

## THE DEVELOPMENT OF MEASURES OF SELF-REGULATIVE KNOWLEDGE AND ITS RELATIONSHIP TO SELF-REGULATED LEARNING: A PRELIMINARY STUDY

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**Abstract.** This study produced an instrument to gauge self-regulative knowledge. It also looked into the relationships between such knowledge and self-regulated learning. The sample consisted of 322 students from two secondary schools. Self-regulative knowledge was measured by the Self-Regulative Knowledge Scale, developed in this study. Self-regulated learning, on the other hand, was measured by the Learning Strategies Subscale (Pintrich, *et al.*, 1991). The newly developed instrument was found to be valid and reliable. In addition, the results showed that students' self-regulative knowledge was positively and significantly related to their self-regulated learning.

**Keywords:** Self-regulative knowledge; scale; self-regulated learning; learning strategies; self-regulation.

**Abstrak.** Kajian ini menghasilkan sebuah instrumen untuk mengukur pengetahuan tentang strategi pembelajaran aturan sendiri. Ia juga mengkaji hubungan antara pengetahuan tersebut dengan pembelajaran aturan sendiri. Sampel kajian terdiri daripada 322 pelajar dari dua buah sekolah menengah. Pengetahuan pelajar tentang strategi pembelajaran diukur dengan *Self-Regulative Knowledge Scale* yang dihasilkan dalam kajian ini. Pembelajaran aturan sendiri pula diukur dengan *Learning Strategies Subscale* (Pintrich, *et al.*, 1991). Skala yang dihasilkan didapati sah dan boleh dipercayai. Selain itu, dapatan kajian menunjukkan bahawa pengetahuan pelajar tentang strategi pembelajaran aturan sendiri mempunyai hubungan yang positif dan signifikan dengan pembelajaran aturan sendiri mereka.

**Kata kunci:** Pengetahuan aturan sendiri; alat ukur; pembelajaran aturan sendiri; strategi-strategi pembelajaran; aturan sendiri

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## 1.0 INTRODUCTION

Self-regulative knowledge is a relatively new and essential construct in educational research. It refers to students' knowledge about self-regulated learning strategies and their beliefs about the values of these strategies. Research has consistently suggested that self-regulative knowledge is positively related to self-regulated learning (Ee, 2002; Greene, 1995). This is because effective self-regulated learners always know how, when, and why they employ certain strategies (Cantwell & Moore, 1996). In other words, they are equipped with knowledge to self-regulate in learning. Even though the importance of self-regulative knowledge has been acknowledged, surprisingly very few studies have been conducted on this psychological construct. The scarcity of research in this area may be due to the limitation in measuring instruments. To date, very few instruments were developed specifically to measure students' knowledge about self-regulated learning strategies. The existing instruments unfortunately seem to focus more on knowledge in general learning strategies.

The Learning Strategies Scale developed by Chan (1993) for instance, measures students' awareness and regulation of general learning strategies. Each item describes students engaged in different ways of learning and studying, such as 'thinking up questions that might be asked and then trying to answer them when studying for a test'. The scale provides two scores, knowledge and reported usage of general learning strategies, each with a minimum score of 25 and a maximum of 100. This scale obviously does not measure students' knowledge about self-regulated learning strategies specifically; it is more related to general learning strategies. Furthermore, no attention was paid to students' knowledge on strategies values.

In Nolen and Haladyna's (1990) study, students' usage and knowledge about strategies were measured by presenting a list of things that students might do when learning a chapter in a Science text. Students were asked to rate, on a 5-point Likert scale, how often they use specific strategy and their agreement that each strategy was useful to them. It measures students' views about metacognitive and cognitive strategies, which focused on monitoring (For example, 'I stop and ask myself questions to see if I understand') and elaboration (For example, 'I try to figure out how it fits in with what I've already learned in Science class'). The limitation of this scale is that it only covers cognitive and metacognitive learning strategies.

