WHAT MOTIVATES TEACHERS TO CONDUCT RESEARCH?

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The main function of a teacher is to teach. Reading journals and conducting action research on a regular basis are now considered extra professional responsibilities of Malaysian teachers. This paper examines to what extent Malaysian teachers conduct action research especially those who have undergone in-service courses and workshops on action research, and also identifies the factors that motivate teachers to do action research. There are two avenues to become secondary teachers: either they obtain degrees in education, or a basic degree in any subject offered and a post-graduate diploma in education. It is found that having the knowledge and skills to do research does not necessarily mean teachers will be involved in action research. The teachers give 'bureaucratic constraints' as an excuse for not doing research. On the other hand, a majority of teachers are aware of the importance of research to improve teaching and they also find satisfaction when they can report and share their findings with others. This study also found other variables contribute to teachers' involvement, such as teaching experience, type of training and teachers' knowledge. There are two implications of the research. Effective in-service action research courses should be directed towards changing the attitudes of teachers and the fostering of self-reflection in their practice instead of only providing them with the skills and knowledge in their classroom duties.

INTRODUCTION

In Malaysia, formal education is considered an important platform in nation building. Through formal education, it is hoped that the growth in the economy, as well as the social well being of its citizens, will be enhanced. In this context, the ultimate goal of Vision 2020 is to ensure that Malaysia

becomes a developed nation by the year 2020, and progresses in economy, commerce and also in socio-politics, based on Malaysian values. The Ministry of Education has formulated the Education Vision as an effort to achieve Vision 2020 through education. According to Ibrahim (1995: 534).

> *"The Educational Vision draws from and translates the concerns articulated in Vision 2020 in the educational context. The governing ideas of the National Educational Vision are: knowledge culture, culture of excellence, caring culture, empowerment, national unity, collaboration, monitoring, management style and zero defect."*

In order for formal education to be implemented successfully, the education system should have approaches, methods, techniques, resources and management, which are developed in accordance with the National Education Philosophy (NEP), besides having to upgrade other educational infrastructures. Classroom practitioners, teacher trainers and educational managers should keep abreast with the development in the pedagogical aspects of teaching. This could be achieved if teachers and trainers practise research in their teaching, and continually reflect and seize initiatives to improve the effectiveness of teaching.

In the field of education in Malaysia, the role of research in education has become clear in its usefulness. People have now realised and admitted that the time is ripe to pursue research activities as an important element towards achieving quality, democracy, life-long learning, excellence, the concept of zero defect and world class standard in education (Subahan, 1998). Research culture in education, with specific reference to the policy makers and as a platform in problem solving would need a pivotal thinking among every manager of education and teachers (Wan Mohd. Zahid, 1993), The practice of research thinking and orientation, and research-based decision-making among educational managers and teachers will increase the standard of excellence in education in line with the NEP, 'Rukun Negara' and Vision 2020.

RATIONALE FOR TEACHERS AS RESEARCHERS

In Malaysia, major changes and reforms in education have been made gradually by the Ministry of Education from time to time. The main rationale for the curriculum changes especially in subject matters is to enhance the quality of teaching and learning.

In the early 80s, the issue of school reforms had been the focus of discussions among educationist. Many reform models were of the 'top-down' category where the emphases were on centralisation, standardisation and bureaucracy responsibilities (Rushcamp & Roehler, 1992). The drawbacks of the 'top-down' variety had been proven (Goodlad, 1984). Efforts to change the form of teaching in the classroom would be more fruitful if teachers are willing to accept changes as being important, and are willing to try. This process will not be effective by just giving out orders, guided materials and syllabus, or providing more new teaching aids. One should put more effort in training and developing teachers to have the required characteristics. The emphasis has been mentioned by Fullan and Hargreaves (1992:22),

> *"Knocking down walls, as many open-plan schools did in the 1960s and 1970s, is not enough to bring about change. Nor is writing supposedly teacher-proof curriculum guideline-national or otherwise. Teachers can always shut the door and get on with what they want to do anyway. Education change that does not involve and is not supported by the teacher usually ends up as change for the worse, or as no real change at all. In the end, it is the teacher in his or her classroom who has to interpret and bring about improvement."*

The focus should be on the training of teachers as reflective professionals who recognise their own voluntary development (Clark, 1992) and be responsible towards self-development of a teacher. In reality the change in education is a process where the focus is on the individual (Fullan, 1993), and that individual is the teacher himself.

