MEASURING STEM ATTITUDE, KNOWLEDGE, AND APPLICATION (SAKA) OF PRIMARY SCHOOL SCIENCE TEACHERS OF BATANG PADANG DISTRICT

PRAMELA D/O RAMAKRISHNAN

SULTAN IDRIS EDUCATION UNIVERSITY

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ABSTRACT

This study is performed to measure STEM Attitude, Knowledge and Application (SAKA) of primary school science teachers of Batang Padang District. Specifically, the study examined the scores of teachers' STEM AKA by gender, major course, teaching years and education qualification. This study employs a quantitative approach, 144 teachers from Batang Padang district were selected as respondents through the Stratified sampling method. The questionnaire was adapted and modified from three different instrument, the questionnaire was reliable and valid. The results showed that primary science teachers have non-significant values of the application, knowledge, and attitude [t=0.809, t=0.086 and t=0.146] between male and female science teachers. Moreover, primary science teachers have non-significant values of the application, knowledge, and attitude [t=0.823, t= 0.737 and t=0.336] revealing no differences between science and non-science major primary science teacher's AKA. Furthermore, primary science teachers have non-significant values of the application, knowledge, and attitude [F=0.165, F= 0.074 and F=0.078] according to their teaching experiences years. Finally, primary science teachers have non-significant values of the application, knowledge, and attitude [F=0.081, F=0.142 and F=0.786] according to their education qualifications. In conclusion, the STEM implementation in a school can be done successfully because the teachers are ready. The study's results suggest that STEM AKA are fundamental domains for the proper implementation of STEM education in Malaysia.

MENGUKUR SIKAP STEM, PENGETAHUAN STEM DAN APLIKASI STEM(SAKA) GURU SAINS SEKOLAH RENDAH DARI BATANG PADANG, PERAK

ABSTRAK

Kajian ini bertujuan untuk mengukur Sikap, Pengetahuan dan Aplikasi (SAKA) STEM guru sains sekolah rendah Daerah Batang Padang. Secara khusus, kajian ini mengkaji tahap STEM AKA guru mengikut jantina, kursus utama, tahun mengajar dan kelayakan pendidikan. Kajian ini menggunakan pendekatan kuantitatif, seramai 144 orang guru dari daerah Batang Padang telah dipilih sebagai responden melalui kaedah persampelan Berstrata. Soal selidik telah diadaptasi dan diubah suai daripada tiga instrumen yang berbeza, soal selidik adalah boleh dipercayai dan sah. Hasil kajian menunjukkan guru sains rendah mempunyai nilai aplikasi, pengetahuan dan tingkah laku yang tidak signifikan [t=0.809 t=0.086 dan t=0.146] antara guru sains lelaki dan perempuan. Selain itu, guru sains rendah mempunyai nilai aplikasi, pengetahuan dan tingkah laku yang tidak signifikan [t=0.823, t= 0.737 dan t=0.336] tidak mendedahkan perbezaan antara AKA guru sains major sains dan bukan major sains. Tambahan pula, guru sains rendah mempunyai nilai aplikasi, pengetahuan dan tingkah laku yang tidak signifikan [F=0.165, F=0.074 dan F=0.078] mengikut tahun pengalaman mengajar mereka. Akhir sekali, guru sains rendah mempunyai nilai aplikasi, pengetahuan dan tingkah laku yang tidak signifikan [F=0.081, F=0.142 dan F=0.786] mengikut kelayakan pendidikan mereka. Kesimpulannya, pelaksanaan STEM di sesebuah sekolah dapat dilakukan dengan jayanya kerana guru telah bersedia. Keputusan kajian menunjukkan bahawa STEM AKA adalah domain asas untuk pelaksanaan pendidikan STEM yang betul di Malaysia.

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ANOVA	Analysis of Variance
KPM	Malaysian Ministry of Education
KSSR	Primary School Standard Curriculum
MOE	Ministry of Education
PISA	Programme for International Student Assesment
STEM	Science, Technology,Mathematics and Engineering
TIMSS	Trends in International Mathematics and Science Study

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CHAPTER 1

INTRODUCTION

1.1 Introduction

This chapter starts with the background of the study. Next, researcher had discussed on problem which leads the research to be carried out and the importance of primary science teachers' STEM Knowledge, Application and Attitude towards the development of STEM education was being illustrated. Research objectives were listed down followed with research questions. Conceptual framework, operational definition was included as the structure of this research.

