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"*Knowing About Knowing* – Use of Metacognitive Strategies in Language Classrooms"

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Abstract: *In Tamilnadu, there are more than 550 engineering colleges. The government provides MBC / SC / ST quotas, first graduate scholarships, beedi employees scholarships, etc. which act as excellent avenues for the rural students to study engineering. Along with the students from urban or advantaged positions in the society, rural students with disadvantaged backgrounds also get opportunities to learn engineering and technology. Recently, the government cancels the entrance exam and reduces the cut-off marks to increase the in-take in engineering colleges. This causes crisis in the language classrooms as the teachers have to teach mixed-ability students in engineering colleges. Some students are proficient in English while many are below the beginner level. Hours allotted for language education is very less. Students are least bothered about learning the language. They concentrate only upon getting pass marks in the exams. This study is conducted to find out whether metacognitive strategies can be taught in language classrooms to make engineering students know about knowing and help them become effective language learners.*

1. Background of the Study

Engineering and Technology is a booming field in the education sector. The government is interested in creating 'technically sound' students for the 'rapidly growing' job market. It opens up a lot of engineering colleges and provides a variety of scholarships for the students. In Tamilnadu, there are more than 550 engineering colleges. The government provides MBC / SC / ST quotas, first graduate scholarships, beedi employees scholarships, etc. which help the rural students to study engineering. However, the cancellation of entrance exams and reduction of cut-off marks tend to lower the standards of engineering education. (Pathak, 2010)

Many students join engineering without knowing the real value of engineering and go out 'learning nothing' literally. Some have good technical knowledge but lack communication skills. This affects the employability of students drastically. In India, nearly 5,50,000 students are passing engineering every year. According to Nasscom, only 25% of them are readily employable in the IT field. 15% of them are suitable only for back-office jobs while 10% to 25%

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of them cannot be readily employed by any technology firm in the country. (Julka & Mishra, 2011)

Engineering colleges struggle hard to increase the employability of the students. They conduct Spoken English classes, soft skill training, placement training, etc. to improve the employability skills of the students. Students from urban and rural backgrounds, students with English or Tamil as mediums of instruction in schools, above-average and below-average students, etc. sit in the same classroom. Language teachers face a lot of problems as they have to teach mixed-ability students.

Metacognition is nothing about 'knowing about knowing'. It is “an appreciation of what one already knows, together with a correct apprehension of the learning task and what knowledge and skills it requires, combined with the ability to make correct inferences about how to apply one’s strategic knowledge to a particular situation, and to do so efficiently and reliably” (Peirce, 2003). It includes *person knowledge* (what he/she knows and does not know), *task knowledge* (knowledge about the goals), and *strategy knowledge* (strategies to be used to achieve the goals) (Flavell, 1976).

Some of the effective metacognitive strategies are planning (setting realistic goals, predicting outcomes, selecting strategies), monitoring (comparing the goals with the results), problem solving (identifying and correcting the shortcomings), and evaluating (questioning by the teacher, self-questioning, peer feedback, open discussion). Students can practise metacognition by writing journals or blogs. Students can use mind maps or reading reflections in their journal entries or blogs. This study aims to find out whether metacognitive strategies could help in effective learning and language development in mixed-ability classrooms in engineering colleges.

2. Research Questions:

1. Which medium is used the most by the students to practice metacognition?
2. Which metacognitive strategy is preferred the most by the students?
3. Is metacognition preferred by the students?
4. Do the metacognitive strategies actually help in language learning?

3. Location of the Study

Tisaiyanvilai is a rural village in Tamilnadu, India. VV College of Engineering is located in the outskirts of Tisaiyanvilai. This well-developing college has five departments (Mechanical, Civil, Electronics and Communication, Electrical and Electronics, and Computer Science

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Engineering). It has more than 800 students. It has an excellent infrastructure which includes a sophisticated language lab, digital library, classrooms with projectors, etc.

