

**DISTRICT INSTITUTE OF EDUCATION AND TRAINING
THIRUMOORTHYNAGAR – 642 112**

ACTION RESEARCH

**ENHANCING THE 5TH STANDARD STUDENTS ACHIEVEMENT IN THE
CONCEPT ENERGY USING WORKSHEET METHOD AT THE GUDIMANGALAM
BLOCK PRIMARY SCHOOL.**

2023-24

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**SUBMITTED TO
STATE COUNCILOFEDUCATION RESEARCH AND
TRAINING,
CHENNAI-06**

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This is certify that the action research entitled “ **ENHANCING THE 5TH STANDARD STUDENTS ACHIEVEMENT IN THE CONCEPT ENERGY USING WORKSHEET METHOD AT THE GUDIMANGALAM BLOCK PRIMARY SCHOOL**” is a record of research work done by A.SUBRAMANI, SENIOR LECTURER , District Institute of Education And Training Thirumoorthy nagar ,Udumalpet Taluk, Tiruppur District, Tamilnadu. During the year 2022-23.

Principal

Place: Thirumoorthy nagar

Date:

DECLARATION

We hereby declare that this action research entitled “ **ENHANCING THE 5TH STANDARD STUDENTS ACHIEVEMENT IN THE CONCEPT ENERGY USING WORKSHEET METHOD AT THE GUDIMANGALAM BLOCK PRIMARY SCHOOL**”. is a record of research work done by us at the District Institute of Education And Training Thirumoorthy nagar ,Udumalpet Taluk, Tiruppur District, Tamilnadu. Further we also declare that this work has not been submitted either full or in part by any other researches.

Signature Investigator

Place: Thirumoorthy nagar

Date:

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INTRODUCTION:

In recent years, there has been a growing emphasis on science education in primary schools, with educators recognizing the importance of providing students with a strong foundation in scientific concepts. One area of particular importance is the study of energy and its various forms, as well as the principle of conservation of energy. This report aims to explore why it is essential for primary school students to study these concepts and how they contribute to the overall science education curriculum. At the heart of scientific inquiry lies the concept of energy. Energy is a fundamental property of the universe, and understanding its various forms and transformations is crucial for comprehending the natural world. By introducing primary school students to the concept of energy, educators lay the groundwork for a deeper understanding of the physical processes that govern our universe. From the movement of objects to the generation of heat and light, energy is omnipresent in our daily lives, making it a relevant and accessible topic for young learners.

Interdisciplinary Connections

Energy is a concept that transcends traditional disciplinary boundaries and is inherently interdisciplinary. Studying energy and its types allows students to make connections between different fields of science, including physics, chemistry, and biology. For example, students can explore the transfer of energy in biological systems, the chemical reactions that release or absorb energy, and the physical principles underlying energy conservation. By integrating energy concepts across various scientific disciplines, educators provide students with a holistic view of science and its interconnectedness. The study of energy promotes critical thinking and inquiry skills among primary school students. By exploring questions such as "What is energy?" and "How is energy transformed from one form to another?", students are encouraged to think analytically and logically about the world around them. Energy conservation principles, in particular, challenge students to consider the consequences of their actions and the importance of sustainable practices. Through hands-on experiments, observations, and discussions, students learn to ask questions, seek explanations, and make evidence-based conclusions—a crucial aspect of scientific literacy.

Environmental Awareness and Responsibility

Understanding energy and its conservation also fosters environmental awareness and a sense of responsibility among primary school students. As students learn about the finite nature of resources and the impact of human activities on the environment, they develop a greater

appreciation for the need to conserve energy and protect natural habitats. Concepts such as renewable energy sources, energy efficiency, and reducing carbon footprints become tangible and actionable for young learners, empowering them to become stewards of the environment.

Understanding the Basics: Energy is fundamental to everything around us. Teaching children about energy helps them understand the world better. It forms the basis for comprehending how things work, from powering appliances to feeling our bodies. Teaching about different types of energy introduces students to concepts like renewable and non-renewable resources. This early understanding fosters environmental consciousness, helping them appreciate the importance of sustainable energy sources for the future of our planet. Learning about energy can encourage critical thinking and problem-solving. Students can explore questions like how to generate electricity efficiently or how to reduce energy consumption in everyday life, fostering creativity and innovation. Introducing energy concepts at a young age lays the foundation for understanding fundamental scientific principles. It helps students grasp concepts such as potential energy, kinetic energy, and energy transformation, which are essential for further scientific exploration. Learning about different types of energy introduces students to concepts like renewable and non-renewable resources, as well as the environmental impact of energy production and consumption. This early awareness fosters a sense of environmental responsibility and encourages sustainable behaviors. Understanding energy is directly relevant to students' daily lives. It helps them comprehend how energy powers their homes, schools, and communities, as well as the technology they use. This connection to real-world applications makes learning about energy engaging and meaningful.

