



STUDY OF THE EXISTING STATUS OF SCHOOL BASED ASSESSMENT SYSTEM IN UPPER SCHOOL CHEMISTRY OF SRI LANKA

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Abstract:

School Based Assessment (SBA) system at Advanced Level classes of Sri Lanka was implemented since 2009. At the beginning there were fifteen assessments to be completed with five practical assessments to get the eligibility for the final examination. There are five assessments that must be completed to get the eligibility for General Certificate of Education in Advanced Level G.C.E (A/L) examination which is implementing from 2019 onwards. This study is mainly focused on the identification of the current status of SBA regarding Chemistry subject as well investigate the drawbacks and remedial actions that can be taken. Marks of the School based assessment in (G.C.E (A/L)) Chemistry should always be used as the measure of teaching-learning process. It should provide the student as well as teacher to evaluate themselves on the lesson that they taught. Unfortunately, this is not happening in our current system and hence is not a landmark of students' achievement or success of teaching learning process. Therefore most of the teachers use the same teaching and assessing methodology without any change throughout the assigned time period giving minute attention to the achievement of their students and pay much attention to cover whole syllabus rather than checking the conceptual establishment in them. Quantitative and qualitative data were collected from 356 students of seven provinces and 170 teachers from nine provinces. Teachers were selected from 1AB and 1C schools from the province. Students' data were collected from two schools of the province from both male and female students of grade 12 and 13 according to the number of students in that class. Further the qualitative data collection was done

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through focused group discussions and interviews. These discussions were conducted in three districts with the participation of eight teachers and twenty eight students. Forty final codes were identified and they were categorized under ten segments. Then sub themes were identified and according to them, seven themes were identified. 75% of the teachers who were participated in the survey had identified the importance of SBA. About 67% of them suggested the more teacher and student friendly assessment system. They requested more guidance from higher authorities, proper training and well-organized assessment models. According to the student point of view, about 60% of them requested more help from teachers to understand the subject matter, reliable marking system which aims to the final examination.

Keywords: chemistry, focused group discussion, questionnaire, school-based assessment system

1. Introduction

School Based Assessment plays the key role in the education system. Various countries use different assessments systems though Sri Lanka rely solely on the final written examination. The trend towards assessment for learning encourage educators to focus on the process as well as the products of learning (Birenbaum, 1996). Formative assessments that provides students with clear goals, appropriate learning tasks and helpful feedback improves learning particular for low achievers (Black and William, 1998). Assessment philosophy of Singapore contain three messages: Assessment is integral to the learning process, beings with clarity of purpose and should gather information to inform practice (MOE, Singapore). Queensland, Australia has a long tradition of teacher-based assessment system (Klenowski, 2011). Some states of US started SBA system for *No Child Left Behind* policy as a means of identifying students that put the school at risk of failing to meet annual yearly progress targets while schools in a few states such as Michigan, Vermont and Nebraska have employed SBA with a less policy oriented agenda (Flaitz, 2011). When considering the Asian countries like Singapore, Thailand, Malaysia, Bangladesh and Indonesia have encouraged SBA with mixed success because of prevailing beliefs and practices that privilege uniform testing from summative purposes (Berry, 2011).

According to the main objective of this study, data were collected from 170 teachers of nine provinces and 356 students from seven provinces. Further data were collected from focus group discussions and from interviews. These discussions were conducted in three districts with the participation of 8 teachers and 28 students. Five schools were chosen which are National schools as well as Provincial schools. In some schools they have very less number of chemistry teachers and some were involved in other works. Therefore, in some schools could be found only one or two teachers. If only one teacher, interviews were followed with them. Qualitative data was collected through the questionnaire given to the students and teachers. In the quantitative part of the

questionnaires, more percentage of the teachers as well as students have mentioned existing School Based Assessment system is conducting well in schools. Answers given in the qualitative part interpret different data in some occasions to the quantitative analysis results of the same province. Five assessments must be completed to get the eligibility for G.C.E (A/L) examination held from 2019 onwards. It is not a must to conduct practical assessments and most of the teachers are not aware about the accurate procedure of the assessments because they have not get the proper trainings. Most of the teachers as well as students put their effort to complete the syllabus and practice to face the final evaluation ignoring the application of chemistry and development of the attitudes.

Though teachers conduct assessments, students and teachers were not aware about the worthiness of SBA because they didn't have the proper guidance and training. Both the students as well as teaches consider the conducting of assessment is an extra burden on them. Student think it is a time-wasting task because no value given to the assessment marks in their final examination. Lack of interest in doing practical work due to unavailability of required things in the laboratories and no practical assessments are considered in the final examination, Both the parties have suggested the student and teacher friendly assessment system correlated with the modern technology.

2. Material and Methods

According to the main objective of this study, data were collected from 10 teachers and 61 students of the Southern Province, 33 teachers and 41 students of Eastern Province (including Sinhala and Tamil medium schools), 10 teachers of Sinhala medium and 4 Tamil medium teachers and 38 Sinhala medium students and 5 Tamil medium students of the Central Province, 39 teachers and 65 students of Northern Province, 10 teachers and 52 Students of Sabaragamuwa Province, 11 teachers and 36 students of the North Western Province and 16 teachers and 58 students of Western Province, 16 teachers of North Central Province and 21 teachers from Uva Province were participated to the primary survey. Altogether teachers of all nine provinces and students from seven provinces were participated for the survey. The data collected by focused group discussion, five schools were chosen which are National schools as well as Provincial schools. According to the very less number of chemistry teachers in that schools, interviews were followed with them. Qualitative data has been collected through the questionnaire given to the students and teachers. Schools that are selected were Prince of Whales and Princes of Whales from Colombo, Taxila Central College from Kalutara, Siridamma Vidyalaya and Janadipathi Balika Vidyalaya from Galle.

The questionnaire for teachers consisted of fourteen questions including closed ended questions and one open ended question. There were eleven closed ended and one open ended question in students' questionnaire. Teachers have been chosen from different schools of the province while their training program. Therefore, National school teachers as well as Central College teachers of rural areas also were participated in this

survey. Target was to collect data from 10 teachers from one province, but some teachers of Eastern Province were highly preferred to participate to the evaluation. Therefore, a greater number of teachers' ideas were collected. Students data was collected from two schools of the province from both male and female students of grade 12 and 13 according to the number of students in that class. Focused group discussions were conducted in three districts of the Western Province and Southern Province including National Schools which are controlled by the Ministry of Education and Central schools which are controlled by Provincial Education Department. Students of grade 12 and 13 both male and female teachers as well as students were participated in the survey.

Quantitative data was analyzed by using graphical method. Data collected from the Focused Group Discussions was analyzed by thematic analysis. Thematic Analysis is the process of identifying patterns or themes within qualitative data. Braun and Clarke (2006) suggested that it is the first qualitative method that should be learned because it provides core skills that will be useful for conducting many kinds of analysis. This is not tied to a particular epistemological or theoretical perspective like other qualitative methodologies. Therefore, it is more flexible. Teachers' discussion mainly based on the ideas they encounter with the existing assessment system, drawbacks, problems they faced while conducting and suggestions to uplift the reliability and accountability in implementation and improvements. Students' Focus group discussion mainly focused on the way that the assessments conduct in their schools, related problems when facing to the assessments, about practical assessment and the worthiness of the existing system. Three teachers from Galle District, three teachers from Colombo District and two teachers from Kaluthara District were participated for the discussion. Ten students from Galle District, nine students each from both the Colombo and Kalutara Districts were participated to the Discussion. Teacher's discussion mainly focused on six questions and student's questions were mainly focused on three questions. Henceforth more related areas to the main questions were also discussed. Discussions were taken about 30- 40 minutes. Sometimes it was about one hour discussion according to the interest of the participants expressing ideas about assessments.

At the beginning of qualitative data analysis 128 Initial code were identified. After that 40 final codes were identified, and those final codes were categorized under 10 segments. According to the segments Sub themes were identified which are closely related with the research questions. Finally, 7 Themes were identified about the existing School Based Assessment System (SBA).

3. Results and Discussion

3.1 Teachers' Questionnaire of Central Province

Table 3.1: Summarized Data collected from Sinhala medium teachers of Central Province

Q. NO	Totally Agreed	Agreed	Partially Agreed	Not Agreed	Totally Disagreed	Not answered
1	1	9	0	0	0	0
2	6	4	0	0	0	0
3	3	7	0	0	0	0
4	3	4	3	0	0	0
5	0	6	4	0	0	0
6	2	5	3	0	0	0
7	5	4	1	0	0	0
8	1	2	4	2	1	0
9	5	5	0	0	0	0
10	1	3	4	1	1	0
11	5	3	2	0	0	0
12	1	3	6	0	0	0
13	0	2	3	4	1	0
14	0	1	8	0	1	0

Almost 100% of the Teachers in the Central Province were agreed that they were trying to complete the assessments within the proper time and assessment is a requirement in teaching learning process. Similarly, 100% of the teachers were agreed that the identification of the weaknesses of students after each lesson is essential. After the analysis of assessment marks introducing of special methods to enhance the students' achievement levels was accepted by 70% of the teachers. Further 30% of the teachers partially agreed to check the conceptual development after each lesson. About 40% out of 10 teachers partially agreed to adjust their teaching pattern according to the students' strengths and weaknesses. About 90% of Central Province teachers had used practical to build a better understanding in students about concepts in that lesson. Almost 70% did not accept the exiting School Based Assessment system. Implementation of new assessment system in relation to modern technology for Advanced Level students was accepted as a suitable method by 100%. Conducting of school level assessments to evaluate students was accepted by 40%. Around 80% has accepted the grievances faced while conducting student centered assessment system. 40% of the teachers believed that introduction of a new assessment system could be a big challenge. According to the teachers point of view 20% of the students preferred the existing assessment system. Only 10% were agreed that the existing School Based Assessment system provides knowledge, skills and attitude development.