1.2 Background of the Study

Reeve (2015) has characterized the four components of Science, Technology, Engineering, and Mathematics (STEM) in the schooling framework as follows: science is a review identified with nature, while innovation fills in as a significant instrument

to change the regular world to address the issues and needs of society. Designing uses the information on arithmetic and science to create innovation where Mathematics addresses the language of numbers, examples, and connections that identify with science, innovation, and designing in general. Despite the fact that there are different definitions used to make an interpretation of STEM into the schooling framework, the objective of the STEM instruction framework is to fabricate and build the limit of each understudy to address the issues of the STEM business and is a continuous cycle (Halim,2018).

The familiarity with meaning of science has been given the exact consideration, particularly in the Malaysian instruction framework to create more qualified work who are talented in STEM to help the nation's economy. This is basically the same of Malaysia's definitive point of vision 2025 is to acquire status as a completely evolved country in each angle: financially, strategically, socially, profoundly, mentally and socially (Suhid et al.,2010).

This work will achieve a positive effect on understudies' contribution because of early openness to the significance of logical information and its connection to STEM vocations, whenever diverted in a more straightforward and organized way. Because of the accentuation of STEM professions, the Ministry of Education (MOE) truly took up the ideas of the National Education Blueprint (PPPM) 2013-2025. The plan to change the current educational program to the Standard Secondary School Curriculum (SSSC) is by fortifying and presenting STEM in the training arrangement of Malaysia as one of the columns in the new educational plan.

As a proactive advance to put Malaysia comparable to other created nations, the plan on enabling STEM has been obviously expressed in Malaysian Education Blueprint 2013-2025. In any case, the issues identified with STEM schooling that is science educators' demeanour, information and application towards STEM instruction is a worry. Towards accomplishing this vision, the Malaysian government is focused on changing Malaysian instruction framework by outfitting educators with information, basic and inventive reasoning, authority abilities and capacity to speak with the remainder of the world. In this manner, the Ministry of Education center around instructing and learning quality, admittance to dependable and significant data, straightforward accountabilities and suitable learning climate and foundation (Rauf, 2012).

Teachers have a very important role and responsibility to succeed in achieving student achievement in STEM fields (Baumann, 2016). 21st century education requires teachers to constantly improve their skills in the face of an increasingly globalized era. To fullfill that responsibility, teachers need to be prepared and equipped with a variety of skills and competencies, such as improving classroom teaching methods, mastering educational technology, building a harmonious teaching and learning environment, and building teacher-student relationships (Rahayu, 2018). According to Bridgeland et al.,(2013), to be successful teachers must have self-confidence, as it can improve student success in the STEM classroom. This is what teachers are still experiencing today in the teaching and learning process in the classroom.

In addition to this, there are three areas identified to enhance student satisfaction in STEM learning which focuses mainly for teachers , namely (i) the teaching style, method, or teaching strategies provided by teachers in teaching and learning, (ii) teacher

knowledge and preparation delivering teaching materials in the classroom, and (iii) teacher attitude towards teaching, subjects, students (Sun, 2015). From these issues, schools need to encourage teachers to maximize their quality attitude wise, in order to create education success and inclusivity in order to achieve national goals.

Educators' STEM mentalities assume a significant part in instructors' use of STEM educating and their decision of showing practice (Wilkins and Ma, 2003). As per Pundak et al. (2007), each part of instructing is impacted by the intricate organization of educators' perspectives, including information securing and understanding, definition and choice of showing errands, translation obviously content, and assessment decisions. As of now, there is a lot of proof that educators' presentation in schools is impacted by their perspectives towards instructing and learning (Pajares, 1992; Richardson, 1996); Wilkins (2004).) Teachers with a negative demeanor towards STEM will more often than not try not to show STEM (Appleton, 2003). Uplifting outlooks of STEM instructors will impact homeroom showing systems and assist with framing positive student perspectives (Kerr, 2013).

In this way, educators need to have an uplifting perspective towards STEM encouraging techniques to make progress in homeroom practice. They additionally need to have an assortment of encounters to change their present perspective on educating, accordingly forestalling the improvement of new instructing techniques. Hence, it very well may be reasoned that the disposition towards STEM educating is a critical part of establishing a great learning climate for students. For this situation, it is fundamental for the instructing of STEM training.

