administering the modified SRLIS, the researcher collected the students’ mid year maths and English marks.
**Scoring and inter-Rater Reliability**

All responses were scored by the researcher. The appropriate use of strategies was not considered. Total strategy use, total strategy frequency and total strategy consistency are the measures used to summarise the data. Individual category strategy frequency measure and consistency measure were also considered.

To assess reliability, a colleague (a psychologist) independently coded 20% of the response sheets. A pearson product moment correlation was performed on the ratings made by two scorers (.78). The correlation was high and represents an important inter-rater reliability check. It shows that there was a very high measure of agreement between the two judges.

**Results**

**Data Assumptions**

To analyse the data; Pearson product moment coefficient correlation, t-test, multiple regression and factor analysis were evoked. Since these tests are parametric, three main parametric assumptions (Lutz, 1983; Runyon and Haber, 1980; Shavelson, 1981; Siegel, 1956; Wright, 1976) were considered. All data assumptions needed for the statistics used were met or at least closely approximated as in the case of the distributions of scores for strategy use measure and Mathematics performance.

**Descriptive Data**

**Strategy Use**

The number of strategies mentioned by students ranged from 5 to 14, with .70% of the students reporting the use of 5 strategies while 1.40% stated 14 strategies. The modal number of strategies was 11 and 52.70% of the students reported use of 11 or more strategies. Those strategies which could not be suitably classified into any of the 14 categories were grouped under the “other” category. The mean number of times strategies belonging to this category were mentioned was 2.03 with a standard deviation of 1.34.
Strategy Frequency

Strategy frequency scores ranged from zero to the total number of times that the strategy was mentioned in response to each of the items. Even though there were 9 items, the maximum number of times a strategy could be mentioned is 8 because any strategy mentioned in response to the 9th question only counted when the same strategy was not mentioned in response to any of the earlier questions.

Most of the categories of strategies had frequency of more than one except reviewing tests, rehearsing and memorising, and self-consequating which have means of .03, .61 and .74 respectively. Two strategies had means above 2.00; these are organizing and transforming with a mean of 2.18 and seeking peer assistance with a mean of 2.61.

Strategy Consistency

Strategy consistency measures ranged from the number of times a strategy is mentioned and rated as “seldom” to each time the strategy is mentioned and rated as “most of time”. This gives a range of scores of 1 to 4. Hence the greatest possible value of strategy consistency is 32.

The means for strategy consistency measure ranged from a minimum of 1.02 for reviewing texts to 7.46 for seeking peer assistance. These low mean scores reflect that, besides reporting use of few strategies, most students reported that they seldomly used the strategies they reported.

The Relationship Between Strategies and Performance

Table 1

<table>
<thead>
<tr>
<th>MEASURE OF SELF REGULATED LEARNING</th>
<th>MATHS</th>
<th>ENGLISH</th>
<th>MATHS AND ENGLISH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategy Use</td>
<td>.19*</td>
<td>.32**</td>
<td>.28**</td>
</tr>
<tr>
<td>Strategy Frequency</td>
<td>.14</td>
<td>.29**</td>
<td>.23*</td>
</tr>
<tr>
<td>Strategy Consistency</td>
<td>21*</td>
<td>.34**</td>
<td>.30**</td>
</tr>
</tbody>
</table>
Figures are rounded to two decimal places.

I-Tailed significance:

* - .01

** - .001

Students’ reported use of strategy correlated .19 with Maths; 32 with English; and .28 with the combined score of Maths and English. Thus explaining 4%, 10% and 7.8% of the variance respectively. The correlation between strategy use and Maths was weak but statistically significant at the I-tail .01 level. The correlations between strategy use and English; and between strategy use and combined Maths and English were both moderate and statistically significant at the I-tail .001 level.

