**RESEARCH ARTICLE**

# Metacognitive writing strategies of Sri Lankan secondary school children

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**Abstract:** This study was conducted to identify metacognitive strategies used by secondary school children in the three stages of writing process, to identify their distribution within metacognitive strands and metacognitive fields, and to identify whether they differ according to rural / urban schools, grades and sex. 408 observation notes, written exercises from 278 Mother Tongue lessons, 289 interviews and responses to a questionnaire were collected from 678 Grade 6-10 students. Qualitative data were coded, frequencies calculated and differences between proportions were Z tested. Quantitative data were clustered and analyzed using Chi square and Factor analysis. Writing Stage is dominant in the Writing Process of Grades 6 -10 students of both sexes and in rural / urban schools. Planning and Revising stages are mixed with the Writing Stage. The Planning Stage is dominated by an explanation of the lesson by the teacher. Students do not show an awareness or regulation of metacognitive strategies in the Planning of Writing. Knowledge Telling Process can be found in the Writing Stage. Revising Stage is dominated by mechanical and surface level changes. There is a tendency towards a boy-girl dichotomy. Girls emphasize the Planning Stage whereas the boys emphasize the Writing Stage.

## INTRODUCTION

Flavell (1976) first coined the term metacognition as "one's knowledge concerning one's own cognitive processes and products or anything related to them, e.g. the learning related properties of information and data". He further describes metacognition as "the active monitoring and consequent regulation and orchestration of these processes in relation to the cognitive objects or data on which they bear, usually in the service of some concrete goal or objective" (Flavell, 1976). There is a growing theoretical and practical interest in the topic of metacognition: how we monitor and control our own mental processes (Pintrich, 1999). Metacognition has made contributions to two applied domains, namely education, specially applications towards improving learning and training and legal contexts (Schwartz & Perfect, 2002). An important aspect of learning is using Cognitive and Metacognitive strategies to control and regulate students' own learning.

Metacognition is a construct similar to Executive Decision Making Process of Information Processing System. Metacognition is also an aspect of Self-regulation. One of the schools of thought that has contributed to enhance the knowledge in the construct of Self-regulated Learning is 'Metacognition and Regulation Styles' (Boekaerts, 1999). Many research studies on Self-regulated Learning play a major role in understanding classroom learning processes and facilitating the intellectual development of the child, (Newman, 1990; Zimmerman, & Bandura, 1994; Schunk, & Zimmerman, 1994; Boekaerts, & Minnaert, 1999) centered on cognitive and metacognitive strategies such as mnemonic encoding and self-monitoring (Zimmerman, & Bandura, 1994). According to the constructivist viewpoint, the learner should have a control over his or her own learning because the responsibility is with him in sensitizing with the learning and the student needs cognitive and metacognitive knowledge and skills to do this successfully.

Although, as a new construct, the concept of Self-regulated Learning is embraced by policy makers, teachers, educationists and parents (Boekaerts, 1999), the research emphasis in Sri Lanka on the concept of

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metacognition is not grounded and its application at classroom level is yet to be identified.

Metacognitive skills and strategies can be used in any subject area of school curriculum and in the thought processes of children such as attention, motivation, learning, memory, and understanding (Linn, 1986; Nickerson, 1986; Carrol, 1986).

Further, there are 'General metacognitive skills and strategies' that can be applied across different subject areas or mental processes and 'Specific metacognitive skills and strategies' that can be used in specific subject areas or mental processes. The present study focuses on a specific subject area, i.e. writing of secondary school children, which according to Scardamalia & Bereiter (1986a) has gained academic attention recently, although it had been neglected until now.

Four aspects of writing have been focused on in research literature on Writing and the present study focuses on the aspect of 'incidents and processes occurred in the mind during Writing in the classroom setting.

## LITERATURE SURVEY

### Metacognition

Based on the theoretical explanations (Flavell, 1976; Brown, & Smiley, 1977; Flavell, 1979; Brown, 1980; ; Cavanaugh, & Perlmutter, 1982; Meichenbaum, Burland, Gruson, & Cameron, 1985; Wellman, 1985; Beyer, 1987; Brown, 1987 ; White, 1988) two aspects of metacognition are delineated for the study. They are,

• Knowledge and awareness about cognitive behaviour/ processes and,

• Monitoring and controlling of such knowledge and awareness to regulate cognitive behaviour/ processes.

Learning strategies that display Knowledge, Awareness, Monitoring and Controlling have been identified by researchers in different subject areas and mental processes. According to Paris, Saarnio, & Cross (1986), the strategies are skimming, rereading, paraphrasing, and summarizing. Ellis (1986) cited planning, checking, testing, revising and evaluation as strategies. Baird (1986) cites confirmation of the topic, evaluation of knowledge, reviewing the structure of the message, extracting important sections, and evaluating outcome of learning as learning strategies. Moely, Hart, Santulli, Leal, Johnson, Rao, & Burney (1986) named

rehearsal, chunking, categorization, verbal elaboration, and note taking as general strategies. Weinstein, & Mayer (1986) categorize strategies into eight as basic rehearsal strategies, complex rehearsal strategies, basic elaboration strategies, complex elaboration strategies, basic organizational strategies, complex organizational strategies, comprehension monitoring strategies, and affective and motivational strategies.

In Sri Lanka, Gorrell, Dharmadasa, Kularatne, & Abeyratne (1996) found that older children in primary classes tend to use more complex strategies and younger children tend to use basic learning strategies. Use of strategies by children also differed according to the subjects being studied. Further, Sri Lankan primary school children function effectively and strategically in their classroom performances. Gorrell, Dharmadasa, & Dharmadasa (1999) studied learning strategies of self evaluation, organization and transformation, goal setting, planning, seeking information, self monitoring, adjusting environment, rehearsing, memorizing, seeking peer help, and seeking help from parents and teachers, used in problem solving.

Use of specific strategies in the writing behaviour is focused on in the present study. Hence metacognition is defined, for the purpose of this study as the knowledge, awareness and monitoring and the controlling of that knowledge and awareness, in using strategies for writing.

The present research focuses on the Writing Strategies, and 'knowledge and awareness' of children on the Writing Strategies and the 'monitoring, controlling, and regulating of such 'knowledge and awareness' in the three stages of the Writing Process: Planning, Writing and Revising.

### Writing Process

Writing is a complex activity (Archibald, & Jeffery, 2000). It also has a recursive process. The present trend of research into the writing of children focuses on the process of writing rather than on the product of writing, and on the recursive nature of writing rather than the linear nature of writing (Rohman, 1965; Britton, Burgess, Martin, Mcleod, & Rosen, 1975; Hayes, & Flower, 1980; Flower, & Hays, 1981a; Graves, 1983; Murray, 1984; Bereiter, & Scardamalia, 1987; Moore, & Caldwell, 1993; Hayes, & Nash, 1996; Torrance, Thomas, & Robinson, 1999; Torrance, Thomas, & Robinson, 2000).

Although Planning, Composing and Revising stages are

overlapping in the Writing Process, they can be taken separately to facilitate description (Hartley, 1994).

An important time log of Writing should be focused on Planning Stage of Writing where the goal setting occurs (Murray, 1978; Flower, & Hays, 1980a; Moffett, 1982; Graves, 1983; Rohman, 1983). Goal setting is one important aspect of good writing (Page-Voth, & Graham, 1999).

During the second stage of Writing Process, i.e. the Writing Stage, ideas are translated into the written mode. The writer is expected to perform many tasks during this period and due to this, writing becomes an unusually complex task (Biggs, Lai, Tang, & Lavelle, 1999).

Revising which enhances the quality of an essay is a basic and important aspect of the Writing process (Murray, 1978; Scardemalia, & Bereiter, 1986a; Fitzgerald, 1987; Fitzgerald, & Markman, 1987; Graham, MacArthur, & Schwartz, 1995). Professional writers set apart considerable time for Revising (Hildick, 1965; Graham, MacArthur, & Schwartz, 1995).

Effective Revising results in good Writing (Murray, 1978; Bridwell, 1980). Many writers, however, revise little (National Assessment of Educational Progress, 1977; Scardamalia, 1981; Bartlett, 1982; Hull, 1987; Englert, Hiebert, & Stewart, 1988). They tend to be proof readers rather than reviewers whose role is to edit the document to suit a known audience (Sommers, 1980; Faigley & Witte, 1981).

In American Public Schools many children do not revise competently and effectively (Fitsgerald, & Markman, 1987; Fitzgerald, 1987; Graham, MacArthur, & Schwartz, 1995). They focus on mechanical and word-level changes (Bridwell, 1980; Faigley, & Witte, 1981; Scardamalia, & Bereiter, 1986a; Scardamalia, & Bereiter, 1986b; Graham, MacArthur, & Schwartz, 1995) and their Revising influences a little on the quality of Writing (Bracewell, Scardamalia, & Bereiter,

1978; Scardamalia, & Bereiter, 1986a; Scardamalia, & Bereiter, 1986b; Graham, MacArthur, & Schwartz, 1995). Their sense of audience is limited, resulting in less Revision (MacArthur, Schwartz, & Graham, 1991; Graham, MacArthur, & Schwartz, 1995). In Sri Lanka, a study on Metacognitive Writing is yet to be completed.