Many writers suggest that the main idea is to encourage teachers to carry out research in classes or their classrooms (Cochran-Smith & Lytle, 1990; Sardo-Brown, 1990; Calhoun, 1993). They suggest that action research acts as a catalyst towards effective change and that teachers must be agents of change (Pierce & Hunsaker, 1996).

Many studies have been carried out in education regarding action research and its impact on the development of teacher effectiveness. Findings from the various researches have postulated that action research has improved the level of teacher effectiveness—teachers become more reflective, increase their skills of analysing and solving problems and even

foster closer relationship among colleagues (Bennet, 1993; Thompson, 1996). Teachers have higher self-esteem and autonomy in the classroom context (Bennett, 1993). Action research has improved their practice of teaching and increased job satisfaction from pedagogical practice of teachers (Johnson, 1993).

Many teachers have misinterpreted the role of teachers as researchers. Darling-Hammond (1985) has highlighted the misinterpretation towards research work. She states that many schoolteachers are confused of their role as researchers of education. Teachers believe that research is the work of experts in education, and that their work is to implement the results of research work in teaching. These beliefs will generate situations where teaching is solely based on textbooks.

According to Polemeni (1976), teachers do not think that they are researchers as they believe they cannot assume the role of a researcher. They become subjects to a researcher but not as individuals who produce research work. They are involved only as the target for investigation. According to Zuber-Skerritt (1991), academicians especially teachers must apply and translate theories, which are developed by educational researchers into their own practice. Action research will enable teachers to integrate theories and practices. Hence, action research by practitioners (teachers) themselves on their own teaching are more relevant, meaningful, and appropriate than educational research carried out by those theorists to be applied by teachers.

CONCEPT OF THE INCULCATION OF A RESEARCH CULTURE

Action research activities or projects that have been carried out in Malaysia can be regarded as an important agenda for inculcating the idea of teacher as researcher among teachers. The aim of these projects is to inculcate research culture among teachers.

Generally, culture is defined as behaviours, beliefs, attitudes and ideas to be shared by an individual in a group (Ember & Ember, 1993). According to Pettigrew (1979) culture is a meaningful system that is accepted generally and collectively by a group at certain times. Culture consists of beliefs, expectations and values that can be shared and developed by any organisation as the result of the previous experience, and accepted as

something good, which can be followed by its members (Deal & Kennedy, 1982; Busher & Saran, 1992). Thus, in this paper, culture is defined as beliefs, values and stable behaviours that are shared among members of an organisation. Culture is a way of life for every member in an organisation, and their practices can be considered as habitual actions in managing the respective organisations.

On the other hand, research culture refers to the working definition of action research as reported by Zuber Skerritt (1991:8) and the CRASP model by the same author, who clearly stated the definition, characteristics and goals in carrying out action research as the acronym below shows:

- **C**ritical collaborations enquiry by
- **R**eflective practitioners who are
- **A**ccountable in making the results of their enquiry public and
- **S**elf-evaluative in their practice, and engaged in
- **P**articipative problem solving and continuing professional development.

Based on the definition of culture by Deal and Kennedy (1982), Busher and Saran (1992), the working definition of action research as well as the CRASP Model by Zuber-Skerritt (1991), a research culture among teachers that is nurtured through the action research project is defined as beliefs, values and behaviours that stress on quality in teaching and learning, accountability and also adherence to the concept of collaborating with others to continually improve working conditions. Teachers are described to have a research culture when they are literate, knowledgeable and skilful in research, and display positive attitudes. Teachers tend to carry out action research individually or collaboratively, critically, reflectively, and responsibly. They share their experiences and findings with others, make self-evaluation, and are committed to solving problems and enhancing professional development (Jamil, 1999). The research culture in this study is thus defined.