4. Samples of the Study

53 students who study I Year CSE (Computer Science & Engineering) in VV College of Engineering are taken as the samples of the study. 2 teachers are involved in explaining the strategies, follow-up of activities, feedback collection, data consolidation, etc.

5. Procedure

As the first step, the teachers conduct a pretest to test the speaking and writing skills of the students. During the course, they explain *multiple intelligence* with a diagram. The students are asked to identify the types of intelligence they think they possess. Then they are directed to use the *learning style inventory* and identify their learning styles. Next they are asked to think and write about their long term, short term, and immediate goals using different *goal setting charts*. They are instructed to have *smart* goals which are specific, measurable, attainable, relevant, and time-bound. Then they are asked to write down the ways they would follow to achieve the goals. Different study skills and techniques are explained to them. They are advised to follow the study techniques which suit their learning styles. For example, visual learners need to use more illustrations, graphs, charts, etc. while auditory learners should use more songs, lectures, recorded lessons, etc.

For follow-up, they are asked to maintain a journal or blog. They have to record their use of metacognitive strategies like planning (setting realistic goals, predicting outcomes, selecting strategies), monitoring (comparing the goals with the results), problem solving (identifying and correcting the shortcomings), and evaluating (questioning by the teacher, self-questioning, peer feedback, open discussion) in the form of mind maps or reflective writing. They are instructed that every journal or blog entry will get marks. The relevance and effectiveness of the entries will earn more marks. So the students studiously record their planning, monitoring, problem-solving, and evaluating entries in their journals or blogs. At the end of the course, feedback is collected from the students to find out which medium is used the most by the students to practice metacognition, how often they record the use of metacognitive strategies in learning, which mode of evaluation in metacognition is preferred the most by them, whether they think metacognition is useful, etc. A post-test on speaking and writing is conducted to check whether the metacognitive strategies have actually helped them in language learning.

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6. Data Analysis and Interpretation

Table 6.1 Number of Students Using Journals and Blogs:

Medium Used to Practise Metacognition	No. of Students	Percentage
Journals	42	79
Blogs	11	21

Graph 6.1 Number of Students Using Journals and Blogs:

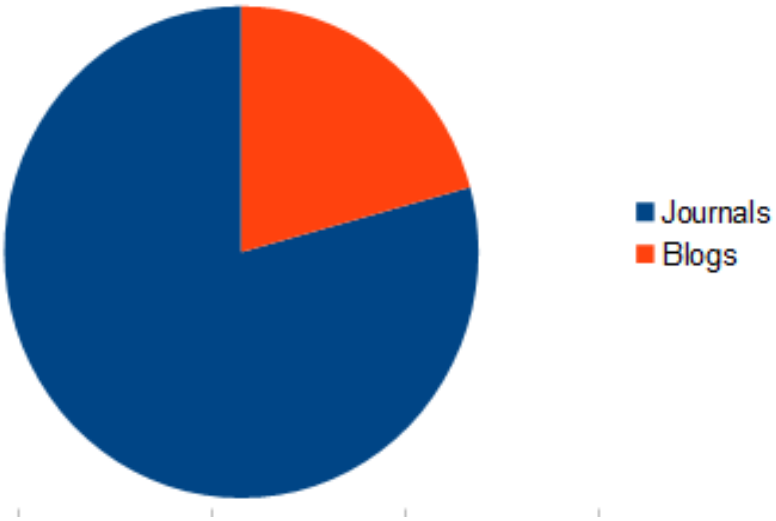

Table 6.2 Average No. of Journal / Blog Entries During the Course:

Average No. of Entries	Journals	Blogs
Weekly	3	2
Monthly	12	8

Graph 6.2 Average No. of Journal / Blog Entries During the Course:

