附件 2

國立臺北教育大學雙語教學研究中心
109 學年度國民小學素養導向
數學、自然科學雙語教學教案設計競賽

作品名稱：**Fun with Magnet**

報名組別：□師培生組■教師組

國立臺北教育大學全英語教學研究中心
109學年度國民小學素養導向數學、自然科學雙語教學教案設計

領域/科目 Subject	Science			設計者 Designer		
班級 Class profile	年級(year) 3	班級(class) 如無免填	人數 (number of students) 27	總節數 Time	4 節 (periods)	160 分鐘 (minutes)
單元名稱 Unit	Fun with Magnet					

設計依據

		數學或自然領域 (content)	英語文 (language)
學習重點 Learning focus	學習表現 Students' performance	ti-II-11 能在指導下觀察日常生活現象的規律性，並運用想像力與好奇心，了解及描述自然環境的現象。 tr-II-1 能知道觀察、記錄所得自然現象的的結果是有其原因的，並依據習得的知識，說明自己的想法。 po-II-2 能依據觀察、蒐集資料、閱讀、思考、討論等，提出問題。 pe-II-2 能正確安全操作適合學習階段的物品、器材儀器、科技設備及資源並能觀察和記錄。 pa-II-2 能從得到的資訊或數據，形成解釋、得到解答、解決問題。並能將自己的探究結果和他人的結果（例如 來自老師）相比較，檢查是否相近。 pc-II-2 能利用簡單形式的口語、文字或圖畫等，表達探究之過程、發現。 ai-II-2 透過探討自然與物質世界的規律性，感受發現的樂趣。 ai-II-3 透過動手實作，享受以成品來表現自己構想的樂趣。 an-II-3 發覺創造和想像是科學的重要元素。	5-II-2 在聽讀時，能辨識書本中相對應的書寫文字。 5-II-3 能以正確的發音及適切的速度朗讀簡易句型的句子。 5-II-4 能運用所學的字母拼讀規則讀出英文字詞。 6-II-1 能專注於教師的說明與演示。 6-II-2 積極參與各種課堂練習活動。 7-II-2 能妥善運用情境中的非語言訊息以幫助學習。 9-II-1 能夠將所學字詞做簡易歸類。

	學習內容 **Learning content**	Ina-II-3 物質各有其特性，並可以依其特性與用途進行分類。 INb-II-1 物質或物體各有不同的功能或用途。 INe-II-7 磁鐵具有兩極，同極相斥，異極相吸；磁鐵會吸引含鐵的物體。磁力強弱可由吸起含鐵物質數量多寡得知。	Ac-II-1 簡易的教室用語。 Ac-II-2 簡易的生活用語。 Ac-II-3 第二學習階段所學字詞。 B-II-1 第二學習階段所學字詞及句型的生活溝通。 D-II-1 所學字詞的簡易歸類。
核心素養 **Core competency**	A3 Planning, Execution, Innovation, and Adaptation 自-E-A3 具備透過實地操作探究活動探索科學問題的能力，並能初步根據問題特性、資源的有無等因素，規劃簡單步驟，操作適合學習階段的器材儀器、科技設備及資源，進行自然科學實驗。 B1 Semiotics and Expression 英-E-B1 具備入門的聽、說、讀、寫英語文能力。在引導下，能運用所學、字詞及句型進行簡易日常溝通。 C2 Interpersonal Relationships and Teamwork 自-E-C3 透過探索科學的合作學習，培養與同儕溝通表達、團隊合作及和諧相處的能力。 英-E-C2 積極參與課內英語文小組學習活動，培養團隊合作精神。		
議題融入 **Issue integration**	□人權教育 □環境教育 □海洋教育 □品德教育 □生命教育 □法治教育 □科技教育 ■資訊教育 □能源教育 □安全教育 □防災教育 ■閱讀素養 □國際教育 □家庭教育 □原住民教育 □戶外教育 □多元文化教育 □性別平等教育 □生涯規劃教育 □無		
與其他領域/科目的連結 **Connections to other subjects**	□音樂 □體育 □藝術 □社會 □科技 □生活 □綜合活動 □健康與體育 ■其他：無		
教材來源 Materials **參考資料 References**	Magic video- “The cap penetrates the glass bottle”： https://www.youtube.com/watch?v=Jwpz5itwaJY(27:55-29:29) Picture Book "Two Magnet Babies"： https://www.xuehua.us/a/5ec002bd11bd787a122cfd8b?lang=zh-tw Video- “Six Good Ideas for Magnets”：https://www.youtube.com/watch?v=R04OSUWIrzI Picture Book " A Look at Magnets "： https://www.youtube.com/watch?v=S4y8ZzoS7-4		
教學設備/資源 **Teaching aids/equipment**	1. Teaching PowerPoint, worksheets, Seesaw activities 2. Pad for every student 3. Magnet-related Vocabulary flashcards 4. Teaching aids：iron rulers, PET bottles, iron cans, aluminum cans; several bar magnets, disc magnets, horseshoe magnets, rod magnets, paper clips; straws, balloon holders; cotton threads, glasses of water 5. Source of teaching materials：臺北市自編 CLIL 雙語教材-Science https://sites.google.com/view/tp-clil		

<table>
<tr><td>學生背景
Students' Background</td><td colspan="2">【Science Field】
1. The third grade students are exposed to the "science field" specialized subject for the first time. Most students have a strong curiosity and interest in this subject.
2. Science field focuses on "observation and discovery from experiments". Therefore, the third grade students must acquire observation skills step by step when they first encounter this subject. Teacher needs to make use of the worksheets to guide students how to record the experimental results correctly.
3. Science helps students to develop the spirit of inquiry. According to the experiment process and results, teacher must make good use of the question-and-answer method to lead students to explore the truth.
【English Field】
1. The third grade students have learned about the English words and sentences in the first and second grade.
2. Students have studied English in school for two years.
3. Students are used to and can understand the basic English classroom English.
4. Students can understand the basic wh- questions (what, when, where, who).</td></tr>
<tr><td rowspan="2">學習目標
Learning Objectives
(請編號)</td><td>數學或自然領域 (content)</td><td>英語文 (language)</td></tr>
<tr><td>C-1. Through observation and manipulation, students can find out that magnets can attract iron products.
C-2. Through experiments and observations, students can find out the magnetic poles and recognize their names.
C-3. Through repeated operation and observation, students can understand the principle of "same poles repel each other and different poles attract each other".
C-4. Through experiments and observations, students can discover that magnet has the ability to attract iron products through objects.
C-5. Through observation, students find out that many life products designed by the</td><td>
Language of learning
L-1. Magnets：Objects that can pull or push away another magnet
L-2. Magnetic poles：Magnets have two poles, South Pole and North Pole
L-3. Magnetic field：Areas around a magnet
L-4. Metals：A hard material such as iron, steel, gold
L-5. repel (push)：To move something back
L-6. attract (pull)：To move something closer to
Language for learning
<table>
<tr><td>教師用語 For teachers</td><td>學生用語 For students</td></tr>
<tr><td>I. Classroom English
● Open your book.
● Take out your worksheet.
● Take out your pencil.
● Turn to page ___ .
● Eyes to the front.</td><td>● It is _____.
● Magnets will pull or push away another magnet.
● There are two poles in the magnet: north pole and south pole.</td></tr>
</table>
</td></tr>
</table>