INCULCATION OF A RESEARCH CULTURE PROGRAMME

In Malaysia, the concept of action research was introduced in 1998 in a teacher professional development programme, which was a short course for 41 teacher trainers from Teacher Training Institutions and officers of the Teacher Education Division (TED). It was held from the 11 to 18 December 1988, and conducted by the School of Education, Deakin University, Australia.

As a result, the notion of a teacher as a researcher came to light in the early 90s, and henceforth, the concept of action research was introduced and has become part and parcel of the pre-service courses in teacher education institutions. Action research has been one of the many subjects taught in the 'National Teaching Diploma' (KDPM), 'Post-graduate Teaching Certificate' (KPLI) in teacher training institutions and 'Diploma of Education' in universities. Efforts have been made to introduce the concept of action research to schools by the Educational Planning and Research Department (EPRD), Ministry of Education through the *Programme for Innovation Excellence and Research* (PIER) from 1993 to 1996. Besides that, efforts to inculcate research culture among teachers in schools have also been made as an on-going programme through courses and workshops on action research conducted by this department.

PIER was funded by the World Bank for Primary and Secondary Education Sector, Ministry of Education, Malaysia. The duration of the fund was from 1993 to 1996. PIER consisted of four sub-programmes: Sub-programme I: Innovation in science and mathematics, Sub-programme II: Small schools, Sub-programme III: Distance learning education, and Sub-programme IV: Educational research (EPRD, 1997). The focus of this study is on Sub-programme IV, which is educational research. The aims were to:

i. Review different alternatives of teaching methodologies in education.

ii. Increase students' achievements and opportunities to achieve equality in education.

iii. Inculcate research culture among managers of education and teachers by means of action research.

Sub-programme IV was allocated as much as 38 percent from the total allocation for PIER (EPRD, 1997). This was to ensure that the action research project become the main agenda for inculcating research culture in school. It also included the sending of education officers and teachers abroad to attend exposure courses that would enable them to become effective facilitators when conducting similar courses.

The State and District Education Department and Schools had conducted 741 action research projects for the whole nation from 1993 to 1996. The distribution of research carried out according to years and States is given in Table 1.

Table1
Number of Action Research Projects According to Years and States

States	1993	1994	1995	1996	Total
Terengganu	8	-	15	152	175
Kelantan	-	15	-	104	119
Selangor	-	5	29	70	104
Pahang	-	1	-	56	57
Perak	6	2	14	34	56
Melaka	7	-	-	45	52
Negeri Sembilan	-	1	7	33	41
Kedah	1	-	11	25	37
Sarawak	-	-	-	30	30
Johor	3	-	9	17	29
Sabah	-	-	-	19	19
Wilayah Persekutuan	-	-	13	-	13
Pulau Pinang	-	-	3	6	9
Perlis	-	-	-	-	-
Total	25	24	101	591	741

Source: Ministry of Education 1997. Programme for Innovation Excellence and Research (PIER) Report. Research Unit, EPRD, Ministry of Education.

The Ministry of Education through the EPRD continued the effort of inculcating action research culture among teachers using the funds provided by the 'Co-ordination Committee of Educational Research' of the MOE. In 1997 alone a total of 150 action research studies had been conducted in the States as given in Table 2 below.

Table 2
Number of Action Research Project Funded by the 'Co-ordination Committee of Education Research' in 1997

States	Number of studies
Kelantan	43
Terengganu	38
Wilayah Persekutuan	24
Negeri Sembilan	26
Melaka	19
Total	150

Efforts to encourage research culture were also made through the funding from the Ministry of Science, Technology and Environment. It was channelled through the EPRD who planned and implemented a series of action research courses for Science and Mathematics teachers. The aim was to expose these teachers on the rationale and methodology of action research in schools. The agency also provided funding for 100 action research projects in 1998 and a similar funding for the same number of participants in 1999.