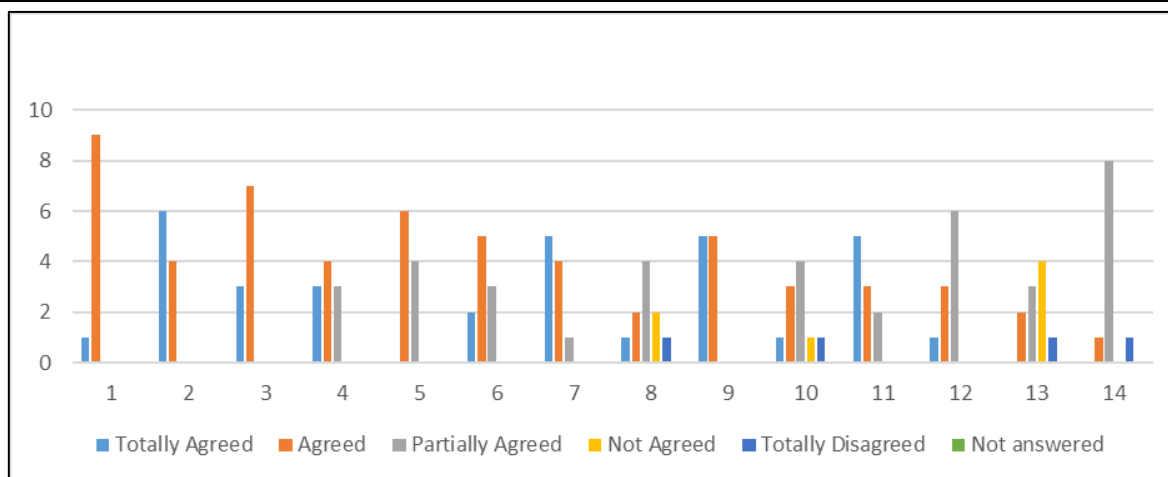


Figure 3.1: Responses of Sinhala Medium teachers – Central Province

Table 3.2: Summarized Data collected from Tamil medium teachers of Central Province

Q. NO	Totally Agreed	Agreed	Partially Agreed	Not Agreed	Totally Disagreed	Not answered
1	2	1	0	0	0	1
2	3	1	0	0	0	0
3	2	2	0	0	0	0
4	1	2	1	0	0	0
5	0	3	1	0	0	0
6	3	1	0	0	0	0
7	2	2	0	0	0	0
8	0	4	0	0	0	0
9	3	1	0	0	0	0
10	2	1	0	1	0	0
11	3	1	0	0	0	0
12	3	1	0	0	0	0
13	0	1	2	1	0	0
14	0	1	2	1	0	0

Tamil medium teachers of the Central Province were completely agreed to the first 3 statements. Only 25% of the teachers were partially agreed to the 4th statement. 75% of the teachers were agreed that they evaluate concepts within teaching learning process. All of them completely agreed to statements 6 – 9. Student centered assessment system which is conducted in school level is accepted as a successful method by 25% of the teachers. Statements 11 and 12 were completely accepted by them and 75% were disagreed to the statements 13 and 14.

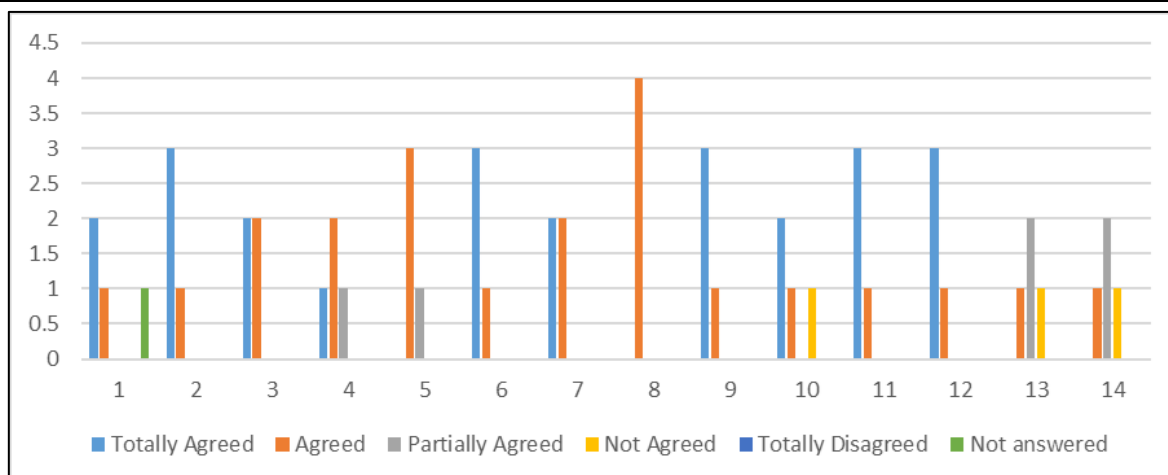


Figure 3.2: Responses of Tamil Medium teachers – Central Province

Central Province Teachers’ responses to the open-ended question in the questionnaire are as follows.

- More time is wasted to enter data in the given document.
- Co-curricular activities of the school always disturb to the teaching learning process therefore assessments couldn’t be conducted at the proper time.
- Full attention is being given to the final evaluation therefore it is badly affected to the School Based assessment.
- Teacher contribution to School Based assessments is very low.
- Introduce new assessment system after changing the attitudes of the teachers about School Based assessment by giving them the proper training.
- It is very difficult to find the time to conduct assessments due to the heavy load of the syllabus and it can’t be covered within the given time period.

Table 3.3: Summarized Data collected from Sinhala medium Students of Central Province

Q. NO	Totally Agreed	Agreed	Partially Agreed	Not Agreed	Totally Disagreed	Not answered
1	14	15	8	0	0	1
2	7	17	8	6	0	0
3	11	21	4	2	0	0
4	7	10	12	6	3	0
5	13	7	6	5	4	3
6	13	10	7	4	2	2
7	15	12	3	4	2	2
8	6	3	7	0	2	20
9	10	16	5	3	2	2
10	9	12	9	7	1	0
11	13	9	10	4	1	1

Thirty eight Sinhala medium students were participated to the survey in Central Province Including 20 girls and 18 boys from grades 12 and 13. About 78% of students were agreed that the teachers conduct assessments to evaluate them regularly. 16.2% of the students agreed that they can identify their weaknesses after doing the assessments. “Assessment is being given after the practical” was accepted by 54%. Almost 28.9% of students were

not satisfied with the support given by their teachers to uplift their ability and skills through identification of weaknesses. About 71% of the students had agreed that the teachers' contribution to enhance their knowledge was optimum. Exactly half, completely agreed that the knowledge and skills developed by assessments would be helpful in their final evaluation. Furthermore about 45% of the students were not satisfied with the teachers' feedbacks. 42.1% of the students disagreed to the fact that the teaching method correlate the lesson and the day to day life experiences.

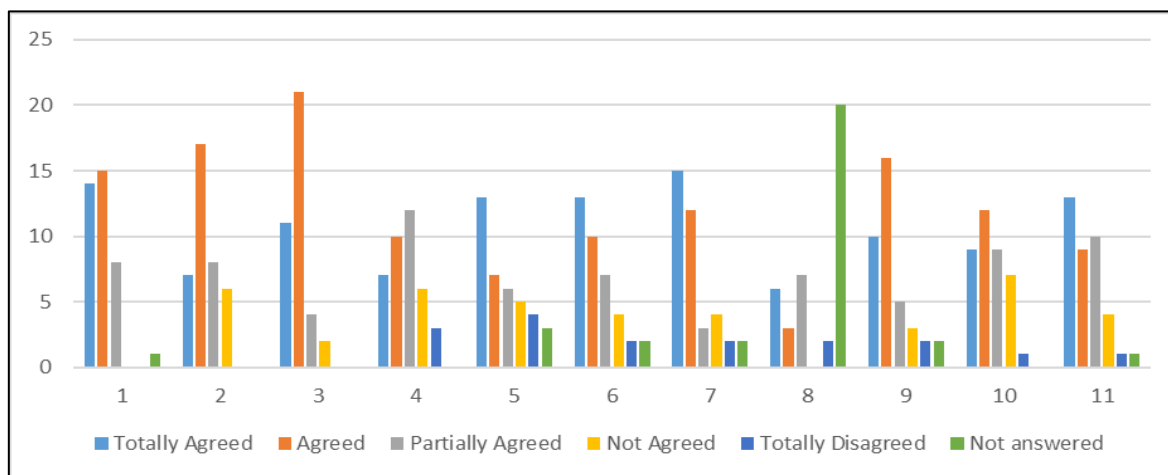


Figure 3.3: Responses of Sinhala medium students – Central Province

Table 3.4: Summarized Data collected from Tamil medium Students of Central Province

Q. NO	Totally Agreed	Agreed	Partially Agreed	Not Agreed	Totally Disagreed	Not answered
1	2	2	0	0	0	1
2	3	1	1	0	0	0
3	2	3	0	0	0	0
4	1	2	1	1	0	0
5	0	3	1	1	0	0
6	3	1	0	0	0	1
7	2	1	1	0	0	1
8	0	5	0	0	0	0
9	3	1	0	1	0	0
10	2	2	0	1	0	0
11	4	1	0	0	0	0
12	3	1	1	0	0	0
13	0	1	2	2	0	0
14	0	1	2	1	1	0

Five Tamil medium students were participated from Central Province to the survey. Almost 80% was agreed to statement 1 and 2. Statement 3 was accepted by 100% of the students. Statements 4 and 5 were not accepted by 40%. Statements 6, 9, 10 and 12 were completely agreed by the 80% and 100% for statements 8 and 11. Further 60% has agreed to statement 7. Percentage disagreement for the statements 13 and 14 were 80%.

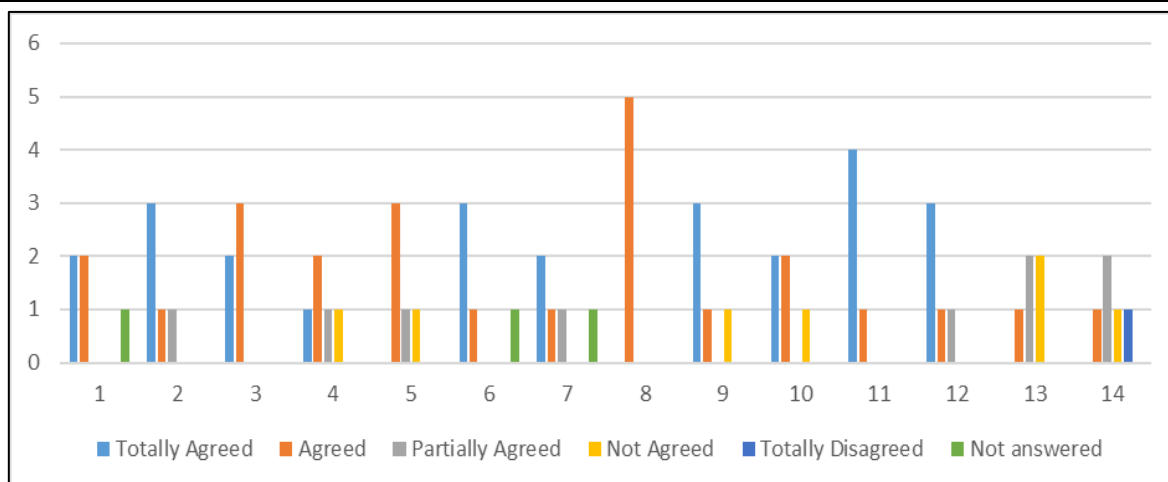


Figure 3.4: Responses of Tamil medium students – Central Province

Central Province Students’ responses to the open-ended question in the questionnaire are as follows.