Furthermore towards STEM instructor mentality, research has shown that educators' STEM content information, experience, and social setting are identified with rehearses that help educators and understudies succeed (Nordin et al., 2013), and can supplant a more extensive scope of educator information issues and activities. Be ready to show STEM content (Lannin et al., 2013). STEM information assumes a significant part in STEM educating. All together for STEM instruction to be fruitful in schools, instructors will require another interdisciplinary substance information base (M. Stohlmann et al., 2012). In the event that STEM instructors can comprehend their themes inside and out and clarify ideas and techniques according to different viewpoints, they will be viable in the study hall (Rotermund et al., 2017). Instructors' comprehension of the subject and their degree of information are identified with their capacity to viably show content (Lannin et al., 2013).

To guarantee the accomplishment of instructors, get backing to foster their substance information to have the option to viably show STEM (M. S. Stohlmann et al., 2013). Albeit proficient information identified with STEM content information is vital for showing coordinated STEM, STEM content information alone isn't sufficient. Educators additionally need to comprehend and become specialists in training methodologies to help understudies in an incorporated STEM insight. Training in this climate additionally requires helping capacities to guarantee that students effectively take an interest in study hall exercises (Harrell, 2014). To improve the capacity of STEM instructors to adequately deal with the study hall, they should dominate the educating strategy.

1.3 Problem Statement

Malaysia Education Blueprint 2013-2025 planned to sustain the focal difference in facilitated STEM guidance to extend the understudies' enrolment in STEM field. Facilitated STEM guidance is a to some degree groundbreaking thought in Malaysia and moreover one of the new sections embedded in the Secondary School Standard Curriculum which is as of late dispatched in 2017. How far the made composed instructive program thought can be totally passed on and executed is at this point a request. At this moment in Malaysian fundamental and assistant schools' review lobbies, STEM disciplines are at this point instructed autonomously. Science and math are taught as two restricted subjects as focus and compulsory subjects while development and planning disciplines are told as elective subjects. Other than most educators have gotten planning in only one discipline, and most schools classes really have separate workplaces and class periods for the STEM disciplines

As uncovered from past research, teacher is one of critical component and the essential expert in choosing quality similarly as accomplishment of consolidated STEM preparing as communicated by A. Z. Khairani, (2017). Thusly, it is a need to investigate teachers' STEM attitudes, data and application towards tutoring to ensure the public level educational change can achieve its objectives.

Content of information in the subjects among instructors is a significant issue that has been concentrated widely in investigates. Solid substance of information has been reliably recognized as a vital component for instructors to do a powerful showing STEM (Alabdulkareem Abdullah Saleh, 2016). Yet, a review led with respect to the instructing of STEM found that numerous educators who show each of the four

subjects, are less proficient in their field. This causes instructors who are less intrigued by STEM training complete educating and discovering that make understudies not or less comprehend the STEM subjects.

Studies show that most instructors don't have the right stuff expected to give a viable STEM training when they start their showing calling (Balikesir, 2014). Instructors ought to look into new information. Nonetheless, educator must give replies to every one of the understudies questions; Rather, the reason for the instructor is to empower understudies to direct autonomous examination and structure their own perspective and assessment (Wong, 2008). Understudies who are in the 21st century should be continue all alone without depending totally to the educators. Profoundly effective science instructors utilize their expert information to connect with their understudies in learning science (Avraamidou, 2015). These instructors additionally use understudy commitment to create learning (Spratt and Florian, 2015). Abilities, for example, these are less applied by fledgling instructors. This would consequently prompt inferior quality of educators and less appealing STEM instructing and learning process.

Numerous rustic schools deal with the issue of absence of educators. Because of the lack of instructors, educators who represent considerable authority in different regions are at times needed to show STEM subjects. Instructors who are not in this choice are normally not ready and are not happy with the educating of these subjects (Friedrichsen et al., 2007). This outcomes in serious drop in understudy accomplishment for STEM subjects. The Non discretionary educators can not run the STEM instructing and learning process successfully. This thusly can prompt the drop of the STEM subjects.