The Knowledge Subscale, developed by Youlden and Chan (1994), was used by Ee (2002) to measure self-regulative knowledge. This subscale measures students' knowledge about self-regulated learning strategies, which contains 24 items. Students were required to rate a 4-point Likert scale on how helpful strategies would be for them based on a description of a learning strategy. For instance, 'Spotting the questions that might be asked and then trying to answer them when

studying for a test'. Followed by a question on how helpful that way of learning and studying would be for them. The constraint of this scale is that its descriptions of strategies are not congruent with the categories of self-regulated learning strategies (Pintrich *et al.*, 1991; Zimmerman & Martinez-Pons, 1986). Furthermore, this instrument only measures the beliefs dimension of self-regulative knowledge, not the knowledge dimension. It was possible that the researcher measured students' knowledge on strategies with another scale, the Use Subscale, which was also employed in the study. This indicates that the researcher did not differentiate students' knowledge and their actual usage of strategies, which are actually two separate constructs. This is because students who have knowledge of strategies may or may not apply them (Zimmerman & Schunk, 1989).

The limitations in the existing instruments have highlighted the need to produce a scale that gauges self-regulative knowledge. It ought to measure students' knowledge on cognitive and metacognitive as well as resource management self-regulated learning strategies. These are the dimensions of self-regulated learning strategies proposed by Pintrich *et al.* (1991). Self-regulated learning and self-regulative knowledge is still a fairly new area of study in Malaysian educational research. Thus, the development of the instrument, which is named as Self-Regulative Knowledge Scale, is deemed significant. Literature reviews also showed that, to date, not many studies have investigated the relationships between self-regulated learning and self-regulative knowledge. Therefore, there is a need to look into this association, particularly in the local context. Based on the above mentioned reasons, this study attempt to achieve two objectives as following:

## 2.0 OBJECTIVES OF THE STUDY

- (1) Determine the reliability and validity of the Self-Regulative Knowledge Scale
- (2) Determine the relationships between Self-Regulative Knowledge and Self-Regulated Learning.

## 3.0 METHODOLOGY

A survey research was carried out to achieve the two objectives of the study. Three hundred and twenty two students from Sekolah Menengah Sains Muar, Johor, and Sekolah Menengah Sains Muzaffar Shah, Malacca were sampled. This sample size was chosen because it is an appropriate size to run factor analysis for the newly developed 10-item scale (Tinsley & Tinsley, 1987; Nunnally, 1978). Furthermore, Tabachnick and Fidell (1996) emphasize that factor analysis requires at least 300 cases. The researcher, therefore, is confident that the chosen size (N = 322) is adequate for factor analysis. It is also enough to run a correlation analysis for the second objective of the study.

### 3.1 Instruments

Two instruments were used to measure the variables in this study. Students' self-regulative knowledge was measured with the Self-Regulative Knowledge Scale, developed by the researcher. Students' self-regulated learning on the other hand was gauged by the Learning Strategies Scale taken from the Learning Strategies for Learning Questionnaire (MSLQ), developed by Pintrich *et al.* in 1991.

#### 3.1.1 The Self-Regulative Knowledge Scale

The Self-Regulative Knowledge Scale is a brief self-report instrument designed to measure Malaysian secondary students' knowledge on self-regulated learning strategies and their beliefs about the values of these strategies. It is a 7-point Likert scale, with 10 items written in the Malay Language. A panel of experts in Educational Psychology has verified the content of the scale and each item has been checked by Malay Language experts.

The content specification or outline of the Self-Regulative Knowledge Scale was guided by literature reviews on cognitive constructive theory, self-regulative knowledge and self-regulated learning strategies (Ee, 2002; Chen, 2002; Chan, 1993; Pintrich, *et al.*, 1991; Nolen & Haladyna, 1990). The content specification of the scale is shown in Table 1.