Diverse Career Opportunities: Energy is a vast field encompassing various sectors such as engineering, environmental science, renewable energy, policy-making, and more. Exploring different types of energy opens up a wide range of career opportunities for students to explore and pursue in the future. As the world faces challenges related to energy sustainability and environmental conservation, there is a growing demand for professionals who can innovate and develop solutions. Teaching students about energy types equips them with the knowledge and skills needed to address these future challenges through their careers. **Inspiring Passion and Purpose:** Learning about energy can ignite passion and purpose in students, driving them to pursue careers where they can make a positive impact on the world. Whether it's developing renewable energy technologies, advocating for sustainable practices, or tackling energy poverty, students can find meaningful careers that align with their interests and values. Energy education naturally integrates concepts from science, technology, engineering, and

mathematics (STEM). By exploring energy and its types, students develop critical thinking, problem-solving, and analytical skills that are valuable in STEM-related careers. Understanding energy and its types connects students to broader global goals such as achieving sustainable development and combating climate change. By pursuing careers in energy-related fields, students can contribute to these global efforts and make a positive difference on a larger scale.

By introducing primary school students to the importance of energy and its types, educators can inspire curiosity, exploration, and future career aspirations, ultimately shaping a new generation of professionals equipped to address the world's energy challenges. Understanding energy empowers students to make informed decisions about energy use. They can become advocates for energy conservation and sustainable practices in their communities and households. When teaching primary school students about energy, it's essential to use age-appropriate methods like hands-on activities, experiments, and engaging demonstrations. By making learning about energy fun and interactive, educators can lay a solid foundation for future study and environmental stewardship. In conclusion, the study of energy and its types, as well as the principle of conservation of energy, is essential for primary school students for several reasons. Not only does it provide a foundation for understanding the natural world and promote interdisciplinary connections, but it also fosters critical thinking, inquiry skills, environmental awareness, and responsibility. By incorporating energy concepts into the science curriculum, educators equip students with the knowledge and skills they need to navigate an increasingly complex world and contribute to a sustainable future.

However, primary school students may find the concepts of energy and its various forms challenging to grasp initially. These abstract ideas can be difficult to understand without tangible examples and hands-on experiences. When introduced to these concepts, students may feel overwhelmed or confused. They might struggle to connect the theoretical ideas to their everyday experiences. The principle of conservation of energy, which states that energy cannot be created or destroyed but only transformed from one form to another, can also be challenging for young learners. Understanding this principle requires a shift in perspective and a deeper understanding of how energy behaves in different situations. However, with the right teaching methods and resources, primary school students can gradually develop an understanding of energy and its forms. Teachers can use interactive demonstrations, experiments, and real-life examples to make the concepts more tangible and accessible. Providing opportunities for students to explore and manipulate different forms of energy can help them internalize these

abstract ideas more effectively. Using worksheets can be a helpful method for teaching primary school students about energy and its various forms, as well as the principle of conservation of energy. Here's how a teacher might approach using worksheets to address these concepts. Begin by introducing the concept of energy in a simple and engaging way. Use visuals, such as pictures or diagrams, to illustrate different forms of energy, such as light, heat, sound, and motion. Provide guided practice exercises on the worksheet that allow students to identify different forms of energy in everyday scenarios. For example, students could match pictures or descriptions of energy sources with their corresponding forms of energy. Incorporate hands-on activities within the worksheet, such as experiments or simulations, that demonstrate the conversion of energy from one form to another. For instance, students could draw or label diagrams showing how energy is transformed in a simple machine, like a pulley or a lever. Include problem-solving questions on the worksheet that require students to apply the principle of conservation of energy. For example, students could calculate the total amount of energy before and after a collision between two objects, demonstrating that the total energy remains constant despite the transfer between kinetic and potential energy. Include reflection questions on the worksheet that prompt students to think critically about the concept of energy and its relevance to their daily lives. Encourage students to consider how they can conserve energy in their homes or communities. After completing the worksheet, provide feedback to students and facilitate a class discussion to address any misconceptions and deepen their understanding of the concepts covered. Moreover, breaking down complex concepts into smaller, more manageable parts and using age-appropriate language can also facilitate understanding. Encouraging students to ask questions, express their thoughts, and engage in hands-on activities can help alleviate feelings of difficulty and foster a sense of curiosity and excitement about learning energy concepts.

EFFECTIVE TEACHING:

The research model based on the four emergent themes which Bustos-Orosa (2008) developed in her research on teachers' conceptions of good teaching with focus on teaching from elementary to college. These are:

- (1) personality-based dispositions,
- (2) teaching competency traits,
- (3) content mastery and expertise, and

(4) pedagogical knowledge and

(5) extension of the self

Using the outcomes of the research, this investigator attempted to expand Bustos-Orosa's (2008) model, thereby enabling the construction of a more comprehensive framework that is nonetheless geared towards addressing the demands and fully applying the unique characteristics of effective teaching at the basic education level. Thus, the initial framework on which the study was based is shown in Figure



PERSONALITY-BASED DISPOSITION:

On the personality related dispositions as the major theme, there were three underlying themes generated:

- (1) Inherent personality characteristics,
- (2) Good interpersonal relations, and
- (3) Being inspirational.