## OBJECTIVES

The objectives of the research were to identify metacognitive strategies used by secondary school children (Grades 6-10) in the three stages of Writing Process, to identify distribution patterns of metacognitive strategies used by secondary school children within 'metacognitive strands (Awareness and Regulation)' and 'metacognitive fields (Generating ideas, Goal setting, Organization, Self monitoring and Self evaluation)'; to identify the nature of their knowledge/ awareness and monitoring / regulation of metacognitive strategies and to identify whether the metacognitive strategies used differ according to the type of school (rural / urban), grade (6-10) and sex (boy / girl). Figure 1 shows the conceptual model of the study.

## METHODOLOGY

The sample comprised 725 children (Male = 363; Female = 362) of Grade 6, 7, 8, 9, and 10 from four purposively selected schools (Urban = 2; Rural = 2). A sub sample of 120 children was used to collect 408 observation notes and written exercises as classroom artifacts. They were collected from 278 Mother Tongue lessons by 12 data collectors, including the researcher. Two hundred and eighty nine interviews were conducted with the children focusing on their writing behaviour (Table 1).

Based on the data collected from the sub sample of 120 children, a questionnaire was developed to collect data from the sample of 725 students.
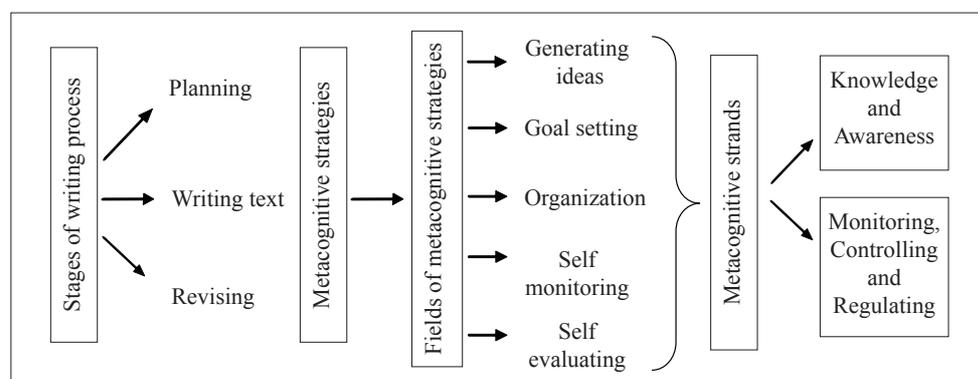


**Figure 1**. Conceptual model of the study

**Table 1**:  Mother Tongue lessons (Interviews and Observations)

| School | No. of observed lessons | | | | | | No. of interviews | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 6 | 7 | 8 | 9 | 10 | Total | 6 | 7 | 8 | 9 | 10 | Total |
| A | 16 | 19 | 20 | 16 | 17 | 88 | 22 | 19 | 30 | 22 | 16 | 109 |
| B | 22 | 17 | 16 | 11 | 21 | 87 | 15 | 13 | 15 | 20 | 19 | 82 |
| C | 9 | 12 | 9 | 9 | 11 | 50 | 12 | 12 | 8 | 6 | 6 | 44 |
| D | 10 | 10 | 10 | 13 | 10 | 53 | 12 | 11 | 8 | 19 | 4 | 54 |
| Total | 57 | 58 | 55 | 49 | 59 | 278 | 61 | 55 | 61 | 67 | 45 | 289 |

Observation and interview data, qualitative in nature, collected from 120 children were transcribed, coded and frequencies were calculated according to the Stages of writing (Planning, Writing, Revising), Metacognitive strategy fields (Generating ideas, Goal setting, Organization, Self monitoring and Self evaluation), Metacognitive strands (Awareness and Regulation) and 72 Metacognitive strategies. Differences between proportions of frequencies were tested using z test. In the reporting of findings, extracts of classroom artifacts, observations and interviews were quoted as qualitative examples.

The quantitative data derived from the questionnaire, that were used to study the generalizability of patterns identified from 120 students, were analyzed using 'Hierarchical tree cluster analysis' to identify speculative patterns, 'Chi square test' to identify confirmed patterns and 'Factor analysis' to identify specific patterns.

**Delimitations and Limitations**

The study focused on writing activities performed as a part of curriculum implementation in the selected grades. Specifically designed writing activities by the researcher were not used since the objective was to identify metacognitive strategies in writing in the natural classroom setting. A secondary grade, Grade 11 was not included due to its exam oriented writing behaviour.

Only 604 children responded to the questionnaire, due to the involvement of the other children in pre assigned school activities (Table 2).

**Table 2:**  Student responses to questionnaire

| Environment of school | Sex of the child | Grades | | | | |
|---|---|---|---|---|---|---|
| | | 6 | 7 | 8 | 9 | 10 |
| Rural | Boys | 35 | 38 | 38 | 29 | 32 |
| | Girls | 26 | 33 | 32 | 30 | 27 |
| Urban | Boys | 36 | 53 | 24 | 41 | 24 |
| | Girls | 16 | 23 | 20 | 28 | 19 |
| Total | Boys | 71 | 91 | 62 | 70 | 56 |
| | Girls | 42 | 56 | 52 | 58 | 46 |
| **Total** | | **113** | **147** | **114** | **128** | **102** |
| **Grand Total** | | **604** | | | | |

**Ethical Considerations**

The consent of school principals and teachers was obtained for the research on the assurance that classroom and school activities would not be affected.

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## DATA PRESENTATION AND DISCUSSION

### 1. Patterns Emerging from sub sample

#### *1.1 Time taken for each stage of writing process: the content analysis*

It could be identified that there were two sub periods in Mother tongue lessons, the time taken by the teacher to teach and the time taken by the student to write. The average percentage of time in which, 120 children of the sub sample engaged in the writing during their observed 278 Mother Tongue lessons was 60% (Rural 67%, Urban 54%). Gradewise percentages were 58% (Grade 6), 58% (Grade 7), 67% (Grade 8), 62% (Grade 9), and 56% (Grade 10) (Table 3).

During the observation of Writing activities by 12 observers, children entered into the Writing stage of the Writing process in 408 instances. Out of the 408 instances, Planning stage of the Writing process was observed in 19% of the instances (Rural 17%, Urban 21%) and Revising in 12% of the instances (Rural 5%, Urban 21%). The main reason for the less time period for Revision was the limited 40 minute time period for lessons. During the Writing stage, however, children engaged in Planning in 65% of the instances (Rural 62%, Urban 67%) and in Revising in 75% of the instances (Rural 68%, Urban 82%). Hence, Writing stage was dominant in the Writing Process of male and female students in both urban and rural schools and in Grades 6-10 students. Rather than being in two separate stages, Planning and Revision were mixed in the Writing stage, because children tended to plan and revise while Writing.

**Table 3:** Relative time spent on each stage of writing

| Grade | 6 | | 7 | | 8 | | 9 | | 10 | | Grand total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Time | | | | | | | | | | | |
| School | Lessons: Minutes | Writing: Minutes | Lessons: Minutes | Writing: Minutes | Lessons: Minutes | Writing: Minutes | Lessons: Minutes | Writing: Minutes | Lessons: Minutes | Writing: Minutes | Lessons: Minutes | Writing: Minutes |
| Sch. A Sch. B | 537 652 | 334 456 | 659 880 | 352 472 | 684 941 | 404 798 | 491 627 | 424 449 | 584 543 | 373 379 | 2955 3643 | 1887 2554 |
| Rural Total | 1189 | 790 66% | 1539 | 824 54% | 1625 | 1202 74% | 1118 | 873 78% | 1127 | 752 67% | 6598 | 4441 67% |
| Sch. C Sch. D | 640 727 | 346 344 | 770 867 | 545 460 | 827 851 | 597 418 | 547 1032 | 292 499 | 725 704 | 297 378 | 3509 4181 | 2077 2099 |
| Urban Total | 1367 | 690 50% | 1637 | 1005 61% | 1678 | 1015 60% | 1579 | 791 50% | 1429 | 675 47% | 7690 | 4176 54% |
| Total | 2556 | 1480 | 3176 | 1829 | 3303 | 2217 | 2697 | 1664 | 2556 | 1427 | 14288 | 8617 |
| Grand Total | | 58% | | 58% | | 67% | | 62% | | 56% | | 60% |

*1.2   Metacognitive strategies used in each stage of the Writing Process: Observation data*

When the notes taken during the lesson observations were translated into graphs (Fig. 2 & 3) to accentuate patterns, the relative expansion of stages of writing could be further identified.  In the graphs, the process of writing of children were depicted through signs which are cited below the Fig. 2 as a key.  In some places of the graphs, to highlight the stages of writing process, words have been written using English phonetic scripts. As an example in the Fig. 2 Sinhala word 'vivida' (English meaning = various) is written as 'vivida'.

