# Alberta Grade 3 Science Curriculum Comparison Document

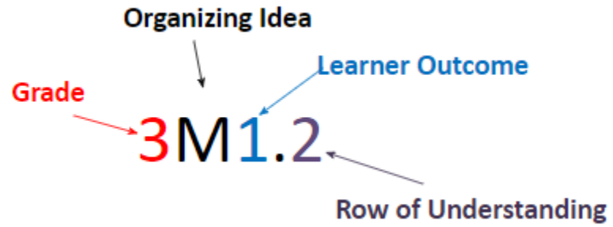
## 2023 - 2024

**The purpose of this document is to provide you with an opportunity to review the previous curriculum (1996) and compare it with the new 2023 Science Curriculum.  You will find the old curricular outcomes on the left side of your page and the new one to the right.**

**When reviewing for the first time, read the document through completely to familiarize yourself with the contents.**

**On second review, make notes along margins that help to identify familiar knowledge concepts or those which are very new.**

**Repeat this process for the Skill Concepts (Verbs). Consider how the verbs will inform your practice and assessment.**




# Grade 3 Curriculum Comparison to the New Alberta Science Curriculum

**M = Matter** **E= Energy** **ES = Earth Systems** **S = Space** **LS = Living Systems** **CS = Computer Science** **SM = Scientific Method.**

| **Outcomes** from 1996 Curriculum | **Learner Outcomes** (New) | **Understandings** from New Curriculum, **Knowledge** | **Skills and Procedures** |
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| **Possible Links to the 1996 Science Curriculum** | **Matter(M) : Matter: Understandings of the physical world are deepened by investigating matter and energy.**<br>**Guiding Question: How can materials change?** | | |
| | **LEARNER OUTCOME**<br>3M1.1 Students investigate and analyze how materials have the potential to be changed. | **UNDERSTANDING**<br>Materials can be used in their natural form or processed to create new materials.<br><br>Interaction with natural materials by First Nations, Métis, and Inuit is guided through living in harmony and balance with the land.<br>**KNOWLEDGE**<br>Processed materials are modified from natural materials and do not occur in nature.<br><br>Processed materials are designed and manufactured for a specific purpose.<br><br>First Nations, Métis, and Inuit communities respectfully interact with natural materials, such as<br>● trees<br>● rocks<br>● ice<br>● shells<br>● plants<br>● animals | **SKILLS and PROCEDURES**<br>Relate a processed material to the natural material from which it originated.<br><br>Discuss how interaction with natural materials is guided by relationships with the land for First Nations, Métis, and Inuit communities. |

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| | | First Nations, Métis, and Inuit communities interact with natural materials for specific purposes, such as<br>● teepees<br>● igloos<br>● medicines<br>● clothing<br>● transportation<br>● ceremonies<br>. | |
| **Grade 3**<br>**Topic B: Buoyancy and Boats**<br>2–6 Describe the interaction of water with different materials, and apply that knowledge to practical problems of drying, liquid absorption and liquid containment. (5. Demonstrate an understanding that liquid water can be changed to other states:<br>• recognize that on cooling, liquid water freezes into ice and that on heating, it melts back into liquid water with properties the same as before<br>• recognize that on heating, liquid water may be changed into steam or water vapor and that this change can be reversed on cooling<br>• identify examples in which water is changed from one form to another.) | **LEARNER OUTCOME**<br>3M1.2 Students investigate and analyze how materials have the potential to be changed | **UNDERSTANDING**<br>Matter can change state if heated or cooled.<br><br>**KNOWLEDGE**<br>Matter is anything that takes up space and has weight.<br><br>States of matter include solid, liquid, and gas.<br><br>Melting is a change of state from solid to liquid.<br><br>Freezing is a change of state from liquid to solid.<br><br>Evaporation is a change of state from liquid to gas.<br><br>Condensation is a change of state from gas to liquid. | **SKILLS and PROCEDURES**<br>Conduct an investigation to demonstrate changes of state.<br><br>Discuss examples of daily activities that include heating and cooling. |
| | **LEARNER OUTCOME**<br>3M1.3 Students investigate and analyze how materials have the potential to be changed. | **UNDERSTANDING**<br>Solids, liquids, and gases have distinct properties.<br>**KNOWLEDGE**<br>A solid is a state of matter that has a definite shape and volume.<br><br>A liquid is a state of matter that has a definite volume but no definite shape.<br><br>A liquid flows and takes the shape of the container it is in.<br><br>A gas is a state of matter that has neither definite shape nor definite volume.<br><br>A gas flows easily and expands to the size of the container it is in. | **SKILLS and PROCEDURES**<br>Describe solid, liquid, and gas states of matter in terms of the properties of shape and volume.<br><br>Conduct an investigation to demonstrate the properties of the state of matter. |