- Existing system is good.
- Existing system is somewhat good.
- It is a time-wasting process. It is a burden to students as well as teachers and no use of doing assessments. Doesn’t give marks properly.
- It is so hard to do assessments with the existing education system and no need to do so.
- No use of school-based assessments and they are not helpful for the final examination. We don’t have necessary equipment to conduct experiments.
- Up to now we didn’t get any use from the assessments. But it will be more helpful if conduct with proper organization. Practical tests will be more beneficial.
- It is good to conduct assessments but it takes long time to prepare booklets.
- Not conducting under proper criteria and marking is also irregular and sometimes marks are not trustworthy.
- Assessments should be finished within the school time and suggest to conduct debates and paper discussions.
- There are no facilities to conduct practical assessments. Should conduct them in a methodical manner.
- Don’t know about assessments because we never faced to the assessment in the school.
- It is good to conduct one assessment per term and when allocating marks, it is necessary to assess the skill of the student.
- No idea about assessments because they don’t conduct them. But my point of view it will help to better understanding of subject matter.
- Don’t want assessments. Favoriting to some students is unfair and help each student as the same.
- It helps to our learning.

- Actually, School Based Assessments are not useful to us and we are not satisfied with the way of giving marks.
- No use of assessments to the final evaluation and only one assessment is enough to one term.

Table 3.5: Summarized Data collected from teachers of Northern Province

Q. NO	Totally Agreed	Agreed	Partially Agreed	Not Agreed	Totally Disagreed	Not answered
1	9	22	3	2	3	0
2	27	8	3	1	0	0
3	16	15	7	1	0	0
4	6	22	9	2	0	0
5	4	21	10	4	0	1
6	12	20	7	0	0	0
7	20	16	3	0	0	0
8	3	17	6	12	1	0
9	19	16	3	1	0	0
10	7	17	6	8	1	0
11	10	22	4	2	1	0
12	6	28	4	1	0	1
13	3	15	7	12	2	0
14	3	23	3	8	2	0

Thirty nine teachers were participated to the survey from Northern Province. They were actively participated to share their views than any other province. Statements 1 and 3 were accepted by 79.5% of the teachers. Similarly, 89.7% were agreed to statement 2 and 9. Further 71.8% of the students were agreed to the statement 4 , 64.1% to the statement 5, 92.3% to the statement 7 and 51.3% to the statement 8. Statements 6 and 11 were completely accepted by 82%. Agreements of the teachers to statements 10 was 61.5%, statement 12 was 87.1%, statement 13 was 46.1% and statement 14 was 66.7%.

Northern Province teachers' responses to the open ended question in the questionnaire are as follows.

- Most of the time use the past paper questions and no room to students' thoughts. Should use new questions.
- Questions should be correct.
- Not enough time for discussion after the assessment.
- Time is not enough due to paper work and teachers don't show much interest in doing assessments. Difficult to identify students in doing assessments and they don't support for this work.
- Students don't care about this assessment system and only focus to Advanced Level Examination.
- Does not evaluate practical skills.
- Assessments should be conducted according to the level of students to develop high mental skills.
- Conduct assessments through internet.
- Especially boys don't involve in assessments.

- Questions should be prepared correlating with new knowledge.
- Number of students in one class is high therefore the implementation of the assessment is difficult.
- Proper supervision is required.
- Give proper understanding about assessments to the teachers as well as students.
- Practical assessments should also be included.
- Assessments should be conducted in student friendly manner and should not be another burden to them.

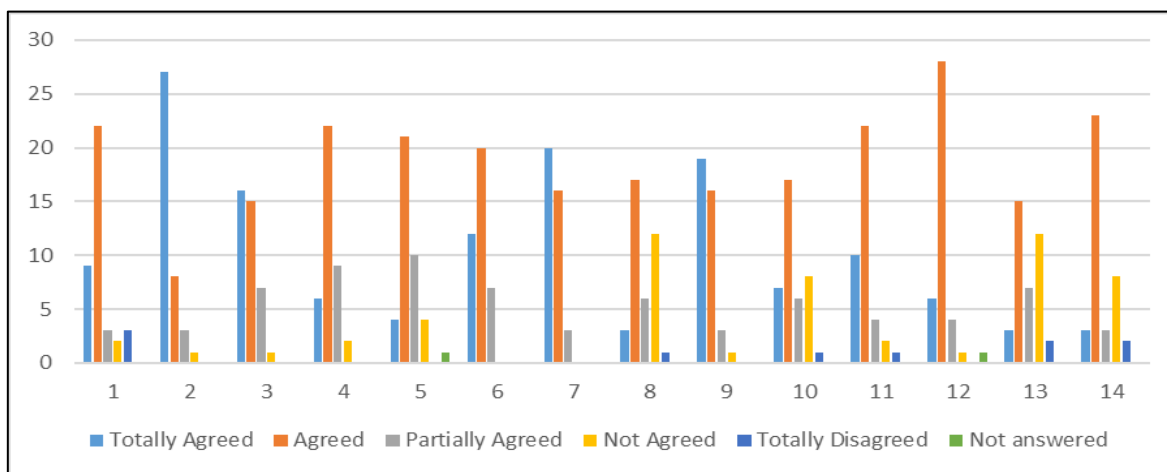


Figure 3.5: Responses of Teachers – Northern Province

Table 3.6: Summarized Data collected from students of Northern Province

Q. NO	Totally Agreed	Agreed	Partially Agreed	Not Agreed	Totally Disagreed	Not answered
1	29	30	6	0	0	0
2	18	36	5	5	1	1
3	21	32	9	3	0	0
4	10	35	12	8	0	0
5	27	27	5	5	0	1
6	21	23	14	5	1	1
7	31	23	5	4	0	2
8	23	13	12	0	0	17
9	20	30	7	4	0	4
10	28	23	4	5	4	1
11	20	31	5	7	1	2

Sixty five students were participated to the survey including 35 boys and 30 girls from the Northern Province.

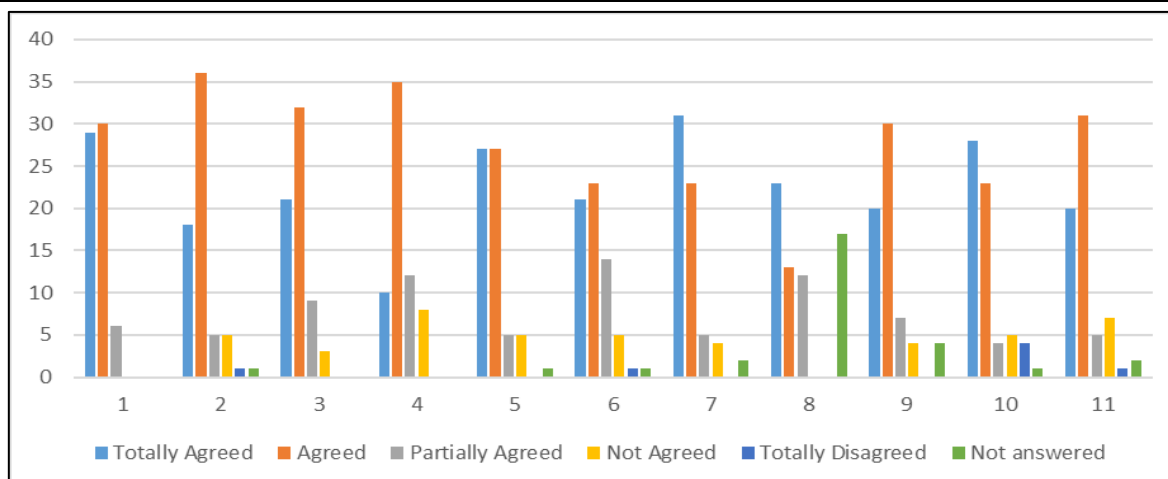


Figure 3.6: Responses of Students – Northern Province

Northern Province students’ responses to the open-ended question in the questionnaire are as follows.

- It should be common and general one to all students.
- Only small parts of the syllabus is testing and ignores main parts.
- Can conduct assessments for test small parts of the syllabus.
- Assessment system is monotonous and marking is not reliable.
- Should introduce the marking procedure.
- School Based Assessment is very helpful to enhance the education level of students.
- Satisfactory.
- Competition arises among students. Therefore, it is useful.
- Useful to correct our knowledge.
- Time to self-assessment.
- No special benefit of doing assessments.

Table 3.7: Summarized Data collected from teachers of Sabaragamuwa Province

Q. NO	Totally Agreed	Agreed	Partially Agreed	Not Agreed	Totally Disagreed	Not answered
1	0	5	4	1	0	0
2	6	4	0	0	0	0
3	6	4	0	0	0	0
4	0	8	2	0	0	0
5	3	4	2	0	0	1
6	4	5	0	0	0	1
7	6	3	0	0	0	1
8	0	0	4	4	2	0
9	6	3	1	0	0	0
10	3	3	4	0	0	0
11	4	4	1	1	0	0
12	4	4	1	1	0	0
13	0	1	4	4	1	0
14	0	4	3	3	0	0

Ten teachers were participated to the survey from Sabaragamuwa Province. Answers given by them for the questionnaire has given in the table above and graphical representation has given below.