The experience of an educator when the person in question was an understudy and how STEM subjects are likewise applied to them is vital variable as well. It is broadly acknowledged by science educators, instructing overall that they are affected by the manner in which they learn science. They keep up with their study hall practice same like how their educator showed them many years prior. In any case, it is obvious from the perceptions of their study hall that they show appropriately like the manner in which they were instructed (Dolphin and Tillotson, 2015). However, it isn't really the right instructional method to show STEM for the 21st century. Exploration by Volkinsteine et al. (2014) concerning the abilities to arrange understudy's logical examinations shows that educators are neglect to comprehend that the examination cycle requires dynamic cooperation by understudies in STEM instructing and learning process. The changing job of the educator from the supplier of data to the expert is as yet not acknowledged by most instructors. Accordingly the instructor actually apply moderate manner by which they concentrated on STEM subjects previously.

The nature of a decent instructor somewhat relies upon the inspiration and the assets gave to the educator. The educators in country and far off regions don't have sufficient assets to deal with this STEM instructing and learning process. Aside from that they likewise absence of direction from experienced STEM educators. This is perceived by Kasey (2014) in which the absence of direction given to the new provincial STEM educators and restricted freedoms to work together with other STEM instructors in country schools. This thus will influence the nature of STEM instructors in provincial regions. Educators who don't get adequate assets and inspiration can not effectively lead STEM instructing and learning process.

STEM educating requires quite a while. This is on the grounds that the understudies need to take part effectively in the STEM instructing and learning process. In spite of the fact that educators have an obligation to perceive that an assortment of showing science technique or action can animate the insight in them, they additionally gripe that it tends to be tedious (Kasey, 2014) Apart from the schedule that should be instructed is extremely long. In a roundabout way Malaysia practice test arranged educating. So many of the educators instructing and learning cycle of STEM center around the test. The educators have a ton of prospectus to cover and prepare the understudies to respond to the test questions. The educators track down instructing and learning cycle of STEM as a weight and an exercise in futility.

In the beyond couple of many years, the quantity of understudies joined up with STEM courses has been declining, which shows that the proportion of science classes to craftsmanship classes is one to five. This proportion shows that Malaysia needs to find steady ways to build the quantity of understudies taking STEM subjects. As featured in the Malaysia Education Blueprint 2013-2025, the public authority anticipates a science/innovation: workmanship proportion of 60:40. Nonetheless, the objective was not accomplished. In 2014, just 45% of understudies picked science, innovation and professional courses. Most understudies decide not to concentrate on science in secondary school, and the extent has expanded to 15%. This demonstrates that, as expressed in the MEB 2013-2025 (Fluctuation 1) report, the quantity of understudies took on STEM subjects is declining.

Start STEM schooling at the early period of adolescence in light of the fact that the youngsters can construct their advantage towards science, innovation, designing, and arithmetic at this age. At the point when the youngsters enter grade school, they

can keep acquiring the information through examination and investigation exercises. Once in the lower optional level, the kids can begin to examine the issues that occur in their everyday existence just as tackling them. Since the younger age school are where children get their fundamental legitimate preparing in the space of STEM, the teachers in the fundamental ought to be prepared not only to educate anyway to move their understudies. Grade school STEM direction developments in importance since it is inside these beginning phases that liberal receptiveness to mathematical and intelligent thoughts and cycles is accepted to be essential to later achievement there.

There is solid confirmations that numerous essential instructors don't feel STEM educational program is a high need since STEM training is being underscored in optional school just in Malaysian schooling (DeJarnette, 2012). Furthermore, when it is tended to in the study hall, it is regularly not instructed such that improves and energizes understudy accomplishment (Enochs and Riggs, 2002). As per research by Bell (2016), not exactly 33% of essential educators feel don't care for STEM since they are not capable to show STEM, particularly when requested to utilize the as of now favored request approach. Maybe this is on the grounds that most, yet not all, essential instructors in the study hall today were not shown utilizing an involved technique while understudies in elementary school (Seals and Smith, 2013), and are consequently not however alright with it as they seem to be with the substance based projects that they are more acquainted with from their own learning encounters. to acquire incredible STEM data in addressing strategies that lead children to the suitable reactions they are searching for without just "offering the reactions".