	characteristics of magnets. C-6. Through group cooperation, students can work together to create a magnetic toy. C-7. By sharing on the Seesaw, students can explain the magnetic principles used in the created magnetic toy.	● Is everybody ready to start? ● What does ____ mean? ● Pay attention. ● Work together to discuss the answers. ● Work together to do the experiment. **II. Academic English** ● Can you tell me what this is? ● What is a magnet? ● What objects can be attracted by a magnet? ● How many poles in a magnet? ● Is it north pole or south pole? ● Which side is the strong side in a magnet?	● Magnets can attract the iron products. ● Same magnetic poles will repel each other. ● Different magnetic poles will attract each other.
		Language *through* learning ● What do you think this story is about? ● What will happen next? ● What do they look like? ● What happened to the magnet? ● Do they attract or repel each other?	
		Translanguaging 1. Teacher introduces the vocabulary in English; and then ask students what are their Chinese meaning. 2. Allow students to ask questions in Chinese; but encourage them to use English more. 3. Allow students to discuss in Chinese; but encourage them to use English more. 4. Students can use the dictionary anytime during the class when they don't know the meaning of the English vocabulary. 5. At the end of every period, teacher summarize the main points in Chinese.	
情境脈絡 **(文化/社區/公民實踐)** **Context** **(Culture/ Community / Civic**	**1. STEAM curriculum; develop students to become lifelong learners with scientific literacy and creativity** This lesson plan starts from the science curriculum and designs extended activities with the concept of STEAM. After exploring the characteristics and principles of magnets, students can use hands-on operations and creativity to design their own magnetic toys. Not only can students understand the knowledge in the textbook, but also use this knowledge to solve problems in life, and even enrich		

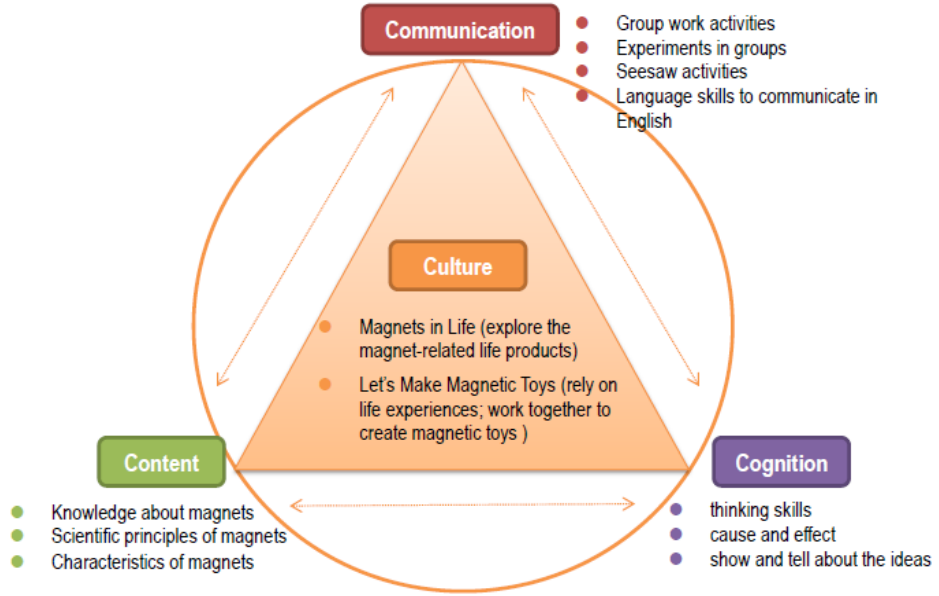
Practice)

life. At the same time, creating magnetic toys in groups can help students to cultivate their artistic and cultural literacy from a scientific perspective. Working with classmates to complete tasks can develop students' high EQ to get along with others, so as to enhance humanistic literacy. The tasks in this lesson plan aims to make students become lifelong learners with literacies and qualities.

STEAM / Periods	Science	Technology	Engineer	Art	Math
1st Period **What are Attracted to Magnets?**	✓				✓
2nd Period **Explore Magnetic Poles**	✓				✓
3rd Period **Magnets in Life**	✓	✓			
4th Period **Let's Make Magnetic Toys**	✓	✓	✓	✓	✓

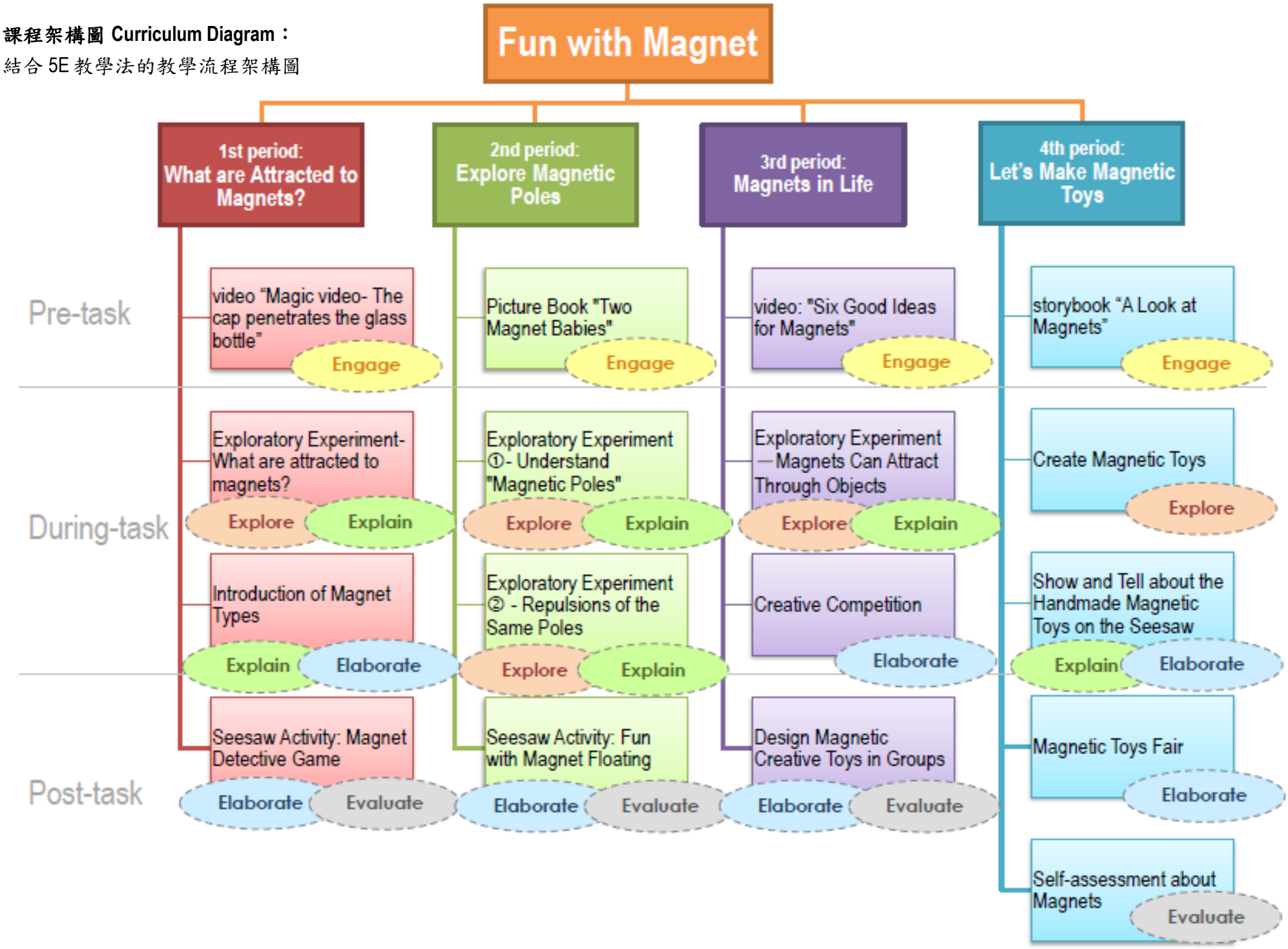
2. Multiple learning activities are based on the students' cultural life experiences

As the educator Dewey said, "learning by doing". This curriculum encourages students to learn science by "doing". This lesson plan makes good use of multiple learning activities such as video, non-fiction books, experiments, observations, Seesaw activities, and hands-on projects. After learning and understanding the scientific characteristics of magnets, teacher encourage students to explore the magnet-related products in life. And moreover, in the 4th period, students use their personal and cultural experiences to design and create their own magnetic toys. Let students fully demonstrate their creativity.