Among the inherent personality characteristics that is closely related to effective teaching as viewed by close to half of the study respondents is the teacher's demonstration of 'patience'.

Emotional stability and steadfast adjustment to situations in the teaching-learning environment are two variant core ideas identified which focused on the affective state of the teachers. One respondent described a teacher who is emotionally stable as “calm even when stressed out”. A review by Harris and Rudledge (2007) cited that one of the personality traits that is positively correlated to teacher effectiveness is emotional maturity.

Moreover, according to those surveyed, effective teachers have good interpersonal relations with their students as well as their colleagues. In particular, survey responses indicate the typical core idea that effective teachers tend to have a good relationship with their students, which reinforces the notion that effective teachers generally exert their strong influence on students’ wellbeing by serving as their second parents. Other typical core ideas of good communication skills, approachability, rapport with students, and working well with others.

EXTENSION OF THE SELF :

The effective teachers’ characteristics conceptualized another major theme emerged as depicted. Extension of the self as a major theme in this study refers to the demonstration of a teacher of his/her voluntary service to students, co-workers, to the school and even to the community.

It was apparent that the teachers in schools have the capacity to “walk an extra mile” despite their heavy workload and large-sized classes. The first underlying theme identified under the major theme “extension of the self” is about the teacher’s generosity of his/her time, energy and knowledge.

TEACHING COMPETENCE :

Teaching competence encompasses a range of skills, knowledge, and attributes that enable educators to effectively facilitate learning and support the development of their students. Here are some key components of teaching competence:

Subject Matter Expertise: Competent teachers have a deep understanding of the content they are teaching. This includes not only knowledge of facts and concepts but also an understanding of the underlying principles and connections within the subject area. Students are encouraged to delve deeply into the underlying concepts of a subject matter rather than merely memorizing facts or procedures. This involves exploring the why and how behind the information they're learning.

Pedagogical Knowledge: Effective teachers are familiar with various teaching methods, strategies, and instructional techniques that cater to diverse learning styles and needs. They know how to design lessons, deliver content, and assess student progress in ways that promote meaningful learning. This component involves helping students develop awareness and control over their own learning processes. They learn to monitor their understanding, identify areas of confusion, and employ strategies to overcome challenges.

Classroom Management: Competent teachers create a positive and supportive learning environment where students feel safe, respected, and engaged. They establish clear expectations, routines, and boundaries to manage classroom behavior effectively.

Communication Skills: Teachers must be able to communicate clearly and effectively with their students, colleagues, parents, and other stakeholders. This includes both verbal and nonverbal communication skills, as well as active listening skills to understand and respond to student needs. Generative teaching aims to facilitate the transfer of knowledge and skills to new contexts. Students are encouraged to apply what they've learned in one situation to solve problems or understand concepts in different contexts.

Adaptability and Flexibility: Competent teachers are able to adapt their teaching approaches and instructional strategies based on the needs and abilities of their students. They are flexible in responding to unexpected challenges or changes in the learning environment. Collaboration fosters social interaction and collective problem-solving skills. Students work together in groups, sharing ideas, discussing concepts, and supporting each other's learning.

Assessments: Effective teachers use a variety of assessment methods to monitor student progress, identify areas of strength and weakness, and provide timely and constructive feedback to support student learning and growth.

Practice: Competent teachers engage in ongoing reflection and self-assessment to continuously improve their teaching practice. They seek out opportunities for professional development and collaboration with colleagues to enhance their skills and knowledge.

Overall, teaching competence involves a combination of expertise, interpersonal skills, and a commitment to lifelong learning and improvement, all aimed at fostering student success and well-being. Conceptual Understanding:

TEACHER ATTITUDES TOWARDS SCIENCE AND TECHNOLOGY:

Schools play a major role in the development of students attitudes. According to social cognitive learning theories, children learn by observing standards and behaviours of their teachers. Students shape their attitudes towards a subject by listening to teachers' comments and by observing their teachers' enjoyment when teaching about a topic. Teachers thus may influence students' experiences via their abilities to (accidentally or intentionally) instil values and beliefs in their teaching and students may adopt these values and beliefs as their own attitudes. As a result, teachers' high task values may have positive effects on students' enjoyment of learning. On the other hand, teacher's negative associations, captured in their teaching, could also be observed by students. Therefore, it is suggested that teacher enjoyment in teaching is considered one of the most important characteristics of effective teaching. Students' enjoyment in learning about science and technology can very well be positively stimulated by teachers' enthusiasm about the subjects they teach.