**Table 1** Content specification for the self-regulative knowledge scale

Self-regulative knowledge	Items no.
1. Knowledge about self-regulated learning strategies	
(a) Cognitive and metacognitive strategies	
Cognitive strategies	1, 3, 4
Metacognitive self-regulation	5
(b) Resource management strategies	
Time and environment management	2,6
Effort regulation	7
Peer learning and help seeking	8
2. Beliefs about the values of self-regulated learning strategies	
Importance of self-regulated learning strategies	10
Usefulness of self-regulated learning strategies	10
Total items	10

The scale is divided into two dimensions namely students' knowledge on self-regulated learning strategies and their beliefs about the values of self-regulated learning strategies. From the knowledge perspective, it measures students'

knowledge about cognitive and metacognitive strategies as well as resource management strategies. This dimension does not measure students' actual usage of strategies. An example of the items in the knowledge dimension (cognitive strategies) is '*Saya mempunyai teknik-teknik tertentu untuk menghafal fakta-fakta penting*' (I have specific techniques to memorize important facts).

Table 1 shows that students' beliefs about learning strategies are divided into importance and usefulness dimensions. Item from the important dimension is '*Saya berpendapat bahawa setiap pelajar patut diajar cara untuk menggunakan teknik-teknik pembelajaran*' (In my opinion, every student should be taught ways to use learning strategies' whereas item from the usefulness dimension is '*Saya tidak percaya bahawa penggunaan teknik-teknik pembelajaran dapat meningkatkan pencapaian saya.*' (I do not believe that the use of learning strategies can improve my performance).

As mentioned before, the Self-Regulative Knowledge Scale is a 7-point Likert scale, whereby responses may range from 1 (not at all true of me) to 7 (very true of me). Items 2 and 9 are negative statements that involved reverse coding. In other words, the ratings for these two items have to be reversed before a respondent's score can be computed. A respondent who has circled point 1 now receives a score of 7. Accordingly, point 2 receives a score of 6, point 3 receives a score of 5, point 4 receives the same score, which is 4, point 5 receives a score of 3, point 6 receives a score of 2, and finally point 7 receives a score of 1. The reverse coding procedure will be done using Statistical Packages for Social Science (SPSS), version 11.5.

Scale scores are obtained by summing the score for each item. The maximum possible score that a respondent could obtain is 70 (point 7  $\times$  10 items). The possible minimum score, on the other hand, is 10 (point 1  $\times$  10 items). The scores for self-regulative knowledge, hence, may range from 10 to 70. If the obtained score is greater than one standard deviation from the mean, the respondent is considered to have high self-regulative knowledge. On the other hand, if the obtained score is lesser than one standard deviation from the mean, respondent has low self-regulative knowledge. If the obtained score falls within plus minus one standard deviation from the mean, respondent has average self-regulative knowledge.

### **3.1.2 The Learning Strategies Scale**

Self-regulated learning was measured by the Learning Strategies Scale taken from the Motivated Strategies for Learning Questionnaire (MSLQ). The MSLQ was developed by Pintrich *et al.* in 1991. It is a valid and reliable instrument (Pintrich *et al.*, 1993). This scale consists of two sections; a motivational section and a learning strategies section. The Learning Strategies Scale is taken from the learning strategies section. In order to be applied in Malaysian context, some modifications were made to the Learning Strategies Scale. The revised version of the scale has 56 self-rating items concerning students' use of different self-regulated learning

strategies. It is a 7-point Likert scale; responses may range from 1 (not at all true of me) to 7 (very true of me). Scale scores are determined by summing the items and taking an average. Its reliability has been tested with Cronbach's alpha analysis. The researcher found that the adapted scale has an alpha coefficient of 0.92, indicating that it is highly reliable.

## 4.0 RESULTS AND INTERPRETATIONS

The results and interpretations are divided into two sections, in accordance with the two objectives of the study. The reliability and validity of the Self-Regulative Knowledge Scale were first discussed. Subsequently, the relationship between self-regulative knowledge and self-regulated learning was determined.

