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CHATGPT DEVELOPS PHYSICS EXPERIMENT WORKSHEETS FOR PRIMARY EDUCATION TEACHERS

Konstantinos T. Kotsis[i]
Department of Primary Education,
University of Ioannina,
Greece

Abstract:
This research examines how ChatGPT is a valuable tool for primary school teachers in creating essential worksheets for conducting physics experiments in the classroom. Teachers may use ChatGPT's features to develop stimulating and interactive exercises that improve students' comprehension of physics ideas. Studies on the efficacy of technology in education support this study. Studies have shown that hands-on experiments enhance students' comprehension and memory of scientific topics. Incorporating ChatGPT into designing worksheets for physics experiments has the potential to transform how teachers teach science in primary schools.

Keywords: ChatGPT, AI, worksheets, physics experiment, primary education

1. Introduction

1.1. Research Background and Problem Statement

ChatGPT is an AI language model that uses the GPT-4 architecture to produce human-like text answers in conversations (Abdullah *et al.*, 2022). ChatGPT, created by OpenAI, is trained on extensive text data to imitate natural language patterns and provide coherent answers to user inputs (Wu *et al.*, 2023). This technique has important implications for various applications, such as customer service chatbots, virtual assistants, and automated content generation. ChatGPT's capacity for engaging in substantial discussions and grasping context is beneficial for enhancing user interactions and delivering tailored experiences across different domains (Nazir & Wang, 2023). Moreover, the flexibility and capacity for growth of ChatGPT make it appropriate for use in many educational environments, where it may support educators in developing dynamic and captivating teaching resources (Baidoo-Anu & Ansah, 2023).

Worksheets are essential in physics experiments as they provide a systematic framework for students to document their data, observations, and analytical processes (Syamsidar *et al.*, 2021). The worksheets are created to lead students through the many

[i] Correspondence: email kkotsis@uoi.gr

stages of an experiment, including the methods to be followed and the measurements to be taken. Worksheets let students gather the data needed to analyse the physics concepts involved. Worksheets assist students in structuring their ideas and analyses, facilitating the derivation of conclusions from the experiment's findings (Toh *et al.*, 2012). Worksheets are helpful instruments for enhancing learning and comprehension in physics experiments (Amin *et al.*, 2019).

Primary school teachers have a vital impact on moulding the destiny of young students. These educators are the first contact for students entering the formal education system and are tasked with establishing a solid foundation in many areas, such as physics. Teachers may promote children's curiosity and critical thinking by creating and using hands-on physics experiment worksheets (Leas *et al.*, 2017). Moreover, these activities aid students in comprehending scientific ideas and principles, preparing them for success in higher-level science courses (Deksissa *et al.*, 2016). Primary school teachers have a crucial role in fostering the development of future scientists and analytical thinkers via their commitment and creative teaching approaches.

2. ChatGPT's Development of Physics Experiment Worksheets

Customising instructional materials for various grade levels is essential, mainly when designing worksheets for physics experiments (Gerard *et al.*, 2010). Primary school teachers need to customise their resources to match the requirements and skills of pupils in different grade levels (Stoffels, 2005). Youthful pupils may benefit from visual and hands-on exercises, but senior students may need detailed theoretical explanations and sophisticated problem-solving assignments. Using technologies such as ChatGPT to create tailored worksheets, teachers may guarantee that the material is suitable and exciting for students at various points in their academic progression. This high degree of personalisation results in a more efficient and significant learning experience for all students (Tetzlaff *et al.*, 2021).

Alternative ideas or misconceptions about physics concepts are crucial in physics education (Kotsis & Stylos, 2023; Vlachos *et al.*, 2024). Even though misconceptions are a valuable tool for science education (Kotsis, 2023), they are also obstacles in physics teaching (Kotsis, 2024; Tsoumanis *et al.*, 2024). Teachers can use ChatGPT to develop worksheets with the proper experiments to achieve conceptual change for specific misconceptions.