Teacher attitudes, such as teacher enjoyment, might thus play an important role in student attitude development. Although there is relatively little known about the teacher's role in student attitude development, there is some empirical evidence confirming this relationship. For example, Frenzel et al. found that teacher enjoyment was positively related to student enjoyment. The more teachers enjoyed the teaching, the more enthusiastic they taught and the more students enjoyed the lesson. Similar effects of teachers' attitude towards their teaching subject were shown already in the 1960s by Mastin, who found that teacher attitudes towards a specific subject influenced student attitudes towards this subject. Moreover, teachers who lacked ability, confidence, and enthusiasm were more likely to have students with poor attitudes. A positive teacher attitude thus seems to be crucial in the development of positive student attitudes. As female teachers tend to have less positive attitudes towards science and technology than their male counterparts, teachers' gender might also play an important role in student attitude development.

LEARNING ATTITUDE:

Attitude refers to the evaluation of a specific target and behaviour of individual in the environment and is also an obtained inclination after learning and a consistent behaviour due to the incurring feel and opinion after the recognition and evaluation of events and objects. The

targets of attitude are multilateral including people, events, objects, groups, systems, and concepts on behalf of consolidate events and objects. Attitude usually consists of three aspects of recognition, emotion, and action which results in difference of attitude of individual due to the different strength and scope or the content of each aspect. Chang indicated that the meaning of attitude consisted of three aspects, namely, aspect of recognition, aspect of emotion, and aspect of action. The aspect of recognition was the psychological progress of understanding and recognition of people, events, and objects, which was created via conscious activities of individual. The aspect of emotion was the specific attitude of certain target of individual in all emotions and moods, especially when the evaluation of the specific attitude of the target was positive or negative. The aspect of action was the specific attitude of certain target of individual presented by the inclination of action. Lin and Chiu also indicated that individual evaluated differently in the three aspects of learning attitude, i.e., aspect of recognition, aspect of emotion, and behavioral aspects, on the curriculum of physical education implemented by the school, which was used to determine the response in listing the items of questionnaire for learning attitude of physical education. Chen and Yu investigated the learning attitude and satisfiability of physical education in high school and the results indicated the scores of learning attitude were the highest in the aspect of intentions and actions and the second of recognition and emotion. Also, the satisfiability of learning of physical education affected the learning attitude in forward direction. Huang also indicated that the difference between the three aspects of Weng et al. / Multimedia Learning on Learning Styles 4 / 9 recognition, emotion, and behaviors of learning attitude and the satisfiability, relation, and self-confidence, reached the significance level in different educational system. Learning technology is continuous adopting in every sectors. In education field, to encourage children to participate physical activity is essential for elementary education. The usage of technology would bring new environment to attract children to participate. Children live in urban or rural has different resources and it makes them different experience. The learning attitude of physical education was very important and it might directly or indirectly affect the intention of persistence in participating in the athletics. Therefore, cultivating correct learning attitude of physical education was unneglectable in fostering good habit of athletics. In summary, the learning attitude was a key factor which affected the learning outcomes. The teachers could then bring teaching into full play only if the teachers understood the learning attitude, compiled and designed the right teaching material and teaching mode and enabled the students to yield twice the result with half the effort in learning. As an educator, the teachers should pay attention to the difference of individual, grasp the learning style, and aim to promote good learning attitude. We then intended to understand

the learning style so as to various learning attitude of student through different teaching modes with different teaching approaches.

THE WORKSHEETS

A worksheet, in the word's original meaning, is a sheet of paper on which one performs work. They come in many forms, most commonly associated with children's school work assignments, tax forms, and accounting or other business environments. Software is increasingly taking over the paper-based worksheet. It can be a printed page that a child completes with a writing instrument. No other materials are needed. It is "a sheet of paper on which work schedules, working time, special instructions, etc. are recorded. A piece or scrap of paper on which problems, ideas, or the like, are set down in tentative form." In education, a worksheet may have questions for students and places to record answers. Worksheet refers to a teaching aid introduced into the teaching methods to stimulate the activity of the students and thereby increased their level of understanding. It is strategically prepared and designed for teaching remediation for low achievers in the subject. It is given after the regular classroom instruction to students who were not able to grasp the concepts of the subject matter.

It is also defined worksheet as meant to re-teach the concepts and skills (least mastered). It is a material given to students to help them master competency – based skills which they were not able to develop during a regular classroom teaching. It consists of both learning strategies (for students) and content enhancement (for teachers). It is a multifaceted approach to help students to become independent and successful learners. It does not involve pretest and post-test and includes fun activities. Worksheet increases and deepens students' skills in manipulation, knowledge or thinking, understanding and observing the microscopic into macroscopic representation of matter like atoms, molecules and ions which students believe as a discrete representation of the existing matter and other related components of science.

The study on worksheet as a tool to reduce least mastered skills in 5 STD Science, concluded that Teacher-crafted worksheet provides baseline information and should be implemented to avoid marginalization of pupils. The study also indicated that there is a significant reduction in the pupils' mean number of least mastered skills after Teacher-crafted worksheet implementation.

STATEMENT OF THE PROBLEM:

“ENHANCING THE 5TH STANDARD STUDENTS ACHIEVEMENT IN THE CONCEPT ENERGY USING WORKSHEET METHOD AT THE GUDIMANGALAM BLOCK PRIMARY SCHOOL”.