### 4.1 The Reliability and Validity of the Self-Regulative Knowledge Scale

Reliability is the degree to which an instrument consistently measures whatever it is measuring (Gay & Airasian, 2000). The more reliable an instrument or a scale is, the more confidence the researcher has that the obtained scores are essentially the same scores that would be obtained if the scale were readministered to the same samples. There are a number of different reliability coefficients. One of the most commonly used is Cronbach's alpha, which is based on the average correlation of items within a test. This analysis determines how all items within the instrument measure the same construct (Sweet & Grace-Martin, 2003). Reliability is expressed numerically; as a coefficient that varies between 0 and 1. The closer the alpha is to 1.00, the greater the internal consistency of items in the instrument being assessed (George & Mallery, 2003). The alpha coefficient of Self-Regulative Knowledge Scale is 0.87. Based on DeVellis's (1991) guidelines, the scale is considered reliable given that the alpha value is above 0.80.

Validity refers to the degree to which an instrument measures what it is intended to measure (Gay & Airasian, 2000). The content validity of the Self-Regulative Knowledge Scale has been verified by a panel of experts in education. Factor analysis was carried out to examine the construct validity of this scale. According to Gay and Airasian (2000), construct validity is the most important form of validity. It seeks to determine whether the dimension(s) underlying a variable are actually being measured. The researcher has screened the data and examined the assumptions and practical considerations underlying factor analysis. During data screening, two missing data have been replaced with mean using the Replace with Mean function in SPSS (Coakes & Steed, 2000). Next, procedures to test normality were carried out. The visual displays suggested that the data was from a normal distribution. The Kolmogorov-Smirnov test, nevertheless, indicates that the sample did not come from a normal distribution as the observed significance level

(Kolmogorov-Smirnov = 0.00) was lesser than 0.05. This result was obtained because it is impossible to find data that are exactly normally distributed when the sample size is large, such as in this study (N=322) (Nurusis, 1992). Founded on Nurusis's view, the results of the visual displays and also the fact that factor analysis is robust to the assumption of normality, this data was considered normally distributed.

The suitability of the data for factor analysis was tested. The correlation matrix indicates that a number of correlations exceed 0.30 thus it is suitable for factoring. The Bartlett's Test of Sphericity is significant at 0.01, this indicates no zero correlation and the Kaiser-Meyer-Olkin Measure of Sampling Adequacy is 0.90, far greater than 0.60, the minimum value required to run a factor analysis (Coakes & Steed, 2000). Furthermore, the anti-image matrices showed that all the values are above the acceptable level of 0.50. (Coakes & Steed, 2000), hence the researcher is confident that these items are factorable.

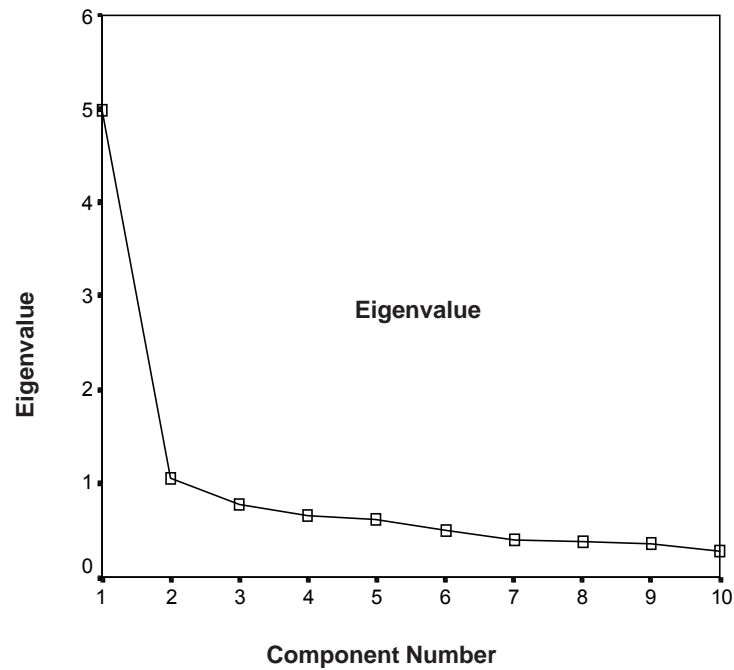
Examination of the initial statistics revealed that two factors would be extracted. This implies that the Self-Regulative Knowledge Scale is not unidimensional as postulated by the researcher. This scale consists of two dimensions or factors, which accounted for 60% of the variance. Factor I is predominant, it explained 50% of the variance and had an eigenvalue of 4.97 whereas Factor II accounted for 10% of the variance and had an eigenvalue of 1.05. Eigenvalues greater than one were accepted for the latent root criterion as recommended by Hair, *et al.* (1992). Results for the extraction of common factors are shown in Table 2.