Adding interactive components to instructional materials has been shown to increase student involvement and encourage dynamic learning. Teachers may enhance the learning experience for students by including quizzes, simulations, and interactive diagrams in physics experiment worksheets, creating a more engaging and interactive environment (Bean & Melzer, 2021). The interactive components strengthen fundamental ideas and enable students to put their knowledge into practice, enhancing the meaningfulness and effectiveness of learning. Teachers can efficiently create and use interactive worksheets using platforms such as ChatGPT, enhancing the engagement and interactivity of physics teaching for students across all age groups (Xu & Patnao, 2023).

Adhering to the curricular requirements is essential when creating instructional resources for elementary schools (Mahoney *et al.*, 2021). Ensuring that the worksheets generated by ChatGPT align with the specified curricular requirements is crucial for teachers to properly convey the relevant knowledge to students during physics experiments (Drake *et al.*, 2004). Educators may ensure they address the curriculum's fundamental subjects and ideas by adhering to these requirements (Solomon, 2009). This alignment facilitates evaluating student progress and comprehension by targeting particular learning goals established by educational authorities via the design of the worksheets. Integrating ChatGPT-created worksheets with the curricular requirements improves the quality of physics instruction in elementary schools (Zhao *et al.*, 2023)

It is crucial to provide accessibility features for a variety of learners to establish an inclusive educational setting that promotes the success of all students (Thurber & Bandy, 2018). These features may include offering other educational resources, including audio versions or captioned films, to support students with visual or aural disabilities. Moreover, including customisable font sizes and colour contrast choices in digital materials might benefit students with learning difficulties or visual impairments (Farhan & Razmak, 2022). Diversifying assessment methods, such as vocal presentations or written tasks, may accommodate students with varying learning preferences. Educators may guarantee equitable academic opportunities for all pupils by using these accessibility elements.

3. Benefits of Using ChatGPT Worksheets for Teachers

Using ChatGPT to create worksheets for physics experiments in elementary school improves the efficiency and effectiveness of teachers by streamlining the process. AI-generated materials may be tailored to meet individual lesson plans and learning goals, minimising the need for manual worksheet development and modification (Mondal *et al.*, 2023). Teachers may use automation to free up time for other instructional responsibilities, including student engagement and evaluation, leading to enhanced education delivery. Implementing AI technologies such as ChatGPT in educational environments demonstrates the potential of advanced tools to enhance teaching methods and improve student learning results (Adiguzel *et al.*, 2023).

Increased student involvement in elementary school leads to active participation and successful learning during physics experiments (Wong & Liem, 2022). Using ChatGPT to create essential worksheets for these experiments, teachers may customise the material to match the student's interests and learning styles, enhancing their engagement and drive to learn. Furthermore, including interactive components like virtual simulations or hands-on exercises in the worksheets may improve student engagement by offering a more immersive learning experience. New technologies such as ChatGPT may improve student engagement and provide elementary school pupils with a more stimulating learning environment (Tharapos *et al.*, 2022).

Facilitating differentiated Instruction is crucial in elementary education to address the varied learning requirements of kids (Roberts & Inman, 2023). Teachers must adjust

their teaching methods, resources, and evaluations to cater to learning styles, capabilities, and preferences (Lindner & Schwab, 2020). Educators may provide personalised education tailored to each student's needs via tiered assignments, learning centres, and variable grouping. This method improves student involvement, drive, and scholastic success, creating a more comprehensive and efficient educational setting. Furthermore, differentiated teaching fosters a favourable classroom atmosphere that enhances students' sense of worth and assistance in their academic progression (Tomlinson & Imbeau, 2023).

Utilising data tracking and evaluation tools is essential for assessing the impact of educational interventions and monitoring student advancement (Van Geel *et al.*, 2016). Educators may use these technologies to gather and assess student data, pinpoint improvement areas, and adapt teaching methods appropriately. Using data monitoring and assessment systems, teachers may make informed choices based on data, tailor student learning experiences, and guarantee the achievement of educational goals. Moreover, these tools provide significant insights into patterns of student performance and assist teachers in evaluating the effectiveness of their instructional approaches on student results (Araka *et al.*, 2020). Data monitoring and assessment systems are crucial for enhancing teaching methods and fostering student achievement in the educational setting (Kumar *et al.*, 2023).