CONSTRAINTS IN PROPAGATING RESEARCH CULTURE

The findings from the seminar in Kuala Terengganu, held between 27 and 29 August 1996 (EPRD, 1997) indicated some problems in inculcating a research culture among teachers in schools. The problems and obstacles highlighted by the teachers were the inability to realise the importance of action research in school, not understanding the concept of action research, having limited information on the methods of action research, possessing different value systems as reflected by the negative attitudes of some teachers and administrators, and generally having too many duties to carry out.

According to the EPRD (1996), the constraints of conducting action research projects are: time, inexperience, finance, facilities, colleagues who do not know about action research, lack of support from school administrators and heavy workload. A report from the EPRD (1999) on a survey of 1564 teachers and 193 principals and headmasters throughout Malaysia indicated.

i. From the years 1993 to 1998, the number of schools involved in action research had increased. However the percentage of urban schools carrying out action research was higher compared to rural schools.

ii. There is no significant difference in the percentage of teachers undertaking research in terms of school location, experience and subjects taught.

iii. Within a school, the majority of teachers carried out research in a collaborative manner. However, research projects carried out with other schools are few.

iv. The recurring themes are teaching and learning, curriculum management and management of pupils.

v. The constraints faced by teachers in carrying research are time and funding.

PURPOSE OF THE STUDY

The purpose of this study was to examine Malaysian teachers' research culture and to determine the factors that motivate teachers to do action research.

RESEARCH METHOD

A questionnaire and an interview schedule were designed. The questionnaire was used in the survey to examine the teachers' culture on action research in schools and the interview schedule was used to examine qualitatively what motivates teachers to do action research. The State of Terengganu was chosen as the population sample because it has been reported that the State Education Department in Terengganu is active in action research and a high number of teachers from the state have attended in-service courses, and were involved in action research. The sample size

for the research survey was 697 teachers, comprising 322 teachers who had attended in-service courses in action research and 375 teachers who had not attended any such courses. In this study, 20 teachers from sample were interviewed, ten of them indicated to have conducted action research while the other ten were inactive in action research.

The questionnaire was developed based on a review of research literature and ideas from texts and documents on action research. It was validated by a panel of experts from the Education Faculty of National University of Malaysia and Malaysia Institute of Malay language. Having validated the content of various aspects covered in the questionnaire, it was sent to all the respondents by post. The interview schedule consisted of structured questions on teachers' involvement and the motivation in conducting research.

The frequencies, percentages, means and standard deviations were computed from the data obtained from the questionnaire. The data from the interviews were tabulated to analyse some major trends and patterns.

RESULTS OF THE STUDY

Table 3 shows the mean scores on aspects of teachers' competencies in terms of knowledge and skills on action research. The Table consists of mean scores on implementation of action research in terms of availability of supporting materials and findings on action research, administrator's encouragement to teachers to conduct research, and the level of knowledge and skills in action research.

Table 3
Comparison of Mean Score of Several Aspects in Research Culture

Aspects	Attendance in Action Research Courses	Freq.	Mean Score	Level of Culture	Overall Mean Score
Knowledge in Action Research	Yes	322	3.630	Moderate	3.268
	No	375	2.957	Moderate	
Skill in Action Research	Yes	322	3.309	Moderate	2.917
	No	375	2.580	Moderate	
Conducting Research	Yes	322	2.137	Low	2.011
	No	375	1.903	Low	
Use of Research Finding in Teaching and Learning	Yes	322	3.294	Moderate	3.042
	No	375	2.864	Moderate	
Disseminating of Research Finding	Yes	322	2.858	Moderate	2.733
	No	375	2.627	Moderate	
Critical Attitude	Yes	322	3.873	High	3.759
	No	375	3.660	Moderate	
Reflective Attitude	Yes	322	3.946	High	3.851
	No	375	3.769	High	
Accountability in Making The Research Public	Yes	322	3.965	High	3.888
	No	375	3.822	High	

Research Culture

The research culture among the respondents was analysed using the mean scores for each particular aspect of the measures. Table 3 gives the summary of the results. The mean scores between 1.00 and 2.33 were considered low, 2.34 to 3.60 was considered moderate and above 3.67 was considered high, based on a 5-point scale. The overall mean score indicates that teachers were generally positive in their knowledge and skills in conducting research, and have high scores too on reflective, critical and accountability attitudes. However, the mean score on conducting research is low.