According to the patterns in the graphs, children did not spend time for Planning and right away started writing. During the explanation of lessons by teachers, only three children 'took notes independently' by way of writing the meaning of difficult words, showing the metacognitive regulation behaviour. During the explaining of lessons, however, mental metacognitive strategies of 'identifying the necessity for writing', 'knowledge on the specific task and task difficulty', 'using prior knowledge' and 'identifying the goal of writing' were emerging in the minds of the children. Children tend to begin writing at once as the teacher wants them to start writing, based on this basic conceptual springboard. Major parts of graphs are dominated by the Writing Stage of the Writing Process indicating the importance children place on the Writing Stage.  Hence a Writing Stage dominated Writing Process could be identified. As revision is not a separate section of the Writing Process, it mixes with the Writing Stage. Accordingly, children revised while writing the text, not after finishing the text. Hence, a recursive process of writing could be identified. Further, their revisions were limited to mechanical revisions i.e. Writing on the letters to have them clearer, preparation of vowel sounds, colouring letters to make them prominent and making surface level changes of the text i.e. Striking off written words, writing new words, writing correct letters / words for incorrect ones.
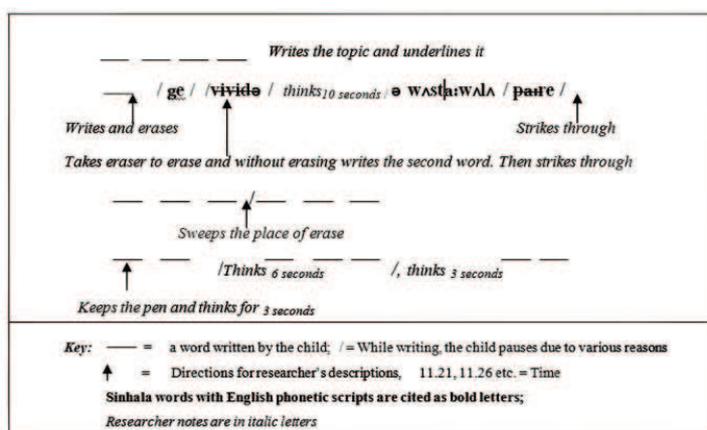

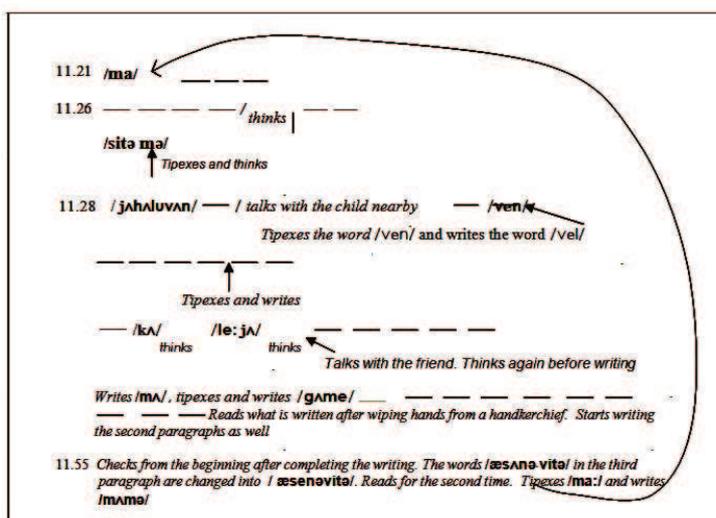
**Figure 2:** Graph showing the flow of writing of child A65F



**Figure 3:** Graph showing the flow of writing of child A66F

### 1.3 Metacognitive strategies used in each stage of the Writing Process: Analysis of qualitative data

The writing stage which dominated the writing process could also be identified from the extracts of interview data.

### 1.3.1. The Planning of Writing

The Planning of Writing is mainly a mental process that could not be visible through external behaviours, i.e. preparation of drafts, taking notes. Only four children out of 120 used drafts for writing during the observations. The ideas expressed in interviews by children (I thought a little, I thought about this piece of writing and then wrote, memorized what the teachers had taught us and wrote, I recollected facts) show the mental Planning for Writing.

Children do not show awareness or regulation of metacognitive strategies in the Writing process (Fig 4 & 5). The obvious metacognitive strategy that was not used in Planning was 'Goal setting' (Fig 6 & 7). Out of the 40 metacognitive strategies related to Planning of Writing: 'memorizing relevant facts', 'using prior knowledge', 'reading to collect information', 'seeking information', were used by the children.

| Researcher | : | You did not write anything during the teacher's explanation. Did you? |
|---|---|---|
| Student | : | Yes |
| Researcher | : | Why didn't you write while the teacher was explaining? |
| Student | : | We do not do it other days also |
| Researcher | : | So, you just listen. Don't you? Can you remember all the facts teacher explains? Don't you forget? |
| Student | : | I forget some facts. |
| Researcher | : | Then why don't you take notes? |
| Student | : | No Answer |

**Figure 4:** An extract from an interview with the child B105F

| Researcher | : | Did you have a plan at the beginning of the writing? |
|---|---|---|
| Student | : | Yes, first we have to introduce. |
| Researcher | : | Then |
| Student | : | No answer |
| Researcher | : | When you started writing did you have an idea about the length and the content of the essay? |
| Student | : | No such thing. I kept important facts in my memory. |

**Figure 5:** An extract from an interview with the child

| Researcher | : | Did you decide that you were going to write this much of facts? |
|---|---|---|
| Student | : | No |
| Researcher | : | Did you think of writing a little? |
| Student | : | No |
| Researcher | : | Then why did you write a little? |
| Student | : | While I was writing I had no idea about my piece of writing. While writing I thought this much would be enough. |

**Figure 6:** An extract from an interview with the child A65F

| Researcher | : | Did you write this dialogue using your memory? |
|---|---|---|
| Student | : | No, I just wrote the ideas that came into mind at that time. |
| Researcher | : | Didn't you write what the book mentioned? |
| Student | : | I took one episode and wrote one conversation and then thought about the next conversation later. I thought about the beginning but not about the end of the dialogue. |
| Researcher | : | Do you have the whole story in your mind? |
| Student | : | No. I take one incident and expand it. I write one and then think about the next thing to be written. After writing one word, think about the next word. |

**Figure 7:** An extract from an interview with the child B102M

Analysis of interview data in relation to five matacognitive fields reveals the fact that the field of goal setting was weak during the Planning Stage.

### 1.3.2 The Writing Stage

Absence of Planning Stage, results in a Writing Stage where children tend to write what they have in their minds at the moment of writing. The unawareness of the writing task in the Writing Stage also surfaced (Fig 8).

| Researcher | : | The teacher asked you to write LIYO. But you have written Lio. Why? |
|---|---|---|
| Student | : | Madam, I forgot it. I was not aware |

**Figure 8:** An extract from an interview with the child B83M

Children entered the Writing Stage with 'awareness on the present cognitive status' and they had the awareness of the 'ongoing writing activity'. 'While writing they thought about the writing' and 'took decisions on paragraphing and organizing the written work'. Due to this metacognitive awareness during the Writing Stage, they could identify the places where revisions were necessary and edit the written work accordingly (Fig. 9).

| Researcher | : | You wrote the words "Parakrama Samudraya" and thought for a while. Why? |
|---|---|---|
| Student | : | I thought whether it was right. |
| Researcher | : | Why did you cut a word in the fourth line of the third paragraph? |
| Student | : | I thought about a better word |

**Figure 9:** An extract from an interview with the child B95F

Although metacognitive regulation strategies of 'transformation of content of the piece of writing to produce a better product', 'thinking about the writing task and as a result self monitoring', and 'reflecting on the writing task' could be found in some of the children who were in the Writing Stage of the Writing Process, as a whole, there exists a 'knowledge telling behaviour' rather than a 'knowledge transformation behaviour' proving the theory of writing suggested by Scardamalia & Bereiter (1986ab) (Fig 10, 11 & 12).

| Researcher | : | How did you think about writing in this way? |
|---|---|---|
| Student | : | While I was writing facts it came into my mind. Hence I wrote in that way. |
| Researcher | : | That means you do not think about the things you are going to write at the beginning, at the middle of the essay and at the end of the essay? |
| Student | : | Yes |

**Figure 10:** An extract from an interview with the child C66F

| Researcher | : | I saw you striking off a word here |
|---|---|---|
| Student | : | First of all I began to write this sentence. Afterwards this word came into my mind. Hence I wrote that word. |

**Figure 11:** An extract from an interview with the child D95F

| Researcher | : | That means you think before you write? |
|---|---|---|
| Student | : | I keep on writing and if the facts do not come into my mind I stop writing. |

**Figure 12:** An extract from an interview with the child B103M

When the interview data were analysed according to five matacognitive fields, the field of generating ideas seemed to overlap with the Writing Stage.

