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An Analysis of Action Research Studies Conducted by Teachers in Sri Lankan Schools

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Abstract

Action research is becoming popular in the school system as a viable mean for empowering teachers. It provides teachers the opportunity to improve their reflective practice and to implement solutions to problems they face in the teaching-learning process. Considering the potential benefits of action research to teachers, students and school community at large, the Ministry of Education of Sri Lanka had launched a project aimed at empowering teachers with required skills and motivating them to conduct action research studies. About 84 teachers who had sent their research proposals in response to an open invitation sent by the Ministry of Education in early 2017 were called for a series of workshops through which their original proposals were fine-tuned and knowledge and skills on action research were enhanced.

This paper analyses the nature of problems considered by teachers for their action research studies, the innovative strategies adopted for the intervention process and the observations and reflections made during the intervention process on the changes experienced by participants. As the analysis reveals, teachers are capable in applying

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innovative strategies as solutions to the problems in their teaching-learning process. Further, it is evident that many students who had problems in coping with day-to-day activities in their classrooms benefitted through the interventions. It is recommended that school authorities should develop a supportive environment within their schools to motivate teachers towards action research studies as they provide on-the-spot solutions to the problems in the teaching-learning process.

Keywords: Action research, intervention process, innovative strategies

Introduction

Action Research is defined "as a form of collective self-reflective inquiry undertaken by participants in social situations to improve the rationality and justice of their own social education practices, as well as their understanding of these practices and situations in which these practices are carried out. The approach is only action research when it is collaborative, though it is important to realize that the action research of the group is attached through the critically examined action of individual group members" (Kemmis & McTaggart, 1985:5). Action research in education can be defined as the process of studying a school situation to understand and improve the quality of the educative process (Johnson, 2012). It offers multiple beneficial opportunities for those professionals working within the teaching profession (McTaggart, 1997). It is gaining recognition in the school system as it provides teachers the opportunity to improve their reflective practice and to implement solutions to problems they face in the teaching-learning process (Ferrance,2000). Hansen (1996) had given a detailed explanation about the benefits of action research to teachers. According to Hansen, it helps teachers develop new knowledge directly related to their classrooms, promotes reflective teaching and thinking, expands teachers' pedagogical repertoire, puts teachers in charge of their craft, reinforces the link between practice and student achievement, fosters an openness toward new ideas and learning new things, and gives them ownership of effective practices. Development of teachers in those areas will directly have an impact on student learning and development will in turn contribute to the

upliftment of schools. Considering the potential benefits of action research to teachers, students and school community at large, the Research and Development Branch of the Ministry of Education, Sri Lanka has launched a project aimed at empowering teachers with required skills and motivating them to conduct action research studies in 2016.

Action Research Project of the Ministry of Education

In 2014, the Ministry of Education took a decision to support teachers and In-Service Advisors (ISAs) in the form of financial grants and specialist assistance in developing creative activities based on action research, which would help to develop new models in the teaching-learning process. This project was jointly conducted by the Research & Development Branch of the Ministry of Education, Department of Research & Development at the National Institute of Education and the Faculties/Departments of Education in the Universities. Applications were called from qualified Teachers and In-Service Advisors who were interested in conducting action research to apply for research grants along with their research proposals.

Those proposals were reviewed by expert panels comprising senior academics of Universities. Then, the teachers were informed about the acceptance or rejection of their proposals by the Research Unit. The teachers whose proposals were accepted were invited to participate in a series of workshops prior to engaging in the action research studies in their schools. These workshops covered important aspects such as: 1. Introduction to action research 2. Characteristics of action research 3. Action research process 4. Data collection in action research 5. Writing reflective journals 6. Triangulation of data/evidence and 7. Report writing. It was expected that these workshops would help teachers to improve their understanding on action research approach prior to reporting progress to their supervisors and get feedback continuously during the study period either face-to-face or on-line.

In the last three (2013,2014 & 2017) years, about 300 teachers/In – Service Advisors have been engaged in action research studies aimed at creating meaningful changes in their teaching-learning processes as well as in the student performance. It was further believed that those teachers would be able to find on-the -spot solutions to the problems they faced while developing themselves as reflective practitioners. It was expected that these teachers would share the

knowledge and skills gained through this project with fellow teachers and contribute to develop a research culture in their school settings. Further, many students who had difficulties in coping with the normal teaching-learning process were provided with opportunities to develop themselves according to their own pace.