Difference Between Teachers

On further analyses, the difference in the mean scores between teachers who had attended and those who had not attended in-service course on action-research showed a difference. Generally, those who have attended such courses showed a slight positive response probably due to the experiences gained by attending and participating in the courses.

The mean scores for each aspect were higher, indicating more knowledge and skills, reflective practices, and critical and evaluative skills gained by those who attended the in-service courses compared to those who had attended any (Table 3). However, this was not true for the aspects of conducting research because the mean scores for both groups on conducting research were rather low. This shows that teachers generally did not conduct or get involved in action research even though they were equipped with the necessary knowledge to do it. Furthermore, they tend not to use and disseminate action research findings. The regularity of teachers conducting action research was computed. Tables 4, 5 and 6 show the frequencies and percentages of teachers' involvement in action research.

Table 4
Frequency of Conducting Action Research Individually

Frequency of Conducting Action Research	Attendance in Action Research Courses		
	Yes	No	Total
Never	48 (14.9%)	160 (42.7%)	208 (29.8%)
Rarely	87 (27.0%)	85 (22.7%)	172 (24.7%)
Seldom	116 (36.0%)	98 (26.1%)	214 (30.7%)
Often	49 (15.2%)	31 (8.3%)	80 (11.5%)
Very Often	22 (6.8%)	1 (0.3%)	23 (3.3%)
Total	322 (100.0%)	375 (100.0%)	697 (100.0%)

Table 5
Frequency of Conducting Action Research Collaboratively

Frequency of Conducting Action Research	Attendance in Action Research Courses		
	Yes	No	Total
Never	96 (29.7%)	164 (43.7%)	260 (37.3%)
Rarely	102 (31.7%)	95 (25.3%)	197 (28.3%)
Seldom	109 (33.9%)	101 (26.9%)	210 (30.1%)
Often	13 (4.0%)	15 (4.0%)	28 (4.0%)
Very Often	2 (0.6%)	0 (0.0%)	2 (0.3%)
Total	322 (100.0%)	375 (100.0%)	697 (100.0%)

Table 6
Number of Action Research Completed and Courses Attended

Frequency of Conducting Action Research	Attendance in Action Research Courses		
	Yes	No	Total
Never	48 (14.9%)	160 (42.7%)	208 (29.8%)
Once a year	192 (59.6%)	156 (41.6%)	348 (49.9%)
Twice a year	53 (16.5%)	49 (13.1%)	102 (14.6%)
Three times a year	25 (7.7%)	10 (2.7%)	35 (5.0%)
More than 3 times a year	4 (1.2%)	0 (0.0%)	4 (0.6%)
Total	322 (100.0%)	375 (100.0%)	697 (100.0%)

The results show that very few teachers had conducted action research regularly and only twenty percent of those who had attended in-service courses had done so.

A Qualitative Approach

To understand the reasons few teachers carry out research, qualitative data were obtained by interviewing two selected groups of teachers. The purpose was to gather a more complete and in-depth data to explain what motivates teachers to conduct action research. Twenty teachers were identified with ten teachers representing each group who were either active or not active in action research. They were all contacted and showed their willingness to be interviewed. Face-to-face interviews were held with the respondents. Most of the data as spoken by the respondents were audio-recorded, but two respondents were reluctant to have the interviews taped and therefore, the researcher had to take notes during the interview. All the data were written down verbatim, and the researchers went through the transcript. The major themes and trends were identified and classified. An independent researcher, experienced in qualitative research, was asked to go through the transcripts. There was agreement to the general themes identified. The interview data generally indicated that the respondents could be divided approximately into four subgroups.