### 1.3.3 The Revision Stage

Twelve percent of the children who entered the Revision Stage of Writing Process as well as others who revised the writing, while they were still at the Writing Stage tended to make mechanical changes and surface level changes. There was no metacognitive awareness of deep level revising.

It was observed that the fields of self evaluation and organization were mixing with the Revision Stage, when the interview data were analysed according to five metacognitive fields,.

As a whole the self regulation field could not be found in the writing behaviour of secondary school children.

### 1.4 Metacognitive emphasis on each stage of the Writing Process: Quantitative analysis of interview data

The fact that the Writing Stage dominated the Writing Process could also be identified from the quantified interview data. 2481 steps of 289 interviews were read, coded and analyzed quantitatively to identify the distribution of student ideas in the three stages of the Writing Process, the five fields of metacognition and the 72 metacognitive strategies.

Of the total number of times mentioned (3715), Writing Stage was mentioned in 49%, as against 31% on the Planning Stage and 20% on the Revising Stage. The emphasis on Writing Stage as against the other two stages and on Planning Stage against Revision Stage was significant at 0.5 (Table 4). Hence, the dominance of the Writing Stage could be discerned in the Writing Process.

**Table 4:** Distribution and significance of expressed ideas of students according to stages of writing

| Stages of writing | Number of times mentioned | % |
|---|---|---|
| Planning | 1153 | 31% |
| Writing | 1814 | 49% |
| Revising | 748 | 20% |
| **Total** | **3715** | **100%** |

| Comparison of variables (proportionate Z test) | Stages of writing | | |
|---|---|---|---|
| | **Planning <>Writing** | **Planning < > Revising** | **Writing < > Revising** |
| P value | 1.0000 | 0.0000 | 0.0000 |
| | Sig < | Sig > | Sig > |

When the data were analyzed according to variables of sex, environment of the school (Rural/Urban) and grade (6, 7, 8, 9, 10), emphasis on the Writing Stage could be identified (Tables 5, 6 & 7). However, girls emphasize the Planning Stage whereas boys emphasize the Writing Stage and urban students emphasize the Planning Stage and rural students emphasize the Writing Stage. Grade 6 students emphasize Planning and Writing Stages significantly and Grade 8 and 9 students emphasize Writing Stage as against Planning significantly. Further, Grade 8 students emphasize Planning than Revision.

**Table 5:** Distribution and significance of expressed ideas of students according to stages of writing and sex of the student

| Stages of writing | Boys | % | Girls | % |
|---|---|---|---|---|
| Planning | 452 | 28% | 701 | 33% |
| Writing | 831 | 51% | 983 | 47% |
| Revising | 335 | 21% | 413 | 20% |
| **Total** | **1618** | **100%** | **2097** | **100%** |

| Comparison of variables | | Stages of writing | | |
|---|---|---|---|---|
| | | **Planning** | **Writing** | **Revising** |
| P value | Boys <> Girls | 0.9999 | 0.0033 | 0.2239 |
| | | *Sig <* | *Sig >* | *Not Sig* |

**Table 6:** Distribution and significance of expressed ideas of students according to stages of writing and environment of the school

| Stages of writing | Rural | % | Urban | % | Total | % |
|---|---|---|---|---|---|---|
| Planning | 568 | 28% | 585 | 35% | 1153 | 100% |
| Writing | 1034 | 51% | 780 | 46% | 1814 | 100% |
| Revising | 427 | 21% | 321 | 19% | 748 | 100% |
| **Total** | **2029** | **100%** | **1686** | **100%** | **3715** | **100%** |

| Comparison of variable | | Stages of writing | | |
|---|---|---|---|---|
| | | **Planning** | **Writing** | **Revising** |
| P value | Boys <> Girls | 1.0000 | 0.0021 | 0.0638 |
| | | *Sig <* | *Sig >* | *Not Sig* |

**Table 7:**   Ideas expressed by students according to stages of writing and grades

| Grade | 6 | | 7 | | 8 | | 9 | | 10 | |
|---|---|---|---|---|---|---|---|---|---|---|
| Stages of writing | Total | % | Total | % | Total | % | Total | % | Total | % |
| Planning | 178 | 29 | 246 | 31 | 158 | 26 | 258 | 28 | 313 | 40 |
| Writing | 285 | 46 | 372 | 47 | 337 | 55 | 478 | 53 | 342 | 44 |
| Revising | 155 | 25 | 169 | 22 | 120 | 19 | 176 | 19 | 128 | 16 |
| **Total** | **618** | **100** | **787** | **100** | **615** | **100** | **912** | **100** | **783** | **100** |

| Comparison of variable (Grades) | Planning | Writing | Revising |
|---|---|---|---|
| | P-Value | P-Value | P-Value |
| 6 <> 7 | 0.26046 | 0.3909 | 0.84829 |
| | *Not Sig* | *Not Sig* | *Not Sig* |
| 6 <> 8 | 0.79356 | 0.02098 | 0.94274 |
| | *Not Sig* | *Sig>* | *Not Sig* |
| 6 <> 9 | 0.52149 | 0.27535 | 0.75452 |
| | *Not Sig* | *Not Sig* | *Not Sig* |
| 6 <> 10 | 0.04322 | 0.64238 | 0.95568 |
| | *Sig>* | *Not Sig* | *Sig<* |
| 7 <> 8 | 0.91239 | 0.04902 | 0.70296 |
| | *Not Sig* | *Sig>* | *Not Sig* |
| 7 <> 9 | 0.62085 | 0.31484 | 0.60147 |
| | *Not Sig* | *Not Sig* | *Not Sig* |
| 7 <> 10 | 0.09662 | 0.69942 | 0.83625 |
| | *Not Sig* | *Not Sig* | *Not Sig* |
| 8 <> 9 | 0.39372 | 0.58808 | 0.51008 |
| | *Not Sig* | *Not Sig* | *Not Sig* |
| 8 <> 10 | 0.01632 | 0.94557 | 0.72663 |
| | *Sig>* | *Not Sig* | *Not Sig* |
| 9 <> 10 | 0.14394 | 0.76884 | 0.62511 |
| | *Not Sig* | *Not Sig* | *Not Sig* |

When the data were compared among grades (6, 7, 8, 9, 10) Grade 6 children significantly emphasized more on Revision than Grade 10 children and Grade 10 children significantly emphasized more on Planning than Grade 6 children (Table 8).

**Table 8:**   Expressed ideas of students according to fields of metacognition

| Metacognitive fields | No. of times expressed | % |
|---|---|---|
| Generating ideas | 1386 | 26% |
| Goal setting | 441 | 8% |
| Organizing | 1183 | 22% |
| Monitoring | 1301 | 24% |
| Evaluating | 1058 | 20% |
| **Total** | **5369** | **100%** |

| Comparison of variables | p - value |
|---|---|
| 1 Generating ideas <> 2 Goal setting | 1.0000 |
| | *Sig <* |
| 1 Generating ideas <> 3 Organizing | 0.8349 |
| | *Not Sig* |
| 1 Generating ideas <> 4 Monitoring | 0.6292 |
| | *Not Sig* |
| 1 Generating ideas <> 5 Evaluating | 0.8214 |
| | *Not Sig* |
| 2 Goal setting <> 3 Organizing | 0.0000 |
| | *Sig >* |
| 2 Goal setting <> 4 Monitoring | 0.0002 |
| | *Sig >* |
| 2 Goal setting <> 5 Evaluating | 0.0364 |
| | *Sig >* |
| 3 Organizing <> 4 Monitoring | 0.3314 |
| | *Not Sig* |
| 3 Organizing <> 5 Evaluating | 0.6338 |
| | *Not sig* |
| 4 Organizing <> 5 Evaluating | 0.7303 |
| | *Not Sig* |

### 1.5 Emphasis on each Metacognitive Field: Quantified interview data

Out of the Metacognitive Fields, Generating Ideas, Organization, Monitoring and Evaluation were mentioned 26%, 22%, 24%, and 20% respectively of the total terms (5369) as against 8% on Goal Setting. The less emphasis on Goal Setting is significant (Table 8). Significantly less emphasis on Goal Setting was established when data was analyzed according to variables of sex and environment of the school. According to grades, however, there was no significant difference between metacognitive fields. Girls set goals before writing than boys and boys tended to organize writing during the Writing Stage.