However, so far, an in-depth analysis has not been carried out by the Ministry of Education to find out whether the project had provided meaningful insights to develop and apply new models in the teaching-learning process.

Review of Literature

Action research is popular among teachers due to its ability to provide on-the-spot solutions to their problems in the teaching -learning process without controlling the classroom setting. Action research design includes two main parts: a small-scale intervention and a close examination of the intervention. The salient characteristics of action research embrace the systematic process, participatory and collaborative approach, self-reflective practice, self-evaluative nature etc. (McNiff, 2002; Cohen and Manion, 1989; Carr and Kemmis,1986). Further, Schon (1983) explained that action research proceeds by doing and by making mistakes in a self-reflective spiral of planning, action, observing, reflecting and re-planning etc. Thus, a significant feature of action research is that it operates in cycles. In other words, action research process would include many cycles to cover different aspects of the study.

Noffke (1997) suggested that the action research methodology lends itself effectively to a broad range of beliefs and relationships — analogous to a family. Reason and Bradbury (2008) further elaborate that the participatory, democratic process of action research seeks to bring together action and reflection, theory and practice, in participation with others, in the pursuit of practical solutions to issues of pressing concern to people, and more generally the flourishing of individual persons and their communities (Reason and Bradbury, 2008).

As explained by Hensen (1996), action research promotes reflective teaching and thinking, expands teachers' pedagogical repertoire, puts teachers in charge of their craft, reinforces the link between practice and student achievement, fosters an openness toward new ideas and learning new things, and gives teachers ownership of effective practices. Further, through action research, teachers are empowered to make informed decisions about what to change and what not to change, link the knowledge gained with practice, learn from positive and negative experiences and systematically improve their own practice and student outcomes, (Gay *et al.,* 2015). Some of the characteristics highlighted in the literature were used in this analysis to get a meaningful understanding about the action research studies conducted by the teachers.

Methodology and Objectives

A documentary survey was carried out using the research reports submitted by teachers in 2017. Their reflective notes, evidence produced and presentations done (presentations were recorded and slides were available for about 30 teachers) at different points of the study to show their progress. About seven teachers who made presentations had neither submitted reports, nor reflective notes. So, they had to be removed from the analysis.

The objectives of the present paper are to analyze the nature of problems considered by teachers for their action research studies, the action research process applied, changes experienced by participants and the relevancy of the conclusions made at the end of the study. In addition, several suggestions for improvement of the action research project will be suggested.

Nature of problems considered by teachers for their action research studies

Action research studies conducted by the teachers focused considerably on the problems related to subject matter (subject specific-9 out of 23) and out of them the majority (4 out of 9) were targeting the subject of Science (Table 1). Three other studies were based on IT and Mathematics and one on Geography. "Skills specific" action research studies (8) targeted the development of basic skills

such as reading and writing of Sinhala or English Language which demand urgent attention of school authorities. Three studies focused on behavior problems (behavior specific) of students which should be considered as a common issue in most of the classrooms in Sri Lankan schools. Another three studies were related to problems of school management.

Another distinguishing feature that emerged from the data was that teachers tend to do individual action research (16/25) rather than doing collaborative action research in their schools. Those who had done collaborative research were either deputy principals or sectional heads who were able to get support from other teachers and students without much difficulty. Most of the action research studies (16) were targeting grade 6-10 students whereas only five studies focused on A/L students. It could be further observed that subject-specific, skills-specific and behavior-specific problems were common among studies on grade 6-10 students in schools. A manageable number of students (not more than 10) had been considered as the target group in most of these studies. In one study, the target group was teachers and, in another study, nearly 15 students in three groups had been used.