**Table 2** Results for the extraction of common factors in self-regulative knowledge scale

Factors	Eigenvalues	Percentage of variance	Cumulative percentage
I	4.97	49.78	49.77
II	1.05	10.54	60.32

The scree plot in Figure 1 graphically displayed the eigenvalues for each factor. Factors above the inflection point of the slope should be retained. Factor I is above the inflection point of the slope thus it should be kept. The researcher decided to retain Factor II since the curve first begins to straighten out at this factor. Further more Factor II is interpretable and its eigenvalue is greater than 1. Varimax rotation method is used to assists the interpretation of the factors as it yields meaningful item groupings. According to the rule of thumb by Hair *et al.* (1992), factor loadings of 0.30 or higher were accepted. The result of this analysis is shown in Table 3.

There were six items with dual loadings. This result is expected as items 1 to 10 were designed to measure self-regulative knowledge therefore the factors extracted would be related. Items that are loaded on dual factors were placed under factors



**Figure 1** Scree plot of factors in self-regulative knowledge scale

**Table 3** Factor loading matrix using principal component analysis with varimax rotation on factors in self-regulative knowledge scale

Items	Factor I	Factor II
SRKNOW1	0.765	
SRKNOW2	0.577	0.328
SRKNOW3	0.593	0.519
SRKNOW4	0.672	
SRKNOW5	0.622	0.417
SRKNOW6	0.692	0.366
SRKNOW7	0.587	0.543
SRKNOW8	0.588	0.567
SRKNOW 9		0.824
SRKNOW10		0.797

*Note:* Only loadings above 0.3 is displayed

*Factor I:* Knowledge on strategies

*Factor II:* Beliefs about strategies



that yielded the highest loadings. The rotation solution shows that Factor I consists of items 1-8 whereas Factor II is made up of items 9 and 10. Further examination indicates that Factor I comprises items which measure students' knowledge on self-regulated learning strategies. Factor II on the other hand consists of items which measure students' beliefs about the values of the strategies.

After conducting factor analysis, the dimensionality of Self-Regulative Knowledge Scale is clearly defined. However, there are only two items representing Factor II. According to Green, *et al.* (2000), this is a common problem when factor analysis is carried out on existing scale. In order to overcome this problem, additional items have to be constructed. At least four items are needed to measure a construct (Green, Salkind, *et al.* 2000). Hence, items 11 and 12 were added to measure student's beliefs about the values of self-regulated learning strategies (Appendix A). These items are as follows:

Item 11: Usefulness of Self-Regulated Learning Strategies-Positive Statement

Item 12: Importance of Self-Regulated Learning Strategies-Negative Statement

Since two new items were added to the Self-Regulative Knowledge Scale, the maximum and minimum possible score of this scale have been increased. Based on the revised scale, the scores for self-regulative knowledge may range from 12 to 84. The maximum possible score that a respondent could obtain is 84 (point 7  $\times$  12 items). The minimum possible score, on the other hand, is 12 (point 1  $\times$  12 items).

#### 4.2 Relationships between Self-Regulative Knowledge and Self-Regulated Learning

The relationships between self-regulative knowledge and self-regulated learning were investigated using Pearson product-moment correlation coefficient. Interpretation on the strength of correlation was based on guidelines proposed by Cohen (1988) (Table 4). The results of these analyses are shown in Table 5.