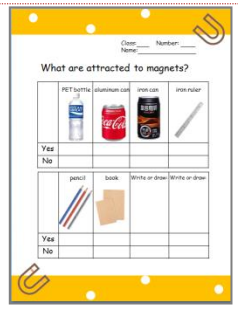
課程架構圖 Curriculum Diagram：

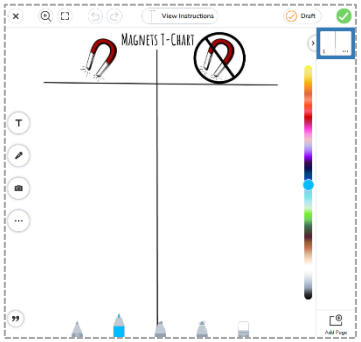
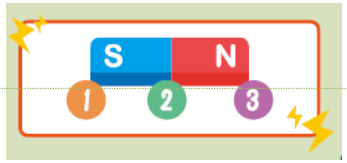
結合 5E 教學法的教學流程架構圖

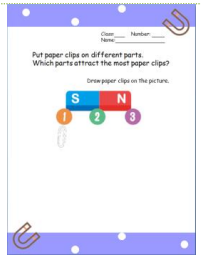
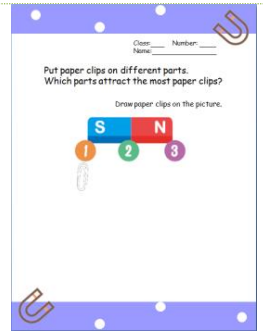
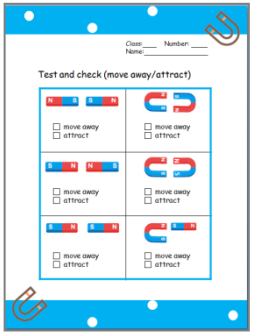


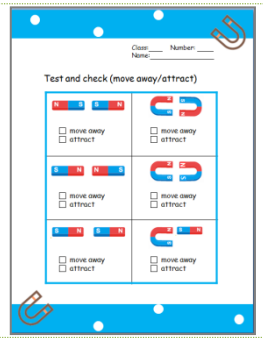
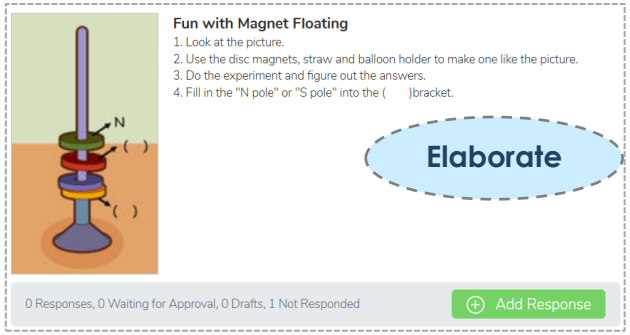
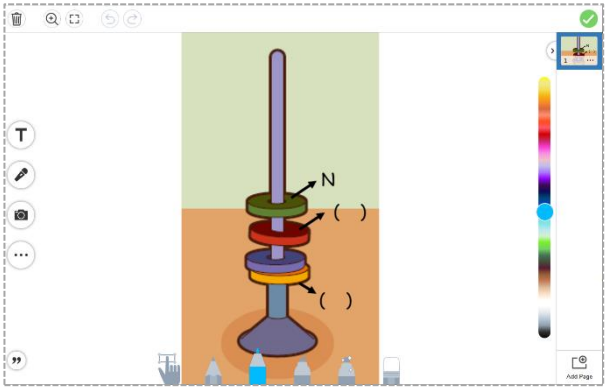
教學活動設計 Classroom procedure			
時間分配 Distribution of time			
節 (period)	日期 (date)	教學重點 Main points of teaching	
		數學或自然領域 (content)	英語文 (language)
1st What are Attracted to Magnets?	10 / 05	• Magnets cannot attract non- metals. • Magnets can attract iron products. • Different types of magnets	• Q: What are attracted to magnets? A: ___ can be attracted by magnets. ___ can't be attracted by magnets. • Magnet-related Vocabulary：magnets, magnetic poles, magnetic field, metal, repel (push away), attract (pull) • Different types of magnets names in English • T: Point to the word _____ and repeat. S: (repeat) _____.
2nd Explore Magnetic Poles	10 / 08	• The two sides of the magnet (magnetic poles) attract the most paper clips, and the middle attracts the least. • Same magnetic poles will repel each other. • Different magnetic poles will attract each other.	• What are they? • How many sides are in a magnet? There are two sides. • Q: Which part can attract the most/least paper clips? A: _____ can attract the most/least paper clips. • The sides of a magnet are called "magnetic poles": N pole and S pole. • _____ poles will repel each other. ___ poles will attract each other.
3rd Magnets in Life	10 / 12	• Magnets can attract iron through objects. • N pole and S pole can attract each other. • Using the characteristic of magnets can attract iron products through objects, we can apply magnets in daily life.	• Q: What life products are related to magnets? A: ___ are related to magnets. • Please work together and do the experiment. • How can we take out paper clip without touching water?
4th Let's Make Magnetic Toys	10 / 15	• Use the magnetic principles to design and create a magnetic toy.	• Q: What happens when two N poles meet together? A: They will attract/ repel each other. • Work in groups and design a magnetic toy together. Discuss and set the game rules for the toy.

學習目標 Learning objectives (請與前面學習目標編號相符)	教學活動 Teaching activities 教師活動 Teacher's activities	教學活動 Teaching activities 學生活動 Students' activities	教學設備/資源 Teaching aids/equipment	時間 (分) Time	評量 Evaluation
C-1.	**1st Period：What are Attracted to Magnets?** Pre-task Teacher plays the video "Magic video- The cap penetrates the glass bottle". T：Guess what scientific principles are used in this magic. Engage	**1st Period：What are Attracted to Magnets?** Pre-task Students are free to guess the scientific principles behind the magic	"Magic video- The cap penetrates the glass bottle"	3'	Oral evaluation
L-1. L-4. L-6.	During-task **【Exploratory Experiment- What are attracted to magnets?】** T：According to the video we just watched, magnet can attract the metal bottle caps. Now everyone please do some experiments to explore the following two questions. Q1: Can magnets attract non-metallic objects? Q2: There are many kinds of metals (iron, aluminum...). Can different metals be attracted by magnets? Explore **【Discussion and Generalization】** 1. Project the tables of each group onto the whiteboard. Discuss the results of each group's experiment.	During-task **【Students' Exploratory Experiment】** 1. Students are free to find out the objects they want to test around them. For example: scissors, eraser, iron ruler... (Inquiry activities are integrated into life situations.) 2. Use the bar magnet to test whether it can attract PET bottles, iron and aluminum cans or other equipment. 3. Do the experiment and observe carefully. Record the results of the experiment in the form of worksheet A **【Discussion and Generalization】** 1. Students present their experimental results. 2. Students try to summarize from the experimental results. And integrate the	Per student： 1 bar magnet Per group： pencil, iron ruler, textbook, 1 PET bottle, 1 iron can, 1 aluminum can Worksheet A (Appendix Ⅱ-A.)	15' 7'	Performance evaluation Formative evaluation