Table 1. Problems selected by teachers/ISAs for their action research studies and the grades

Subject specific	**Skills specific**	**Behavior specific**	**Management specific**
Low achievement in Mathematics (Grade 10)	Self-reading ability of students (Grade 6-7)	Disturbing behavior of students (Grade9)	Garbage management in the School (15)
Low achievement in Science (Grade 8-9)	Sinhala Letter writing skills (Grade 6)	Behavior problems of students (Grade9)	Develop co-curricular activities in school (school)
Analysis of Metric Maps in Geography (Grade 13)	Memory skills (Grade6)	Problems in moral conduct of students (Grade8)	Duties and responsibilities of prefects (Grade6-9)
Practical tests in Physics (Grade 12)	Problems in English writing (Grade10)		

Basic concepts related to 'Mole' in Chemistry (10)	Literary skills (Grade12)		
Understanding of Rhythm/music (Grade 8 and 7)	Pronounce problems of letters (mother tongue) (Grade8)		
Effect of Activity based learning in Science (Grade8)	Errors in letter writing (mother tongue) (3,6,7)		
Low performance in Information Technology (Grade 12)			
Lack of interest towards Information Technology (Grade 12)			

Action research Process applied in the research studies

In this section, the analysis of data was done in line with the three characteristics of action research identified through existing literature, namely:

a. Systematic process
b. Participative and collaborative nature
c. Self-reflective practice

a. Systematic Process

Action research apples a systematized process for data collection in a school setting. This systematic process includes, a sophisticated intervention plan, a step-by-step process moving through planning, action, observation to reflection and several cycles to experience positive changes in participants. Through the analysis of presentations which were done one month prior to submission of reports, the gaps in the knowledge and skills of teachers could be identified about the systematic process of the action research. However, the final reports show a substantial improvement in this regard. In eight research studies, the researchers had developed sophisticated intervention plans incorporating specific problems,

specific actions, expected outcomes, resources and proposed time for each action. However, only in five studies did the teachers mention about the four main steps recommended by Kurt Lewin to be implemented in an action research. The identification of the problem featured strongly in both presentations and research reports.

Further, there might be situations where two or three intervention cycles needed to be conducted at the same time by considering different levels of participants. In addition, it is highly unlikely that the whole group of participants would experience success at the end of each cycle (100% success is not possible) which necessitates re-implementation of the same cycles again with some minor or major revisions. Thus, it is necessary to review progress achieved by each student and revise the actions according to the level of participants. It was encouraging to find that the implementation of two (or three cycles) simultaneously; one for the achievers and one for non-achievers, was visible in several studies (9 out of 23) which can be considered as evidence for the effectiveness of training workshops conducted through the project. The best examples are given in Table 2 (source: Content analysis of the reports).

Table 2. Examples for two to three cycles of actions with several steps in each cycle

Teacher No. 8 How to improve student achievement in Science? (Grade 6) *Two cycles with re-arrangements of actions for the second cycle, a number of specific steps in each cycle, a very organized action plan with actions, resources, behavioral changes and time including reflections had been incorporated.* TeacherNo.10 Improving writing ability of Grade 10 students *Three cycles of interventions were implemented considering different*	Teacher No. 11 How to minimize difficulties of Grade 13 students in interpreting Metric Contour Maps? *Three cycles had been implemented with several sub steps to achieve targets. The activities in each sub step were properly planned and carefully implemented through consideration of the progress of individual students.* Teacher No. 7 Improving Literary skills of Grade 12 students

aspects of writing. Step by step process applied with several motivational strategies to help students move forward.	*First cycle was directed to identify the problem using informal discussions. Identification of the problem was illustrated in the reflective journal (what did I do? what exactly happened? what did I think about it? What did I learn from what had happened)? Several Activities used were meaningfully to achieve targets.*

However, a substantial number of researchers (10) had not implemented several cycles but conducted only one cycle integrating meaningful and worthwhile steps as solutions to the problems at hand. Two such examples are given in Table 3.

Table 3. Examples for implementing activities step-by-step in one cycle

Teacher No. 18	Teacher No. 21
Teaching the concept of 'Mole' in Chemistry *Intervention plan was conducted through 9 actions. Concepts were broken into small steps on which the actions were planned and conducted* *Systematic procedures were adopted for identification of students -Specific objectives had been identified for each intervention step.*	*Development of co-curricular activities in the school* *Nine activities had been planned along with the resources and time frame to improve the existing situation. A concept map was prepared. Through a systematic plan, encouragement and evaluation the co-curricular activities of the school improved.*

Source: Extracts from the content analysis

There were four studies which exhibited limited understanding of teachers about action research design (Table 4). In one study, three methods were applied to the same student group to find the most suitable method for teaching practicals and in the other three studies, there were misunderstandings about research cycles, interventions,

steps and samples used. At the presentations, sufficient explanations were given about the intervention though it is pity that processes of these studies have not been improved.

