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RESEARCH ARTICLE

INTEGRATION OF ART ELEMENTS IN STEM FOR TEACHING AND LEARNING ISLAMIC EDUCATION TO DISABLED STUDENTS IN MALAYSIA

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Abstract

This study discusses about teaching and learning method of STEAM (Science, Technology, Engineering, Art and Mathematic) in the Islamic education of disabled students in Malaysia, specifically those with vision, hearing, and cerebral palsy problems. The stress on using STEAM method as teaching and learning Islamic education has become important to transform knowledge of the 21st century and should be acquired and practiced by students at all levels including disabled students. The objective of this study is to examine the teaching and learning methods of STEAM in the elements of Islamic education on disabled students specifically those disabled in vision and hearing, and cerebral palsy. This study will also analyze the challenges of applying teaching and learning STEAM, and its mechanisms and application on disabled students. The study is a case-study qualitative research. The data collection methods include library study on the primary and secondary sources of data on disabled students in elements of Islamic education. This study employed semi-structure interviews in which the interviewees are teachers teaching Islamic education to students having cerebral palsy. While the data analysis will apply methods of inductive and deductive document analysis. Based on the research findings, a special STEAM curriculum will be developed to assist understanding of applying teaching and learning methods of STEAM on Islamic education for disabled students; to ensure the effectiveness of assessment mechanism to these disabled students. The elements of Islamic education will be selectively focused as to the challenges faced by disabled students at this COVID-19 endemic time. Thus it is significant to develop the STEAM curriculum in teaching and learning method which will produce more effective human capital and mechanism of assessment.

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Introduction:-

Innovation development in teaching and learning of Science, Technology, Engineering, Mathematic (STEM) is necessary in developing students' critical thinking skills. Exploring the elements of STEM is explained in the Quran as principles of basic knowledge which show the evidences of Allah's greatness. The disabled students

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should therefore, be exposed to the teaching and learning of STEM, with a special emphasis on artistic elements known as STEAM (Science, Technology, Art, Engineering, Mathematic) (Lu, 2022). Inclusive Education Programme has been guided by the Guidelines for Inclusive Education Programs for Students with Special Needs (Trial Edition) which consists of students' criteria, students' placement, teacher, teaching and learning and assessment. The same assessment and evaluation will be given to the students with special needs and normal students and as a consequence, it contributes to poor examination results among students with special needs (Othman, 2020). Majority of the special education teachers are in the category of the average level of knowledge on learning disabilities (Nasharuddin, 2019).

This study focuses the teaching and learning methods of STEAM on students who are disabled in vision, hearing and cerebral palsy. There are several attractive activities applied in the teaching and learning methods of STEAM which activate the cognitive level and build the creativity of the disabled students. This includes the skill of using psychomotor and solving problem. The use of Problem Based Learning (PBL) in teaching, which applies the elements of cooperation, team building, logical acceptance, problem analysis, and decision making, helps improve the students' understanding. The concept of STEAM which integrates with the artistic elements enable to upgrade the disabled students potential, ability to understand knowledge, learning skills, and experience effectively and positively. The application of STEAM teaching and learning is necessary to develop students' critical thinking skills that have been emphasized in education fields of the 21st century (Lu, 2022).

Literature Review:-

The article by Jiwon Hwang in Journal of Science Education, introduced Science, Technology, Engineering, Art, Mathematic (STEAM), a method specially developed for disabled students to study STEM which pointed out that the installation of art elements in the presentation of teaching and learning (Hwang, 2016). A research report by Shih Yun Lu indicates that study findings based on STEAM assessment method which applied the curriculum of Problem Based Learning (PBL), Design Based Learning (DBL) and 6E Learning to disabled students in the United States. This achievement is required to achieve Sustainable Development Goals (SDG) 4 by the year 2030 which can be an example to Malaysia in instillation of the Islamic education elements related to STEM (Lu, 2022).

The article by Zetty Nurzuliana Rasyed stresses that the challenges faced by the visually challenged students are using suitable teaching and learning methods, and using and preparing safe equipment conducive in class environment in achieving the learning objectives (Rasyed, 2018). The article by Nik Hassan Seman, on the other hand, discusses the symptoms faced by the audibly challenged students in teaching and learning in class, such as difficulty in understanding abstract matters (Seman, 2016). Meanwhile study by Aidah Alias published by Penerbit Universiti Kebangsaan Malaysia (UKM Press) examines the effective practices of teaching and learning for disabled students in Malaysia such as the visual and acting movement with explanation aid through non-verbal language (Alias, 2016). Article by Safani Bari shown that adolescents with disabilities especially hearing impaired student and their family face many challenges especially at critical transition periods in their lives. So that, implementation of career preparation practices in transition programs in hearing impaired education curriculum of students of vocational programs in secondary school (Bari, 2013).