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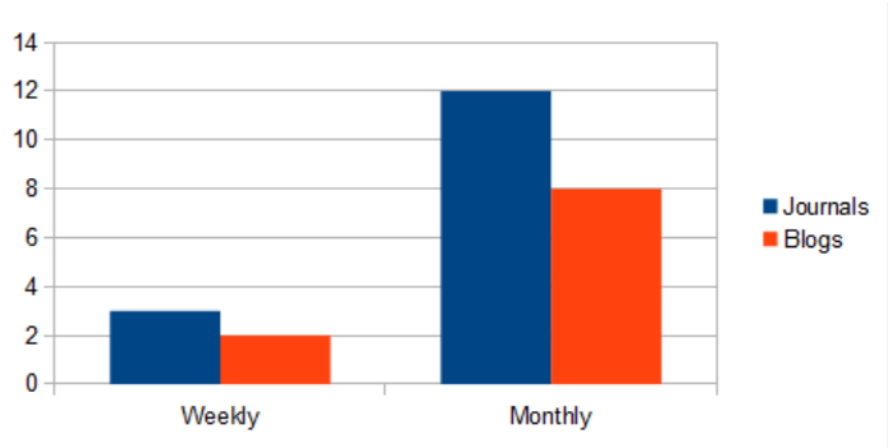

Table 6.3 Meta-cognitive Strategy Considered Easy / Difficult by the Students:

Level of Difficulty	Metacognitive Strategies			
	Planning	Monitoring	Problem Solving	Evaluating
Easy	88	62	20	25
Difficult	10	34	45	44
Very Difficult	2	4	35	31

Graph 6.3 Meta-cognitive Strategy Considered Easy / Difficult by the Students:

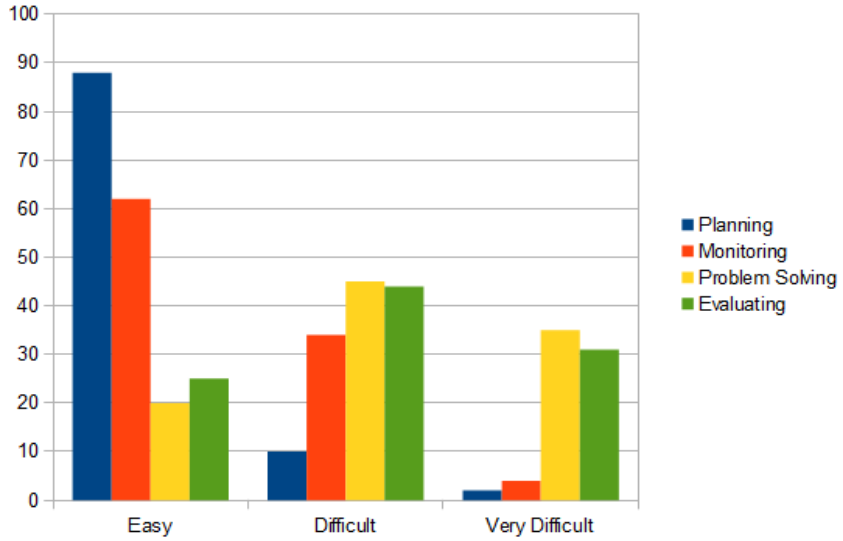

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Table 6.4 Meta-cognitive Evaluation Strategy Preferred by the Students:

Meta-cognitive Evaluation Strategies	No. of Students	Percentage
Questioning by the Teachers	14	26
Self-Questioning	9	17
Peer Feedback	18	34
Open Discussion	12	23

Graph 6.4 Meta-cognitive Evaluation Strategy Preferred by the Students:

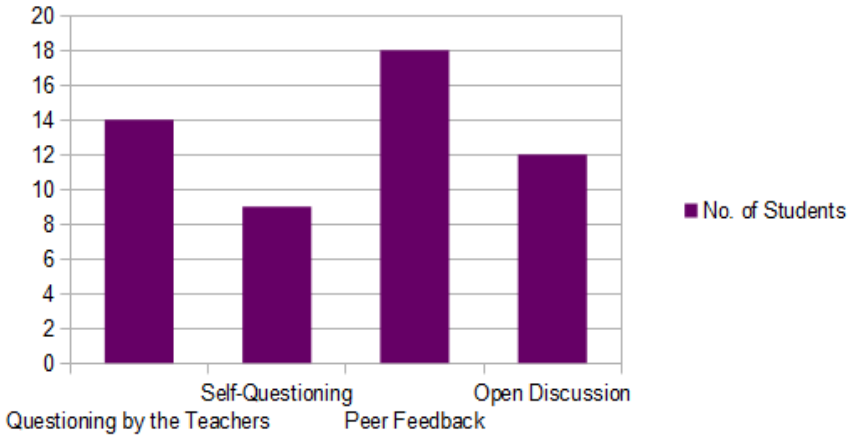

Table 6.5 Number of Students Preferring Metacognition:

Students' Feedback	No. of Students	Percentage
Prefer Metacognition	42	79
Don't Prefer Metacognition	8	15
Don't Follow Metacognition	3	6

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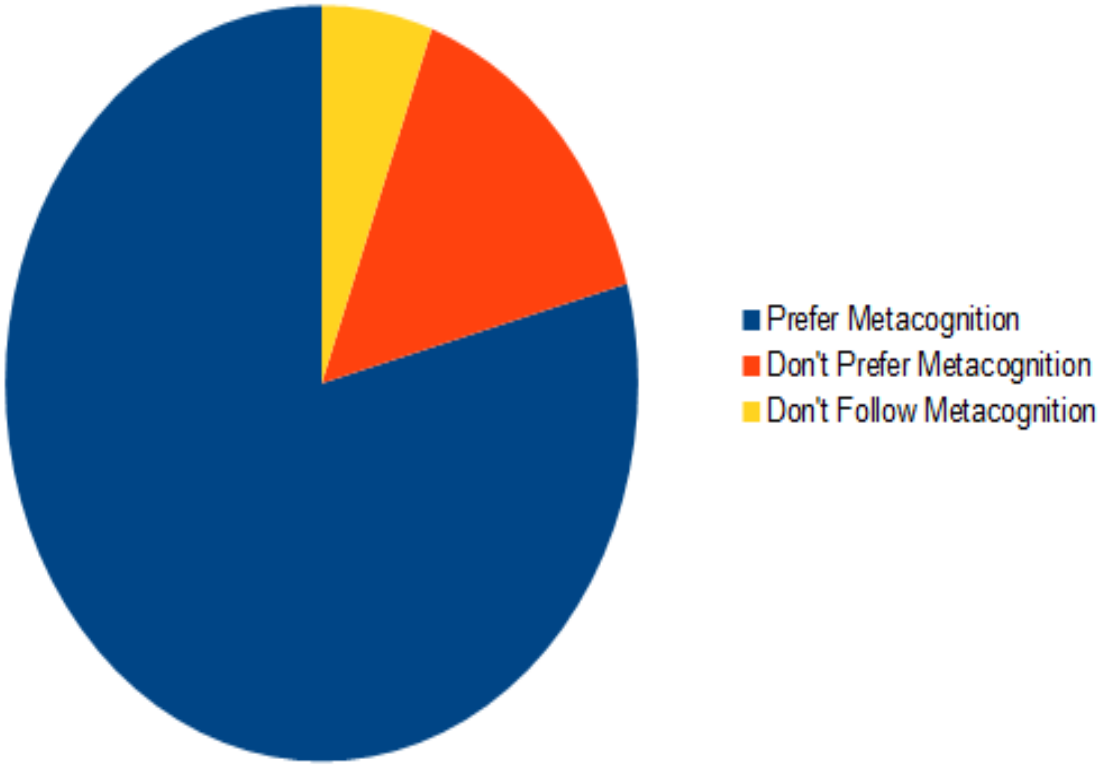

Graph 6.5 Number of Students Preferring Metacognition:

Table 6.6 Pretest and Post-Test Scores of the Students:

Tests	Average Scores	
	Pre-test	Post-test
Speaking	35	80
Writing	45	85

Graph 6.6 Pretest and Post-Test Scores of the Students:

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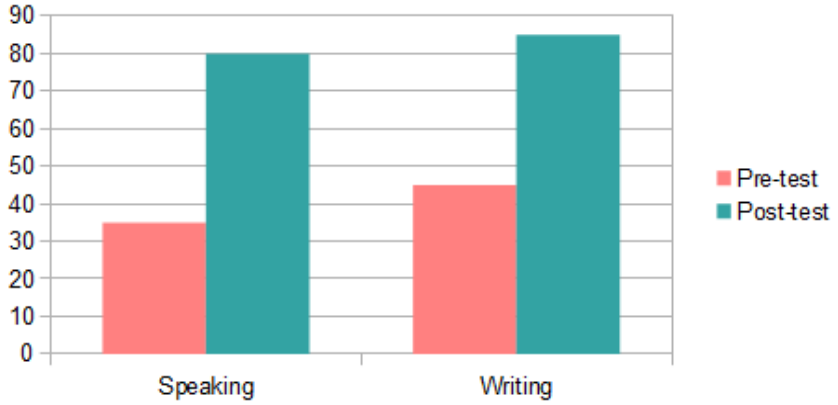

7. Quantitative Findings

- 79% of the students use journals while 21% of them use blogs for practising metacognition.
- Students write an average of 3 journal entries and 2 blog entries in a week and an average of 12 journal entries and 8 blogs in a month.
- The meta-cognitive strategy *planning* is considered 'easy' by 88%, 'difficult' by 10%, and 'very difficult' by 2% of the students. The meta-cognitive strategy *monitoring* is considered 'easy' by 62%, 'difficult' by 34%, and 'very difficult' by 4% of the students.
- The meta-cognitive strategy *problem solving* is considered 'easy' by 20%, 'difficult' by 45%, and 'very difficult' by 35% of the students. The meta-cognitive strategy *evaluating* is considered 'easy' by 25%, 'difficult' by 44%, and 'very difficult' by 31% of the students.
- The meta-cognitive *evaluation* strategy 'questioning by the teachers' is preferred by 26%, 'self-questioning' by 17%, 'peer feedback' by 34%, and 'open discussion' by 23% of the students.
- 79% of the students prefer metacognition, 15% don't prefer metacognition, and 6% don't follow metacognition due to absence or irregularities.
- The pretest and post-test average scores in the speaking test are 35% and 80% respectively. The pretest and post-test average scores in the writing test are 45% and 85% respectively.

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8. Qualitative Findings

- Due to lack of technology, only 21% of the students could use blogs to practise meta-cognition.

- Many students find it difficult to write the journal or blog entries. They write only because the teachers instruct that the journal entries will be counted and only the effective writings will be given marks. Continuous instructions and constant counselling are required to make them follow meta-cognitive strategies in the classroom.

- 'Planning' is quite easy. Monitoring, problem-solving, and evaluating are crucial and need constant support of the teachers.

- Among the four metacognitive evaluation strategies (questioning by the teachers, self-questioning, peer feedback, and open discussion), students prefer 'peer feedback' the most as they feel comfortable discussing the mistakes with their friends. They prefer 'questioning by the teacher' as it triggers their thinking process and helps to find relevant solutions. Open discussion is preferred by some students as it gives chances to know common errors made by all the students. It is disliked by some students who are afraid of accepting their own errors. 'Self-questioning' is less preferred as it needs a lot of prior knowledge and careful practice.

- 79% of the students find the metacognitive strategies useful in language learning. They feel that they could use these strategies to improve their subject learning too. 15% of the students don't prefer metacognition as it demands a lot of work. They find the writing exercises (mind maps and reflective writing) laborious and boring.

- In spite of regular instructions and follow-up, 6% of students do not understand the significance of meta-cognitive strategies. Due to absence or irregularities, their progress could not be monitored and responses could not be recorded.

- The average post-test scores are higher than the average pre-test scores in the speaking and writing tests. This is because the students write a lot (mind maps and reflective

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writing) during 'planning' and 'monitoring' and speak a lot during 'problem-solving' and 'evaluation' done in the language classroom.