**Table 4** Guidelines to interpret the strength of correlation ( $r$ )

Correlation coefficient ( $r$ )	Strength
$r = 0.10$ to $0.29$	Small strength
$r = 0.30$ to $0.49$	Medium strength
$r = 0.50$ to $1.0$	Large strength

(Source: Cohen, 1988)

**Table 5** Pearson product-moment correlation between self-regulative knowledge and self-regulated learning

Variables	Self-regulated learning
Self-regulative knowledge	0.66**
Knowledge dimension	0.63**
Beliefs dimension	0.51**

\*\* Correlation is significant at .01 level (1-tailed)

Table 5 shows that there was a strong and positive correlation between self-regulative knowledge and self-regulated learning, indicating that self-regulated learning increases as self-regulative knowledge increases ( $r = 0.66$ ,  $p < 0.05$ ). Both dimensions of self-regulative knowledge, students' knowledge about self-regulated learning strategies (knowledge dimension) and their beliefs about the values of these strategies (beliefs dimension) were found to be positively related to self-regulated learning. The strength of correlations between knowledge ( $r = 0.63$ ,  $p < 0.05$ ) and beliefs dimensions ( $r = 0.51$ ,  $p < 0.05$ ) with self-regulated learning can be considered as quite strong (Cohen, 1988).

Partial correlation was used to further explore the relationships between the dimensions of self-regulative knowledge with self-regulated learning. This analysis provides a single measure of linear association between two variables while adjusting for the effects of one or more additional variables (Pallant, 2001; Coakes & Steed, 2000). Results show that there was a moderate partial correlation between knowledge about self-regulated learning strategies and self-regulated learning, after the beliefs dimension was controlled ( $r = 0.49$ ,  $p < 0.05$ ). This indicates that without taking into consideration students' beliefs about the values of strategies, the knowledge that students have on strategies was enough to produce a significant positive relationship with self-regulated learning.

On the other hand, there was a low but significant partial correlation between beliefs about the values of self-regulated learning strategies and self-regulated learning, after the knowledge dimension was controlled ( $r = 0.25$ ,  $p < 0.05$ ). This implies that student' beliefs about strategies values alone were able to contribute a positive correlation with self-regulated learning. Each dimension obviously has unique contributions. These results were congruent with factor analysis, which suggested that the underlying construct of self-regulative knowledge consists of students' knowledge about self-regulated learning strategies and their beliefs about the values of these strategies.

The low correlation between beliefs about the values of strategies and self-regulated learning may be due to the small numbers of items measuring the beliefs dimension. However, after factor analysis, two more items were added to this

dimension, a higher correlation may then be obtained. Further study can be carried out to confirm this postulation.

## 5.0 IMPLICATIONS

In this study, self-regulated learning was found to be strongly associated with self-regulative knowledge; self-regulated learning improves as self-regulative knowledge increases. One implication for educational practices arising out of this finding suggests that teachers may play a prominent role in promoting self-regulated learning. They can provide students with knowledge on self-regulated learning strategies and convey the values of these strategies.

Students must be taught how to select and use appropriate strategies to regulate their own learning activities independently and proactively. Generally, students have to use cognitive and metacognitive strategies to analyze task requirements, define performance criteria, set learning goals, complete learning tasks and revise the learning material. During task completion in particular, students have to learn how to employ specific learning strategies to access, analyze and apply information efficiently. After the tasks have been carried out, students must know how to self-assess and take appropriate measures to further enhance their performance. Given that self-regulation is not a skill that automatically develops as students get older, teachers ought to take measures to teach students cognitive and metacognitive strategies, such as elaboration, organization, critical thinking and metacognitive strategies so that they are able to carry out the above mentioned activities.

Besides cognitive and metacognitive strategies, students also need to have resource management skills. These skills enable students to plan and organize their revision schedule, select appropriate study area, increase motivation to complete individual assignments on time as well as seeking guidance when needed. Resource management strategies include time and environment management, effort regulation, peer learning and help seeking strategies.