1.4 Research Objectives

The general objectives of this research are to investigate the STEM Knowledge, Application and Attitude of primary school science teachers in Batang Padang District, Perak. The specific objectives of this research are:

1. To measure the STEM Knowledge, Application and Attitude (SAKA) of primary science teachers in Batang Padang district towards STEM education .
2. To investigate the differences of primary science teacher's STEM attitude, knowledge and application (SAKA) by gender ,
3. To investigate the differences of primary science teacher's STEMKnowledge, Application and Attitude (SAKA) by major course ,
4. To investigate the differences of primary science teacher's STEM Knowledge, Application and Attitude (SAKA) by years of teaching, and
5. To investigate the differences of primary science teacher's STEM Knowledge, Application and Attitude (SAKA) by education qualifications.

1.5 Research Questions

The purpose of this study is to measure STEM Knowledge, Application and Attitude of primary science teachers related to their gender, major course, years of teaching experience and qualification levels. Five research questions stated below defined the present study:

1. What is the current level of STEM Knowledge, Application and Attitude (SAKA) of primary science teachers in Batang Padang district .

2. Are there any significant differences in the level of primary science teacher's STEM Knowledge, Application and Attitude (SAKA) by gender ?

3. Are there any significantdifferences in the level of primary science teacher's STEM Knowledge, Application and Attitude (SAKA) by major course ?

4. Are there any significantdifferences in the level of primary science teacher's STEM Knowledge, Application and Attitude (SAKA) by years of teaching ?

5. Are there any significantdifferences in the level of primary science teacher's STEM Knowledge, Application and Attitude (SAKA) by education qualifications ?

1.6 Hypothesis

Based on the research objectives, Hypotheses of the research are as below:

Research question 2: Are there any significant differences in primary science teacher's STEM Knowledge, Application and Attitude (SAKA) by gender?

H_0 : There is no statistically significant difference between the primary science teachers STEM Knowledge, Application and Attitude (SAKA) of male and female science teachers.

Research question 3: Are there any significant differences in primary science teacher's STEM Knowledge, Application and Attitude (SAKA) by major course?

$H_{0:}$ There is no statistically significant difference between the primary science teachers STEM Knowledge, Application and Attitude (SAKA) of teachers who are science major and non science major.

Research question 4: Are there any significant differences in primary science teacher's STEM Knowledge, Application and Attitude (SAKA) by years of teaching?

$H_{0:}$ There is no statistically significant difference between the primary science Teachers' Knowledge, Application and Attitude (SAKA) of teachers with different years of teaching experiences.

Research question 5: Are there any significant differences in primary science teacher's STEM Knowledge, Application and Attitude (SAKA) by education qualifications?

$H_{0:}$ There is no statistically significant difference between the primary science teachers STEM Knowledge, Application and Attitude (SAKA) of teachers with different education qualifications.