4. Integration of ChatGPT Worksheets into Lesson Plans

Integrating ChatGPT into the current curriculum offers a novel method to improve the instruction of physics experiments in elementary school. Teachers may easily customise AI-generated worksheets and lesson plans from ChatGPT to match their teaching methods and curricular goals (Hutson & Plate, 2023). This integration simplifies the preparation process for teachers and guarantees that students get customised and captivating learning experiences. ChatGPT's adaptable materials may be integrated flexibly to enhance the efficacy of the physics curriculum in elementary school, complementing conventional teaching techniques (Türker & Kahraman, 2024).

Collaborative possibilities for teachers may significantly improve the quality of education delivery and student results. Educators may enhance their teaching approaches and boost student engagement by collaborating with others to exchange resources, ideas, and best practices (Core *et al.*, 2021). Collaborative endeavours may result in the creation of novel teaching methods and the development of more efficient learning resources. Teachers may create physics experiment worksheets using collaborative platforms like ChatGPT to improve students' classroom experience and deepen their comprehension of intricate scientific ideas (Haleem *et al.*, 2022). Collaboration possibilities assist teachers and students via mutual learning by creating a more participatory and engaging learning atmosphere (Sin, 2022).

Adaptability in the educational environment has become more critical, mainly due to the shift to distant learning caused by the COVID-19 pandemic (Besser *et al.*, 2022). Teachers must adapt and transition smoothly between traditional classroom teaching and

online learning. This flexibility requires technical expertise and a profound awareness of how various learning modalities influence student involvement and understanding (Radó, 2020). Educators who can adeptly traverse these shifts are more capable of meeting their students' different requirements and ensuring learning objectives are reached regardless of the learning environment. Teachers may enhance the inclusivity and practicality of the learning experience for all students by improving their skills in adapting to various instructional methods (Juliani, 2021).

Professional development assistance is crucial for educators to improve their abilities and keep abreast of the most recent trends and approaches in teaching. Primary school teachers may enhance the creation of physics experiment worksheets using ChatGPT by gaining professional development assistance to improve the quality and engagement of their learning materials. Teachers may enhance their teaching methods and student results by providing seminars, training sessions, or online courses concentrating on curriculum design, assessment techniques, and technology incorporation. Continuous support may enable educators to adjust to students' changing needs and promote a culture of continual learning in the education community (Curry, 2019).

5. Improvement of Student Learning Outcomes

Hands-on learning is essential in education, particularly physics, to combine practical application with theoretical understanding (Holstermann *et al.*, 2010). ChatGPT, an advanced technological platform, has played a crucial role in creating worksheets that provide primary school teachers with the essential materials for conducting physics experiments. Engaging in hands-on activities improves students' comprehension of intricate scientific ideas and encourages interest and involvement in the classroom (Schwichow, 2016). Teachers may use these tools to create dynamic learning environments that accommodate various learning styles and abilities, enhancing academic achievements and student success (Pham & Tran, 2022).

Utilising theoretical notions while creating teaching materials, such as physics experiment worksheets, is essential for helping students understand intricate scientific principles efficiently (Etkina *et al.*, 2010). Teachers may enhance student engagement and foster a more profound comprehension of the material by using fundamental physics ideas like Newton's laws of motion and energy conservation principles to develop interactive exercises (Etkina & Van Heuvelen, 2007). ChatGPT's capacity to create customised worksheets that correspond with these theoretical principles demonstrates artificial intelligence's potential to improve elementary school instructional materials. Teachers can enhance students' learning experiences in physics by using AI-driven technology and educational theories to reinforce essential ideas interactively (El Kharki *et al.*, 2021).

Enhancing critical thinking and problem-solving abilities is crucial in education, particularly in physics (Sholihah & Lastariwati, 2020). Teachers may cultivate these talents in their pupils by engaging students in challenging activities and experiments that

test their comprehension and utilisation of scientific principles. Students are encouraged to think critically and find innovative solutions by doing hands-on experiments and assessing the outcomes. These exercises enhance students' comprehension of physics and aid in acquiring critical transferable skills for different academic and professional environments. Educators can significantly impact the teaching of physics and the development of students' critical thinking and problem-solving skills (Verawati & Sarjan, 2023).