The first two subgroups did not conduct action research, but the levels of competencies in research of these two subgroups were different. One group was more competent than the other was. The third and fourth subgroup did research for different motivational reasons, which are extrinsic versus intrinsic types of motivation.

Doing Research

A few excerpts from the study were quoted to explicate the themes. The first open-ended question was intended to indicate teachers' experience in conducting research. The group who did not do research gave quite different reasons, as the illustrated by the following excerpts:

> *"I have not done any action research or research at all in class, simply because I have not attended any course. No training...be happy to try it when I have the knowledge of how and what to do."*
>
> (Group 1, A)

"Every year I was given different classes to teach. No time to reflect as new problems arise. Though I am trained and have been selected to attend the course, here (schools) they do not give me a chance...I teach different class (level) each year."

(Group 2, A)

The other two subgroups however gave mixed reactions to the reasons for conducting research.

"I have taught in this school for a long time ... ten years ... its time for me to get a good pay increase... if not it will be stagnant. Being a senior teacher, some form of rewards would be good ... so those young teachers would look up to me. Normally, I focus on how I would improve the overall results of the students. My classes are examination classes ... results count in this school."

(Group 3, A)

"My satisfaction is to see my students enjoy my teaching and I like to see their sparkling when they perform well in exams ... I always reflect on my teaching, trying to understand my students and my teaching better. I always discuss to find out, the best way to improve ... if it works I am happy ... everybody ... but that won't stop them. The course I attended on action research was a bit of help. Moreover, my principal made me do it. She wants to see the report to be presented to the district. It gives confidence in my work..."

(Group 4, A)

For those who were intrinsically motivated, the reward was not interpreted in terms of money as indicated in the following excerpt:

"Not for money ... or any form of present or prizes: all I am asking is some recognition ... give some credits for completing some research ... let the other staff members know for all the effort I put in preparing a report which was send to the district department through the headmaster. I gave him a copy ... I think its being kept in one of the shelves ... for what reason I want to continue doing this. However I do reflect on my teaching and adjust ..."

(Group 3, B)

The above data indicate that school administrators have to provide a conducive climate for teachers to conduct classroom research in so for that the quality of teaching and learning could be improved. A particular reason, for which principals play down the significance of encouraging their teachers to do research, is the worry that teachers' involvement in research would take them away from the usual chores of preparing the students for examinations. The following views illustrate the above argument.

"My principal told me he has read my action research report and noted that I found some improvement with a new strategy that I introduced to my class to teach a topic in Accounting ... but it did not show in their overall performance, the final examination results was quite similar as in the previous year ... I told myself, if this is what he thinks ... I better stop here. Its strange for him to says so because only one topic was tried ... its too early to judge..."

(Group 4, C)

The Malaysian education system has often been describe as exam-oriented and the driving force has always been for teachers to complete the syllabus and prepare students for examination. Since this trend has been a norm, especially of late, any changes from the normal routine would be perceived by teachers as drastic changes, and this might affect the school's general performance.

BENEFITS OF ACTION RESEARCH

The teachers were asked their reasons for doing research or why action research is important. The overwhelming majority of teachers agreed that action research would help to solve some of the problems faced in the classroom or school. The following excerpts indicate this:

"There is room for improvement in our teaching ... students are not learning ... a number of complains ... students at higher levels do not understand the basics that are supposed to be taught at lower forms. There is truth in it ... I blame the examination..."

(Group 3, B)

"Maybe we won't have much of the problem that we have now ... students play ... refuse to learn and ... do not do their homework ... and discipline in the class is quite bad sometimes, it is difficult for teachers to manage teaching."

(Group 2, C)

"We need to improve ... new ways to teach ... ICT, computers and the like and perhaps Malaysian way of teaching."

(Group 1, C)

"Malaysia wants to be a developed country. So we have to produce quality education."