9. Recommendations

- Metacognitive strategies seem to be abstract unless practised individually by the students.
- Continuous and constant follow-up and counselling are necessary to make the students practise metacognition.
- Visual learners can be encouraged to use more mind maps while writing journals or blogs.
- Kinesthetic learners who hate reflective thinking or journal writing may feel frustrated by the activities. They could be involved more in peer feedback and group discussions.
- Meta-cognition helps in improving the speaking and writing skills of the students. Moreover, it enhances the study skills and learning habits of the students which make them effective learners.

10. Scope for Further Research

- Surveys can be conducted to find whether meta-cognitive strategies help in creating self-regulated learners.
- Meta-cognitive strategies can be applied separately on visual, auditory, and kinesthetic learners to find out which types of learners benefit the most from meta-cognition.
- Longitudinal studies can be conducted to find out whether the students apply the meta-cognitive strategies to improve their life-long language learning.

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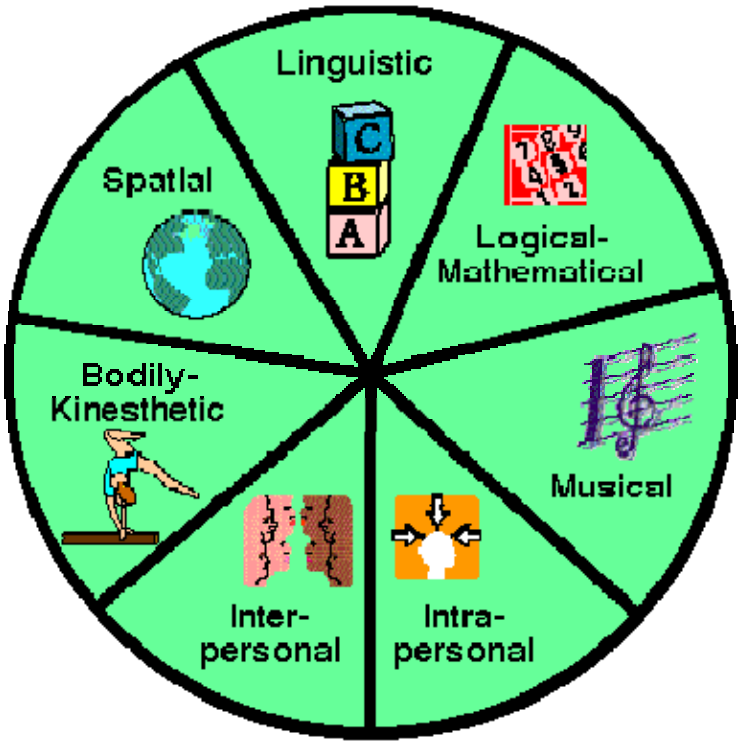
Appendix

Multiple Intelligence Chart



Reference: http://www.educationalvoyage.com/multiintell.html

Learning Style Inventory

QUESTIONS	Seldom	Sometimes	Often
1. Can remember more about a subject through the lecture method with information, explanations and discussion.	☐	☐	☐

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2. Prefer information to be presented the use of visual aids.	☐	☐	☐
3. Like to write things down or to take notes for visual review.	☐	☐	☐
4. Prefer to make posters, physical models, or actual practice and some activities in class.	☐	☐	☐
5. Require explanations of diagrams, graphs, or visual directions.	☐	☐	☐
6. Enjoy working with my hands or making things.	☐	☐	☐
7. Am skillful with and enjoy developing and making graphs and charts.	☐	☐	☐
8. Can tell if sounds match when presented with pairs of sounds.	☐	☐	☐
9. Remember best by writing things down several times.	☐	☐	☐