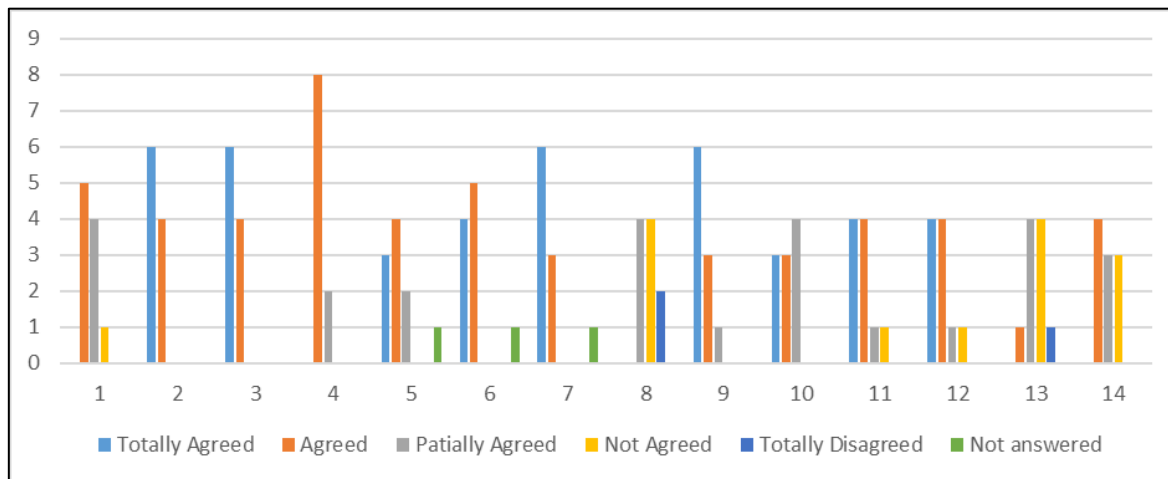


Figure 3.7: Responses of teachers – Sabaragamuwa Province

Teachers’ responses from Sabaragamuwa province to the open-ended question in the questionnaire are as follows:

- Time wasting to enter the data.
- Assessments can’t be done at the proper time because of co-curricular activities.
- Full attention is paying to the final evaluation therefore School Based Assessments have neglected.
- Teacher contribution for SBA is very low and it is essential to introduce a new system and change the attitudes of teachers regarding SBA.
- It is very difficult to find the time to conduct assessments.

Table 3.8: Summarized Data collected from students of Sabaragamuwa Province

Q. NO	Totally Agreed	Agreed	Partially Agreed	Not Agreed	Totally Disagreed	Not answered
1	9	35	7	2	1	0
2	10	21	15	4	3	0
3	22	26	0	3	1	0
4	8	14	16	10	5	0
5	16	20	6	8	3	0
6	23	20	8	2	0	0
7	21	24	7	1	0	0
8	15	14	7	1	0	18
9	23	20	9	1	0	0
10	12	22	10	4	5	0
11	21	11	11	6	3	0

Fifty two students were participated to the survey from Sabaragamuwa Province. Answers given by them for the questionnaire has given in the table above and graphical representation has given below.

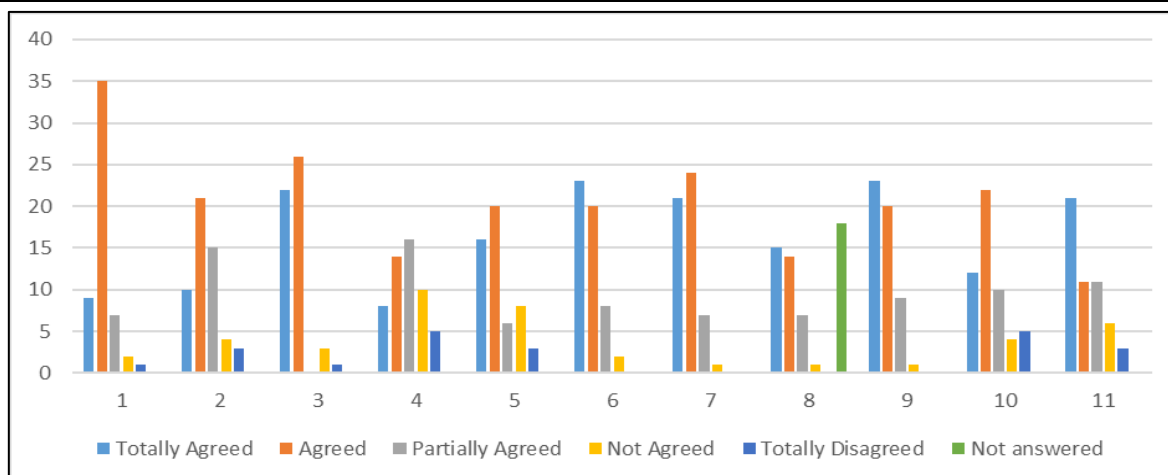


Figure 3.8: Responses of students – Sabaragamuwa Province

Sabaragamuwa Province students' responses to the open-ended question in the questionnaire were as follows.

- Existing assessment system helps us to understand the theory well and help to facilitate teaching learning process.
- It is very helpful to recall our knowledge while discussion.
- Time is not enough to conduct all assessments.
- Conduct practical assessments as group work and conduct all assessments related with all lessons.
- Most of the assessments were not discussed and it is less practicable.
- Should change the method and introduce efficient ways. Then can increase the Advanced Level results.
- Preparation of booklets is not a good practice because students write the note again.
- No proper idea about SBA. But it is helpful if practical are conducted.
- Sudden assessments were conducted but no marks are given to practical.
- Teacher helps to understand the difficult theory parts after the assessments.
- Assess students once a week.
- Conduct common assessments to all schools.
- Suggesting competency-based assessments.
- Should organize well.
- Doing practical is in a very weak condition and must improve.
- I'm highly satisfied with my chemistry teacher and the way she conducts assessments.
- Conduct SBA but most of the time didn't get marks.
- It is very helpful doing SBA in schools.
- Not conducting in a proper way. Therefore, it is not that much effective.
- Assessments are conducted very rarely.
- Unsuccessful
- Not satisfied with the existing system.

- Can't give ideas because didn't conduct them.
- Doesn't conduct methodically.
- It is useful to conduct assessments after practical.

Table 3.9: Summarized Data collected from teachers of Western Province

Q. NO	Totally Agreed	Agreed	Partially Agreed	Not Agreed	Totally Disagreed	Not answered
1	2	10	1	1	1	1
2	8	7	0	1	0	0
3	7	6	2	1	0	0
4	4	7	4	1	0	0
5	2	7	4	2	0	1
6	3	9	3	0	0	1
7	9	7	0	0	0	0
8	1	5	4	4	2	0
9	6	10	0	0	0	0
10	2	6	4	3	1	0
11	3	9	3	0	1	0
12	3	9	3	0	1	0
13	1	1	7	6	1	0
14	0	5	7	2	2	0

Sixteen teachers were participated in the survey of the Western Province. . Answers given by them for the questionnaire has given in the table above and graphical representation is given below.

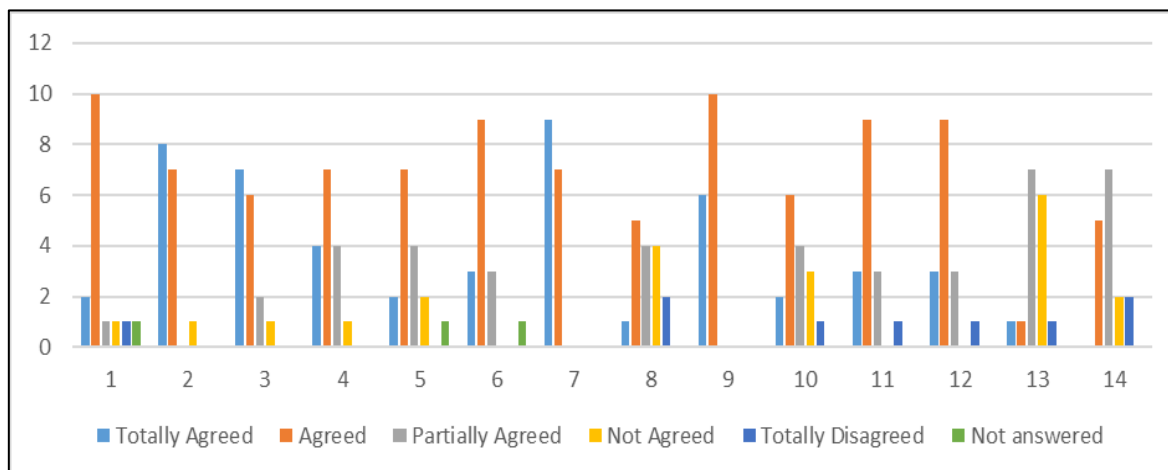


Figure 3.9: Responses of teachers – Western Province

Western Province teachers' responses to the open-ended question in the questionnaire are as follows.

- Suitable to conduct an assessment after each lesson.
- They should be more organized and should be given more validity.
- I think monthly tests are more successful than SBA
- There are number of assessment types but restricted according to the subject that is going to be used.

- Assessment system should be developed not only to enhance the knowledge but also to skills and attitudes.

Table 3.10: Summarized Data collected from students of Western Province

Q. NO	Totally Agreed	Agreed	Partially Agreed	Not Agreed	Totally Disagreed	Not answered
1	22	25	8	1	1	1
2	9	25	16	7	1	0
3	31	12	12	2	1	0
4	7	10	21	15	5	0
5	13	15	14	11	3	0
6	22	17	15	3	1	0
7	21	21	9	4	2	1
8	19	15	0	0	0	22
9	26	14	13	3	2	0
10	16	18	11	7	6	0
11	19	17	10	5	7	0

Fifty eight students were participated to the survey from Western Province. Answers given by them for the questionnaire has given in the table above and graphical representation has given below.

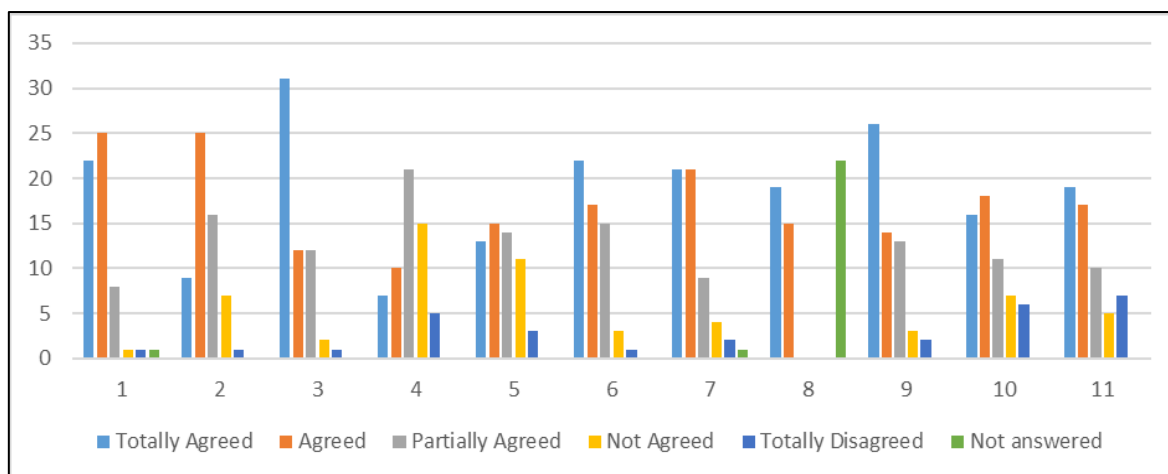


Figure 3.10: Responses of Students – Western Province

Western Province students' responses to the open-ended question in the questionnaire are as follows.