The correlation between Maths and total strategy frequency measure was weak and not statistically significant at the I-tail .01 chance level. Only 2% of the variance was accounted for. There was a moderately positive and significant association between strategy frequency and English. The relationship explained 8.4% of the variance. There was also a moderately positive and significant relationship between strategy frequency and Maths and English combined. This association accounted for 5.3% of the variance.

Students’ estimated frequency of using strategies (i.e. strategy consistency) was moderately and positively correlated with English, and with Maths and English combined. In each case the correlation accounted for more than 9% of the variance. These relationships were significant at the I-tail .001 level. Strategy consistence correlated .21 (P<.01) with Maths, thus explaining more than 4% of the variance. Compared to the other two measures of self-regulated learning, strategy consistency explained the most variance in each of the three measures of performance.

Results of T-test on Sex Status

<table>
<thead>
<tr>
<th>STRATEGY MEASURE</th>
<th>MEAN</th>
<th>STD. DEV.</th>
<th>MEAN</th>
<th>STD.DEV.</th>
<th>T-VALUE</th>
<th>DF</th>
<th>LEVEL OF SIGNIFICANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SU</td>
<td>10.16</td>
<td>1.73</td>
<td>10.49</td>
<td>1.74</td>
<td>-.16</td>
<td>146</td>
<td>N.S.S.</td>
</tr>
<tr>
<td>SF</td>
<td>17.88</td>
<td>8.53</td>
<td>17.60</td>
<td>3.66</td>
<td>.41</td>
<td>146</td>
<td>N.S.S.</td>
</tr>
<tr>
<td>SC</td>
<td>56.07</td>
<td>17.41</td>
<td>55.64</td>
<td>13.59</td>
<td>.17</td>
<td>146</td>
<td>N.S.S.</td>
</tr>
</tbody>
</table>
Figures are rounded to two decimal places.
N.S.S. : Not statistically significant at the 2-tail .05 level.

Females reported use of slightly greater number of strategies than males. However, the difference between the means was not statistically significant at the 2-tail 0.05 level. In strategy frequency, males' mean score was only greater by a small margin of .28. Males also registered a strategy consistency mean score which was bigger than females' by a negligible .43. The differences between the means consistency scores for self-evaluation and for seeking information were found to be statistically significant at less than 2% and at less than 5% levels respectively.

Results of T-test On School Status

Table 3

<table>
<thead>
<tr>
<th>STRATEGY MEASURE</th>
<th>BOARDERS MEAN</th>
<th>STD. DEV.</th>
<th>DAY-SCHOLARS MEAN</th>
<th>STD. DEV</th>
<th>T-VALUE</th>
<th>DF</th>
<th>LEVEL OF SIGNIFICANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SU</td>
<td>10.18</td>
<td>1.81</td>
<td>10.38</td>
<td>1.70</td>
<td>-.68</td>
<td>146</td>
<td>N.S.S</td>
</tr>
<tr>
<td>SF</td>
<td>17.27</td>
<td>4.00</td>
<td>18.00</td>
<td>4.22</td>
<td>-1.01</td>
<td>146</td>
<td>N.S.S</td>
</tr>
<tr>
<td>SF</td>
<td>53.88</td>
<td>15.53</td>
<td>56.83</td>
<td>15.83</td>
<td>-15.12</td>
<td>146</td>
<td>N.S.S</td>
</tr>
</tbody>
</table>

Figures are rounded to two decimal places.
N.S.S. = Not statistically significant at the 2-tail 0.5 level.