Table 4. Examples for limited understanding of the research process

Teacher No. 22 How to Improve Duties and Responsibilities of Prefects (Secondary level) *Systematic process had not been followed* *Teacher was not aware of the difference between interventions and activities.* *Only three activities had been conducted but mentioned as interventions.* TeacherNo.15 Problems in letter writing (Grade 5) *Four steps had been implemented to improve letter writing using the book 'Akuru Malu". There was no plan for conducting a separate cycle for those who cannot achieve the targets at the first instance.*	Teacher No.2 Teaching Practicals for GCE A/L classes *A survey design was used instead of the action research design. Three practicals were conducted using different methods to reveal the most effective method.* TeacherNo.16 Garbage problem in the school *2 ½ months intervention cycle with three steps was implemented. No detailed explanations about the steps used. Several student groups were used at different points of the study.*

Source: Extracts from the content analysis

There were three teachers (teachers No. 4,5,10) who had planned many activities under the intervention but ended up with implementing only a few due to unavoidable reasons. It would have been better if teachers could complete the activities which were already planned.

b. Participative and collaborative nature of the study

The collaborative nature of action research was highlighted by many researchers. Therefore, it was expected that teachers/ISAs engaged in these studies would collaborate with other teachers, students and parents in the school community through action research studies to

gain an understanding on the crucial problems in their schools, to plan and implement step-by-step cyclical innovations as solutions to those problems, to critically reflect on each other's practices and to integrate rational practices to create a meaningful change in their day-to-day activities.

It was interesting to find that in all action research studies reviewed (23), collaboration and participation of students were visible (13 teachers) and several teachers have introduced reinforcement strategies (teachers No. 3, 6, 9) to obtain continuous participation of their target group throughout the study. It could be further observed that close collaborations were maintained by several teachers with fellow teachers in parallel classes or other classes (9 teachers). The situations in which such collaborations and participations of other teachers were visible could be listed as follows:

1. When exploring the reasons for the burning issues of the class/school (8)
2. When planning and conducting interventions with the target group (5)
3. When external evaluators were needed to assess the student progress in line with activities introduced by the teacher (2)

Most teachers who had participated in this project were either from IAB Schools (15) or National Schools (4) where parallel classes do exist, and fellow teachers were involved in teaching the same subjects. However, it was surprising to find that some teachers had not obtained the assistance or requested the participation/collaboration of other teachers when planning, conducting and assessing their interventions.

Parents' collaboration was obtained by three teachers to make the classroom an attracting place (teacher No. 3), to improve achievement in Science (teacher No. 8) and to improve student participation in co-curricular activities (teacher No.9). Altogether, three studies, including action research on school management issues, were conducted in collaboration with and participation of all categories of stakeholders in the school community. However, such information was not available in their reports or in reflective notes in relation to eight teachers.

Table 5. Collaboration and participation obtained through the Action Research

With Principal/ Vice principal	With Other Teachers	With Students	With Parents	No Information
2 Teachers (No. 3, 9)	9 Teachers (NO. 3, 5, 6, 8, 9, 17, 19, 21, 20)	13 Teachers (No. 3, 4, 5, 6, 8, 7, 9, 11, 17, 16, 19, 21, 20,)	4 Teachers (No. 3, 8, 9,17)	8 Teachers (No. 1, 2, 10, 12, 13, 14, 22, 23)

Source: Extracts from the content analysis

At the progress review presentations held at the Ministry of Education, some teachers reported both positive and negative reactions of the school community towards their action research. There was one extreme case reported by a teacher about the hardship she had undergone due to negative attitude of the school principal and other teachers. As reported, her genuine interest and commitment to support students was misinterpreted and her capabilities were underestimated by others in the school. However, without the support of the school principals and other fellow teachers it is very difficult for a single teacher to conduct an action research in the school setting. In several cases, it was reported that student participation was low and keeping some students after school hours was problematic. As such the success of an action research will depend on the active participation and collaboration of students who will be the target group of the study.