- Assessments should be done as an examination. Teachers should give more attention to the students who had scored low marks.
- Should give papers and discuss them.
- Help to understand the subject matter.
- Assessments should be conducted in a proper manner.
- Help to identify the weak areas of the subject.
- Assessments are more helpful to recall the subject matter.
- Sometimes didn't get proper advice to enhance the weak subject areas.
- We mark our own papers and give marks.

- It is better to include more practical tests.
- SBA should be conducted in groups.
- Give more assessments.
- Less useful.
- There are no SBA in our school.
- It should be conducted after each lesson.

Table 3.11: Summarized Data collected from Teachers of North Western Province

	Totally Agreed	Agreed	Partially Agreed	Not Agreed	Totally Disagreed	Not answered
1	0	5	5	1	0	0
2	5	3	0	2	0	1
3	3	6	1	1	0	0
4	3	2	4	1	0	1
5	2	6	2	1	0	0
6	1	8	1	1	0	0
7	5	4	1	1	0	0
8	0	0	2	5	3	1
9	2	5	3	0	0	1
10	1	3	4	2	1	0
11	4	5	1	1	0	0
12	6	2	3	0	0	0
13	0	1	4	3	3	0
14	0	2	5	1	3	0

Eleven teachers from the North Western province were participated to the survey. Statements 1 and 4 were agreed by 45.4% of the teachers. Statements 2, 5 and 12 were completely agreed by 72.7% and 81.8% were completely agreed to statements 3, 6, 7 and 11. Almost 100% disagreed with statement number 8. Statement 9 was agreed by 63.6% and 36.3% agreed statement 10. Very low percentages were agreed to statement 13 and 14 and percentages were 9 and 18 respectively.

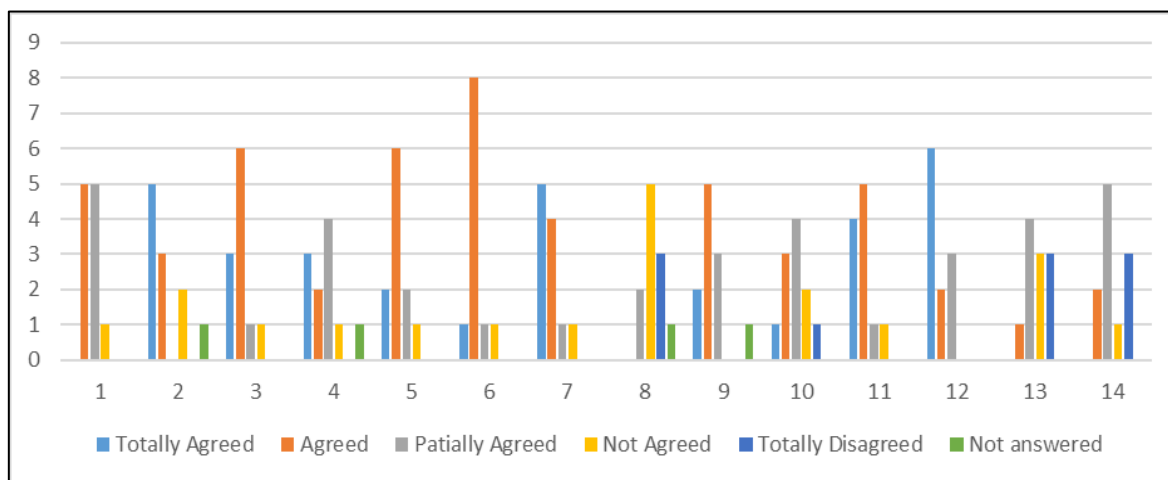


Figure 3.11: Responses of Teachers – North Western Province

North Western Province teachers' responses to the open-ended question in the questionnaire are as follows.

- Same type of SBA should be conducted in each school.
- Couldn't conduct practical due to lack of laboratory apparatus, chemicals and weak maintenance.
- Different assessment tools should be used. Students prefer to do practical therefore practical assessments are more valuable.
- It is very difficult to finish the syllabus due to large amount of extra-curricular activities in schools.
- Principals run the school as they wish. So it is better to introduce a National Policy.

Table 3.12: Summarized Data collected from Students of North Western Province

Q. NO	Totally Agreed	Agreed	Partially Agreed	Not Agreed	Totally Disagreed	Not answered
1	15	18	2	1	0	0
2	7	15	14	0	0	0
3	8	16	5	6	0	1
4	7	12	11	5	0	1
5	6	17	10	3	0	0
6	5	17	11	2	0	1
7	12	14	7	3	0	0
8	11	16	6	1	0	2
9	9	13	11	2	1	0
10	8	14	11	2	1	0
11	5	17	11	3	0	0

Thirty six students were participated to the survey including grade 12 and 13 both male and female. Statement 1 was completely accepted by 91.67%, statement 3 by 76.7%, Statement 5 by 63.9%, statement 7 by 72.2% and statement 8 by 75% each. Similar percentages, 61.1% were completely accepted statements 2, 6, 9, 10 and 11.

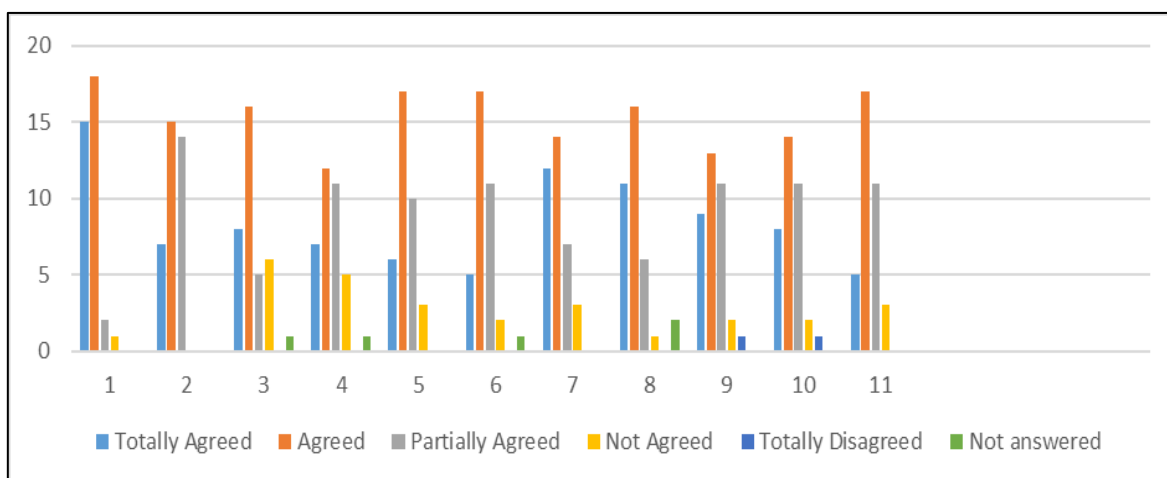


Figure 3.12: Responses of Student's – North Western Province

Students' responses to the open-ended question in the questionnaire are as follows.

- Satisfactory.
- Good and help to uplift our knowledge.

Table 3.13: Summarized Data collected from Teachers of North Central Province

	Totally Agreed	Agreed	Partially Agreed	Not Agreed	Totally Disagreed	Not answered
1	0	10	2	3	0	1
2	9	7	0	0	0	0
3	3	13	0	0	0	0
4	2	11	2	1	0	0
5	1	13	2	0	0	0
6	1	13	2	0	0	0
7	10	6	0	0	0	0
8	0	3	4	5	4	0
9	2	11	3	0	0	0
10	2	10	3	1	0	0
11	3	6	4	3	0	0
12	1	9	2	2	0	2
13	1	2	7	3	2	1
14	0	4	6	3	2	1

Sixteen teachers were participated to the survey of North Central Province. Statements 1, 11 and 12 were agreed by 62.5% of the teachers. They were 100% agreed to statements 2, 3 and 7. Statements 4 and 9 were agreed by 81.3%. Statements 5 and 6 by 87.5% and 8 and 13 by 18.8%. Almost 56.3% and 25% were completely agreed to statement 10 and 14 respectively.

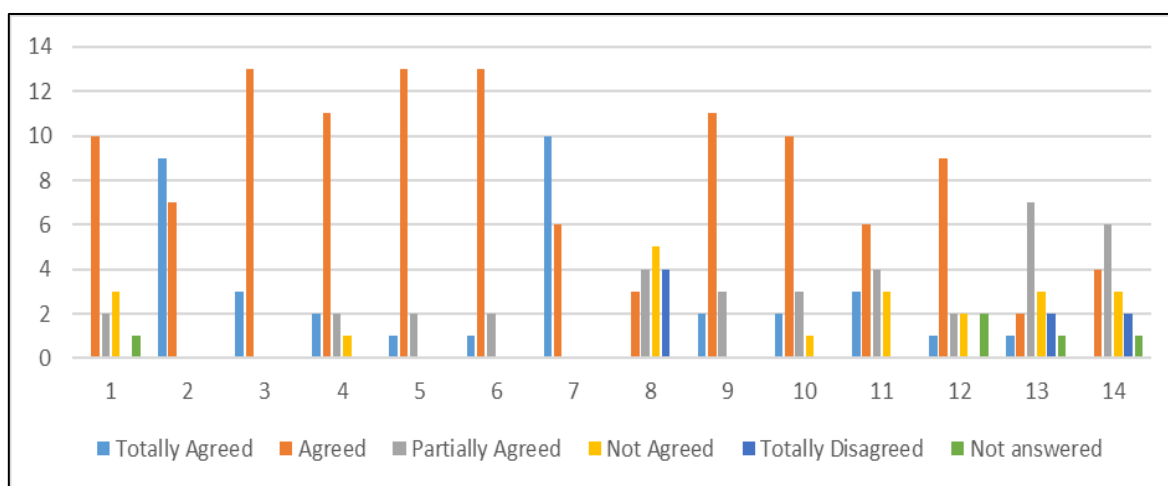


Figure 3.13: Responses of Teachers – North Central Province

North Central Province teachers' responses to the open-ended question in the questionnaire are as follows:

- Existing system is teacher biased.