C-1. L-7. L-1.~L-7.	2. Generalization： ① Magnets cannot attract non- metals. ② Not every metal can be attracted by magnets. Iron can be attracted by magnets, but aluminum cannot. Explain **【 Introduction of Magnet Types】** 1. Teacher displays “Different types of magnets” flash cards and introduces magnets of various shapes： Bar magnets, disc magnets, horseshoe magnets, rod magnets. 2. Teacher displays and briefly introduces “ Magnet-related Vocabulary” flash cards ： magnets, magnetic poles, magnetic field, metal, repel (push away), attract (pull). Explain 3. Quick Pairing Game： ① Teacher put the flashcards on the blackboard randomly. ② Divide students in two groups. ③ Teacher says the magnet-related vocabulary in English. Each group points to the matching flashcard and repeat the word. Evaluate	characteristic of the magnet — Magnets can attract iron products. **【 Introduction of Magnet Types】** 1. Students can recognize the English names of various magnets. 2. Students find the matching magnet according to what teacher taught. 3. Based on the flash cards, students say the English names of various magnets and find the matching magnets.	 “Different types of magnets” flash cards (Appendix Ⅰ-B.) Per group： 1 bar magnet, 1 disc magnet, 1 horseshoe magnet, 1 rod magnet	10’	Oral evaluation Formative evaluation
C-1.	Post-task **【Seesaw Activity: Magnet Detective Game】** 1. “Magnet Detective” Game： Teacher asks the students to find out which products in the classroom and the hallway are attracted by magnets. Students take photos of the products that can be attracted by magnets and then upload to the Seesaw. Seesaw activity： Elaborate	Post-task **【Seesaw Activity: Magnet Detective Game 】** 1. Students work in pairs, holding magnet sand doing the test in the classroom and hallway. 2. Students show the products that can be attracted by magnets. And take photos then upload to the Seesaw, hand in the activity. (Possible answers: electric fan frame,	Seesaw activity “Magnet Detective Game” (Appendix Ⅳ-A.)	5’	Performance evaluation

	 2. Ask the students to pay special attention to whether the "door and window frames" can be attracted by magnets. 3. Teacher integrates students' comments and makes the conclusion : Magnets can attract iron products. Evaluate	blackboard, iron cabinet, scissors...) Student's Seesaw page :  3. According to the phenomenon that the door and window frames cannot be attracted by magnets, students find that the door and window frames are "aluminum products" (aluminum doors and windows) instead of "iron products".			
C-2. C-3.	**2nd Period : Explore the Magnetic Poles** Pre-task Picture Book "Two Magnet Babies" PowerPoint Q1. There are two different colors on the two sides of the magnet, what are they? Q2. N pole can only hold hands with which pole? How about S pole? Engage	**2nd Period : Explore the Magnetic Poles** Pre-task 1. From the story, students discover that the magnet has two poles, N pole and S pole. 2. According to the story, students find that the N pole can only be attracted to the S pole and will push away the other N pole.	Picture Book "Two Magnet Babies" PowerPoint (Appendix Ⅰ-A.)	5'	Oral evaluation
L-1~L-7.	During-task **【 Exploratory Experiment① - Understand "Magnetic Poles"】** 1. Teachers mark the bar magnet with ①②③, and ask students to test which part can attract the most paper clips. 	During-task **【 Student's Exploratory experiment① - Understand "Magnetic Poles"】** 1. Students do the experiment and observe carefully. And record the results of the experiment in the table of worksheet B.	Per student : 1 bar magnet Per group : 1 box of paper clips Worksheet B (Appendix Ⅱ-B.)	12'	Performance evaluation

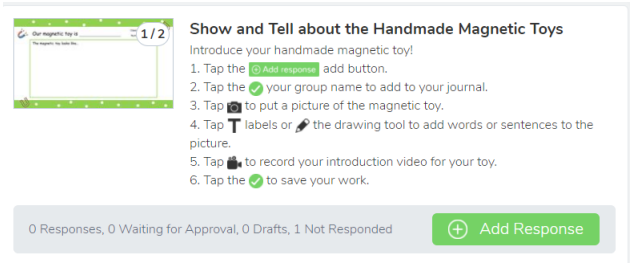
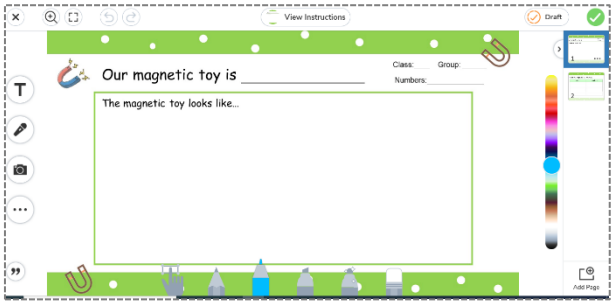
L-2. L-3. C-2.	Explore **【Discussion and Generalization①】** 1. Project the tables of each group on the whiteboard and discuss the experimental results of each group. Explain 2. Generalization： ① The two sides of the magnet attract the most paper clips, and the middle attracts the least (or even unable to attract). ② The sides of the magnet are called "magnetic poles".	 **【Students' Discussion and Generalization①】** 1.Students present their experimental results. 2.Students try to generalize from the experimental results—the two sides of the magnet can attract the most paper clips.		8'	Oral evaluation
C-3.	**【Exploratory Experiment ② - Repulsions of the Same Poles】** The teacher asks students to test: ① The N poles of the two magnets are close to each other. ② The S poles of the two magnets are close to each other. ③ What happens if the N pole and S pole are close to each other?  Explore **【Discussion and Generalization ②】** 1. Project the tables of each group on the whiteboard and discuss the experimental results of each	**【Student's Exploratory Experiment② 】** 1. Students do the experiment and observe carefully. And record the results of the experiment in the table of worksheet C.  **【Students' Discussion and Generalization ②】** 1.Students present their experimental results. 2.Students try to generalize from the experimental	Per group： 2 bar magnets, 2 disc magnets, 2 horseshoe magnets, 2 rod magnets Worksheet C (Appendix Ⅱ-C.)	5' 5'	Performance evaluation Oral evaluation

L-5. L-6. C-3.	group. 2. Generalization： ① N pole and N pole will repel each other. ② S pole and S pole will repel each other. ③ N pole and S pole will attract each other. Explain	results- the same poles repel each other, and different poles attract each other.			
L-1~L-7. C-2. C-3.	Post-task **【Seesaw Activity: Fun with Magnet Floating】** 1.Teacher assign the activity on the Seesaw： ① Techer send several disc magnets, 1 straw, 1 balloon holder to the students. ② Ask students to log in the Seesaw and read the activity's instruction. ③ Ask students to follow the picture assigned in the Seesaw and make one using the disc magnets, straw and balloon holder. ④ Label the magnetic poles on the picture of the Seesaw. Activity is the following：  Elaborate 3. Approve and review students' uploading works. Evaluate	Post-task **【Seesaw Activity: Fun with Magnet Floating】** 1. Students use the disc magnets, straw and balloon holder to do the experiment and figure out the answers of the Seesaw. 2. Students work together and complete the activity in Seesaw. 3. Upload the answer and hand in the work. Student's Seesaw page： 	Seesaw Activity: Fun with Magnet Floating (Appendix Ⅳ-B.) Per student： 1 iPad Per group： several disc magnets, 1 straw, 1 balloon holder	5'	Performance evaluation Summative evaluation