C. Self-reflective practice

The reports produced by teachers, their presentations and reflective notes were thoroughly examined to uncover evidence on self-reflective practices of teachers. In some reports and notes (teachers No. 14,15, 18,19,21) the reflective practices were hardly evident. The Table 6 illustrates predominant areas and the real applications of reflective practices among teachers. However, it was with much difficulty that the researcher had categorized them into some specific areas as they exhibited multiple characteristics.

Table 6. Evidence for promotion of reflective practices in the action research

Teacher No. 3: Puts in charge of their practices (Pls revise: this is not clear) *I had to change the activities to suit the students' needs while expanding opportunities for students to learn by themselves.* *On the one hand I was happy that students have something to take back home.*	***Teacher No. 5: Reflective teaching and thinking*** *I planned a set of simple activities step-by-step and started my first activity using a periodic table.* *Happy to say that they all wrote elements correctly in the correct order.* *I had to play the video clip several times for them to learn*
Teacher No. 4: Puts in change of their practices (Pls revise: this is not clear: Puts is charge who???)) *I applied several strategies to help them understand concepts and tried to give reinforcements as much as possible.* *My strategy was working well for many students*	***Teacher No. 20: Conscious about actions*** *I was depressed after receiving complaints from other students, teachers and the class captain.* *So, a dislike was growing towards the teaching profession due to some students' behavior* *I could develop a close relationship with them* *With time students became very friendly with me.*
Teacher No. 11: Openness toward learning new things *Use of mobile phones for teaching was a novel experience for me – it helped to get their attention as well as give clear ideas about contours in maps.* *At the end of the first cycle progress achieved by students was not satisfactory*	***Techer No. 22: Conscious about change*** *When the first motivation lecture was conducted attendance was not satisfactory.* *However, it gradually increased with the guidance provided* *In the month of November, stability in the attendance of the senior prefects was observed.*
Teacher No.11-Puts in charge of effective practices (Not clear; you put in charge someone) Suggestion: Encourages effective practices	***Teacher No. 13-puts in charge of effective practices*** *Second cycle was very successful as it was implemented with the support of other students.*

By giving them very practical experiences students were able to get a clear idea. *In the teaching-learning process giving targets and helping students to achieve them through step by step reinforcements was very effective.*	*The students participated in the action research very willingly* *I really value their efforts*
Teacher-No.8 - Conscious about change *After the first motivation session student attendance did not increased.* *However, it gradually increased with the guidance provided. In the month of November, stability in the attendance of the senior prefects was observed.*	***Teacher No. 7- Reflecting on the outcomes of actions*** *I could not believe that the problem was that bad.* *The selection of the examples should have been done after discussing with students.* *I should not have concluded that their literary skills were somewhat high.*

Source: Extracts from teachers' reports

With reference to table 6, the teachers' openness towards learning new things would pave the way for acquiring new knowledge and skills required for teaching in the 21st century. When analyzing the evidence given, it was clearly observable that several teachers were very conscious about the actions implemented, outcomes experienced through actions and the actual change taken place in students at the end of the process. Such process will improve effectiveness and efficiency of teaching and learning thereby assuring benefits to both teachers and students. Further, these action research studies expanded opportunities for teachers to be in charge of their good practices certifying their ownership of those practices and strengthening their commitment and involvement in action research studies.

1. **Changes experienced by participants through the action research**

In this section, actual changes experienced by teachers and students through action research studies and evidence used to prove that the changes occurred are presented and analyzed (Table 5). However, there were several teachers (No.12,14,15) who had stated very broad objectives and were unable to pinpoint exactly what the changes

occurred due to their interventions. Further, there were four teachers (No. 1,2,4,6) who had explained the changes occurred in students very briefly without substantial evidence (only marks). All the others had presented positive changes experienced by them with more evidence. It was very inspiring to find that three teachers (No.8, 11, 20) were very keen on their action research and have checked with all stakeholders (parents, students, other teachers etc) about the significance of the changes occurred through triangulating evidence. Among the changes reported, they had become very close to students, changed their routine day-to-day behavior, explored others opinion, become exemplary models to other students and developed a strong attachment and commitment to teaching etc. The students as the main recipients of these studies have also experienced substantial changes in their attitudes, habits, performance, attendance and skills through systematic, participative and reflective processes applied by those teachers. Tables 7a (3 research studies) and 7b (four research studies) illustrate only few examples extracted from the teachers' research reports. The changes are highlighted in bold letters for clarity.