1.7 Conceptual Framework

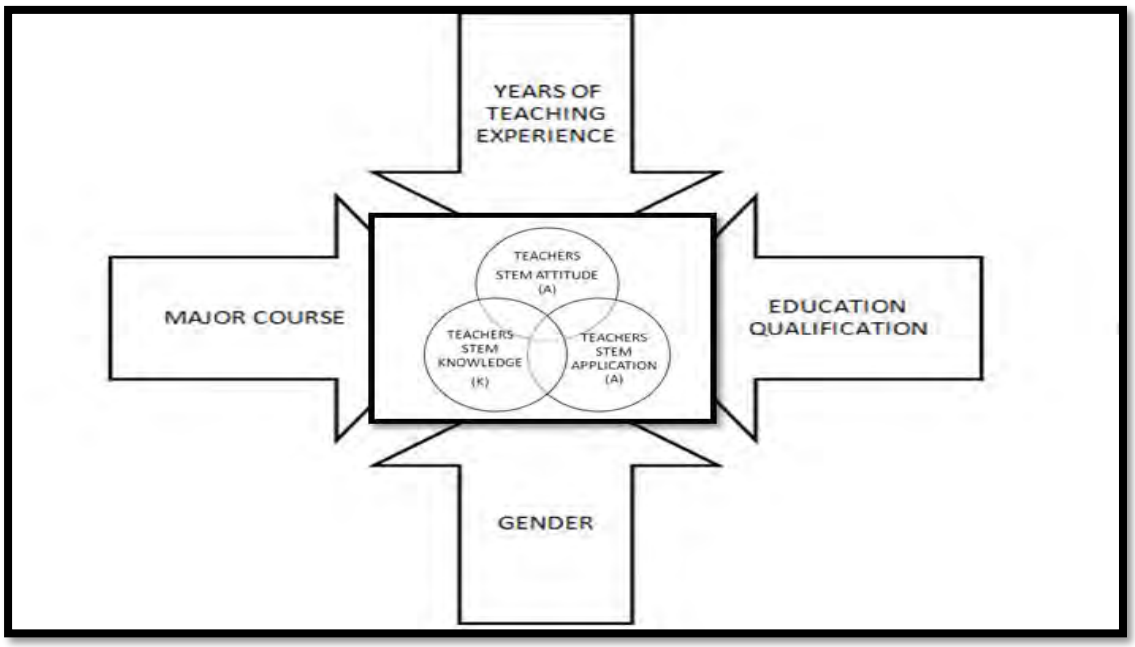

Figure 1.1. Conceptual Framework of the Research

The above hypothetical structure dependent on the Bandura's self-viability hypothesis, the Social-Cultural hypothesis and the Cognitive consistency approach helped with building up a theoretical system of this investigation in surveying the STEM attitude, knowledge and application of teachers towards STEM instruction. Thus, the teachers attitude ,knowledge and application could influence their exhibitions in instructing STEM to their respective students .In this research, the impacts of teachers attitude level, knowledge level and application level of STEM classroom was estimated. In doing this, the applied system introduced was created. It shows the connection between STEM attitude , knowledge and application based on gender , major course, education qualification and years of teaching experience.

As indicated by Bandura hypothesis (1977), that "Seeing individuals like oneself prevail by supported exertion raises eyewitnesses' convictions that they also

have the capacities to dominate practically identical exercises to succeed." Vicarious encounters affect noticing others effectively doing a job. The second speculation which is Socio social theory is an emerging theory in mind research that looks at the critical responsibilities that society makes to individual new development. This speculation centers around the participation between making people and the lifestyle wherein they live. The third speculation I focused in on was Cognitive consistency theory can be described as the possibility that individuals have a tendency for their thoughts, feelings, data, opinions, attitudes, and assumptions to be viable, or, all in all that they don't conflict with each other. This speculation well clarifies the significance of instructors demeanour, information and utilization of studies towards other human which in this settings is the understudies.

Since the term STEM attitude has been characterized from multiple points of view, in this investigation, analysts referred to different sources to explain the significance of these words to situate this flow research. Disposition can change in strength and course, from very ideal for amazingly negative, remembering any point for between. The term disposition is characterized as the general assessment of an article on a few measurements (great/terrible, lovely/horrendous). In this research context , "STEM Attitude " demonstrates whether the science educator can or can't help contradicting the execution of STEM in school , the teachers feeling of interest towards STEM, and the teachers' reasoning and sentiments about STEM(van Aalderen-Smeets et al., 2012)..

The following angle presented is STEM Knowledge . The meaning of knowledge has a wide importance. As anyone might expect, the definition makes it hard to test this part of encouraging work on utilizing a quantitative review. For this

investigation, instructor's STEM knowledge is separated into three structures: propositional knowledge, case knowledge, and vital knowledge. In the first place, propositional knowledge is characterized as a proclamation with right or wrong . When getting some information about the insight of training, the amassed legend of showing experience, individuals will in general discover such information put away as suggestions (Akkerman et al., 2007).

Analyzing the exploration on educating and learning, just as investigating the ramifications for training, is ordinarily looking at the suggestion information. Case knowledge is a particular information which is very much recorded and lavishly portrays occasions. Finally, fundamental data turns into a vital variable as the teacher faces explicit conditions or issues, whether or not speculative, practical, or moral, where guidelines sway and no direct game plan is possible. Data can be gained through experience, but this isn't the singular way one can get data. Data can moreover be refined through sensible idea (Tuma, J. M., and Pratt, J. M. (2012).

The terms STEM application shows the importance of acknowledgment or execution of an action towards STEM instruction. An application implies the utilization of general standards to specific cases or the activity of applying something to a surface. In the interim, practice is the real application or utilization of a thought, conviction, or strategy, instead of hypotheses identifying with the training. Execution is the way toward placing a choice or plan into impact or execution.. The term application is all the more suitably applied to depict the educator's STEM execution in the classroom(Rosicka, 2016). As it shows the significance of evaluating STEM, particularly for something new, for example, the emersion of STEM instruction in Batang Padang area.