In all the three measures of self-regulated learning strategies: day scholars achieved greater means with differences failing to be statistically significant at the 2-tail .05 level.
The Predictive Model of self-Regulated Learning Strategies

Table 4

REGRESSION ANALYSIS OF THE THREE PERFORMANCE MEASURES ON THE COMPOSITE MEASURES OF SELF-REGULATED LEARNING STRATEGIES (PREDICTOR VARIABLE = TOTAL CONSISTENCY)

<table>
<thead>
<tr>
<th>PERFORMANCE</th>
<th>R</th>
<th>R²</th>
<th>R² CHANGE</th>
<th>F</th>
<th>SIGNIFICANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics</td>
<td>21</td>
<td>.05</td>
<td>.05</td>
<td>6.95</td>
<td>.01</td>
</tr>
<tr>
<td>English Language.</td>
<td>34</td>
<td>.12</td>
<td>.12</td>
<td>19.36</td>
<td>.00</td>
</tr>
<tr>
<td>Mathematics &amp; English</td>
<td>.30</td>
<td>.09</td>
<td>.09</td>
<td>14.77</td>
<td>.00</td>
</tr>
</tbody>
</table>

Note: For the three performance variables, total consistency measure was the only significant predictor.

Figures are rounded to two decimal places.

An analysis of three separate step-wise multiple regression analysis of the three performance measures revealed that strategy consistency explained 12% of the English Language performance variance; 5% of the Mathematics performance variance and 9% of the combined English Language and Mathematics performance variance. For all measures of strategies considered in the present study (be it category by category or the three composite strategy measures), strategy consistency measure was the most significant predictor for the three measures of performance. Hence further analysis was done on strategy consistency.
### Table 5

**ROTATED FACTOR LOADING FOR CATEGORY OF SELF-REGULATED LEARNING STRATEGY CONSISTENCY MEASURES (A VARIMAX ROTATION)**

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>FACTORS</th>
<th></th>
<th></th>
<th></th>
<th>H²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ONE</td>
<td>TWO</td>
<td>THREE</td>
<td>FOUR</td>
<td>FIVE</td>
</tr>
<tr>
<td>Seeking Peer Assistance</td>
<td>.67</td>
<td>-  -</td>
<td>-  -</td>
<td>-  -</td>
<td>-  -</td>
</tr>
<tr>
<td>Keeping recordsand Monitors</td>
<td>.62</td>
<td>-  -</td>
<td>-  -</td>
<td>-  -</td>
<td>-  -</td>
</tr>
<tr>
<td>Seeking Teacher Assistance</td>
<td>.54</td>
<td>-  -</td>
<td>-.45</td>
<td>-  -</td>
<td>-  -</td>
</tr>
<tr>
<td>Seeking Information</td>
<td>.54</td>
<td>-  -</td>
<td>-  -</td>
<td>-  -</td>
<td>-  -</td>
</tr>
<tr>
<td>&quot;OTHER&quot;</td>
<td>.32</td>
<td>.30</td>
<td>-.56</td>
<td>-  -</td>
<td>-  -</td>
</tr>
<tr>
<td>Rehearsing and memorizing</td>
<td>-</td>
<td>.74</td>
<td>-  -</td>
<td>-  -</td>
<td>-  -</td>
</tr>
<tr>
<td>Reviewing Notes</td>
<td>-</td>
<td>.71</td>
<td>-  -</td>
<td>-  -</td>
<td>-  -</td>
</tr>
<tr>
<td>Organisation &amp; Transformation</td>
<td>-</td>
<td>-  -</td>
<td>-.78</td>
<td>-  -</td>
<td>-  -</td>
</tr>
<tr>
<td>Goal Setting and Planning</td>
<td>-</td>
<td>-  -</td>
<td>-.45</td>
<td>-.44</td>
<td>-  -</td>
</tr>
<tr>
<td>Reviewing Tests</td>
<td>-</td>
<td>-  -</td>
<td>-.44</td>
<td>-.44</td>
<td>.65</td>
</tr>
<tr>
<td>Seeking Adult Assistance</td>
<td>-</td>
<td>-  -</td>
<td>.66</td>
<td>-  -</td>
<td>-  -</td>
</tr>
<tr>
<td>Environmental Structuring</td>
<td>-</td>
<td>-  -</td>
<td>.58</td>
<td>-  -</td>
<td>-  -</td>
</tr>
<tr>
<td>Total Strategy Consistency</td>
<td>-</td>
<td>-  -</td>
<td>-  -</td>
<td>-.71</td>
<td>-  -</td>
</tr>
<tr>
<td>Self-Evaluation</td>
<td>-</td>
<td>-  -</td>
<td>-  -</td>
<td>-.44</td>
<td>-  -</td>
</tr>
<tr>
<td>Reviewing Tests</td>
<td>-</td>
<td>-  -</td>
<td>-  -</td>
<td>-.44</td>
<td>-.44</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Using the SPSS+ programme (Norusis, 1988); the single category of non-self-regulated learning response (‘other’ category), consistency measure and the fourteen category of strategy consistency variables were submitted to a principal components analysis followed by an oblique oblimin factor rotation and varimax rotation. Both oblique and orthogonal rotations were instituted because of the controversy in the literature as to which procedure is better than the other (e.g. Cattell, 1952; and Nummally, 1978).