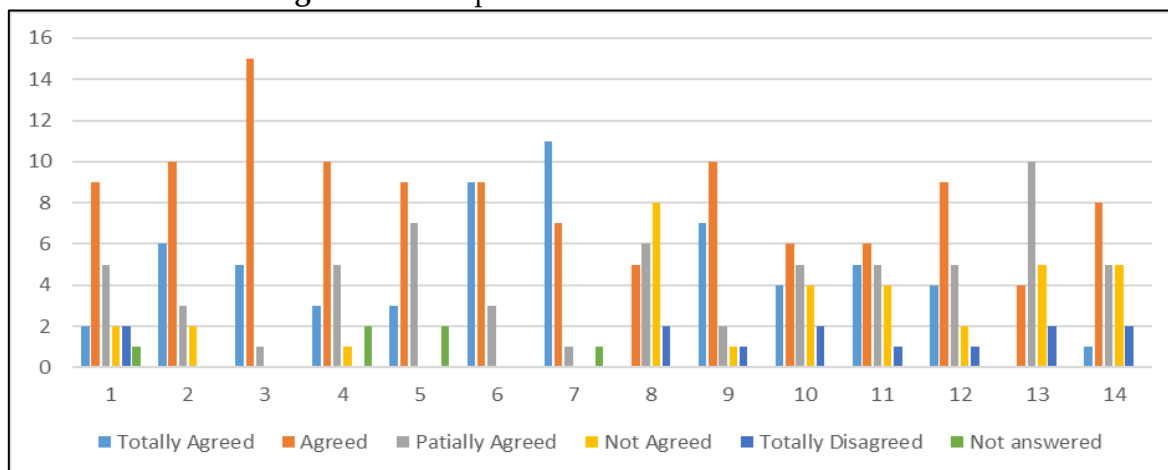
- Better to introduce a new system aligned with new technology. Then students' involvement might be high.
- There should be a method to keep students in the school to conduct SBA.
- Provide model assessments.
- The existing School Based Assessment system is an utter failure. It does not help to improve skills and attitudes of students.
- SBA should be done under the supervision of external authority.
- Suggest to conduct unit tests by Zonal or Provincial or National level.
- Prepare a more reliable method to give marks for practical tests. Then we can prevent students being mechanical and memorizing.
- Good to conduct unit tests and monthly tests. But SBA should be only for practical.
- General method should be introduced to conduct SBA.
- SBA should be a planned one but not according to the wish of the teacher.

Table 3.14: Summarized Data collected from Teachers of Uva Province

Q. No	Totally Agreed	Agreed	Patially Agreed	Not Agreed	Totally Disagreed	Not answered
1	2	9	5	2	2	1
2	6	10	3	2	0	0
3	5	15	1	0	0	0
4	3	10	5	1	0	2
5	3	9	7	0	0	2
6	9	9	3	0	0	0
7	11	7	1	0	0	1
8	0	5	6	8	2	0
9	7	10	2	1	1	0
10	4	6	5	4	2	0
11	5	6	5	4	1	0
12	4	9	5	2	1	0
13	0	4	10	5	2	0
14	1	8	5	5	2	0

Twenty one teachers from the Uva Province were participated to the survey. Statements 1 and 11 were completely agreed by 52.5% while 61.9% agreed statements 4 and 12. Furthermore statements 2, 3, 5, 8 and 9 were completely agreed by 76.2%, 92.2%, 57.1%, 23.8% and 80.9% respectively. Percentage agreement for statements 6 and 7 were 85.7%. Statements of 10, 13 and 14 were accepted by 47.6%, 19% and 42.8% respectively.

Figure 3.14: Responses of Teachers – Uva Province



Uva Province teachers' responses to the open-ended question in the questionnaire are as follows.

- It is very difficult to conduct assessments due to the extra activities, office work and a greater number of students in one class.
- It is enough to conduct one practical test for one term.
- More effective method is required with the help of Zonal or provincial Education office.
- Should guide the teacher with a proper assessment plan.
- Should reduce the number of assessments. Supply chemicals to laboratories.
- Students' attendance of last term is very weak. Should implement a method to keep students in schools in last term. New attractive assessment system is required to keep the students in the school. It should be more student based.
- Existing assessment system is failing up to now. Therefore, prepare a new assessment system that is more valuable to future carriers.
- Give more opportunities to practical workshops for teachers.
- This assessment system is a big pressure to a teacher because of administrators. No issue in the current SBA instead of that.
- Conduct assessments to measure skills of students through practical tests.

3.2 Teachers' Questionnaire of Eastern Province

Table 3.15: Summarized Data collected from teachers of Eastern Province

Q. NO	Totally Agreed	Agreed	Partially Agreed	Not Agreed	Totally Disagreed	Not answered
1	12	19	1	0	0	0
2	19	12	2	0	0	0
3	14	20	0	0	0	0
4	7	21	5	0	0	0
5	3	24	4	0	0	0
6	14	14	3	1	0	0
7	17	13	1	2	0	0
8	1	20	6	1	1	0
9	14	15	2	2	0	1

10	14	11	7	6	1	0
11	7	23	2	0	1	0
12	7	20	4	0	2	0
13	0	11	11	8	3	0
14	2	16	8	5	2	0

Almost 100% of the Eastern Province teachers were agreed that they were trying to complete the assessments at the proper time. Only 6% of the teachers partially agreed that giving assessment was a requirement after each lesson and no disagreements about that statement. Identification of the weaknesses of students after each lesson was noted by them as a must because all the teachers had accepted that statement. According to the analysis of assessment marks introducing of special methods to enhance the student's achievement levels was accepted by 75% of the teachers. Further 12% of the teachers partially agreed to check the conceptual development after each lesson. About 3% out of 33 teachers had not agreed to adjust their teaching pattern according to the student's strengths and weaknesses and 9% of the teachers partially agreed it is necessary to adjust the lesson according to students' strength and weaknesses. About 90% of Eastern Province teachers had used practical to build better understanding in students about concepts in that lesson but 6% were not. Only 63% were accepted that the current School Based Assessment system is a successful method to continuously assess the students. Implementation of new assessment system in relation to modern technology for Advanced level students were accepted as a suitable method by 75%. Only 6% was against that statement. Conducting of school level assessments to evaluate students was accepted by 75%. Around 90% has accepted the grievances faced while conducting student centered assessment system. Though 9% didn't feel that much of difficulty in that scenario. 81% of teachers were believed that introduction of new assessment system would be a big challenge. According to teachers' point of view 33% of the students have preferred the existing assessment system.

Eastern Province teachers' responses to the open-ended question in the questionnaire are as follows.

- Give more attention to the difficult subject matters of students and solve their problems.
- Conduct special seminars to teach how to answer the question papers effectively.
- Most of the students try to avoid the assessments therefore we had to conduct them without prior notice.
- Very low attendance of students and given indicators are insufficient for practical assessments.
- No enough resources to conduct practical sessions and better to conduct seminars to prepare students for the examination.
- According to Unit assessment students tend to give up previous knowledge. Therefore, final evaluation is better than continuous assessment.
- Preference to do practical are very low.

- Preference for assessments are very low in students as well there are some implementation problems.
- Should publish model questions.
- Should assess the practical skills.
- Students should be assessed by model questions.
- Should introduce a common exam method for Grade12.
- Students score more marks in unit tests but ability to conduct practical should be developed.
- Suggest two assessments per term and they should be planned by teacher according to the school environment.
- Assessment methods should not be planned by the Ministry of Education.
- Don't do assessments unit wise. Do as a whole.
- Outside teaching is affecting to assessments.
- Giving the same paper to all schools in the same province is acceptable.
- Resources are not enough to do the practical.
- Assessment system is a requirement though student's attendance is very low.
- Assessment system should be more effectively prepared by the school to enhance skills and attitudes.
- Making system is not similar therefore differences occurred in marking relevant to human factors.
- Some students are purposely being absent for assessments and some teachers give questions out of the syllabus with unnecessary questions.
- Some teachers discuss that questions in their tuition classes therefore students hate assessments.
- Should prepare student centered questions and teachers discussion is required beforehand.
- There is an issue to allocate time for assessments.
- Guidance of resource is not enough to teachers as well. Experienced teachers should guide other teachers.

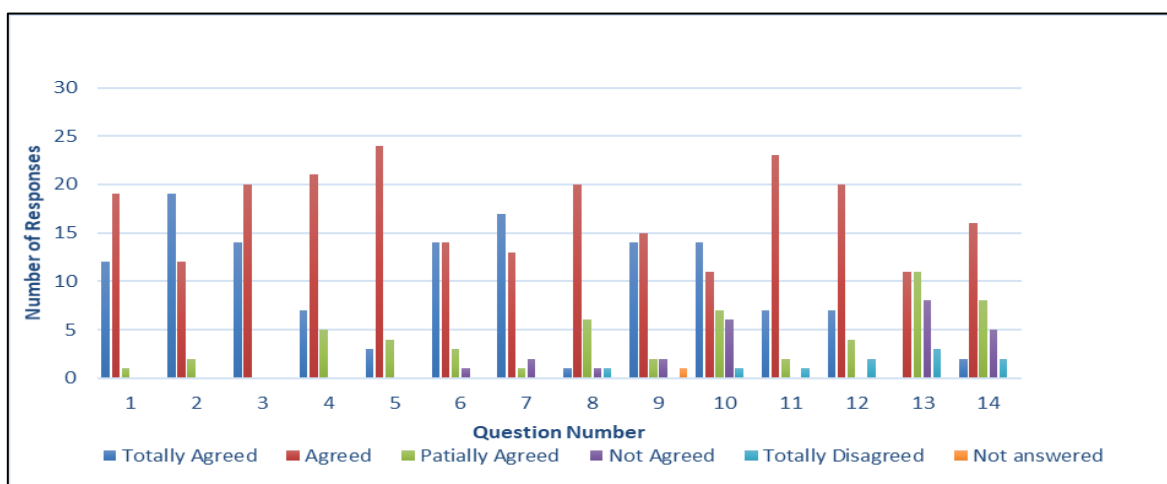


Figure 3.15: Responses of teachers – Eastern Province

3.3 Questionnaire of Eastern Province

Table 3.16: Summarized Data collected from students of Eastern Province

Q. NO	Totally Agreed	Agreed	Partially Agreed	Not Agreed	Totally Disagreed	Not answered
1	14	24	0	0	1	2
2	13	20	6	1	0	1
3	19	12	10	0	0	0
4	8	18	10	2	2	0
5	11	17	11	1	1	0
6	16	14	9	2	0	0
7	20	13	6	2	0	0
8	17	11	11	0	0	2
9	12	20	9	0	0	0
10	13	18	7	2	0	1
11	13	12	12	3	0	1