The Writing Style of telling ideas during the Writing Stage, gained from the teacher during the period of explaining the lesson could be visible. Since the Goal Setting was not prominent, children use knowledge telling strategies rather than knowledge transforming strategies in their writing.

### 1.6 Emphasis on each Metacognitive Strategy: Quantitative analysis of interview data

Out of the 72 metacognitive strategies in writing considered in the study, 40 were related to Planning Stage, 19 were related to the Writing Stage and 13 to Revision Stage. The metacognitive strategies related to Writing Stage were cited as being used in 48% of instances, Planning Stage in 30% instances and Revision Stage only in 22% instances. The data indicate the emphasis on the Writing Stage than the other two stages. When the 72 metacognitive strategies were ranked according to the emphasis in interviews (Table 9), ranking first was the 'regulating thinking on the Writing Process while writing'. The reason for this may be that the writing behaviour of Planning and Revision falls within the Writing Stage itself. The least emphasized metacognitive strategy was 'summarizing and paraphrasing' indicating the minor emphasis on Revision within the Writing Process. The most emphasized strategy was 'regulating thinking on the Writing Process' and the least emphasized strategy was 'summarizing and paraphrasing'. Tendency of children to focus more on the Writing Stage and less on Revision is amply demonstrated by these relative emphases too.

Seventy-two metacognitive strategies were classified into nine categories, based on their ranks and the most emphasized metacognitive strategies and least emphasized metacognitive strategies were identified.

Out of the most emphasized metacognitive strategies five were related to Planning Stage and three were related to Writing Stage. None of the strategies were related to Revision. Strategies related to Planning were linked with the mental processes of children that help them to gain information from the lesson taught by the teacher using their memory and readiness of the child for learning. The metacognitive strategy, 'checking the effectiveness of the approached solution' ranked ninth was the first metacognitive strategy related to Revision that was found in the list and until 27th rank, no other strategy related to Revision would be found in the ranking list showing less emphasis on Revision strategies.

**Table 9:** Ranks of specific metocognitive strategies according to the ideas of students

| No. of the strategy | No. of times expressed | Rank | Stage of writing | Strategy |
|---|---|---|---|---|
| 45 | 688 | 1 | Writing | Thinking of the writing process |
| 48 | 584 | 2 | Writing | Showing awareness on present cognitive and emotional status when using cognitive processes related to writing |
| 5 | 521 | 3 | **Planning** | Being aware of the task assigned |
| 18 | 480 | 4 | **Planning** | Memorizing |
| 1 | 470 | 5 | **Planning** | Self evaluation |
| 2 | 436 | 6 | **Planning** | Understanding the necessity of writing |
| 22 | 426 | 7 | **Planning** | Seeking information |
| 51 | 426 | 8 | Writing | Self monitoring of progress |
| 62 | 426 | 9 | Revising | Checking the effectiveness of the approached solution |
| 46 | 342 | 10 | Writing | Using writing effectively |
| 50 | 337 | 11 | Writing | Using a monitoring plan to assess the effectiveness of writing task |
| 56 | 334 | 12 | Writing | Checking again while engaged in the writing |
| 49 | 295 | 13 | Writing | Reflecting on the writing task |
| 19 | 259 | 14 | **Planning** | Adjusting facts mentally |
| 53 | 248 | 15 | Writing | Making changes for a better document while engaged in writing |
| 3 | 247 | 16 | **Planning** | Evaluating the necessity for writing |
| 37 | 241 | 17 | **Planning** | Identifying solution strategies as hints |
| 4 | 232 | 18 | **Planning** | Knowledge on the specific writing task, its difficulties and skills needed for it |
| 52 | 229 | 19 | Writing | Depend on surface level characteristics |
| 15 | 203 | 20 | **Planning** | Knowing when, where, how, and what is to be written |
| 27 | 198 | 21 | **Planning** | Selection of suitable information |
| 47 | 198 | 22 | Writing | Using the writing format effectively |
| 6 | 197 | 23 | **Planning** | Predicting problems |
| 14 | 189 | 24 | **Planning** | Changing strategies according to task |
| 44 | 187 | 25 | Writing | Using facts and instructions learned previously |
| 41 | 184 | 26 | Writing | Transformation of writing |
| 61 | 182 | 27 | Revising | Awareness on the necessity on revision |
| 20 | 178 | 28 | **Planning** | Using prior knowledge |
| 57 | 178 | 29 | Writing | Sensitivity to external communicators and environment |
| 63 | 177 | 30 | Revising | Making mechanical changes to produce better document |
| 35 | 164 | 31 | **Planning** | Considering alternative strategies |
| 21 | 160 | 32 | **Planning** | Using brainstorming, reading, interviewing, observing to acquire information |

| No. of the strategy | No. of times expressed | Rank | Stage of writing | Strategy |
|---|---|---|---|---|
| 43 | 155 | 33 | Writing | Awareness on the facts and grammar needed for writing |
| 8 | 152 | 34 | **Planning** | Identifying the goal<br>Identifying the necessity for developing a specific plan |
| 11 | 140 | 35 | **Planning** | When encountered a task to be implemented without other's help |
| 25 | 140 | 36 | **Planning** | Depicting thinking via physical acts |
| 10 | 139 | 37 | **Planning** | Metacognitive task of predicting on the effectiveness of writing |
| 64 | 135 | 38 | Revising | Making surface level changes to produce better document |
| 9 | 126 | 39 | **Planning** | Setting manageable goals |
| 72 | 126 | 40 | Revising | Identifying qualities and weaknesses of own writing due to the intervention of an external person |
| 23 | 125 | 41 | **Planning** | Seeking help from peers/teachers/ adults |
| 67 | 115 | 42 | Revising | Evaluating the quality of writing |
| 13 | 104 | 43 | **Planning** | Changing strategies according to writing task assigned |
| 55 | 103 | 44 | Writing | Considering contingency plans when facing a problem |
| 59 | 93 | 45 | Writing | Forward planning while doing the task |
| 54 | 92 | 46 | Writing | Organization of facts |
| 33 | 87 | 47 | **Planning** | Using necessary information to solve problems |
| 36 | 85 | 48 | **Planning** | Choosing a strategy among many |
| 39 | 85 | 49 | **Planning** | Rehearsal |
| 7 | 81 | 50 | **Planning** | Thinking of the audience |
| 38 | 74 | 51 | **Planning** | Systematic planning |
| 66 | 71 | 52 | Revising | Reviewing notes |
| 42 | 66 | 53 | Writing | Regulating pre-planning to suit the finishing of the writing task |
| 30 | 63 | 54 | **Planning** | Separation of basic facts |
| 65 | 59 | 55 | Revising | Deep level revising to produce a better writing |
| 12 | 51 | 56 | Planning | Preparation of drafts |
| 40 | 45 | 57 | Planning | Adjusting environment |
| 69 | 45 | 58 | Revising | Taking action to collect extra information |
| 70 | 43 | 59 | Revising | Recasting the expected meaning |
| 34 | 40 | 60 | **Planning** | Identifying alternative concepts |
| 26 | 39 | 61 | **Planning** | Keeping records / notes |
| 29 | 34 | 62 | **Planning** | Dividing into parts |
| 68 | 33 | 63 | Revising | Predicting new incidents |
| 32 | 32 | 64 | **Planning** | Categorization of basic facts |
| 24 | 30 | 65 | **Planning** | Regulating thinking using more than two media |
| 58 | 28 | 66 | Writing | Adjusting beginning, middle and end of the writing while writing |
| 71 | 28 | 67 | Revising | Looking at own writing as a reader |
| 17 | 22 | 68 | **Planning** | Self instructional |
| 16 | 18 | 69 | **Planning** | Mnemonic encoding |
| 28 | 18 | 70 | **Planning** | Writing again as facts |
| 60 | 17 | 71 | Revising | Summarizing/ paraphrasing |
| 31 | 16 | 72 | **Planning** | Summarizing basis facts |

The emphasis placed on product of Writing has to be changed to an emphasis on process of writing at the classroom level teaching learning process. The Planning Stage was dominated by teacher explanations and providing facts about the lesson. This period can be used to enlighten the Metacognitive strategies of children. However children do memorize as a strategy during the lesson explaining stage. Memorization is the fourth in rank out of the 72 metacognitive strategies (Table 9).

## 2. Patterns Emerging from the Sample of 725 Students

The responses for the 113 items developed to represent metacognitive strategies in the Writing process in the structured questionnaire were analyzed in three stages to see whether the findings of the sub sample could be generalized to the selected classrooms with 725 children.