The principal components analysis extracted six factors which had eigenvalues above 1.00. The six factors accounted for 56.2% of the total variance of category of strategy consistency measures. All the variances had communalities above .40 with .73 being the largest.

The varimax and the oblique oblimin rotations came up with identical factor matrices. The only difference is that, the four variables which loaded highly on factor three of the oblique rotation factor matrix loaded highly on factor four of the varimax rotation factor matrix.

DISCUSSION

The foregoing analysis of strategy/performance function revealed that all measures of use of strategies are significantly and positively related to performance. These results are compatible with the consistent reports (in the literature) which state that learning strategies are highly associated with academic achievement. However, in the present study the correlations between strategy measures and performance were, in general, moderate; but when analyses were done with individual categories most relationships were weak.

The correlational nature of the study leaves open several alternative interpretations of these findings. One plausible explanation is that the modified SRLIS taped students’ knowledge of, not their use of strategies. The argument seems to hold when one considers that on average each subject mentioned more than ten strategies out of a total of fourteen strategies.

An analysis of some of the strategies classified under the category of goal setting and planning revealed that many of the strategies mentioned by the subjects are desirable and could lead to positive learning outcomes when effected appropriately. Most of the responses were suggestive of the fact that the subjects involved know about good study habits but that is no
guarantee that they would engage in such desirable behaviours. While this argument may apply to all fourteen categories of strategies it does not seem to be the final explanation of the negative relationship between performance and some strategies. An alternative plausible explanation is that some desirable strategies fall in the same category with some ineffective strategies. Under this state of affairs, the direction of outcomes may depend on which type of strategies are used by more subjects.

In consistence with earlier studies on self-regulated learning strategies (e.g. Zimmerman and Martinez-Pons, 1986); the single category of non-self-regulated response (the other category) had negative relationships with all the performance measures.

Although females reported slightly greater number of strategies than males (supporting Zimmerman and Martinez-Pons 1990’s findings); males attained a slightly greater strategy frequency mean and slightly greater strategy consistency mean than females.

Analysis of sex differences in use of individual strategies revealed that for most categorises of strategies, there were no significant differences. However, contrary to Zimmerman and Martinez-Pons’ (1990) findings, males used significantly more self-evaluation, and seeking information strategies. Again, unlike Zimmerman and Martinez-Pons’ findings, females surpassed males in the only non-self-regulated “other” category. Nevertheless, the difference was not statistically significant.

On the analysis of school status differences; for each of the three composite strategy measures there were no significant differences. However, when individual categories of strategies were examined, it was revealed that day scholars use the strategy of seeking adult assistance significantly more than boarders. One apparent reason for this difference is that, day scholars generally have more access to adults (excluding teachers) than boarders. Another interesting outcome is that day scholars used more environmental structuring strategies than boarders. Although the difference was not significant here, the direction of the results support the social cognitive theorists’ contention that less structured environment demands more self-regulation than the more structured environment (e.g. Zimmerman, 1986). Compared to day scholars’ circumstances; boarders’ environment is generally more structured and more conducive to academic learning. Anyway the non-significant difference may be due to the fact that the two groups compared came from the same school.