The practicality and real-world significance of using ChatGPT to help primary school teachers create physics experiment worksheets are critical. Teachers may customise their lesson plans to match current industry trends and breakthroughs in physics by using AI technologies. This strategy guarantees that students acquire information and abilities directly relevant to the professional world, closing the gap between theoretical understanding and actual implementation. Using ChatGPT to create worksheets simplifies the process, enabling teachers to concentrate on delivering valuable and captivating educational experiences to their students. This educational technology integration demonstrates the significance of adjusting teaching approaches to align with the needs of a swiftly changing society.

6. Challenges and Limitations of Using ChatGPT Worksheets

The greatest obstacle to incorporating technology into elementary school is the insufficient training and support provided to teachers (Spiteri & Chang Rundgren, 2020). Some educators may lack sufficient training on properly using technology in their classrooms, which results in hesitancy or an unwillingness to integrate it into their teaching methods. Moreover, the rapid rate of technological advancement might challenge educators to stay abreast of the most current tools and platforms that could enhance their students' learning. Teachers may have difficulties effectively using technology to improve student learning experiences without continuous professional development and assistance (Winter *et al.*, 2021). This underscores the need to equip teachers with essential tools and training to address these challenges and use technology efficiently in the educational setting (Chan, 2023).

A key challenge in using ChatGPT to create physics experiment worksheets for primary school teachers is the possible absence of teacher training (Karaman & Goksu, 2024). ChatGPT may help create instructional resources, but teachers may lack the training to use them successfully in the classroom. Teachers may find it challenging to involve students and effectively communicate the topics taught without adequate training on incorporating these worksheets into their class plans (Lee & Zhai, 2024). Educators need training to use technologies such as ChatGPT properly to improve student learning experiences and achieve educational goals (Okulu & Muslu, 2024).

Customisation limits are crucial in developing educational materials, especially when designing worksheets for physics experiments in elementary school (Gerard *et al.*, 2010). Constraints may arise from several sources, including curricular rules, time restrictions, and resource availability. Teachers may encounter limitations in the degree

of customisation they apply because of the particular learning objectives that must be met within a specific timeframe. Resource restrictions might restrict teachers from customising worksheets to meet the specific requirements of particular students. It is essential to balance these limitations while aiming for the best customisation to guarantee that the instructional resources successfully enhance student learning and involvement (Fernandez *et al.*, 2024).

It is essential to cater to the specific requirements of each student for successful instruction, especially in elementary school environments (Parmigiani *et al.*, 2021). Every student has distinct learning styles, capabilities, and obstacles that must be considered to facilitate their academic development. Teachers may establish a more inclusive and responsive learning environment by acknowledging and catering to individual needs, ensuring that every student has the chance to excel. This method includes customised teaching, varied tasks, and specific actions to guarantee that every student gets the necessary assistance to achieve their maximum capabilities (Kasneci *et al.*, 2023). Establishing transparent communication lines with students and their families may provide vital information about their requirements and preferences, allowing teachers to adjust their methods appropriately (Killen & O'Toole, 2023).

7. Examples

The following are some examples of worksheets developed from ChatGPT for teaching physics concepts in primary school.

7.1 Worksheet Title: Exploring Temperature: A Hands-On Worksheet for Primary School

Introduction:

Temperature is a fascinating concept that affects many aspects of our daily lives. In this worksheet, we will explore temperature through fun and engaging experiments. Get ready to learn about hot and cold thermometers and how temperature changes affect different materials!

Experiment 1*: Hot or Cold? Aim: To understand the difference between hot and cold.*

Materials:

- *Two bowls of water,*
- *One bowl filled with hot water (but not boiling),*
- *One bowl filled with cold water (you can add ice cubes to make it colder),*
- *Thermometer.*

Procedure:

1) *Carefully place the thermometer in the hot water and record the temperature.*
2) *Repeat step 1 for the cold water and record the temperature.*
3) *Have the students touch the water in each bowl and describe how it feels (hot or cold).*
4) *Discuss the differences between the temperatures recorded and the sensations felt by touching the water.*

Questions:

1) *Which bowl of water had the higher temperature?*
2) *How did the water feel in each bowl? Why?*
3) *Can you imagine other examples of hot and cold things?*

Experiment 2: *Changing Temperature*

Aim:

To observe how temperature changes affect different materials.