NEED AND SIGNIFICANCE OF THIS STUDY:

The principle of energy conservation plays an important role in physics instruction at all levels. The role of the concept of energy in uniting phenomena that are traditionally associated with the different subjects of physics, chemistry, geology, and biology makes it especially appealing as the basis for an interdisciplinary framework for science instruction. Moreover, the natural association of energy with both human processes and with environmental issues makes it appealing as a context in which to engage pupils in seeing how science is connected to their everyday lives and to important current societal issues. However, there are several complications involved in class room teaching & learning of energy that have been arrised. From our perspective the major challenge lies in devising a treatment (using worksheet method of teaching) of energy that is by necessity largely qualitative for the youngest pupils, but that does not betray the essentially quantitative nature of the concept. Our response has been to undertake a long-term project aimed at the development of a vertically integrated curriculum in which ideas that are introduced in primary school are refined and extended in middle and high school and that incorporates, in a coherent way, the preparation of prospective primary school teachers.

Teachers wants to the worksheet to be a specific and directed learning activities guidance. The worksheet is part of the learning materials. Teachers should be to develop the worksheet and other learning resources corresponding to their requirements and situation. Therefore, science worksheet containing integrated activities in the students needs to be developed and tested scientifically to teachers.

The function of Worksheet is crucial in learning activities, but teachers' ability to develop worksheet is still low. They prefer to use worksheet offered by the teacher. Based on the above background and discussion, this action research focuses to resolve the above-mentioned complications involved in the class room teaching and learning on the concept energy in fifth standard at the Ggudimangalam block primary school.

OBJECTIVE OF THE STUDY:

To Study the effectiveness of the worksheet method in teaching science on teaching-learning at Primary school level.

To Study the difficulties of the worksheet method in teaching science on teaching-learning at Primary school level.

To create the interest among students and Teacher in learning Science at Primary school level.

HYPOTHESES:

The action hypothesis of the study is stated as follows. The worksheets-based teaching strategy developed by the investigators will be to improve the understanding level of concept energy among the fifth standard students.

METHODOLOGY:

Research method

The present study experimental method with single group design was adopted

SAMPLE:

All the 06 students who were studying fifth standard in Panchayat union primary school, Chickanuthu, Gudimangalam Block, Tiruppur District.

INTERVENTION:

The students Academic Achievement was measured by pre-test and post-test questionnaire. The Worksheet contains 20 items to measure the students' academic achievement. Each item had one correct answer and three 'distracters. The research instrument was a validation questionnaire from the two sciences teachers, one researcher and one expert and a student perception questionnaire.

TOOL:

A questionnaire consisting of open-ended questions developed by the researcher has been used as a data collection tool in the study. The questionnaire includes questions about the definition of energy concept, types, definition and examples of energy and the conservation of energy. It is aimed to investigate misconceptions and knowledge levels of the students with these questions.

MATERIALS AND METHOD:

The developmental research method of descriptive research design has been used to determine information about the energy concept of students at different levels. According to the General Guidelines for the Development of Teaching Materials, student work sheets are sheets containing tasks that must be done by students. Student worksheets are usually in the form of instructions or steps to complete a task which must be clear about the basic competencies to be achieved. Learning is more effective by adding student worksheets which contain challenging student projects.

PRINCIPLES OF WORKSHEET DESIGNING:

The steps involved in designing this worksheet are as follows:

a) Material analysis stage, Material analysis aims to identify, detail, and systematically arrange the relevant main parts that students will learn. The first step taken is to identify the core competencies, basic competencies, indicators and learning objectives and their changes based on the syllabus used at the school.

b) Format selection, the choice of format in the factors described in the learning objectives. The format chosen is to design the appearance, content, and selection of learning strategies.

c) The design phase of the Multiple Intelligences-based Science Worksheet, The material in this worksheet is prepared using language that is easily understood by students and includes pictures related to the material.

1. The teacher should require application of science knowledge. This knowledge includes not only fluency with accessing concepts and skills, but also problem-solving strategies and the ability to make reasonable estimations.

2. The teacher should encourage positive dispositions such as confidence, initiative, and a willingness to apply science knowledge flexibly and adaptively. Affective issues have long

been held to play a central role in science learning and teaching, and the importance of developing positive attitudes toward science is emphasized in national curriculum.

3. The teacher should involve using tools. These tools may be representational (symbol system, diagram, tables), physical (model, measuring instruments), and digital (computers, software, internet).

4. The teacher also should be embedded in a range of contexts. These contexts may be drawn from real life or curriculum areas other than science.