Table 7a. Changes experienced, and evidence used in the research studies

Action Research Title	Changes experienced by the teacher (researcher)	Changes experienced by students as mentioned by teachers	Evidence used
3.Making my classroom a happy place	*I was very **close** to students* *A different type of communication had been maintained**: writing a letter** to parents mentioning positive things about the student and asking their help to complete activities at home*	*Students have **undergone a complete change in their behavior*** *Now I see **a great difference in their enthusiasm t**o learn* *Even weak students **asked me for clarifications.***	*Another teachers' opinion* *Reflective notes*

6.Solving problems in letter writing	***Continuous monitoring*** *was adopted* *I identified the* ***need for continuing*** *the research with more interventions*	*There is a substantial improvement in* ***their letter writing***	*Observations* *Reflective notes*
7.Developing literary skills	*I also had* ***to read*** *the book to identify their objectives* *I developed* ***the habit of reading*** *books*	*Number of* ***books read has increased*** ***Creative writing*** *had improved (evidence given)* *Students themselves had* ***posed questions*** *about several books*	*Observations* *Work completed by students*

Source: Extracts from teachers' reports

Table 7b. Changes experienced, and evidence used in the research studies

Action Research Title	Changes experienced by the teacher (researcher)	Changes experienced by students as mentioned by teachers	Evidence used
8.How to improve student achievement in science	*Tried to* ***look after*** *the students always: Identified the* ***need for monitoring*** *student work individually:* *Reviewed lessons in previous terms briefly* *Realized* ***the importance of providing first hand experiences*** *to students*	*Students* ***engage*** *in studies – teacher* *I* ***like*** *Science the most - student* *Science is* ***eas****y for me - student* *My child is very eager to attend school- parent* *My daughter* ***tries to complete*** *the activities in the text book- parent* *Miss changed the students completely - parent*	*Discussions with students' parents* *Reflective notes*

11. Minimizing problems in understanding contours in Geography	*I develop strategies to give **step by step reinforcements** to students* *Significance of giving **practical experiences** was understood* *Need to give **individual attention** for weak students was recognized* *Changed teaching to discussions*	*Student **motivation** towards subject has improved* *Their knowledge on contours has **improved*** *They could **develop structures** correctly* *Majority were **eager** to complete homework* *Specific knowledge on different concepts has improved by using on-line material*	
19. Improving performance in science	*Teacher could reflect on the changes taken place in his/her own behavior to suit the activities and the effectiveness of the activities*	*A change in their behavior could be observed* *The observations made by other teachers have also confirmed that their behavior had improved.*	*Discussions with other teachers* *Observations*
20.Changing pro-social behavior of students	*I started **going early** to school and talked to students in a friendly manner* *Parents were saying that teacher was **very patient** with students* *When students changed their behavior my*	*Students were **eagerly waiting** to get a book from class library* *The act if running away from the classroom was reduced* *When Hiruni became the leader, she **stopped going out** from the class frequently*	*Reflections* *Discussions students, parents,* *Observations*

	stress gradually faded *away*	*Students' views:*	

Source: Extracts from teachers' reports

2. Relevance of the conclusions made through the action research

While doing the presentations before submitting their reports, most of the teachers were not very familiar with writing conclusions in a report and there were problems in linking objectives to final outcomes. However, through the feedback given by experts after each presentation, a substantial improvement could be noted in their reports. It was interesting to find that a substantial number of teachers were focusing on very specific outcomes when drawing conclusions (teachers No.3,4,8,11,20) of their research studies. For instance, changes experienced through different actions in individual students and the teacher, changes experienced in the teaching - learning process and the need for re-inventing the research cycles several times had been specified by some of them. Further, some teachers have extended the changes even to the parents. In some cases, interventions and outcomes were quoted with multiple evidence.