### 2.1 *Hierarchical Tree Cluster Analysis*

The speculative patterns that emerged from Hierarchical Tree Cluster analysis showed a similarity in metacognitive strategies used by boys and girls in rural and urban schools. There emerged a distant relationship in metacognitive use between Grade 6 children and children in Grades 7, 8, 9 & 10 (Fig. 13, 14, &15).
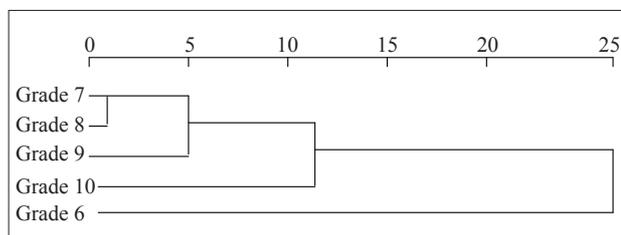
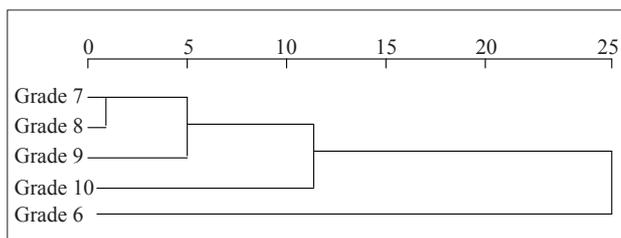**Figure13:** Clustering of responses of students according to grade

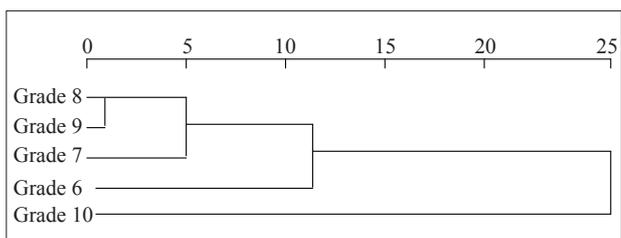**Figure 14:** Clustering of responses of boys according to grade

**Figure 15:** Clustering of responses of girls according to grade

### 2.2 *Chi Square Test*

Chi square test on 113 items that represented metacognitive strategies in writing of the questionnaire confirmed the distanced pattern between the Planning / Revision Stages and the Writing Stage. Also the test confirmed the mixture of Planning and Revision behaviour with the Writing Stage i.e. children's behaviour of Planning and Revising while they were writing.

Seventy three percent of the items of the questionnaire did not significantly relate to the variable of school and 70% of the items of the questionnaire did not significantly relate to the school grades. However, only 46% of the items of the questionnaire did not significantly relate to the variable of sex. Hence it seems that although there is no division between schools and grades, there is a tendency towards girl - boy dichotomy.

The 30 items out of 113 of the questionnaire that were not significantly related to school, grade and sex of the child were categorized into three stages of Writing Process (Table 10) to identify common metacognitive strategies for all children in the sample and their distribution in the stages of the writing process. Accordingly seven items related to Planning indicates the 'engagement in mental pre-writing' with less cognitive effort. Also the 'using of drafts to organize ideas effectively' and other complex Planning strategies are weak in the writing behaviour of the children. As a result when writing, children 'first write one sentence and then think about one by one about the other sentences' rather than using prior planning during the Planning Stage to write effectively during the Writing Stage.

Twelve items related to Writing Stage showed the difficulties children were facing due to lack of planning and external factors that influenced the writing task. 'The difficulty in writing the first sentence', 'forgetting of words while writing' were the difficulties faced due to poor pre- planning. 'Hindrance or disturbances of friends', 'looking at writing of others' were the external factors that influenced writing. However children could 'add extra facts to the appropriate places while they were writing' and 'concentrate on letters omitted'. Hence they are in a position to regulate their writing at the Writing Stage.

Seven items related to Revision indicate the awareness about the revision behavior during the Writing Stage. The revision made during the Writing Stage, however, was limited to mechanical and surface level changes. They were not aware about the deep level revising. They were also not aware of the need for revision after the Writing Stage as they were 'content with the written work' and their speculation on their own writing was 'a success'.

**Table 10:** Distribution of items in the questionnaire which are not significantly related to school, grade and sex according to stages of writing

| No. of item | Strategy | Stage of writing | Strategy or metacognitive strand |
|---|---|---|---|
| 21 | I feel it is difficult to write the first sentence | Writing | Awareness |
| 23 | Even after writing the first sentence, I have to remind the other sentences one by one | Writing | Strategy |
| 27 | Sometimes I find it difficult to understand what to write | Planning | Awareness |
| 30 | Sometimes I feel that I do not understand how to write | Planning | Awareness |
| 32 | I know the reasons for not understanding how to write an assigned writing task | Planning | Awareness |
| 42 | It is my habit to imagine and write the whole sentence | Planning | Strategy |
| 21 | I feel it is difficult to write the first sentence | Writing | Awareness |
| 23 | Even after writing the first sentence, I have to remind the other sentences one by one | Writing | Strategies |
| 36 | I forgot what to write, when my friends trouble me after starting the writing task | Writing | Regulation |
| 39 | If someone is observing while I am writing, I can not do it well and I make many mistakes | Writing | Regulation |
| 43 | The facts that come to my mind after writing something are added to necessary places later | Writing/Revising | Strategies |
| 45 | I forget the words while I am writing | Writing | Awareness |
| 48 | I am unable to write the difficult words found in the copy writing looking only once at them | Writing | Regulation |
| 49 | As I forget some letters in words I have to write them with much concern | Writing | Regulation |
| 50 | I do not know why I write some words incorrectly | Writing | Awareness |
| 82 | When writing essays, it is my habit to think about all the facts at first and then to continue writing | Planning (Essay) | Strategies |
| 91 | I need to complete writing an essay assigned to me as soon as possible | Writing (Essay) | Strategies |
| 93 | It is somewhat difficult for me to decide what to include in an essay. But it is easy for me to answer the questions in the text book. | Planning (Essay) | Regulation |
| 98 | When writing an essay, first I imagine it; then start writing | Planning (Essay) | Strategies |
| 99 | I relate my experiences to the essay | Writing (Essay) | Strategies |
| 103 | I make corrections in essays, if the teacher asks only | Revising (Essay) | Regulation |
| 60 | It is my habit to highlight unclear letters by writing again on them | Revising | Strategies |
| 68 | I handover my writing to the teacher if I feel I have written them well | Writing | Awareness |
| 80 | I can speculate how successful my piece of writing is | Writing | Awareness |
| 70 | I hand over product of writing to the teacher whether it was written in a good way or not because I can finish the writing within the period | Controlling writing due to external factors: Revising | Regulation |
| 75 | I hand over product of writing to the teacher whether it was written in a good way or not because I can't show the writing next day to the teacher to be corrected | Controlling writing due to external factors: Revising | Regulation |
| 77 | I hand over product of writing to the teacher whether it was written in a good way or not because I am praised by the teacher when I finish the writing task earlier | Controlling writing due to external factors: Revising | Regulation |
| 78 | I hand over product of writing to the teacher whether it was written in a good way or not because Due to competition with other children I want to show the teacher first | Controlling writing due to external factors: Revising | Regulation |

## 2.3    *Factor Analysis*

The specific patterns identified through factor analysis confirm the patterns that emerged so far. The 31 items of the questionnaire that were significantly related to school, 34 items significantly related to grade and 61 items significantly related to sex of the child were categorized into 11, 11, and 4 factors respectively and they were compared with the three stages of Writing Process, metacognitive strands and specific metacognitive strategies (Table 11, 12 & 13).

**Table 11:** Factors according to school

| Factor 1 |
| --- |
| Without the stage of Revising. Negative awareness on the writing strategies (Related items of questionnaire 14, 24, 57, 58, 72, 89) |

| Factor 2 |
| --- |
| Can not identify the Planning Stage specifically.  Planning characteristics can be seen within the Writing strategies (Related items of questionnaire 3, 4, 5, 6, 83) |

| Factor 3 |
| --- |
| There is awareness and strategies on Planning. Regulate such strategies during the Writing Stage (Related items of questionnaire 97, 100, 105) |

| Factor 4 |
| --- |
| Awareness on writing mixed with visible Planning strategies (Related items of questionnaire 8, 9, 107) |

| Factor 5 |
| --- |
| Control writing by environmental factors (Related items of questionnaire 26, 37) |

| Factor 6 |
| --- |
| Ability and non ability to regulate Writing according to awareness and strategies about Planning (Related items of questionnaire 11, 12, 86) |

| Factor 7 |
| --- |
| Sculptural Writing and Revising. No Planning (Related items of questionnaire 1, 111) |

| Factor 8 |
| --- |
| Can evaluate the Writing if there is awareness and strategies about mental Planning (Related items of questionnaire 7, 13, 79) |

| Factor 9 |
| --- |
| Using awareness on Planning to revise Writing (Related items of questionnaire 10, 61) |

| Factor 10 |
| --- |
| Regulation of Writing (Related items of questionnaire 64, 71) |

| Factor 11 |
| --- |
| Effective Writing without Planning (Related items of questionnaire 20) |

Out of the 11 factors related to school, the first, second and third factors do not include metacognitive strategies related to Planning and Revision.  Although awareness and strategies were included in the third factor, visible

Planning was shown only in the fourth factor.  Regulation of Planning was not included in any of the factors and Revision was shown only in the seventh factor. Hence according to the factor analysis on school, a Writing Style dominated by Writing and less emphasized by Planning and Revision could be identified. Although children have specific writing strategies, their awareness and regulation of such strategies have less importance (Table 11).