Research Methodology:-

The study applied qualitative conceptual framework of case study analysis. It focused on subjective data and interpretation of data in a particular phenomenon. The population of this study focused on disabled students in primary school using purposive sampling specifically those with disabilities in vision, hearing, and cerebral palsy in Malaysia. The data collection was carried out through the library research method using primary and secondary resources, consisting of books, reports, and academic journal articles related to the topic of study which focused on application of STEAM method of teaching and learning by disabled students of vision, hearing, and cerebral palsy. Semi-structured interviews will be conducted with a teacher teaching Islamic education to disabled cerebral palsy students at Sekolah Kebangsaan Seremban 2A. Interviews with consultant members such as the founder of Apadilangit group, who are active in implementing the program of introduction to astronomy aim to strengthen the faith to Allah among disabled students. Data analysis will be carried out by using document analysis, inductive and deductive methods (Talib, 2018).

Research Findings And Discussion:-

The Challenges of Teaching and Learning of STEAM to Disabled Students

Teaching to and learning of STEAM among visually, audibly and cerebral palsy disabled students have many challenges and difficulties. This is because as compared to the normal students. The teaching and learning methods for the subject Islamic education particularly learning al-Quran requires a specific technique of teaching to develop the skills of reading and understanding the meaning of the Quranic verses (Rahman, 2021).

Among the challenges faced by the visually disabled students are having vision ability at different level in terms of distance and vision medium. Thus, the application of activities and learning materials should be different from one student to another taking into consideration the paper size and thickness of words written and shown by the teacher to make sure the words can be seen clearly. Blindness reading below 3/60 for the eyesight is better even though vision aids are used or having vision medium which is below than 10 degree from fixation. However visually disabled students totally depend on their teacher's assistance to understand a learning topic delivered by the teacher. Their only main strength is to listen and touch which is different from students with limited vision such as poor eyesight which can be improved with the use of vision aids like lenses and spectacles (Rasyed, 2017).

The following are problems often occurred by hearing disabled students during the proses of teaching and learning that is the difficulty to explain something unseen or abstract due to the student's communication disability symptoms. Students with verbal communication problems can face difficulty in saying what they want to deliver through speaking and difficulty in understanding what others are speaking (Seman, 2016).



Diagram 1:- The Siafu PC consists of braille alphabets and the use of lenses for vision disabled students.

The Method of Teaching and Learning STEAM in Islamic Education Elements for Vision Disabled Students

In the process of understanding a learning topic, the use of teaching and learning STEAM method for visually impaired students should be assisted by touching, and listening to sound equipment and the teacher should also explain clearly and comprehensively (Ediyanto, 2019). For example, in learning science, which requires each student to hold a model of 3D replicate such as a globe with atmospheric surface, the use of braille Quran through touching with fingers while listening to the teacher reciting the Quran or recorded audio. The teachers have the function of monitoring incompetency level and characteristics of the visual impairment of the students so that they can assist them in mastering the al-Quran more effectively. For example, a student has limited eyesight vision on one side or both eyes can use vision aids such as spectacles and eye lenses. The use of lenses can assist students to see surface images like book, paper, whiteboard of various sizes according to their convenient and are able to carry out learning activities inside or outside the classroom. However, the students who are totally blind will fully depending on touching and hearing to understand a learning topic (Rashed, 2017).

As a matter of fact, the classroom for visually disabled students cannot have abrupt changes. They are very sensitive to the learning method and the curriculum used, arrangement of the class and requires time to adapt themselves with certain changes. Thus, the teachers should have the skills of giving accurate instructions and brief explanations to the students. The teachers' sitting position should be static so that students can listen to their instructions clearly. The sitting position changes can be distractions to the students in the process of teaching and learning. The class physical preparation is one of the important factors. It should allow enough light with sufficient and suitable brightness for the disabled students with limited eyesight. Too much brightness of the light can lead to the inability to see what is written or shown to them by the teacher. Security factor should also be focussed during the process of teaching and

learning such as arrangement of furniture, learning materials, class wall space, and ventilation of the classroom (Rashed, 2017).



Diagram 2:- The use of hearing aids and visual technique which is explained by the non-verbal language for the hearing disabled students.

The Method of Teaching and Learning STEAM in the Elements of Islamic Education for Hearing Disabled Students

In the process of understanding the learning topic, the method of teaching and learning STEAM for students with hearing impairment, the visual medium aids, such as flash cards, alphabets, picture books, word puzzle board, and flat opaque picture an image photography which is pasted and attached to a mounting board are required to assist teaching. However, the teacher also initiates various alternatives such as showing video and colourful picture through digital slides, PowerPoint, and animation and then explaining the whole situation of the learning topic with non-verbal language and dramatic movements to improve the students' understanding. The exposure will give positive impact in the learning activity to improve understanding of the real situation. In fact, it also improves the student's competency and stimulates to understand the learning topic particularly the elements of Islamic education (Alias, 2016). In learning the al-Quran recitation during the lesson of Islamic education, the students can use the method lipreading that is by looking at the teacher's mouth movement with the use of hearing aids (Hashim, 2017).