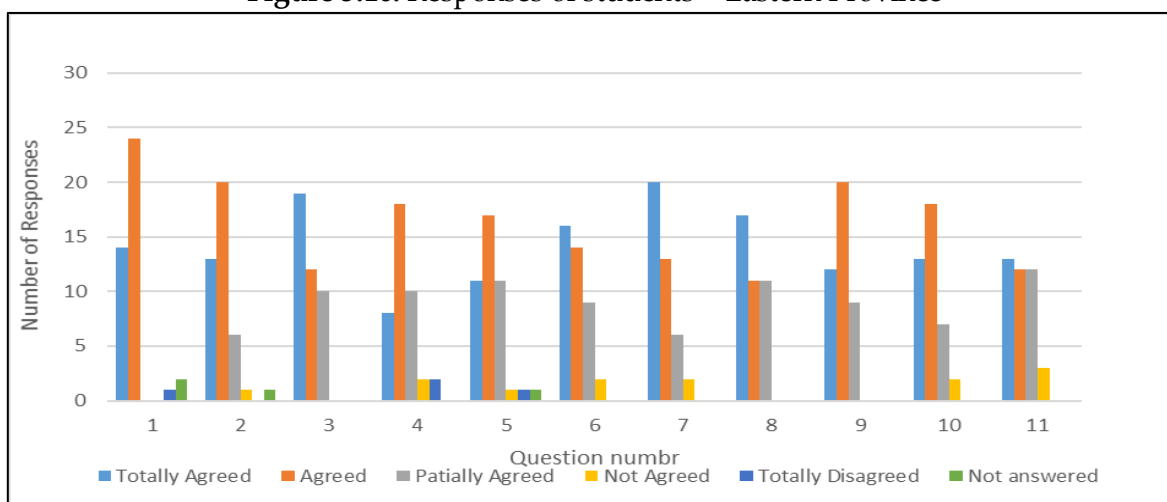
Data collected from 41 students in Grade 12 and Grade 13 in Eastern Province. Question number 8 was only for grade 13 students. Around 92.7% of students had agreed that the teachers are conducting assessments to evaluate them regularly. But 19.5% was accepted that the teachers didn't do assessments after each lesson. Identification of the weaknesses of students by themselves after the assessment was disagreed by 24.4%. "Assessment is being given after the practical" was accepted by 68.3% of students. Almost 26.8% of students were not satisfied with the support given by their teachers to uplift their ability and skills through identification of weaknesses. Most of the students had agreed that the teachers' contribution to enhance their knowledge was optimum except 19.5%. More than half, 68.3% completely agreed that the knowledge and skills developed by assessments would be helpful in their final evaluation. Furthermore 39% of the students were not satisfied with the teachers' feedbacks. Teaching method to correlate the lesson and the day to day life experiences was not accepted by 39% of the students.

Eastern Province students' responses to the open-ended questions in the questionnaire are as follows.

- Good
- Same assessment should be conducted island wide.
- It is not acceptable to reducing up to two assessments.
- No trust on the marks allocation and it is an utter failure.
- It is only suitable to written examinations and sometimes we can't understand the mark allocation. SBA is good to be used as a resource.
- We can identify our weaknesses and use them to enhance our learning.
- It is suitable to give marks through continuous assessment system. Then we can identify our weaknesses.
- Marking system is acceptable and can understand the theory well.
- Should give marks after the assessments as soon as possible
- Should give marks to understand our level.
- Method of giving marks are acceptable.
- It is helpful to me to understand my weaknesses and the level.

- It is more helpful and more useful.
- It is an encouragement to advanced level examination and good prior practice.
- Can face to term tests more easily.
- Assessments can be used as an energizer to final examination.
- Help to face A/L examination effectively.
- It is better to plan field trips and practical tests.
- Conducting different types of assessments are more useful.
- Good guidance from the teacher is helpful to get more marks.
- It is more important to students and the teachers. Should analyze the marks properly and conduct students well to their targets.
- Proper people should be there to conduct assessments.
- Should not include more than one question from one subject matter.

Figure 3.16: Responses of students – Eastern Province



3.4 Teachers' Questionnaire of Southern Province

Table 3.17: Summarized Data collected from teachers of Southern Province

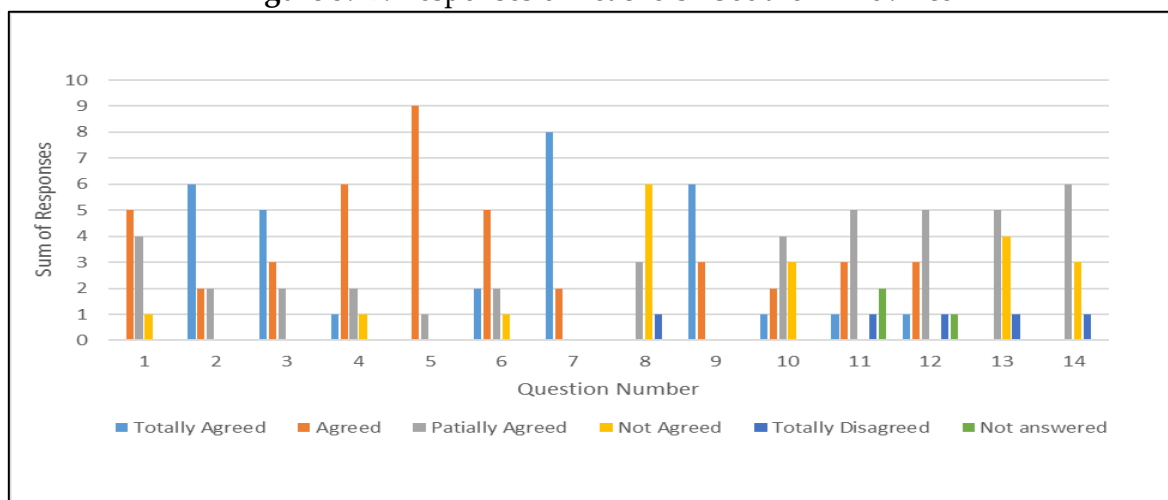
Q. NO	Totally Agreed	Agreed	Partially Agreed	Not Agreed	Totally Disagreed	Not answered
1	0	5	4	1	0	0
2	6	2	2	0	0	0
3	5	3	2	0	0	0
4	1	6	2	1	0	0
5	0	9	1	0	0	0
6	2	5	2	1	0	0
7	8	2	0	0	0	0
8	0	0	3	6	1	0
9	6	4	0	0	0	0
10	1	2	4	3	0	0
11	1	3	5	0	1	0
12	1	3	5	0	1	1
13	0	0	5	4	1	0
14	0	0	6	3	1	0

Ten teachers of different schools had been submitted the data. 50% of the teachers were not trying to conduct assessments at the proper time. But 80% of teachers had accepted it is necessary to give an assessment after each lesson and after analyzing the marks, identify students' weaknesses. But 30% of the teachers had not prepared a method to overcome that weaknesses of the students. Almost 90% was agreed to the evaluation done based on concepts and should be student centered. About 30% has not adjusted their teaching methods according to the students' favour. All the teachers had tried to establish concepts by using practical. Almost all the teachers of the Southern Province have disagreed with the existing School Based Assessment System. All the teachers hope to have a new assessment system with the help of modern technology. Almost 70% of the teachers were not willing to give marks to students which scored to the assessments and decide the level of them. "Student centered assessment system is difficult to conduct in schools" was accepted by 60%. "Introduction of assessment system and implementation is not a difficult one" was accepted by 70%. Almost 100% of the students of the province had disliked current School Based Assessment system. Almost 100% of teachers were accepted the current SBA system does not cater the skill and attitude development of students.

Southern Province teachers' responses to the open-ended questions in the questionnaire are as follows.

- Marks should be given to the absent students according to the administration requirements.
- These marks have been sent to the ministry of education therefore should submit at least false marks.
- Most of the times marks are been given without conducting an assessment and this system is unsuccessful.
- Assessment should be done through activities.
- Structured essay and short answer type questions are given in term test papers too. So that they should not be done as SBA.
- I think the current SBA system should undergo changes because term tests are also in progress.

Figure 3.17: Responses of Teachers - Southern Province



3.5 Students' Questionnaires of Southern Province

Table 3.18: Summarized data collected from students of Southern Province

Q. NO	Totally Agreed	Agreed	Partially Agreed	Not Agreed	Totally Disagreed	Not answered
1	9	30	20	2	0	0
2	4	21	15	16	4	1
3	18	25	10	5	1	2
4	6	9	25	14	6	1
5	20	17	13	9	0	2
6	17	22	14	8	0	0
7	28	17	8	3	2	3
8	12	13	11	4	1	20
9	16	17	15	8	1	4
10	9	19	15	8	1	9
11	22	26	9	2	0	2

About 36.1% of the students had not completely agreed that the assessments were conducted within the teaching learning process. More than 59% was agreed that no assessment was conducted after each lesson. If an assessment is conducted after the lesson it is helpful to understand the difficult parts of the lesson was agreed by 70.5% of students. No proper method to understand the weaknesses and address them was agreed by 75.4%. More than 60% was agreed that the teachers do assessments while doing practical. Around 36.1 % of the students had agreed that they couldn't identify their weaknesses through this SBA system and achieve to high levels. Teachers help students to identify their weaknesses and help to correct them was accepted by 73.8% of students. Around 61% of the students had thought SBA will be helpful to their final examination. Around 45.9% of students had thought this assessment system is not very much important. Assessment marks had been analyzed by the teachers and had adjusted their lessons accordingly was accepted by 45.9% of the students. Subject content was always combined with physical nature and day to day activities were accepted by 78.7%.

Southern Province students' responses to the open-ended question in the questionnaire are as follows.