Analyses of three separate stepwise multiple regression of the three performance measures on total strategy use, total strategy frequency and total strategy consistency measures re-
A.R. Matambo

revealed that total strategy consistency was the only significant predictor variable for all performance measures.

These results agree with Zimmerman and Martinez-Pons' (1986) findings that, strategy consistency measures was the most effective in differentiating higher academic achievers from lower achievers.

In keeping with Zimmerman and Martinez-Pons' (1988) findings in respect of SRLIS, the results of the present study showed that the modified SRLIS was not seriously affected by individual differences in verbal facility. This argument holds when we consider the fact that total strategy consistency which produced the only significant regression correlation is based on nonverbal rating scale (Zimmerman and Martinez-Pons, 1986). Unlike strategy use and strategy frequency measures which depend on verbal fluency; for strategy consistency measure, the student's task was to simply choose appropriate word or phase from a given list.

The other predictive models analysed in the present study depicted that, among the fourteen categories of strategies, reviewing texts was the single most important predictor for the three measures of performance. The other predictors selected were: self-consequating; keeping records and monitoring; rehearsing and memorizing; environmental structuring; seeking information; and organizing and transforming.

Two possible reasons for the category of reviewing texts' being the best predictor of the 'O' level students' mid year results are that:

1) When textbooks are available, they are the most accessible sources of information for students.

2) Teachers, usually, construct test items using textbooks as their main sources.

Factor analysis procedures resulted in both the oblique oblimin rotation and varimax rotation revealing essentially the same six-factor solution. From these results it can be concluded that categories of self-regulated learning strategies are generally related but factorially distinct from each other; and hence each makes an important contribution to Zimmerman and Martinez-Pons (1986) self-regulated learning strategy model. Further support for this conclusion is rendered by the fact that the seven important predictors listed above loaded highly on separate factors, with self-consequating and reviewing texts loading highly on the same factor. Thus, although the correlational nature of the study and the type of instrument
(self-report place limitations to the interpretation of the results; the present study has added support to the self-regulation/performance function.

In summary, the findings of this study suggest that; at least at form four level, there is no student who is totally devoid of the ability to self-regulate his or her academic learning process. Since the least number of strategies reported by each student was five, with more than 50% of the students reporting more than 10 strategies out of a total of 14 strategies; it seems that the type of the combination of, and the rate of using strategies determine the quality of any given students' academic self-regulation. Further, the effectiveness of strategies also seem to depend on type of academic task and prevailing circumstances.

For instance, the best two predictors for English were different from the best two predictors for Mathematics. Thus, it is possible that if History or Science test scores were collected and analysed, different strategies could have emerged as the best predictors. This observation is in line with research evidence which had revealed that different tasks demand different strategies.

CONCLUSION

Since students seem to be very much aware of various self-regulated learning strategies, there is need to provide students with information as to when and where, as well as how, to use self-regulated learning strategies. To this end, future studies should investigate the relation between individual differences in choice and use of self-regulated learning strategies and academic performance. Also, the research question should be expanded to include personal factors such as the student’s attitude, ability and personality. One way of achieving this is to use observation, ratings (by teachers and peers) and interviews in addition to the self-report instrument used here.

Further, relationship between use of self-regulated learning strategies and other academic subjects should also be examined. For instance, in the modified SRLIS, item number 4 asked for strategies which students use when completing homework assignments such as Science reports or English grammar exercises. Here it is possible that some students mentioned learning strategies which are applicable to science reports but not to English grammar exercises. Thus it is suggested that in future, individual items should be more subject or situation specific.

All in all, the results of the present study are encouraging and they could be used as a base for
more vigorous research which in turn may lead to the development of a diagnostic test to be used for counselling students in academic difficulty.

REFERENCES


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