The Method of Teaching and Learning STEAM in the Elements of Islamic Education to Cerebral Palsy Students

A teacher teaching disabled students, Alauddin Yahaya at Sekolah Kebangsaan Seremban 2A applies practical training and singing when teaching Islamic education to primary four and five students. He is teaching students categorised as slower learners and those with nerve problem that cause some bending of their body parts like hands and legs. These students wear special shoes but still perform well in the class learning activity. The students learn through playing game activities including singing at the same time watching the cartoon animation to make the learning more lively. This approach makes it easier for the students to remember what their teacher teaches them. For example, remembering the 10 angels, the 25 prophets, the five pillars of Islam, and the five principles of Islam is made easier this way. Another example is dzikir which is a form of repeated recitation that creates the calmness of the learning situation (Yahaya, 2022).



Diagram 3:- The activities of cerebral palsy students in teaching the subject of Islamic education at SekolahKebangsaan Seremban 2A in 2022.

In fact, Alauddin Yahaya implements training activities such as training them to take ablution and tayamum using clean earth powder. Repetitive actions aim to have more effective learning. Interesting activities related to paper work can polish the thinking and psychomotor skills such as supporting them to be involved in activities of scratching, colouring, pasting words, cutting papers, learning by body movements, and using thing like ball, applauding, shouting to attract the students' attention and improve their confidence. The function of the teacher should always be to motivate students by pleasing and praising them with kind words so that they achieve good and emotional stability to be more studious with their actions following instructions. The teacher who attended to the students will make them feel comfortable with their teaching and learning activities inside and outside the class. Generally, cerebral palsy students are shy and face problems as slow learners who require special and individual teacher's supervision. In fact, leadership training should be given to the students such as encouraging them to give salam, recite the shahadah, and read the doa (Yahaya, 2022).



Diagram4:- The activities of cerebral palsy students in learning the subject of Islamic education at SekolahKebangsaan Seremban 2A in 2022.

A group known as Apadilangit (what is in the sky) by Universe Awareness Malaysia was created since 2016 and is still active. It consists of alot of programmes based on the concept of sharing the miracles of the universe with the disabled students. Muhammad Hafez, the founder of the group had the inspiration from Japan which creatively deliver the scientific elements to disabled students. Besides, he shared his interest with astronomy

science students aims to know Allah, The Creator. He took training at the International Training Centre of Astronomy organised by UNESCO. The use of 3D model teaching material and the illustration appear on paper. At the beginning, the group carried out with children to create interest in the field. Then Muhammad Hafez had the idea to widen the program to the disabled students after attending a convention about introducing astronomy to the public in Japan in 2018. Teaching and learning in Japan employ attractive methods by maximizing its application to the disabled's senses of hearing, smell, and taste.

The group Apadilangit carried out programs at special education school at Jalan Batu, Kuala Lumpur. They met the teacher for disabled students at Seremban, Wan Suhaimi bin Mohd Zawil and implemented an advanced program at the school and other special education school at Jalan Peel in Cheras, Kuala Lumpur. One topic taught to disabled students is the eclipse phenomena which reflects the greatness of Allah. The approach used involve the using of handcodes with reference to the Malay Language dictionary and international research codes (Murtza, 2022).



Diagram 5:- Muhammad Hafez Murtza taught the eclipse phenomenon in Sekolah Pendidikan Khas Seremban.

Conclusion:-

The rationale of making the methods of teaching and learning STEAM more effective for visually, audibly, and cerebral palsy impaired students, is to integrate in the methods with the art elements, which aims to achieve more effective learning. The teachers have the function of monitoring the incompetency level and characteristics of the students through the Program Based Learning (PBL). Leadership training should be given to the students to build their self-confidence in performing the activities in class. Repetitive-action approach in teaching aims to achieve a more effective learning. Interesting activities related to the paper work activities can develop and polish the thinking and psychomotor skills such as to encourage them to be involved actively in their activities. The elements of Islamic education should also be a matter of concern as to increase comprehensive understanding of Islam and strengthen the faith (iman) in oneness of Allah through the methods of teaching and learning of STEAM.

Recommendations:-

The findings of the study to apply the art elements in STEAM can be introduced and adopted by the Malaysia Education Blueprint 2013-2025 for disabled students. The Malaysian Education Ministry should focus its concern on disabled students in their teaching and learning methods of STEAM as to achieve a better quality successful life, aligned with the achievement of SDG 4 goals and human capital development.

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