1.8 Significance of the Study

This research is different from other research because itmeant to survey the advancement of the most recent improvements of STEM training through the three spaces as a feature of the work of keeping up with the development of STEM instruction to be specific the STEM perspectives, information, and applications (SAKA) by science instructors. The focal point of this ebb and flow research was to get a handle on data about the (SAKA) space, contrasts in regards to sexual orientation, long periods of instructing, significant course and showing capability information which contribute towards STEM schooling.

This research is very important ,right off the bat, the utilization of STEM in science classes will be better if the instructor has sufficient information and is fortified by a decent disposition towards STEM. Frail information and an awful demeanor implied that the STEM application in the study hall worked harshly. Regardless of this, the application doesn't occur any longer. Those discoveries of demeanor and information show that these two spaces are basic to the appropriate execution, just as maintainability, of STEM instruction.

Besides, the example that can be taken is that an evaluation will give knowledge and data to all gatherings, particularly policymakers in the field of schooling. The outcome will be a sort of logical data. The logical data will be a solid establishment in strategy making, basically to help modern change 4.0, in the term the field of schooling. One of the focal points of schooling, in the modern time 4.0, is on dominating and disguising innovation and designing for understudies who are reasonable in STEM training. Supportable and organized evaluation is something outright in the field of

instruction since shortcomings and qualities will be unmistakably seen. Hence, the appraisal of STEM training is a beginning stage in fortifying instructive maintainability. In accordance with this, Agenda 21 expresses that schooling is a fundamental instrument for accomplishing manageable turn of events.

Thirdly, the outcomes showed the low degree of information and utilization of most science instructors. The present circumstance is motivation to build the sum and nature of expert turn of events, particularly in the field of STEM instruction. Besides, the inspirational perspective shown by the educators makes a decent beginning stage for quality expert turn of events. The uplifting outlooks by educators are utilized to help instructive developments that are in accordance with the advancement of the time and innovation. In this manner, consolation of advancement in showing rehearses is valuable for development in close to home and profession fields for individuals from school networks.

At long last, this exploration will be a reason for doing additionally investigate in the field of STEM instruction and more extensive general schooling. In the STEM field, ideally, other exploration will arise that can fortify the STEM application, foster educational programs identified with STEM, and evaluate more STEM learning. Those in the field of exploration play a part in cultivating the practical improvement of STEM schooling for what's to come. In the field of instruction by and large, this examination gives data about the turn of events and heading of future schooling research for the 21st century.

1.9 Scope and Limitations of the Study

This investigation of current Knowledge, Application and Attitude of grade teachers in Batang Padang District on the coordination of STEM schooling is directed using a review. Because of the intentional idea of the overview instrument, the return rate is less unsurprising. Additionally, with looking over just Batang Padang locale elementary teachers, the example size is somewhat confined and may not be summed up to different populaces. Besides, overall vibes inside the center gathering meetings could curb sharing of perspectives . Because of the predetermined gathering of educators and managers finishing the review, a delimitation of this limited gathering was distinguished.

Using the descriptive research design is beneficial in comparing the relationships between independent variable and dependent variables, it does have some limitations (Salkin, 2010). In this research, when the independent variables like male and female are being compared, other variables but gender could possibly be compared to the dependent variable too. For example, when the researcher finds male having higher level of Knowledge, Application and Attitude towards STEM education , it might not because of the gender differences, but maybe the male participants simply having higher education qualifications or years of teaching experience.

1.10 Operational Definition

The following terms are included in this research .

Attitude : In this research, " STEM attitude" indicates whether the science teacher agrees or disagrees with the implementation of STEM (in students' classroom learning).

Knowledge : In this research , researcher focus the STEM learning, their knowledge of the way to apply STEM in the classroom, and the students are able to relate STEM in their daily activities (Altun & Akyıldız, 2017).

Application : In this research , researcher focuses the teacher's STEM performance in the classroom and to measure the number of students can develop STEM projects themselves in their daily life . (Chien & Lajium, 2016).

1.11 Summary

As a conclusion, this chapter briefly discuss about the importance of carrying out research on primary school teachers STEM Knowledge, Application and Attitude in their classroom .This chapter has also overviewed the problem faced by the teachers during current education system. Teacher is an important factor in determining quality as well as success of STEM implementation in schools. As STEM education has been implemented in developed countries like United States, United Kingdom and Korea .However as a developing country Malaysia is required to implement STEM beginning

from primary school in order to build STEM attitude and STEM knowledge at a basic level itself.