C-4. C-5.	**3rd Period： Magnets in Life** Pre-task 1. The teacher plays the video: "Six Good Ideas for Magnets". 2. Ask the students to talk about which products they use in their lives are related to magnets. T: What life products are related to magnets? 3. Explore the principles of magnets used in these magnetic life products. 4. In conclusion： Magnets have the ability to "attract iron through objects", and then we will do experiments to explore this characteristic of magnets. Engage	**3rd Period： Magnets in Life** Pre-task 1. Students watch the video. 2. Students talk about what are the applications of magnets in life. (For example: refrigerator magnets, magnetic writing boards...). 3. Students published the principle of magnetic life products such as refrigerator magnets. For example: the magnetic writing board uses the "magnet to attract iron through the object" characteristic to attract iron powder through the plastic board.	video: "Six Good Ideas for Magnets"	10’	Diagnosis evaluation
L-1~L-7.	During-task **【Exploratory Experiment—Magnets Can Attract Through Objects 】** 1. Teacher present the situation：Wow! The paper clip accidentally fell into the glass of water. How can I take out the paper clip without touching water (can't pour out the water)?  2. Ask students to express their ideas. 3. Hands-on exploration in groups. **【 Discussion and Generalization 】** 1. The teacher invites students to express the process	During-task **【 Students' Inquiry Experiment 】** 1. According to the situation, students express their ideas. (Possible answers： ① The magnet draws the paper clip up through the cup outside the cup wall. ② Attract 2~3 bar magnets together to become a very long magnet. Then attract the paper clip at the bottom of the cup. ③ The magnet is tied with cotton thread. Then put it in the water and attract the paper clip. ④ Other answers……) **【 Students’ Discussion and Generalization】** 1. Students express the experimental results.	Per group： 1 glass of water, 1 box of paper clips, cotton thread Per student： several magnets	5’ 3’	Oral evaluation Formative evaluation

C-4. C-5.	and experience of using various methods 2. Teacher leads students to analyze the characteristics of magnets used in various methods. ① Attract outside the cup wall → Magnets can attract iron through objects. ② Several long bar magnets become super long magnets → N pole and S pole can attract each other. ③ Take the iron ruler to attract the magnet, and then put it in the water to attract the paper clip. → Magnets can attract the iron products. 3. Generalization： Using the characteristic of magnets can attract iron products through objects, we can apply magnets in daily life.	2. Students try to generalize from the results of the experiment : ① Magnets can attract iron through objects. ② Many problems in life can be solved by using the characteristics of magnets.			
C-5.	Explain Post-task **【Creative Competition】** 1. The class is divided into two groups. 2. For 3 minutes, teacher asks each group to discuss which magnet-related toys are. (Ex. Fishing game) 3. Each group takes turns to announce until a certain group cannot say a new toy's name. The group which can announce more magnet-related toys' names will be the winner.	Post-task **【Creative Competition】** 1. Students discuss the magnet-related toys in groups. 2. Students take turns to present their discussion.		7'	Performance evaluation
C-6.	Elaborate **【 Design Magnetic Creative Toys in Groups】** 1. Teacher explained that each group should create a magnetic toy together. And share it with the whole class in the next period. 2. Send the Worksheet D to students.	**【 Design Magnetic Creative Toys in Groups 】** 1. Students discuss in groups what magnetic toys to make and the materials to bring next period. 2. Each group discuss and complete the worksheet D. And use time to draw the draft first; then create the magnetic toy.	Worksheet D (Appendix Ⅱ-D.)	15'	

	Elaborate Evaluate				
C-1. C-3.	**4th Period：Let's Make Magnetic Toys** Pre-task Teacher read the storybook "A Look at Magnets", to the students and ask： Q1：Can magnet move an aluminate soda can? Q2：Which part of the magnet can attract the most / the least paper clips? Q3：What happens when two N poles meet together? Engage	**4th Period：Let's Make Magnetic Toys** Pre-task Students listen to the picture book and answer questions. Through the Q&A process, students integrate the magnet principles learned in the first three periods. A1: Magnet can't move away aluminate soda can. A2: Magnet's pole can attract the most paper clips A3: When two north poles meet together, they will repel (push away).	Storybook "A Look at Magnets" PowerPoint (Appendix Ⅰ-C.)	5'	Oral evaluation
L-1~L-7. C-6.	During-task **【Create Magnetic Toys】** 1. Ask students to create the magnetic toys in groups. 2. Ask students to discuss and set the rules of the magnetic toy game. 3. Try out the game and improve it. T: Now work in groups, discuss and design a magnetic toy using the scientific principles leaned about magnets. And set the game rules for the magnetic toy. In the later toys fair, each group will take turns to play other groups' toys. Explore	During-task **【Create Magnetic Toys】** 1. Each group of students work together to make magnet toys. 2. Discuss and set the game rules; then write it down. 3. Team members try out the game, discuss and improve it.	Students prepare： Materials required for each group, art tools (scissors, watering, colored pens) Teacher provided： All kinds of magnets	20'	Performance evaluation

C-7.	**【Show and Tell about the Handmade Magnetic Toys on the Seesaw】** 1. Teacher assign the worksheet D on the Seesaw. Seesaw activity:  2. Each group uses the Pad to record a video to introduce their magnetic toys and upload the video to the Seesaw's activity. 3. Peer review the works on the Seesaw. Explain Elaborate	**【Show and Tell about the Handmade Magnetic Toys on the Seesaw】** 1. Each group work together to introduce their magnetic toy. Students' Seesaw page:  2. Record the introduction to a video and upload to the Seesaw. 3. Peer review the works on the Seesaw.	Seesaw Activity: Show and Tell about the Handmade Magnetic Toy (Appendix Ⅳ-C.)	5'	Performance and oral evaluation
L-1~L-7. C-6.	Post-task **【Magnetic Toys Fair】** 1. Ask each group place their magnetic toys in the corners of the classroom. 2. The whole class take turns to the different corners to play the magnetic toys. Elaborate	Post-task **【Magnetic Toys Fair】** 1. Put the magnetic toys in the corner of the classroom. 2. Put one Pad next to the magnetic toy to display the introduction video for the classmates who come to play. 3. Take turns to play the magnetic toys of other groups.	Per group： 1 pad The handmade magnetic toy	10'	Performance and oral evaluation
C-1~C-7.	**【Self-assessment about Magnets】** 1. Teacher send the self-assessment form about magnets to every student. 2. T: After the "Fun with Magnet" unit, do the self-assessment first to check whether you have learned the main points about magnets or not. And	**【Self-assessment about Magnets】** 1. Students check their understanding toward the magnets after these four periods by themselves. 2. Students finish the elf-assessment form honestly and improve the weak points.	Per student： Self-assessment Form about Magnets (Appendix Ⅲ)		Self evaluation

invite one groupmate to help you evaluate your efforts toward this unit. Then hand in this form to teacher.