Materials:

- *Ice cubes,*
- *A candle,*
- *A piece of chocolate,*
- *A piece of paper,*
- *A thermometer.*

Procedure:

1) *Place an ice cube on a plate and observe what happens as it melts.*
2) *Light a candle and hold it near the thermometer. Observe any temperature changes.*
3) *Hold a piece of chocolate in your hand and observe what happens to it.*
4) *Place a piece of paper near a heater or in direct sunlight and observe any changes.*

Questions:

1) *What happened to the ice cube as it melted? What does this tell us about temperature?*
2) *Did the temperature change when the candle was lit near the thermometer? Why or why not?*
3) *What happened to the chocolate when held in your hand? Why do you think this happened?*
4) *How did the piece of paper change when placed near a heat source? What does this tell us about temperature?*

7.2 Worksheet Title: Exploring Air Pressure - Worksheet

Objective: *To understand the concept of air pressure through hands-on experiments.*

Materials Needed:

- *Plastic bottle (empty),*
- *Balloon,*
- *Scissors,*
- *Straw,*
- *Modeling clay or playdough,*
- *Small piece of cardboard,*
- *Water,*
- *Small bowl,*
- *Marker.*

Experiment 1: *Balloon in a Bottle*

1) *Take the plastic bottle and balloon.*
2) *Inflate the balloon and then let the air out completely.*

3) *Stretch the balloon over the mouth of the bottle, ensuring it fits snugly.*
4) *Observe what happens to the balloon when you try to push it into the bottle.*
5) *Record your observations in the space provided below.*

Observations:

Experiment 2: *Straw Rocket*

1) *Cut the straw into two equal pieces.*
2) *Use the modelling clay or playdough to seal one end of each straw piece.*
3) *Place one straw piece onto the piece of cardboard and blow through the open end.*
4) *Observe the direction in which the straw moves.*
5) *Now, try blowing through the other end of the straw (the sealed end) and observe the direction in which it moves.*
6) *Record your observations in the space provided below.*

Observations:

Experiment 3: *Water in a Bowl*

1) *Fill the small bowl with water.*
2) *Place the cardboard piece flat on top of the bowl.*
3) *Turn the bowl upside down while holding the cardboard in place.*
4) *Observe what happens to the water.*
5) *Record your observations in the space provided below.*

Observations:

Discussion Questions:

1) *What did you observe in each experiment?*
2) *How do you think air pressure relates to each observation?*
3) *Can you explain why the balloon was challenging to push into the bottle in* ***Experiment 1?***
4) *Why do you think the straw moved in the direction it did in Experiment 2?*
5) *What do you think caused the water to stay inside the bowl in Experiment 3?*

Conclusion:

Air pressure is a force exerted by the air around us. These experiments showed how air pressure affects various objects and phenomena. By understanding air pressure, we can explain many everyday occurrences, such as why balloons inflate, how rockets work, and why water stays in a bowl even when it is upside down.

7.3 Worksheet Title: Exploring Thermal Balance

Objective: *To understand the concept of thermal balance through simple experiments.*

Materials Needed:

1) *Two identical containers (cups or jars),*
2) *Hot water,*
3) *Coldwater,*

4) *Thermometer,*
5) *Stopwatch or timer,*
6) *Pencil and paper for recording observations.*

Experiment 1: *Equalizing Temperatures*

1) *Fill one container with hot water and the other with cold water.*
2) *Measure and record the initial temperatures of both containers using a thermometer.*
3) *Predict which container's temperature will change more rapidly.*
4) *Start the timer and observe the temperature of both containers every minute for the next 10 minutes. Record your observations.*
5) *After 10 minutes, measure and record the final temperatures of both containers.*
6) *Compare your predictions with the actual results and discuss why the temperatures changed the way they did.*

Questions for Discussion:

1) *What happened to the hot and cold water temperatures over time?*
2) *Did the temperatures of both containers eventually become equal? Why or why not?*
3) *How does the concept of thermal balance relate to our daily lives?*
4) *Can you think of any examples where understanding thermal balance is essential?*