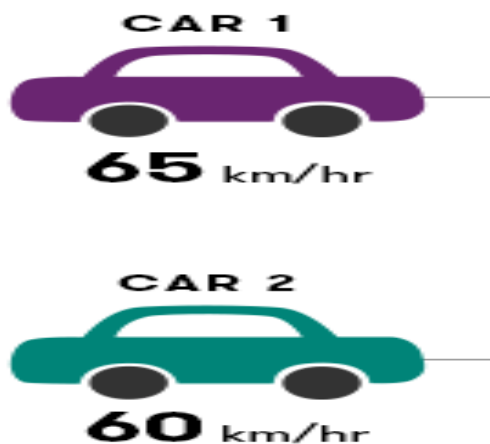
5. The teacher should develop a critical orientation (reflective thinking) in students since people not only know and use methods, they also use and evaluate.

6. The teacher also needs to adopt investigative pedagogies which are defined as "contextualized".

THE WORKSHEET FOR STUDENTS CONSISTS OF FIVE PARTS:

- (1) basic competencies that should be achieved through the worksheet learning process,
- (2) what students will learn,
- (3) instruction how to use the student worksheet,
- (4) the science tasks to allow students understanding of the given science activities, and
- (5) summary activity.

Worksheet for the concept Energy in vth std level



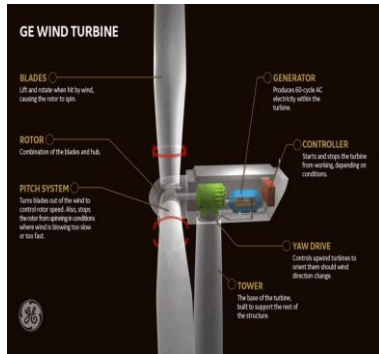
1). Car 1 and Car 2 have the same mass. Which of the following statements is true?

A) Car 1 has the most kinetic energy because it is moving at a faster rate of speed.

- B) Car 2 has the least amount of kinetic energy because it is actually smaller than car one.
- C) Car 2 has the most kinetic energy because it is moving at a slower rate of speed.
- D) Car 1 has the least amount of kinetic energy because it is moving at a faster rate of speed.

2). What changes wind energy into electricity?

- A) Windmill
- B) Windsock
- C) Wind Turbine



3). The diagram above shows a wind turbine. Which section of the wind turbine converts wind energy to electrical energy?

- A) blades
- B) generator
- C) rotor
- D) pitch system



4). Plants need what to do photosynthesis just like solar panels?

- A) Food absorbed from ground
- B) Sun's energy
- C) Food broken down
- D) Minerals from the soil



5). What kind of energy is represented in the picture?

- A) Thermal
- B) Chemical
- C) Sound
- D) Kinetic



6). What energy transformation occurs as howler monkeys loudly call to each other in the forest?

- A) Chemical --> Mechanical --> Sound
- B) Chemical --> Sound --> Thermal
- C) Sound --> Chemical --> Radiant
- D) Mechanical --> Chemical --> Sound



7). What energy do you produce riding your bicycle? _____

- A. Sound Energy
- B. Mechanical Energy
- C. Light Energy
- D. Electrical Energy



8). The football player uses the body to play the sport. Which type of energy does a carpenter use with her body to get the job done?

- A. Mechanical
- B. Electrical
- C. Light
- D. Solar



9). A windmill is a renewable energy source

- A. True
- B. False

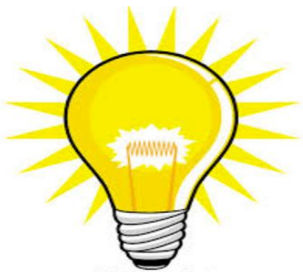


10). Wind, water, geothermal solar and biomass are what types of energy sources?

- A. Renewable
- B. Nonrenewable



11). What type of energy is in this picture?
A.Kinetic B.Potential C.Electromagnetic D.Heat



12). What is the input energy and the output energy of a light bulb?
A.input: nuclear energy output: light energy
B.input: sound energy output: light energy
C.input: electrical energy output: light energy
D.input: chemical energy output: light energy



13). What type of energy is this:
A.elastic B.electrical C.chemical D.Light



14). What type of energy is this:
A.stored chemical B.electrical C.thermal D.light

Part 15). Transformation of Energy Directions: Use the following forms of energy to fill in the table below: mechanical, electrical, heat, radiant, chemical, nuclear, and sound. The first one has been done for you.

	ORIGINAL ENERGY FORM	FINAL ENERGY FORM
1. Electric motor electrical mechanical		
2. A battery that runs a moving toy		
3. A solar panel on the roof of a house		
4. A person lifting a chair		
5. A nuclear power plant		
6. A toaster		
7. A School bell		
8. Gasoline powering a car		
9. A light bulb		
10. Photosynthesis		

match the following



•

• sound energy



•

• mechanical energy



•

• heat energy



•

• electric energy



•

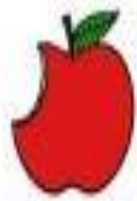
• chemical energy



•

• light energy

Energy Conversion



Chemical



Mechanical



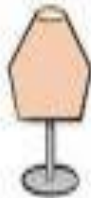
Chemical



Light



Electrical



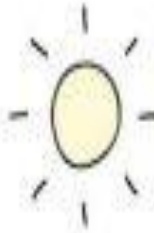
Light



Chemical



Mechanical



Light



Chemical



Electrical



Heat

Energy transformations



Changing forms of energy



An automobile engine changes chemical energy to mechanical and heat energy.