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10. Can understand and follow directions on maps.	☐	☐	☐
11. Do better at academic subjects by listening to lectures and tapes as opposed to reading a textbook.	☐	☐	☐
12. Play with coins or keys in pockets.	☐	☐	☐
13. Learn to spell better by repeating the words out loud than by writing the word on papers.	☐	☐	☐
14. Can better understand a news article by reading about it in the paper than by listening to the radio.	☐	☐	☐
15. Chew gum, smoke, or snack during studies.	☐	☐	☐
16. Feel the best way to remember is to picture it in your head.	☐	☐	☐
17. Learn spelling by tracing the letters with my fingers.	☐	☐	☐

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18. Would rather listen to a good lecture or speech than read about the same material in a textbook.	☐	☐	☐
19. Am good at working and solving jigsaw puzzles and mazes.	☐	☐	☐
20. Play with objects in hands during learning period.	☐	☐	☐
21. Remember more by listening to the news on the radio rather than reading about it in the newspaper.	☐	☐	☐
22. Obtain information on an interesting subject by reading relevant materials.	☐	☐	☐
23. Feel very comfortable touching others, hugging, handshaking, etc.	☐	☐	☐
24. Follow oral directions better than written ones.	☐	☐	☐

After answering each question, click on the button below.

Determine Style

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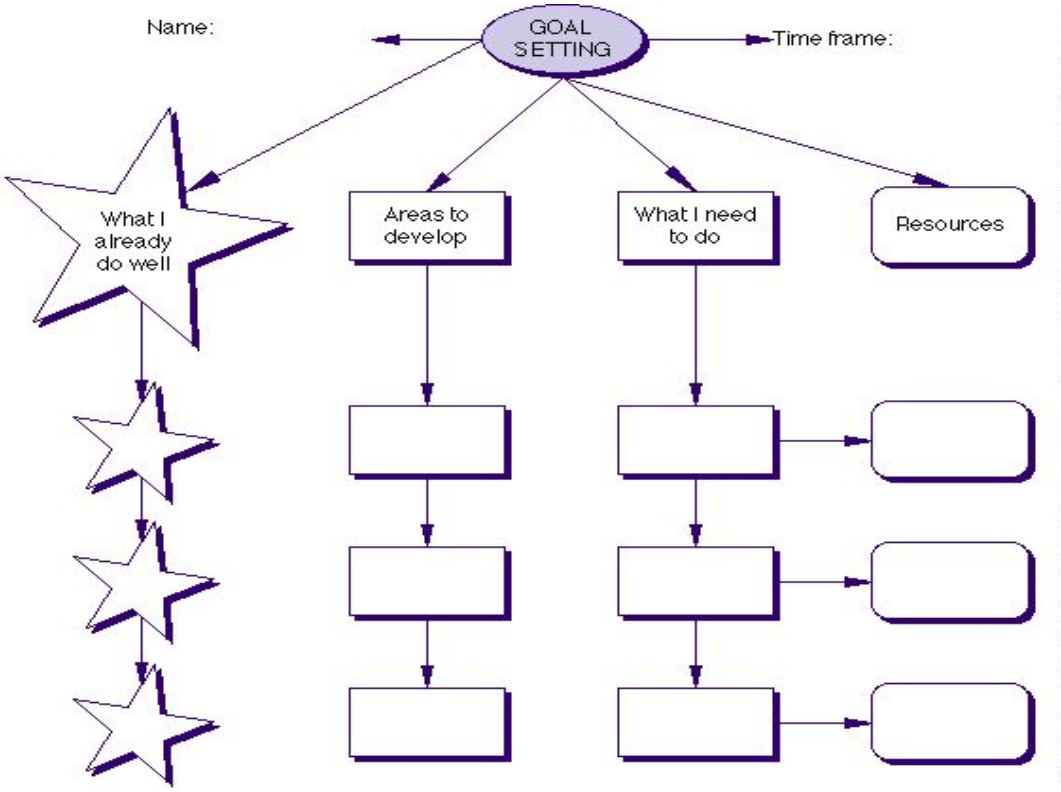
Reference: http://www.personal.psu.edu/bxb11/LSI/LSI.htm

Goal Setting Chart (Example)



Reference: http://ayr.ednet.ns.ca/graphic_organizers.shtml