Experiment 2: Insulation and Heat Loss

1) *Fill one container with hot water and cover it with an insulating material such as a towel or cloth.*
2) *Fill another container with hot water and leave it uncovered.*
3) *Measure and record the initial temperatures of both containers.*
4) *Predict which container will retain its heat better.*
5) *Start the timer and observe the temperature of both containers every 5 minutes for the next 30 minutes. Record your observations.*
6) *After 30 minutes, measure and record the final temperatures of both containers.*
7) *Compare your predictions with the actual results and discuss the role of insulation in preventing heat loss.*

Questions for Discussion:

1) *What differences did you observe between the covered and uncovered containers?*
2) *How does insulation help in maintaining temperature?*
3) *Can you think of other materials that could be used for insulation?*
4) *Why is it important to minimise heat loss in homes and buildings?*

Conclusion*:*

Discuss the importance of understanding thermal balance in everyday life and how it affects various aspects of our surroundings, from weather patterns to energy conservation. Encourage students to think critically about applying this knowledge to make more informed decisions.

7.4 Worksheet Title: Exploring Buoyancy with Fun Experiments!

Objective:

- *To understand the concept of buoyancy.*
- *To explore how different liquids affect the buoyancy of objects.*
- *To learn through hands-on experiments.*

Materials Needed:

- *Various liquids (water, oil, vinegar, syrup, etc.),*
- *Different objects (plastic toys, coins, paper clips, etc.),*
- *Transparent containers (cups, bowls, jars, etc.),*
- *Markers,*
- *Paper towels,*
- *Measuring cups,*
- *Scale (optional),*
- *Safety goggles (optional).*

Experiment 1: *Buoyant or Not?*

1) *Fill three transparent containers with water, oil, and vinegar.*
2) *Predict whether different objects will float or sink in each liquid. Write down your predictions.*
3) *Carefully drop each object into the liquids and observe what happens. Record your observations.*
4) *Discuss your findings. Were your predictions correct? What factors determine whether an object will float or sink in a liquid?*

Experiment 2: *Floating and Sinking*

1) *Fill one container with water and another with syrup.*
2) *Choose two objects of similar size but different weights (e.g., a plastic toy and a metal spoon).*
3) *Predict which object will float and which will sink in each liquid. Write down your predictions.*
4) *Carefully place each object in the water and syrup. Observe and record what happens to each object.*
5) *Compare your predictions with the actual results. Were there any surprises? Why do you think the objects behaved differently in each liquid?*

Experiment 3: Buoyancy Challenge

1) *Fill a container with water and gather several small objects (coins, paper clips, buttons, etc.).*
2) *Predict which objects will float or sink in the water. Write down your predictions.*
3) *Drop each object into the water and observe what happens. Record your observations.*
4) *For objects that float, try adding more of them to see if they eventually sink. For objects that sink, try to make them float by changing their shape or size (e.g., folding a paper clip differently).*

5) *Discuss your findings. What did you learn about buoyancy from this experiment? Can you think of any real-life examples where buoyancy is essential?*

Conclusion:

Reflect on the experiments you conducted and what you learned about buoyancy. Discuss any questions or observations you still have about the topic. Remember, science is all about asking questions and exploring the world around us!

Extensions:

1) *Try experimenting with other liquids like saltwater or soda and see how they affect buoyancy.*
2) *Explore the concept of density and how it relates to buoyancy.*
3) *Design your buoyancy experiment and share it with your classmates.*

8. Future Implications and Innovations

One way to increase the usage of AI, such as ChatGPT, in educational settings is to extend its application to other STEM topics outside of physics. ChatGPT can provide customised worksheets, explanations, and examples for chemistry, biology, mathematics, and computer science. Educators may improve their efficiency in developing teaching materials for different topics by using a consistent model and training it with appropriate datasets. This extension aims to simplify lesson preparation and resource production, providing students with a more dynamic and exciting learning experience across different STEM disciplines.