Grade wise analysis also shows less importance being given to the Planning Stage and more importance given to the Writing and Revising Stages in the first four factors. In the 5th factor, Planning is seen but with a mixture of Writing and Revising, emphasizing its lower independence.  Although Writing and Revising is visible in the first factor, awareness and regulation of strategies are prominent, and they are controlled by external factors and internal factors of the student.

**Table 12:**  Factors according to Grades

| Factor 1 |
| --- |
| No Planning. Awareness, strategies and regulating on Writing and Revision controlled by external factors and internal factors of the child (Related items of questionnaire. 34, 56, 108, 113) |

| Factor 2 |
| --- |
| Regulation of awareness and strategies on Writing. No regulation of Revision (Related items of questionnaire 24, 57, 11, 74, 41, 95) |

| Factor 3 |
| --- |
| Strong awareness on Writing (Related items of questionnaire 73, 51, 88) |

| Factor 4 |
| --- |
| Writing without Planning. Sculptural Writing. However, no Revision (Related items of questionnaire 5, 6) |

| Factor 5 |
| --- |
| Awareness, strategies and regulation on Planning and Revision (Related items of questionnaire 85, 59, 65, 106) |

| Factor 6 |
| --- |
| Use Revising to avoid weaknesses in regulation of Writing Strategies (Related items of questionnaire 53, 19, 62) |

| Factor 7 |
| --- |
| Regulation of strategies mixed with Planning and Writing (Related items of questionnaire 29, 44, 97) |

| Factor 8 |
| --- |
| Awareness on Writing (Related items of questionnaire 55, 79) |

| Factor 9 |
| --- |
| Awareness on Knowledge Telling Writing strategies without Planning (Related items of questionnaire 104, 101) |

| Factor 10 |
| --- |
| Revising based on awareness on Writing (Related items of questionnaire 66, 15) |

| Factor 11 |
| --- |
| Regulating Writing strategies, sensitizing Revision and controlling effects of external environment (Related items of questionnaire 90, 38, 76) |

Sculptural Writing Style could be identified due to the Planning free writing (Table 12).

Even the sex wise analysis shows less importance being given to Planning (Table 13).

**Table 13:** Factors according to sex of students

| Factor 1 |
| --- |
| Writing without Planning. Awareness on the difficulty of Writing. Writing behaviour according to external variables. No goal setting and self regulation.  (Related items of questionnaire 14, 24, 57, 58, 72, 89) |

| Factor 2 |
| --- |
| No Planning. Writing according to teacher instructions and texts and experiences (Related items of questionnaire 101, 11) |

| Factor 3 |
| --- |
| No regulating of time. There is self awareness (Related items of questionnaire 92, 90) |

| Factor 4 |
| --- |
| Writing according to teacher instructions and memory (Related item of questionnaire 12) |

## CONCLUSIONS

The Planning Stage of children is dominated by explanation of the lesson by the teacher, which gives children ideas that can be used in the Writing Stage. The metacognitive strategies used in the Planning Stage are 'awareness about the assigned writing task', 'memorizing', 'self-evaluation', 'understanding the necessity for writing', 'seeking information', 'adjusting facts in mind', and 'evaluating the need for writing'.  The lesser used strategies in the Planning stage are 'summarizing basic facts', 'rewriting as facts', 'mnemonic', 'self instructional coding', 'thinking using more than two media', 'classification of basic facts, 'breaking into parts', 'keeping reports / notes', 'identification of alternative concepts', and 'adjusting the environment'. Metacognitive field of 'Goal setting' is not used for Planning. Students do not show an awareness or regulation of metacognitive strategies in metacognitive strands on Planning.

The metacognitive strategies used in the Writing Stage are 'self-regulation of Writing', 'activating cognitive processes about Writing', 'showing awareness on present cognitive and emotional status in the Writing Process' and 'self-monitoring of progress'. Least used metacognitive strategy is 'adjusting the beginning, middle and end aspects of the Writing activity while facing external influences'.

A mechanical and surface level Revising Style can be identified among students. Deep level changes are not found. The only metacognitive strategy used in Revising Stage is 'checking the product of Writing'. Least used metacognitive strategies for Revising are 'summarizing/ paraphrasing', 'seeing his/ her own written work as a reader', 'predicting new incidents', 'recreating expected meaning' and 'taking necessary steps to add extra information'.

'Knowledge Telling Process' rather than 'Knowledge Transformation Process' can be found in the Writing Process of secondary school children proving the theory of writing suggested by Scardamalia and Bereiter.

Metacognitive strategies used by students, their awareness of those and the way they regulated metacognitive strategies do not differ according to rural schools and urban schools.  Writing characteristics of Grade 6 children are distanced from Grade 7, 8, 9, and 10. There is no significant difference between girls and boys on ideas of Revising Stage.  However there is a tendency towards a boy - girl dichotomy with regard to using metacognitive strategies in the Writing Process. Girls emphasize the Planning Stage than boys and boys emphasize the Writing Stage than girls.

A hunch, which needs further research to be confirmed, can be found about the sculpture style of writing of grade 6 children as against the Engineering style of writing of grade 10 children.

## SUGGESTIONS

Due to the lack of emphasis on Planning and Revising in the Writing Process at classroom level, it is necessary to enhance the quality of written work / writing assignments of students.  Therefore:

•   There is a need for training on metacognitive strategies for students;

•   Methods of training on metacognitive strategies should be included in teacher training courses;

•   Methods of training on metacognitive strategies should be included in teacher guides and textbooks.

•   The emphasis placed on product of Writing has to be changed to an emphasis on the process of writing at the classroom level teaching-learning process.

## ACKNOWLEDGEMENTS

**References**

1.  Archibald, A. & Jeffery, G.C., 2000. Second language acquisition and writing: A multi-disciplinary approach. *Learning and Instruction*, 10 (1), pp. 1-11.

2.  Baird, J.R., 1986. Improving learning through enhanced metacognition: A classroom study. *European Journal of Science Education*, 8, pp. 263-282.

3.  Bartlett, E.J., 1982. Learning to revise: Some component processes. In: M. Nystrand, ed. *What writers know.* San Diego, CA: Academic press, pp. 345-365.

4.  Bereiter, C. & Scardamalia, M., 1987. *The psychology of written composition*. Hillsdale, NJ: Erlbaum.

5.  Beyer, B., 1987. *Practical strategies for the teaching of thinking*. Boston: Allyn & Bacon.

6.  Biggs, J., Lai, P., Tang, C. & Lavelle, E., 1999. Teaching writing to ESL graduate students: A model and an illustration. *British Journal of Educational Psychology*, 69 (3), pp. 293-306.

7.  Boekaerts, M., 1999. Self-regulated learning: Where we are today. *International Journal of Educational Research*, 31, pp. 445-457.

8.  Boekaerts, M. & Minnaert, A., 1999. Self- regulation with respect to informal learning. *International Journal of Educational Research*, 31, pp. 533- 544.

9.  Bracewell, R.J., Scardamalia, M. & Bereiter, C., 1978. *The development of audience awareness in writing*. ERIC Document Reproduction Service No ED 154433.

10. Bridwell, L.S.,1980. Revising strategies in twelfth grade students' transactional writing. *Research in the Teaching of English*, 14, pp. 197-222.

11. Britton, J. et al., 1975. *The development of writing abilities*. London: Macmillan Education, pp. 11-18.

12. Brown, A.L., 1980. Metacognitive development and reading. In R.J. Spiro, B.C. Bruce, & W.F. Brewer. eds., *Theoretical issues in reading comprehension: Perspectives from cognitive psychology, linguistics, artificial intelligence, and education*. Hillsdale, New Jersey: Erlbaum.

13. Brown, A.L., 1987. Metacognition, executive control, self-regulation, and other more mysterious mechanisms. In F. Weinert, & R. Kluwe. eds., *Metacognition, motivation, and understanding*. Hillsdale, New Jersey: Erlbaum, pp. 65-116.

14. Brown, A.L. & Smiley, S.S., 1977. Rating the importance of structural units of prose passages: A problem of metacognitive development. *Child Development*, 48, pp.1-8.

15. Carrol, J.B., 1986. Second language. In R.F. Dillon, & R.J. Sternberg. eds., *Cognition and instruction*. Orlando: Academic press, pp. 83-125.