(Group 4, D)

The above reactions indicate that teachers have positive attitudes towards research, specifically of the significant contributions of research. Sadly, the majority of teachers failed to realise that they indeed ought to, systematically and consistently, indulge in action research to improve both their teaching and students' learning.

CULTIVATING RESEARCH

The teachers were also asked the following questions: why is it some teachers managed (or could not manage) to conduct research?

The following excerpts summarised the subgroups responses:

"They have been to the course ... and have to show that they have benefited the courses ... if not they had it."

(Group 1, F)

"It's the problem with the administrator ... they see only a few people can do work ... she encourage only the group ... others simply not good enough."

(Group 2, C)

"I've learnt action research in university ... but haven't though of using it in my practice."

(Group 2, B)

"Some teachers can do it ... they have few responsibilities ... I just direct them to do it when the district department proposed to our school ... I mean selected ... and the headmaster asked our group to do it ... no benefit, extra work."

(Group 2, E)

"No matter what happens ... these teachers are like that, they come up with a lot of reasons for not wanting to do it ... no money, no time, workload is too heavy ... and they will always ask what they would get ... a reward ... appreciation is not enough ..."

(Group 3, D)

"You must be motivated and know why you are doing ... I am sure most teachers would reflect and self evaluate their teaching ... give them some coaching and encourage them to read, ... many would do it systematically ... after everybody has to be accountable for what they do..."

(Group 4, B)

The above excerpts reinforce the points made earlier, that only teachers who were motivated and had positive attitudes to research would conduct research. The administrators and teachers as a group in general need to work collectively to make it the culture of the school - to share and distribute information on research, and solve classroom problems through action research. As one respondent summed up:

"Practice makes perfect ... we can read or attend courses ... but it is putting into practice ... we need to help each other ... time or workload should not be a factor ... we always can find some time ... the management can also make it happen ..."

(Group 4, A)

When the respondents were asked further on how to encourage (motivate) the school to conduct research, many opinions were forwarded. But generally most of them agreed, that they had to be trained and guided to conduct action research, as a team. The following excerpts mirror their views:

"There is so much talking about improving ones teaching through action research ... How to do it? ... we need courses and not just listen ... show how to do it ... then with the knowledge and the 'know-how' probably we can work together' And if we need extra help like funds, materials ... then the principal has to come in ... see in what way he or she can help ... not give orders only."

(Group 1, F)

There was enthusiasm among teachers to conduct research and there may have been some truth in the constraints and problems they face. Their grievances need to be addressed, and their efforts and contributions need to be appreciated and acknowledged. The teaching profession is not attractive and many complaints have been hurled at teachers, especially when things do not happen as well as expected of school-going children. Some of the complaints were not fair because teaching is very challenging, especially in this age of technology and children can always be drawn away from school. Teachers may need motivation and some form of reward to encourage them to conduct action research in school and classroom in a professional manner.

A probing question was asked: should teachers be rewarded for conducting classroom research? What kind of rewards would be suitable?

A number of views were offered, generally the answers suggest that teachers appreciate the significance of action research to improve their teaching and learning, and are internally motivated. They view it as an additional role to be played, and therefore, they have to be rewarded in return. The following excerpts give the opinions voiced out the respondents:

"Sure ... why not, and more burden ... as if we have not had enough ... No pay rise ... no extra work."

(Group 1, C)

"Maybe, some extra's ... not just appreciation ... or merit certification ... we have enough already ... why not consider it as criteria for promotion ... or extra pay rise."

(Group 2, B)

"Not necessary ... first you have to understand the purpose ... need to read and improve ourselves ... do not feel nice to teach the same way, year in year out ... boring to do so ... we have to improve as times goes on, to keep up with times ... up to date ... more satisfaction and can motivate ourselves to continuously learning ..."

(Group 4, A)

"How much you can pay and how many can be paid ... its' never complete ... our job ... if you feel like doing it ... do it ... don't be rigid ... like preparing for grand research ... you need to understand your students ... before giving any action or treatment ... to improve and find whether there is improvement ... then what is next ..."