- Marking of assessments should not be done by students.
- Should conduct an assessment after each lesson.
- Quality of conducting assessment is very poor. If it is up to a certain standard, we can gain high knowledge.
- Assessments help us to enhance our knowledge.
- Number of assessments given are enough but there are weaknesses in giving marks.
- Mental stress develops.
- Enough assessments are conducted for chemistry and marking system is also accurate.
- Giving assessments and marks are helpful to understand our level.
- It is good to discuss the answers for assessments.

- Assessments are only conducted in grade 12 classes. But if it continues as the same it is beneficial for us.
- Didn't give assessments at the end of each lesson. But it is better to continue.
- Existing method is good, but development is required.
- If assessment is being conducted in proper manner is highly effective to us.
- Should develop more.
- As term tests, monthly tests also should be compulsory.
- Teachers can identify our weaknesses and help us to overcome them
- Supply necessary equipment to the laboratory. Government should involve in these matters more than this because our parents pay taxes to the government.
- I am unhappy with the current SBA system because it is not conducted properly.
- Up to now very few of assessments have been conducted. Therefore, no idea about it.
- Can't give ideas.
- No assessment has been conducted and no idea can be given.
- Should be organized well. Should conduct an assessment after each lesson and explain the theory behind it.
- Conducting assessment is very weak in our school.
- Most of the questions are recalling questions and no analyzing and critical thinking.
- It is better to give attention to each student though it is difficult.
- Should be more systematic.
- Do not agree with the way of giving marks.
- Conducting assessment is a very good practice but teachers are only concerning about marks rather than developing skills and attitudes.
- Not up to satisfactory level.
- Teacher give questions to us and discuss the answers with us.
- Conduct practical lessons well and give assessment after each lesson.
- I am satisfied with the current SBA system and marks allocation. It is very essential to conduct practical tests.
- Well planned assessments and marks are also reliable.
- It is helpful to understand some parts of the subject matter.

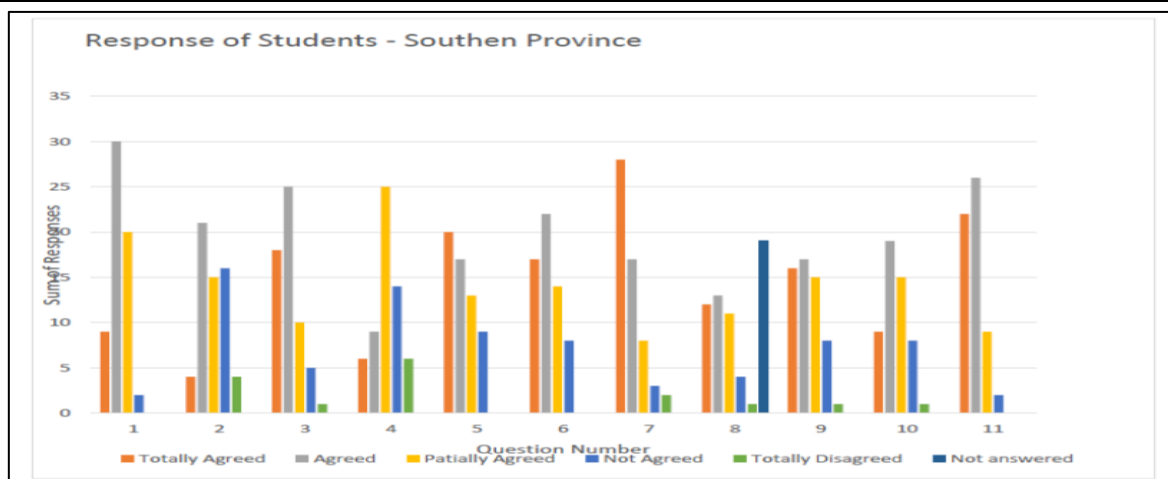


Figure 3.18: Responses of students – Southern Province

Most of the teachers of nine provinces were agreed that they were trying to complete the assessments within the proper time. Implementation of School Based Assessment system of Sri Lankan schools always happen in a very lethargic way throughout 13 years of schooling. Below 10% of the teachers partially agreed that giving assessment is a requirement after each lesson and no disagreements about that statement. Identification of the weaknesses of students after each lesson was noted by them as a must had been accepted more than 90% of the teachers. According to the analysis of assessment marks introducing of special methods to enhance the student's achievement levels was accepted by about 75% of the teachers. Furthermore they have agreed to check the conceptual development after each lesson. But some of the teachers had not agreed to adjust their teaching pattern according to the student's strengths and weaknesses. Use of practical by the teachers to build concepts better in students was low. Below 40% were accepted that the current School Based Assessment system is a successful method to continuously assess the students. Implementation of new assessment system in relation to modern technology for Advanced level students was accepted as a suitable method more than 75% of the teachers. Conducting of school level assessments to evaluate students was accepted by 75%. Around 90% was accepted the grievances faced while conducting student centered assessment system. About 80% of teachers were believed that introduction of new assessment system would be a big challenge. According to teachers' point of view 33% of the students have preferred the existing assessment system.

Most of the students had agreed that the teachers conduct assessments to evaluate them regularly. But about 45% has accepted that the teachers didn't do assessments after each lesson. Identification of the weaknesses of students by themselves after the assessment was disagreed by 25% of the students. "Assessment is being given after the practical" was accepted about 40% of students. Most of the students were not satisfied with the support given by their teachers to uplift their ability and skills through identification of weaknesses. Most of the students had agreed that the teachers' contribution to enhance their knowledge was optimum. More than 60% completely

agreed that the knowledge and skills developed by assessments would be helpful in their final evaluation. Furthermore 40% of the students were not satisfied with the teachers' feedbacks. Teaching method to correlate the lesson and the day to day life experiences was not accepted by 50% of students.

The summary of the analysis of Focused Group Discussion is summarized as follows: Identified 120 initial codes. Considering the initial codes Final codes were taken along with the segments. By the above analysis final codes were categorized into ten segments. Under the main identified segments they have been categorized in to sub themes which are more related with the research questions as follows.

Sub Themes	Themes
<ul style="list-style-type: none"> • Popular test types • Way of conducting 	Current Assessment system in G.C.E (A/L)
<ul style="list-style-type: none"> • Way of marking • Feedback • Reliability in marking 	Marking system
<ul style="list-style-type: none"> • Practical tests • Laboratory facilities • Students willingness about practical 	Practical Context
<ul style="list-style-type: none"> • New teaching methods • New technology based • Marks should be considered to the final exam • Should directed to the final examination 	Perceptions of students
<ul style="list-style-type: none"> • Common criteria • Clear criteria 	Perceptions of teachers
<ul style="list-style-type: none"> • Difficulties in conducting SBA • Reasons for failure 	Emotional responses to SBA
<ul style="list-style-type: none"> • Supervision • Training • Skill based • Consider the nature of students • Computer based and open book test 	Students and teaches expectations

There are mainly seven themes that have been identified through this Focused Group Discussion. Current assessment and evaluation system is based on written tests. Therefore, teachers and students have to talk about the marking system relevant to the written test type. Students need more feedback from teachers and a reliable marking system. Most of the students and teachers have realized the importance of Chemistry practical. Students' negligence in participation of practical sessions according to the absence of practical test and the marks are not being considered in G.C.E (A/L) examination. Students felt bored in traditional talk and chalk method therefore they requested new teaching methods associate with modern technology. In teachers' point of view, they should have the clear and common criteria for SBA system. Lack of time to conduct assessments, pressure created by the higher authority, lack of facilities, students' willingness and attitudes of the teachers and students are some emotional responses. But proper supervision, training system was suggested by the teachers. Further students were suggested the modern assessment system that are valid to the final examination.

4. Recommendations

- 1) It is a big necessity of a proper framework for SBA and high validity should be given to them by making national policy.
- 2) Clear criteria for SBA should be published national wise.
- 3) According to the national framework, school-based assessments should be prepared by the school itself. But Authority should give some models to the teachers to develop them.
- 4) Teachers should be trained well to conduct SBA with an equity.
- 5) SBA should be correlated with modern technology and teacher training for the relevant areas.
- 6) These tests should be more towards the skill development.

5. Conclusion

Students getting knowledge from schools as well as from tuition classes, neither develop Analytical-thinking nor Practical-skills through the current Teaching-learning process and school-based assessment process showing how the current system fails. Reliability of school-based assessment system is very low, and no validity is being given to the marks of them in the final examination. Therefore, both teachers and students pay a lack of attention to school-based assessment system. If the questions are based on concepts, most of the students are unable to do them because their conceptual development is low. Main focus of teachers and students is to get passed through the examination rather than developing skills and attitudes. After all, teachers of nine provinces and students of seven provinces had identified the worthiness of doing assessments. More percentage of the population evaluated from the provinces have suggested that this system required a student and teacher friendly change. Teachers require more guidance from higher authorities than pressing them to submit marks in anyway. The value given to SBA should be more and they should be well organized. Teachers' main complaint was the absence of students to the school. They require more guidance from higher authorities and require facilities for their laboratories. According to the student point of view they require more help from teachers to understand the subject matter and reliable assessment and marking system. Further they were suggested practical assessments. All and all the study show the existing SBA system in G.C.E (A/L) classes of Sri Lankan schools is the utter failure due to various reasons which have discussed in the result and Discussion part. Immediate change of this system is asked by the whole responsible bodies. According to the teacher's point of view conducting assessments is an extra burden. But most of the teachers have accepted if SBA is conducted with a new approach it will be more beneficial to students. Existing SBA system is being underestimated because no validity is being given in the G.C.E Advanced Level Examination. Students have suggested the modern and more attractive teaching method aligning with the modern technology. Well planned monitoring system was suggested by teachers. Most prominent

data of this study is the lack of knowledge about SBA among experienced as well as new teachers. There is no proper training system to teachers for the preparation of assessments, marking and conducting. Some experienced teachers have suggested the necessity of attitude change in teachers and students.

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Main research area of mine is Science Education based on Chemistry. Curriculum Developer, Coordinator of Advanced Level Chemistry syllabus, Teachers' Guides, Practical Manual, Resource books and Teacher trainings, Team member of Ordinary Level science curriculum development team, 23 years of experience in Chemistry teaching, conduct lectures to B.Ed, Member of the paper setting panel- College of Education (Science, Methodology), Control marking Examiner in Advanced Level Chemistry, Assistant Lecturer- National Institute of Education, Sri Lanka.

Research Communications

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