Evaluate

Self-assessment form:

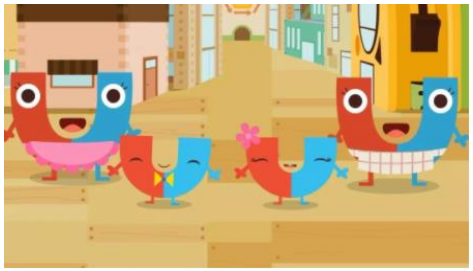
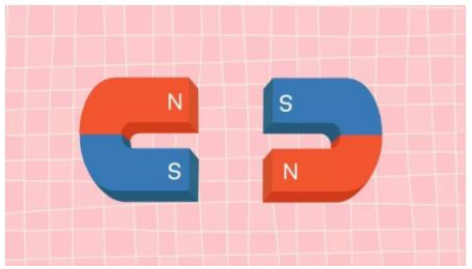
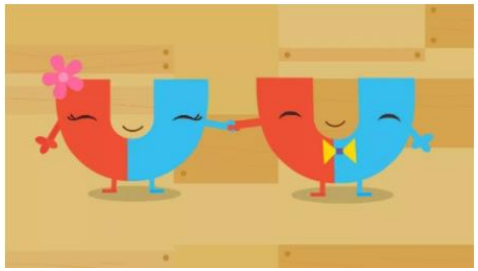
Self-assessment Form about Magnets

Criteria： Content + Language	Self-evaluation	Peer-evaluation	Teacher evaluation
1. I know the magnets can attract iron product and cannot attract non-metals.			
2. I know the different types of magnets and their English names.			
3. I know the two magnetic poles (North pole and South pole) attract the most paper clips.			
4. I understand that the same magnetic poles will repel each other. And different poles will attract each other.			
5. I know the magnet can attract iron through objects.			
6. I can find out that some life products used the characteristic of magnets.			
7. I can work with classmates to create a magnetic toy.			

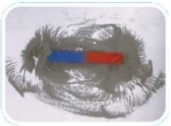
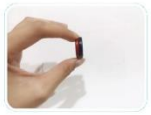
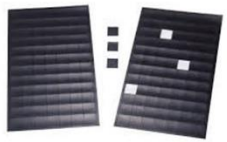
Appendices

Appendix Ⅰ. Teaching Resources

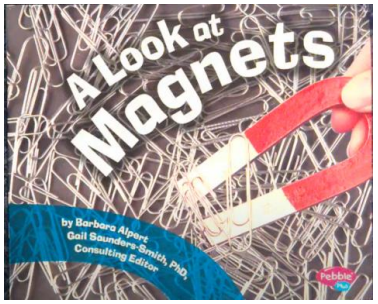
A. Picture Book "Two Magnet Babies" PowerPoint

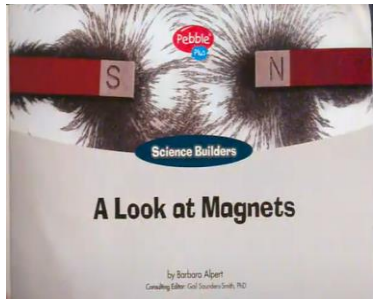
			
Cover of the picture book "Two Magnet Babies"	Two magnet babies met each other one day.	They stretched out their right hand and want to pull each other.	But they felt a repulsive power when they were close to each other.
			
They got hurt, woo…	Mom said: That's because you all stretch your right hand. Magnets with the same pole will repel each other!	Magnet babies understood. One of them stretched out his right hand, the other stretched out the left hand. Suddenly, a power pulls them together tightly!	Magnet babies understand how to get along now. They live happily ever after!

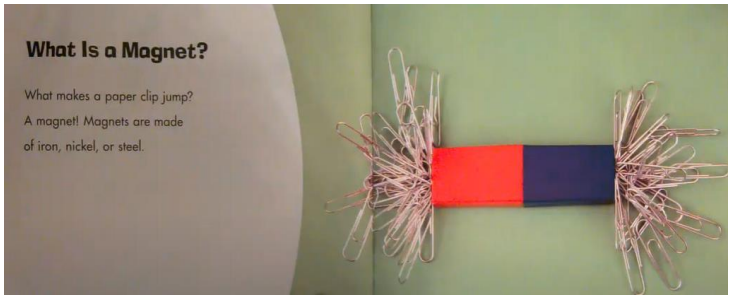
B. "Magnet-related Vocabulary" PowerPoint & flash cards

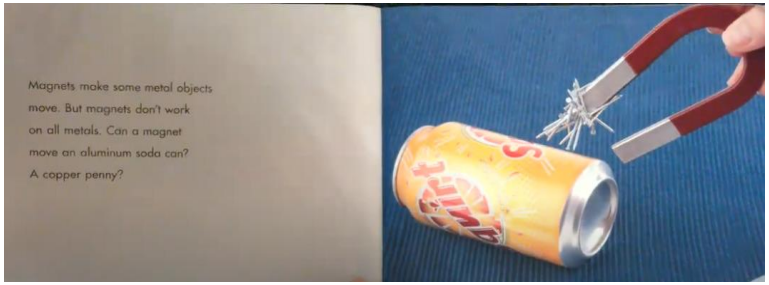
magnet pull or push away another magnet 	magnet poles  two poles of a magnet: south pole and north pole	magnetic field  the area around a magnet	metal  iron, steel or gold
repel (push away) (v.) to move away 	attract (pull) (v.) to move closer to something 		
Bar magnet 	Horseshoe magnet 	Rod magnet 	Disc magnet 
Ring magnet 	Slab-shaped magnet 	Powerful magnet 	Soft magnet 

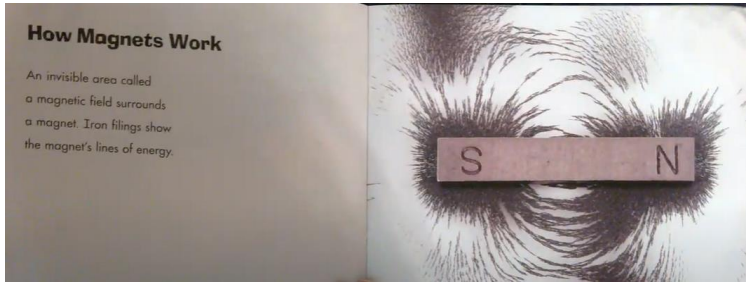
C. Picture book “A Look at Magnets” PowerPoint

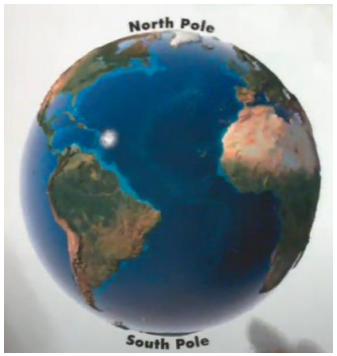


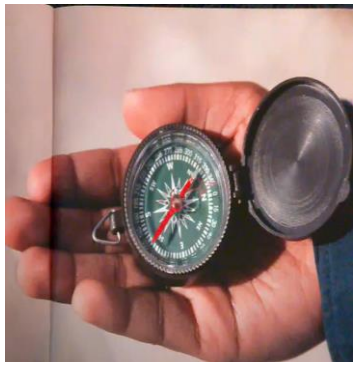


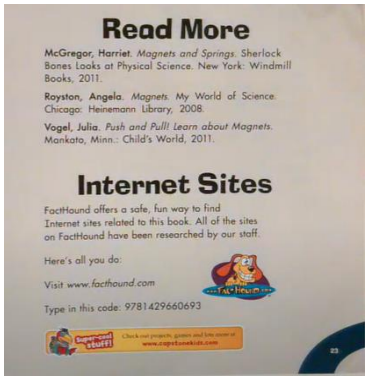












Appendix Ⅱ. Worksheets

A. Worksheet A. “What are attracted to magnets?”

Class:____ Number: ____
Name:_____

What are attracted to magnets?