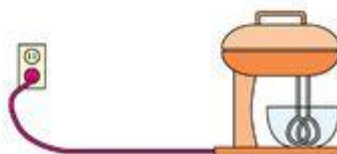
A tree changes radiant energy to chemical energy.



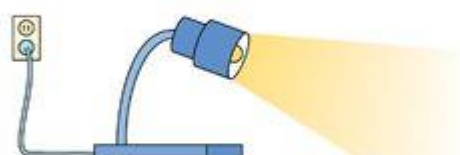
Hammering a nail changes mechanical energy to deformation and heat energy.



A thermonuclear reaction changes nuclear energy to radiant and heat energy.



An electric mixer changes electrical energy to mechanical and heat energy.

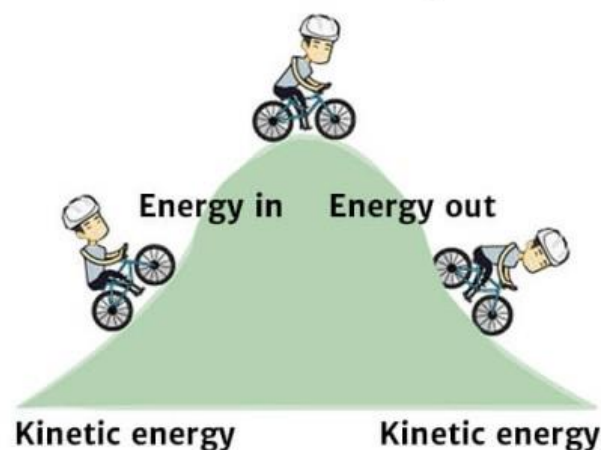


A lamp changes electrical energy to radiant and heat energy.

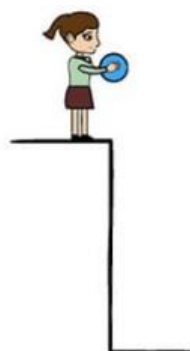
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Forms of Energy

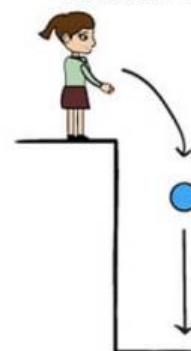
Potential energy



Potential energy



Potential energy transforming into kinetic energy



PRE TEST & POST TEST TABLE:

S.NO	NAME	GENDER	PRE TEST MARK	POST TEST MARK	DIFFERENCE PRE & POST TEST
1	TAMILARASU.V	M	50	92	42
2	DEEPIKA.M	F	48	93	45
3	DHARANLP	F	51	95	44
4	KIRUTHIKA.P	F	47	90	43
5	PAVITHRA.T	F	52	98	46
6	PRIYA.V	F	45	90	45

DATA ANALYSIS:

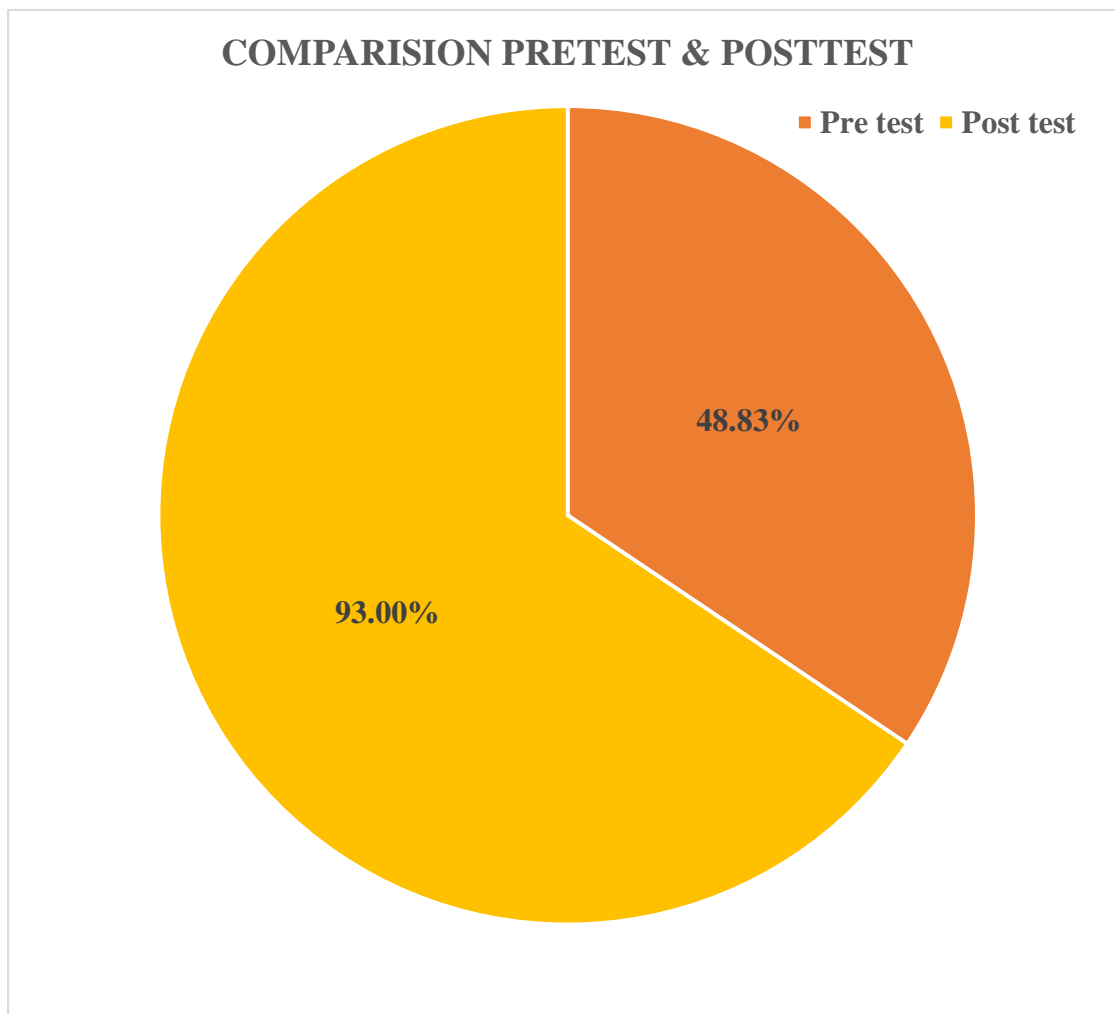
Calculations:

The level of pre and post test among V standard students

	%
Pre test	48.83%
Post test	93.00%

The above table shows that the post-test level of understanding the concept of Energy, at 93.00%, is higher than the pre-test level, which is 48.83%, among V standard students.

GRAPH



HYPOTHESES (NULL)TESTING

THERE IS NO SIGNIFICANT DIFFERENCE IF ANY BETWEEN PRE AND POST TEST SCORES OF UNDERSTANDING THE CONCEPT OF ENERGY AMONG V STANDARD STUDENTS

S.NO	NAME	T-VALUE
1	PRE TEST	3.73
2	POST TEST	

The calculated 't' value is which is greater than the table value at 0.01 level. Hence there is a significant difference between the pretest score and post test score, therefore this method is very useful for this sample of the students.

FINDINGS:

This study was carried out to determine effects of worksheets on students' achievement on factors affecting energy concept, energy types, classifying energy types and conservation of energy. As a consequence, it was found out that worksheets increase students' achievement regarding factors affecting energy concept, energy types, classifying energy types and conservation of energy. In this sense, worksheets can be developed at conceptual basis for other science topics that are difficult to understand. Besides, students stated that they enjoyed the activity and the application was funny. In this action research pre test and post test score on the basis of worksheets in energy concept, energy types, classifying energy types and conservation of energy can be used to find out their effectiveness in students' enhance the leaning". This demonstrates that the worksheets proved more effective than the traditional method in teaching the concepts related to energy. In traditional teaching process, teachers usually lecture and students are passive learners. On the other hand, in learning environments with worksheets, students actively participate in the teaching process.

All the students used worksheets as a supplements material. The average science achievement of students taught by teachers using worksheets as a basis is higher. The students easily learn basic competencies that should be achieved through the worksheet learning process, The goal is to make students learn more effectively. The worksheets he made succeeded in increasing students' achievement its noted in post test score. Therefore, researchers conducted research on the development of Multiple Intelligences-based Science Worksheets which can facilitate the various intelligences possessed by each student. In addition, this can also be used as independent teaching material so as to increase student achievement. The worksheets are also effective for students in classes lacking readiness to learn science.

SUGGESTIONS AND RECOMMENDATION:

This study was carried out to determine effects of worksheets on students' achievement on factors affecting energy concept, energy types, classifying energy types and conservation of energy. As a consequence, it was found out that worksheets increase students' achievement

regarding factors affecting energy concept, energy types, classifying energy types and conservation of energy. In this sense, worksheets can be developed at conceptual basis for other science topics that are difficult to understand. Besides, students stated that they enjoyed the activity and the application was funny. Long-term studies on the basis of worksheets in various subjects can be used to find out their effectiveness in students' "enhance the leaning".

Considering the conclusions extracted from the findings, the following recommendations are offered:

1. Performance of the students in the all examination will be improved, if the teacher properly use the worksheet in the class room teaching learning process.
2. The worksheet must be developed in all learning areas.
3. The worksheet must be given to the students with a low performance.
4. School administrators must encourage the teachers to develop the worksheet not only in science but in all subject areas.
5. The worksheet preparation must be a part of the teachers' training for its effectiveness in enhancing learners' performance.