16. Cavanaugh, J.C. & Perlmutter, M., 1982. Metamemory: A critical examination. *Child Development*, 53, pp. 11-28.

17. Ellis, E.S., 1986. The role of motivation and pedagogy on the generalization of cognitive strategy training. *Journal of Learning Disability*, 19, pp. 66-70.

18. Englert, C.S. Hiebert, E.H. & Stewart, S.R., 1988. Detecting and correcting inconsistencies in the monitoring of expository prose. *Journal of Educational Research*, 81, pp. 221-227.

19. Faigley, L. & Witte, S., 1981. Analyzing revision. *College Composition and Communication*, 32, pp. 400-414.

20. Fitzgerald, J., 1987. Research on revision in writing. *Review of Educational Research*, 57 (4), pp. 481-506.

21. Fitzgerald, J. & Markman, L., 1987. Teaching children about revision in writing. *Cognition and*

*Instruction*, 4, pp. 3-24.

22. Flavell, J.H., 1976. Metacognitive aspects of problem solving. In: L.B. Resnick, ed. *The nature of intelligence*. Hillsdale, New Jersey: Lawrencc Erlbaum, pp. 231-235.

23. Flavell, J.H., 1979. Metacognition and cognitive monitoring: A new area of cognitive developmental inquiry. *American Psychologist*, 34 (10), pp. 906-911.

24. Flower, L.S. & Hays, J.R., 1980. The dynamics of composing: Making plans and juggling constraints. In: L.W. Gregg & E.R. Steinberg. eds. *Cognitive processes in writing*. Hillsdale, NJ: Lawrence Erlbaum, pp. 31-50.

25. Flower, L.S. & Hays, J.R., 1981. A cognitive process theory of writing. *College Composition and Communication*, 32 (4), pp. 365-387.

26. Gorrell, J. J., Dharmadasa, K.H., Kularatne, N.G. & Abeyratne, L.A., 1996. Understanding Sri Lankan child: An observational study of primary school children's use of learning strategies in the classroom. *SAARC Journal of Educational Research*, 2(1), pp. 1-20.

27. Gorrell, J. J., Dharmadasa, K. H., & Dharmadasa, I., 1999. *Understanding the Sri Lankan child: Phase three- Self regulation and problem solving: Children's responses to a self - regulated behaviour interview*. Report submitted to the National Institute of Education, Sri Lanka (Unpublished).

28. Graham, S., MacArthur, C. & Schwartz, S., 1995. Effects of goal setting and procedural facilitation on the revising behaviour and writing performance of students with writing and learning problems. *Journal of Educational Psychology*, 87(2), pp. 230-240.

29. Graves, D.H., 1983. *Writing: Teachers and children at work*. New York: Heinneman Educational.

30. Hartley, J., 1994. *Designing instructional text*. 3rd ed. London: Kogan Page.

31. Hayes, J.R. & Flower, L.S., 1980. Identifying the organization of writing processes. In: L.W. Gregg & E.R. Steinberg, eds. *Cognitive processes in writing*. Hillsdale, New Jersey: Erlbaum, pp. 3-30.

32. Hayes, J.R. & Nash, J.G., 1996. A new model of cognition and affect in writing. In: C.M. Levy & S. Ransdell, eds. *The science of writing: Theories, methods, individual differences and applications*. Mahwah, NJ: Erlbaum, pp. 29-56.

33. Hildick, E., 1965. *Word for word: The rewriting of fiction*. London: Farber and Farber.

34. Hull, G., 1987. The editing process in writing: A performance study of more skilled and less skilled college writers. *Research in the Teaching of English*, 21, pp. 8-29.

35. Linn, M.C., 1986. Science. In: R.F. Dillon, & R.J. Sternberg, eds. *Cognition and Instruction*. Orlando: Academic press, pp. 155-204.

36. MacArthur, C.A., Schwartz, S. & Graham, S., 1991. Effects of a reciprocal peer revision strategy in special education classrooms. *Learning Disabilities Research and Practice*, 6, pp. 201-210.

37. Meichenbaum, D.H., Burland, S., Gruson, L. & Cameron, R., 1985. Metacognitive assessment. In: S.R. Yussen, ed. *The growth of reflection in children*. New York: Academic Press.

38. Moely, B. et al., 1986. How do teachers teach memory skills? *Educational Psychologist*, 21, pp. 55-7.

39. Moffett, J., 1982. Writing, inner speech and meditation. *College of English*, 44 (3), pp. 231-264.

40. Moore, B.H. & Caldwell, H., 1993. Drama and drawing for narrative writing in primary grades. *Journal of Educational Research*, 87(2), pp. 100-110.

41. Murray, D.M., 1978. *Writing before writing*. ERIC Document Reproduction Service No. ed. pp. 157-194.

42. Murray, D.M., 1984. *Write to learn*. New York: Holt, Rinehart & Winston.

43. National Assessment of Educational Progress, 1977. *Write / rewrite : An assessment of revision skills: Selected results from the Second National Assessment of writing* (Writing report No. 05 – W 04). Washington, DC: National Institute of Education.

44. Newman, R.S., 1990. Children's help seeking in the classroom: The role of motivational factors and attitudes. *Journal of Educational Psychology*, 82 (1), pp. 71-80.

45. Nickerson, R.S., 1986. Reasoning. In: R.F. Dillon & R.J. Sternberg, eds. *Cognition and instruction*. Orlando: Academic press, pp. 343-373.

46. Page-Voth, V. & Graham, S., 1999. Effects of goal setting and strategy use on the writing performance and self efficacy of students with writing and learning problems. *Journal of Educational Psychology*, 92(2), pp. 230-240.

47. Paris, S.G., Saarnio, D.A. & Cross, D.R.A., 1986. Metacognitive curriculum to promote children's reading and learning. *Australian Journal of Psychology*, 38, pp. 107-123.

48. Pintrich, P.R., 1999. The role of motivation in promoting and sustaining self-regulated learning. *International Journal of Educational Research*, 31, pp. 459-470.

49. Rohman, D.G., 1983. Pre-writing: The stage of discovery in the writing process. In: M. Myers & J. Gray, eds. *Theory and practice in the teaching of composition*. Illinois: NCTE, pp. 86-95.

50. Rohman, G., 1965. Prewriting: The stage of discovery in the writing process. *College Composition and Communication*, 16, pp. 106-112.

51. Scardamalia, M., 1981. How children cope with the cognitive demands of writing. In: C.F. Frederiksen & J.E. Dominic, eds. *Writing: The nature, development and teaching of written communication, Volume 2*. Hillsdale, New Jersey: Erlbaum, pp. 81-103.

52. Scardamalia, M. & Bereiter, C., 1986a. Research on written composition. In: M.C. Wittrock, ed. *Handbook of research on teaching*. 3rd ed. New York: Macmillan, pp. 778-803.

53. Scardamalia, M. & Bereiter, C., 1986b. Writing. In: R.F. Dillon & R.J. Sternberg, eds. *Cognition and*

*instruction*. Orlando: Academic Press, pp. 59-81.

54. Schunk, D.H. & Zimmerman, B.J., 1994. Preface. In: D.H. Schunk & B.J. Zimmerman, eds. *Self-regulation of learning and performance: Issues and educational applications*. Hillsdale, New Jersey: Lawrence Erlbaum, pp. ix-xi.

55. Schwartz, B. L. & Perfect, T. J., 2002. Introduction: Toward an applied metacognition. In: T. J. Perfect & B.L. Schwartz, eds. *Applied metacognition*. Cambridge: University Press.

56. Sommers, N., 1980. Revision strategies of student writers and experienced adult writers. *College Composition and Communication*, 31, pp. 378-388.

57. Torrance, M., Thomas, G.V. & Robinson, E.J., 1999. Individual differences in the writing behaviour of undergraduate students. *British Journal of Educational Psychology*, 69(2), pp. 189-199.

58. Torrance, M., Thomas, G.V. & Robinson, E.J., 2000. Individual differences in undergraduate essay writing strategies: A longitudinal study. *Higher Education*, 39 (2), pp. 181-200.

59. Weinstein, C.E., & Mayer, R.E., 1986. The teaching of learning strategies. In: M. Wittrock, ed. *Handbook of research on teaching*. 3rd ed. New York: Macmillan, pp. 315-327.

60. Wellman, H.M., 1985. The origins of metacognition. In: D.L. Forrest-Pressley, G.E. MacKinnon, & T.G. Waller, eds. *Metacognition, cognition and human performance, Volume 1*. NY: Academic Press, pp. 1-31.

61. White, R.T., 1988. Metacognition. In: J.P. Keeves, ed. *Educational research, methodology, and measurement: An international handbook*. Oxford: Pergamon, pp. 70-75.

62. Zimmerman, B.J. & Bandura, A.,1994. Impact of self-regulatory influences on writing course attainment. *American Educational Research Journal*, 31(4), pp. 845-862.