	PET bottle	aluminum can	iron can	iron ruler
				
Yes				
No				

	pencil	book	Write or draw:	Write or draw:
				
Yes				
No				

B. Worksheet B. “The magnetic poles of magnet.”

Class:____ Number: ____
Name:_____

Put paper clips on different parts.
Which parts attract the most paper clips?

Draw paper clips on the picture.

C. **Worksheet C. "Attract? Move away?"**

Class:____ Number: ____
Name:_____

Test and check (move away/attract)

 ☐ move away ☐ attract	 ☐ move away ☐ attract
 ☐ move away ☐ attract	 ☐ move away ☐ attract
 ☐ move away ☐ attract	 ☐ move away ☐ attract

D. **Worksheet D. "Make our own magnetic toys."**

Class:____ Group: _____
Numbers:_____

Our magnetic toy is _____

The magnetic toy looks like...

We need ...

item	number

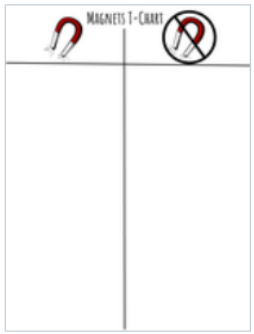
Appendix Ⅲ.

Self-assessment Form about Magnets

Criteria： Content + Language	Self-evaluation	Peer-evaluation	Teacher evaluation
1. I know the magnets can attract iron product and cannot attract non-metals.			
2. I know the different types of magnets and their English names.			
3. I know the two magnetic poles (North pole and South pole) attract the most paper clips.			
4. I understand that the same magnetic poles will repel each other. And different poles will attract each other.			
5. I know the magnet can attract iron through objects.			
6. I can find out that some life products used the characteristic of magnets.			
7. I can work with classmates to create a magnetic toy.			

Appendix Ⅳ. Seesaw Activity

A. Seesaw Activity： “Magnet Detective Game”



Magnet Detective Game

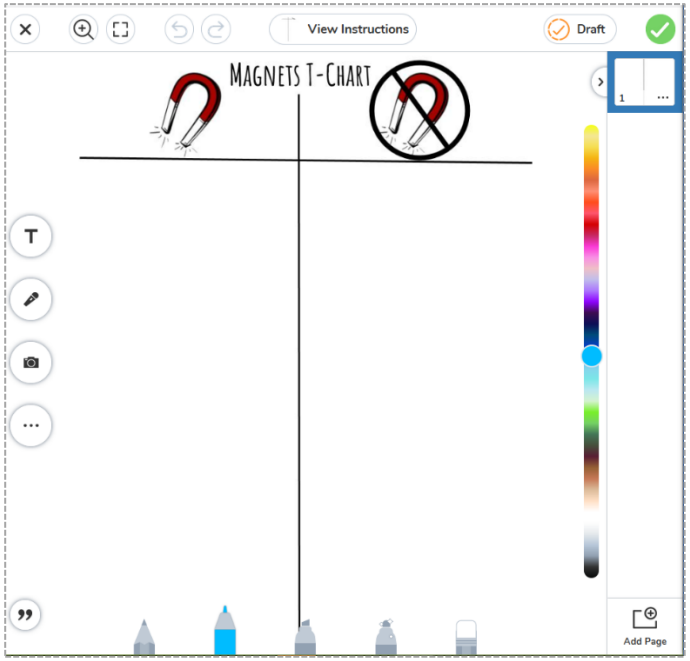
1. Tap Add response
2. Take photos of the magnetic and non-magnetic objects in the classroom.
3. Upload the photos to the chart.
3. Tap

0 Responses, 0 Waiting for Approval, 0 Drafts, 1 Not Responded Add Response

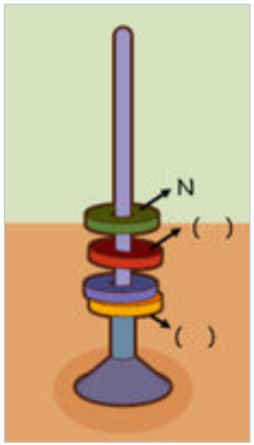
Assigned on Oct 16 at 03:56 PM

Assigned to All Students in 張晶皓's Class

Template attached



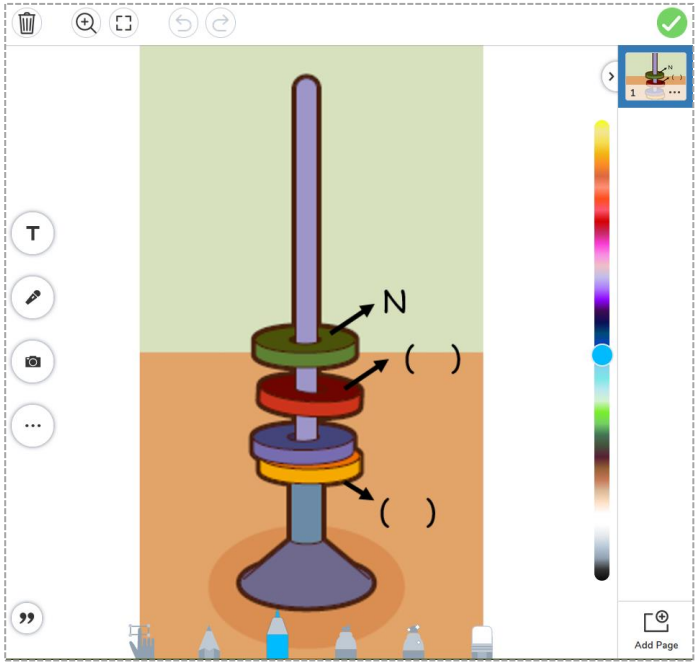
B. Seesaw Activity： “Fun with Magnet Floating”