Strategies can be taught directly as separate lessons or indirectly by incorporating them into school lessons. The latter may be more effective as students can apply strategies during normal learning context and utilize the existing curriculum materials. Teachers may introduce specific strategies, emphasize the importance and usefulness of the strategies and if possible give examples on how the strategies have benefited other students. For example, teachers can teach time management strategies during language lessons, convey the values of the strategies, and guide students to plan and monitor the completion of their language assignments. Besides, teachers can also teach cognitive strategies to process information needed for essays writing or school project. To sustain the usage of self-regulated learning strategies, students have to realize that the strategies can help them to produce better academic performance. It is utmost important that the strategies taught are being employed constantly and practically in learning activities and self-regulated learning is inculcated as a habit among students.

Teachers may use the Self-Regulative Knowledge Scale to gauge students' level of self-regulative knowledge. This scale is designed to be a brief instrument so that it can be used by teachers for action research in normal classrooms. With this simple instrument, teachers may measure students' progress in self-regulative knowledge after strategy instruction. However, the limitation of the scale should also be acknowledged as it is a newly developed instrument. More research should be carried out to refine and extend the scale.

## 6.0 CONCLUSIONS

This study attempts to establish the reliability and validity of the Self-Regulative Knowledge Scale and also to determine the relationship between self-regulative knowledge and self-regulated learning. The Self-Regulative Knowledge Scale's content validity was verified by a panel of experts in education and the construct validity was established with factor analysis. This newly developed instrument can be considered reliable, valid, and comprehensible to secondary students. It can be employed by researchers and teachers to investigate self-regulative knowledge in the Malaysian context. This study also revealed that self-regulative knowledge was positively related to self-regulated learning. This indicates that students' self-regulated learning skills may improve when their self-regulative knowledge increases. Teachers, therefore, have to teach students self-regulated learning strategies and also convey to them about the importance and usefulness of these strategies.

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**SELF-REGULATIVE KNOWLEDGE SCALE****PENGETAHUAN TENTANG STRATEGI PEMBELAJARAN**

Soalan-soalan berikut adalah berkenaan pengetahuan dan kepercayaan anda tentang strategi-strategi pembelajaran. Sila jawab dengan jujur.

	Sangat tidak benar tentang diri saya	←—————→						Sangat benar tentang diri saya
1. Saya boleh merumuskan maklumat dalam bahan bacaan kepada bentuk yang lebih ringkas.	1	2	3	4	5	6	7	
2. Saya tidak mengetahui tentang cara untuk merancang jadual pembelajaran saya untuk menghadapi peperiksaan.	1	2	3	4	5	6	7	
3. Saya mempunyai teknik-teknik tertentu untuk menghafal fakta-fakta penting	1	2	3	4	5	6	7	
4. Apabila mempelajari sesuatu topik baru, saya boleh mengaitkannya dengan apa-apa yang telah saya pelajari	1	2	3	4	5	6	7	
5. Saya dapat memikirkan beberapa langkah untuk meningkatkan pencapaian saya.	1	2	3	4	5	6	7	
6. Saya boleh mengenal pasti tempat yang sesuai untuk membuat ulang kaji.	1	2	3	4	5	6	7	

7. Saya tahu teknik-teknik tertentu yang dapat digunakan untuk meningkatkan motivasi diri untuk belajar	1	2	3	4	5	6	7
8. Saya tidak teragak-agak untuk meminta bantuan rakan sekelas yang lain jika saya mempunyai masalah dari segi akademik.	1	2	3	4	5	6	7
9. Saya tidak percaya bahawa penggunaan teknik-teknik pembelajaran dapat meningkatkan pencapaian saya.	1	2	3	4	5	6	7
10. Saya berpendapat bahawa setiap pelajar patut diajar cara untuk menggunakan teknik-teknik pembelajaran.	1	2	3	4	5	6	7
11. Saya percaya bahawa pelajar lain memperoleh keputusan yang cemerlang kerana mereka menggunakan teknik-teknik pembelajaran.	1	2	3	4	5	6	7
12. Pada pendapat saya, penggunaan teknik-teknik pembelajaran sangat membuang masa.	1	2	3	4	5	6	7

Note: Items 11 and 12 were added after factor analysis