One common feature that emerged from some of the action research reports (No. 5,7,10,13,22) was that the conclusions were very general and not specifically linked with the interventions implemented. Even though teachers themselves had undergone some changes in relation to different aspects, they had not been given prominence in the presentations and reports. Table 8 highlights some examples of general conclusions and specific conclusions drawn by the teachers at the end of the report.

Table 8. Examples of general conclusions and specific conclusions drawn by teachers

General conclusions	Specific conclusions
Teacher No.5 – *Improving the understanding of concept of Mole among students* • *Visual aids to be used to explain difficult science concepts* • *Needs to use technology in the teaching -learning process* • *Interesting activities to be identified and used systematically* • *Collaboration and participation of students to be maintained throughout the intervention*	Teacher No. 3- *How do I make my classroom a happy place*? • *Reflective journal had given me enough evidence to learn that students enjoy learning and have changed their behavior positively* • *Through action research students have undergone a complete change in their behavior* • *Teacher can change behavior of students' parents*
Teacher No.7- Developing literary creations in students • *Step by step students' literary abilities can be improved.* • *Weak students could improve themselves under the guidance of the teacher.*	Teacher No. 4- *Improving performance in mathematics in Grade 10 students* • *The performance of students (listed) has improved* • *Individual attention should have been paid to weak students* • *The relationship between the weak students and the teacher was very distant* • *The students who showed poor performance had problems with conceptualization of subject content*
Teacher No. 10- Improving writing ability of grade 10 students • *Most of the students started to use the language confidently* • *Many students improved their marks*	*Teacher No. 8- How to improve achievement in science* • *A re-intervention cycle was needed to support those who have not attained the outcomes* • *Identified the need for monitoring student work individually*

• *Almost all students knew how to develop an argument*	• *Realized the importance of providing first hand experiences to students* • *Special needs students also had shown some improvement* • *Student attendance could be improved by providing enjoyable learning situations*
Teacher No. 13- To improve understanding of rhythm in Dancing *Conclusions made only thorough observations but not using other means.* *Observation data had been transferred to marks. Justifiable evidence had not been provided* • *Student abilities had been improved.* • *Students have completed the work allocated to them*	*Teacher No. 11- Minimize difficulties of Grade 13 students in interpreting Metric Contour Maps?* • *Videos were more useful to weak students* • *Significance of giving practical experiences to these students was understood* • *Individual attention for weak students was recognized* • *Giving feedback on the spot to was necessary* • *Specific knowledge on different concepts had been improved by using on-line material*
• *Teacher No. 22- How to improve duties and responsibilities of prefects* *The conclusions do not link with objectives.* • *Prefects develop their personalities through the given tasks* • *They need to be given opportunities to play role models and make them aware on them*	*Teacher No. 20- Changing pro-social behavior of students* • *Going early to school and talking to students in a friendly manner had improved student behavior* • *My patience had a positive impact on student behavior* • *Students' behavior changes have reduced my stress as well*

Source: Extracts from the content analysis

Conclusions

The following are general conclusions that could be drawn through the analysis of research reports, presentations of teachers and parts of the reflective journals submitted by them.

- Action research studies have provided on-the-spot solutions to day-to-day problems in the teaching-learning process.
- Interventions related to the action research studies have paved way to create changes in students as well as in teachers.
- Support provided throughout this project has strengthened the action research process and outcomes of these action research studies.

The following specific conclusions could be derived through this analysis:

- Most of the action research studies completed under the project focused on subject-related issues.
- Individual action research studies were more popular among teachers than collaborative/participatory studies.
- Teachers have followed a systematic process while conducting their action research studies.
- The changes experienced by students were given prominence than the changes experienced by teachers.
- Reflective practice strengthened through action research studies positively contributed to the professional development of teachers
- There was evidence for collecting multiple data though teachers were strongly relying on one or two means when analyzing data and making conclusions of their studies.

Recommendations

- The action research project should be expanded to as many schools as possible using different means.
- Streamlining the training workshops on action research and monitoring the progress systematically at different points of the research studies are encouraged.
- More emphasis should be placed on collaborative action research as it would contribute positively towards developing a research-oriented school culture.

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