(Group 4, C)

The interviews carried out in the present investigation have provided valuable insights and data on the effects of action research programmes in disseminating research culture in schools. The data indicate that an overemphasis on providing teachers with knowledge and skills on action research did not change teachers' behaviour to do action research. Secondly, the need for teachers to have the knowledge and skills in research is important, but more paramount is the need for teachers to apply this knowledge and skills to embark on action research to improve teaching and learning in the classroom. A change in the motivational behaviour of teachers is needed in order to encourage them to carry out action research in schools. As one teacher succinctly noted:

"To me, what is more important is, the teacher should be self-motivated ... have internal locus control. The teachers should feel action research is for self-improvement, so that the teaching becomes more effective for personal reasons ... not because somebody asked you to do ... or to seek reward ... the encouragement from the Principal is important for self-satisfaction. Financial support is not important, because action research do not require a lot of money. Most of the materials required are available in schools. Most teachers, who do not carry out action research, would provide various external reasons:

lack of financial support, no reward, no time and others. In fact they do not understand the significance of action research ... that would indirectly make them excellent teachers."

The cultivation of a research culture is best done in higher education institutions where such conditions exist and is practised extensively.

The implication of these findings is that in-service programmes on action research should emphasise on changing the teachers' attitudes toward conducting action research rather than to provide only research knowledge and skills. Therefore, pre-service teacher education curriculum in higher education should include elements of changing the would-be teacher attitudes towards action research and to provide courses on reflective and critical thinking. While teachers are encourage to attend courses on reflective and critical thinking, the drawbacks of teachers not motivated to do action research in schools, such as bureaucratic constraints and heavy workload, need to be addressed appropriately by the school's principal and the educational authorities.

CONCLUSION

Schwab (1973) argued that every education episode involves four common places of education: i) the learner, ii) the subject matter or knowledge, iii) the teacher, and iv) the social context (cited in Novak, 1998). Novak (1998) has proposed 'assessment' as the fifth element (Novak, Mintzes & Wandersee, 2000). The authors however, feel that there is a sixth element — action research. We would consider it among the most important determinants of high quality education. In Malaysia, the role of research in education is now clear and moving in the right direction. Malaysian educationists realise the need to carry out research activities as an effective tool to envisage quality in education, which will promote democratic concepts, life-long pursuits, excellence, zero defects and world class standards in any field. Educational research programmes are incorporating action research into their course as an ultimate agenda to inculcate the research culture among teachers. Despite the various efforts being made, the motivation for conducting research among teachers is low and not encouraging. One contributory factor is the failure of pre-service and in-service courses conducted by universities and teacher colleges to promote the importance of motivating teachers to conduct action research.

Teachers also need the support of school administrators to carry out their new tasks as researchers and contribute to educational change. The following recommendations are suggested to the administrators to create favourable conditions to maintain the role of teacher as action researchers:

i. School administrators should encourage teachers to carry out research work and furnish them with many recent literatures of research publications so as to give the insight of doing research themselves.

ii. School administrators should encourage teachers to try out and implement the latest findings of work in their classrooms.

iii. School administrators should ensure that the school library provides sufficient reference materials for teachers.

iv. School administrators and the District Education Department should organise free seminars and workshops for teachers.

v. Teachers should be given the time and space to reflect on their classroom teaching and share new information.

Finally, based on the above findings, the Ministry of Education can also assist in the inculcation of action research culture in schools by taking the following actions:

i. Collective sharing of research findings with other schools and districts.

ii. Collaborating with the school administrators to explore how action research can be used to change the school policy.

iii. Conducting in-house training in schools and neighbouring schools based on the findings of action research.

iv. Conducting a seminar/conference with parents and teachers based on action research findings.

v. Publish research findings or presentation of papers in conferences.

vi. The State and Local Education Department and Teacher Activity Centres should conduct research forums collectively so that research findings can be shared and disseminated for the benefit of all teachers.

Thus, the authors are certain that if the above recommendations are implemented, it will motivate teachers to embark on classroom action research in Malaysia.

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