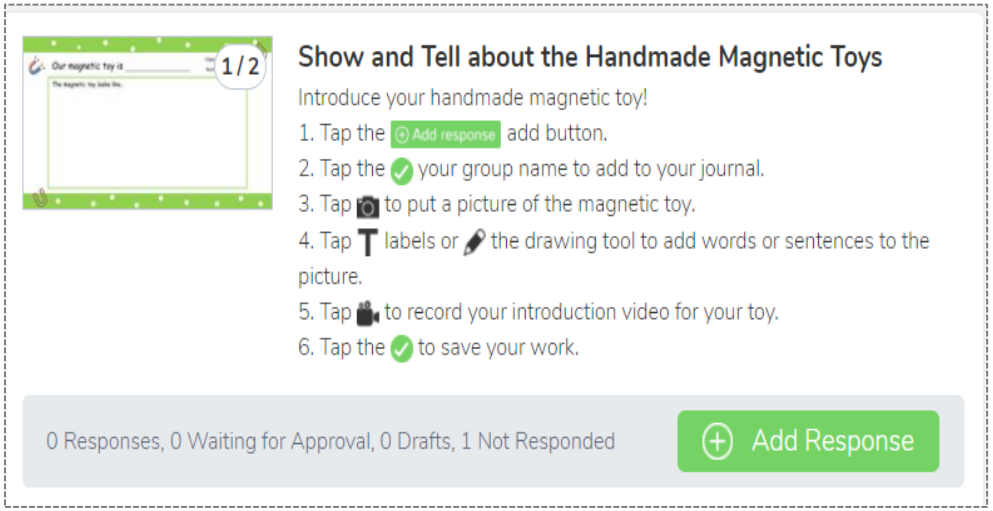
Fun with Magnet Floating

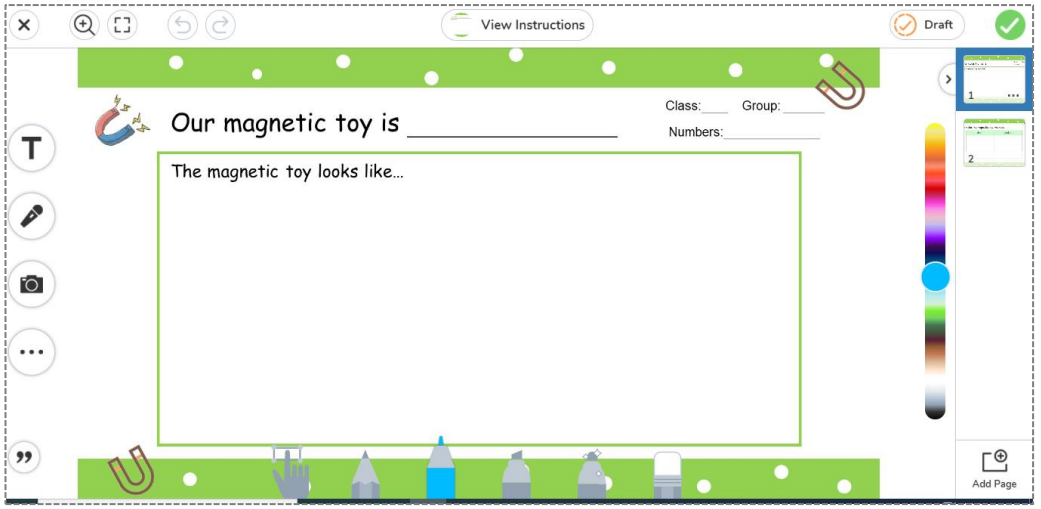
1. Look at the picture.
2. Use the disc magnets, straw and balloon holder to make one like the picture.
3. Do the experiment and figure out the answers.
4. Fill in the "N pole" or "S pole" into the ( )bracket.

0 Responses, 0 Waiting for Approval, 0 Drafts, 1 Not Responded Add Response



C. Seesaw Activity：Show and Tell about the Handmade Magnetic Toy





Appendix Ⅴ. Teaching process photos

1. 1st Period：Experiment：What are attracted to magnets?

磁鐵能吸引鐵罐。

磁鐵也能吸引鐵尺。

剪刀也被吸引了！

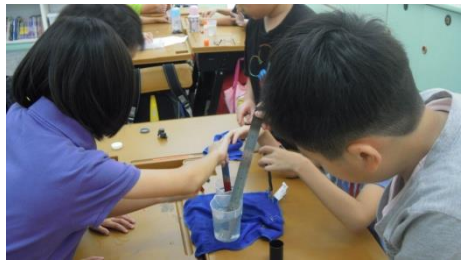
磁鐵能吸引鐵粉，找出磁極！

2. 2nd Period：Explore the characteristic of magnet – “Same poles will repel each other. Different poles will attract each other.”

利用「同極相斥」原理，推動磁鐵小汽車

設跑道、訂規矩，看看誰的汽車跑得遠！

3. 3rd Period：How to use magnet to take out the paper clip falling in the water cup without touching water?



哇！迴紋針掉進水裡了！我們這一組想到的方法是「用鐵尺吸一個磁鐵，放到水裡把迴紋針吸出來」。來！動手做做看吧！

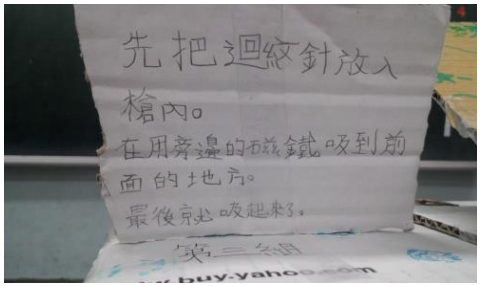
4. 3rd and 4th period：Design and create our own magnetic toys!


分組動動腦，討論我們要設計什麼樣的磁鐵玩具！


帶紙箱、保麗龍切割器，動手製作磁鐵闖關玩具。

★ **These are all our handmade magnetic toys：**



學生作品—神槍手

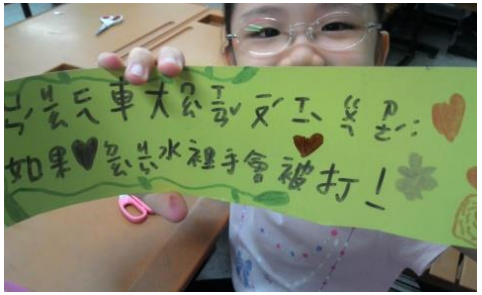
利用「磁鐵吸引鐵製品原理」，玩射擊遊戲。



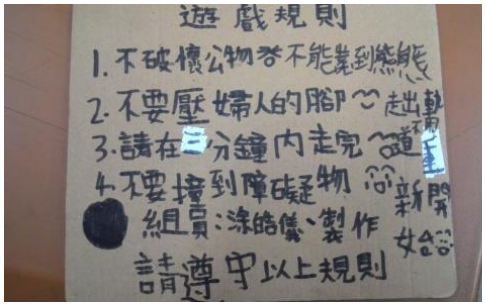
學生作品—走迷宮

利用「磁鐵吸引鐵製品原理」，走到特定位置還會有特殊獎品喔！

學生作品—
雲霄飛車大冒險

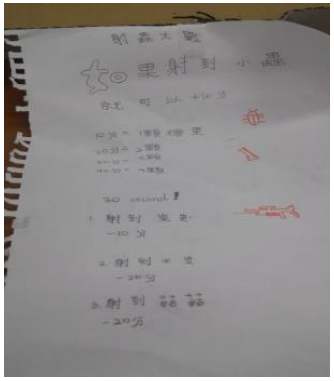


利用「磁鐵吸引鐵製品原理」，如果掉進水裡就要被打喔！



學生作品—
瘋狂大賽車

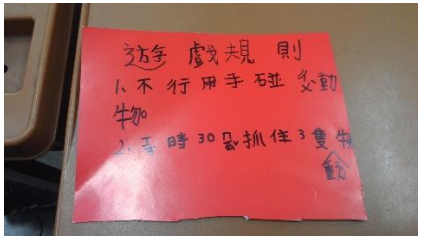
利用「磁鐵同極相斥」原理，比比看誰的車較快到達終點！



學生作品—射蟲蟲遊戲

乍看之下沒用到磁鐵啊？！原來是是蟲子貼磁鐵，在從紙箱背後用另一個磁鐵吸引，讓蟲子變成活動式，在玩者射擊時，組員快速移動蟲子讓他射不到！是款創意十足、笑果也十足的作品喔！

★ **Let's have a "Magnetic Toys Fair"! ：**



↑學生熱絡進行磁鐵玩具闖關，各組設關主，並輪流到其他組別進行磁鐵玩具闖關，像個嘉年華!

←學生用心準備闖關成功之獎勵品提供給他組學生