Artificial intelligence in education has received much interest lately for its ability to improve learning outcomes and enable tailored training. ChatGPT has been created to help primary school instructors make worksheets for physics experiments, allowing pupils to participate in practical learning in a virtual environment. Educators may optimise administrative duties and customise instructional resources for each student using AI technology, leading to a more efficient and interactive learning environment. The advancement of AI in education offers limitless opportunities for innovation and enhancement of teaching methods.

Partnering with educational institutions is essential for developing and enhancing educational materials. Educational technology businesses like ChatGPT may learn about current teaching techniques and subject-specific material by collaborating with universities or research institutes. This collaborative approach enables the development of materials that adhere to educational standards and integrate the latest research and best practices in teaching. Collaborating with educational institutions allows firms to get input from instructors and students to ensure that the created products align with the end-user's requirements. By forming these relationships, firms may improve the quality and efficacy of their educational goods, eventually benefitting both learners and instructors (Rahman, 2022).

ChatGPT's advancement to aid primary education instructors in generating essential physics experiment worksheets has the potential to have a worldwide reach and

influence. ChatGPT can bridge the gap between professors and students globally by offering a platform that can tailor and create educational resources according to individual requirements. This technology can potentially improve the standard of physics teaching worldwide, particularly benefiting students in distant regions or schools with limited resources that lack access to conventional educational resources. Moreover, ChatGPT's capacity to adapt to many languages and educational frameworks may significantly enhance the quality of teaching. By partnering with educators and international groups, ChatGPT has the potential to transform the way physics ideas are taught and learnt globally.

9. Conclusion

ChatGPT played a significant part in building physics experiment worksheets, showcasing its capability to help primary school instructors develop impactful learning resources. ChatGPT's technology enables instructors to create worksheets that include students in practical experiments, enhancing their comprehension of scientific subjects. The worksheets are interactive and educational, intended to lead pupils through doing experiments and assessing outcomes. ChatGPT's input on these worksheets simplifies the teaching process and improves the learning experience for physics students.

Primary school instructors have a vital role in influencing the future via the education of young individuals. These instructors have several advantages in their work, such as employment stability and security. Due to the increasing need for skilled instructors, professionals in elementary education should anticipate consistent job prospects. Primary instructors often feel fulfilled and satisfied by positively influencing children's lives. This industry has many prospects for professional advancement and development, including further study and specialisation options. Primary school instructors have the luxury of nurturing a passion for learning in young children and seeing their academic and social development. Primary school teachers have the opportunity to have a lasting impact on their pupils' lives, extending beyond the classroom (Saragueta *et al.*, 2022).

An urgent call to action is required to guarantee the effective integration and acceptance of ChatGPT in creating essential worksheets for physics experiments in elementary school. Teachers need thorough training on appropriately using this tool in their teaching. School administrators and politicians should also endorse using this technology in classrooms to improve students' learning experience. Facilitating cooperation among teachers, technology developers, and educational stakeholders may provide an atmosphere favourable to effectively integrating and using novel technologies such as ChatGPT in primary education. It is crucial to acknowledge the transformative potential of AI in the education sector and to use its advantages to enhance the learning process proactively.

The future of educational technology has significant potential for revolutionising the learning process for students and teaching methods for educators. Educators may now use sophisticated technologies like ChatGPT to create exciting and interactive

learning experiences. These tools help instructors save time and provide tailored education to individual students. In the future, educators must embrace and adapt to new technology to effectively educate students for the requirements of the modern workforce. By strategically incorporating instructional technology into the classroom, we can guarantee that all children have the chance to excel and prosper in a world that is becoming more digital.

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Conflict of Interest Statement
The author declares no conflicts of interest.

About the Author
Konstantinos T. Kotsis, from 1981 to 2000, served as a Faculty Member specialising in solid-state physics and x-ray diffraction at the University of Ioannina's Physics Department. Since 2000, he has been a Faculty Member at the Department of Primary Education at the University of Ioannina, and in 2012, he was a Full Professor specialising in Physics Education. He has experience teaching in many University Departments, such as Physics, Chemistry, Computer Science, Biological Applications and Technology, and Primary Education at the University of Ioannina and Aristotle University of Thessaloniki, Greece. His team designed the new Greek curriculum for science teaching in primary education. His articles have been published in scientific International and Greek journals.

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