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| | | Volume is the amount of space a solid, liquid, or gas takes up. | |
| **Grade 2**<br>**Topic A: Exploring Liquids**<br>2–5 Describe some properties of water and other liquids, and recognize the importance of water to living and nonliving things.<br>2–6 Describe the interaction of water with different materials, and apply that knowledge to practical problems of drying, liquid absorption and liquid containment. | **LEARNER OUTCOME**<br>3M1.4 Students investigate and analyze how materials have the potential to be changed | **UNDERSTANDING**<br>Substances change state based on melting/freezing and boiling points.<br><br>**KNOWLEDGE**<br>Substances are made of matter that has not been mixed with other matter, including water.<br><br>The temperature at which a substance changes from solid to liquid is called the melting point.<br><br>The temperature at which a substance changes from liquid to solid is called the freezing point.<br><br>The melting and freezing points of a substance are the same temperature.<br><br>The temperature at which a substance changes from liquid to gas is called the boiling point.<br><br>The melting/freezing point of water is 0 ˚C.<br><br>The boiling point of water is 100 ˚C. | **SKILLS and PROCEDURES**<br>Safely explore the melting/freezing points of various substances.<br><br>Compare the melting/freezing and boiling points of various substances, including water. |
| | **LEARNER OUTCOME**<br>3M1.5 Students investigate and analyze how materials have the potential to be changed | **UNDERSTANDING**<br>The water on Earth moves continuously in a cycle.<br>**KNOWLEDGE**<br>The water cycle is a process in which water on Earth moves continuously between bodies of water, land, and the atmosphere.<br><br>In the water cycle, water changes state from a liquid to a gas through evaporation, forms clouds through condensation, then falls back to Earth in a liquid or solid state (precipitation).<br><br>Water can change state from solid to liquid and back again.<br><br>Water can change state from liquid to gas and back again.<br><br>In Alberta, the surfaces of many bodies of water change from liquid in the summer to solid in the winter. | **SKILLS and PROCEDURES**<br>Describe and diagram the changes of state of water using the water cycle.<br><br>Discuss ways to respect water in local environments.<br><br>Identify examples of changes in the state of water in local environments.<br><br>Discuss the importance of safety around bodies of water that have a surface of ice.<br><br>Discuss the importance of safety around bodies of water in different seasons. |

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| | **LEARNER OUTCOME**<br>3M1.6 Students investigate and analyze how materials have the potential to be changed | **UNDERSTANDING**<br>Changes to materials or substances can be permanent or reversible, depending on the properties of the given materials or substances.<br><br>**KNOWLEDGE**<br>A reversible change is a change that can be undone, such as melting or freezing.<br><br>A permanent change is a change that cannot be undone, such as cooking an egg or baking a cake. | **SKILLS and PROCEDURES**<br>Discuss examples of changes to materials or substances that are permanent and examples of changes to materials or substances that are reversible.<br><br>Safely perform experiments on various materials and substances and classify changes as permanent or reversible. |
| **Possible Links to the 1996 Science Curriculum** | **Energy (E): Understandings of the physical world are deepened by investigating matter and energy.**<br>**Learner Outcome:** How can forces relate to changes in movement? | | |
| | **LEARNER OUTCOME**<br>3E 1.1 Students investigate and explain how forces affect movement of objects. | **UNDERSTANDING**<br>Forces can affect properties and movement of objects in different ways.<br><br>**KNOWLEDGE**<br>A force is a push or pull on an object resulting from an interaction with another object.<br><br>An object that is not moving will stay still until a force makes it move, and an object that is moving will keep moving until a force stops it. (Newton's First Law)<br><br>Contact forces occur between objects that touch each other.<br><br>Contact forces include forces that are<br>● applied by a person or an object on another object (applied) caused by objects, surfaces, or substances sliding against each other (friction)<br>● applied by pulling on a string or rope connected to an object (tension)<br>● caused by a compressed or stretched object or spring (elastic or spring)<br><br>Ways to apply a contact force to an object include<br>● stretching<br>● pulling<br>● squeezing | **SKILLS and PROCEDURES**<br>Describe where forces may exist in everyday situations.<br><br>Describe the strength and direction of forces applied to objects.<br><br>Compare the strength of forces applied to objects.<br><br>Predict how an object will be affected by different strengths and directions of force.<br><br>Conduct investigations to demonstrate the effects of forces on the movement of objects.<br><br>Conduct investigations to demonstrate how forces can change the shape or size of objects. |

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| | | ● pushing<br><br>The strength of forces applied to objects can be described as<br>● strong<br>● weak<br>● large<br>● small<br><br>The direction of forces applied to objects can be described as<br>● upward<br>● downward<br>● from the left<br>● from the right<br>● from both sides<br>● from all directions<br><br>Changes to an object's movement when a force is applied include<br>● changing speed<br>● starting<br>● stopping<br>● changing direction | |
| **Limited Links**<br>**Grade 4**<br>**Topic: Wheels and Levers**<br>4–6 Demonstrate a practical understanding of wheels, gears and levers by constructing devices in which energy is transferred to produce motion. | **LEARNER OUTCOME**<br>3E 1.2 Students investigate and explain how forces affect movement of objects | **UNDERSTANDING**<br>Simple machines can change the strength and direction of forces.<br>**KNOWLEDGE**<br>The effort needed to move objects is reduced by simple machines, such as<br>● levers<br>● wheels<br>● inclined planes<br><br>Many First Nations, Métis, and Inuit designed, tested, and continue to use simple machines, such as<br>● an antler wedge<br>● a paddle<br>● Inuit scraping tools; e.g., ulu | **SKILLS and PROCEDURES**<br>Explore how simple machines reduce the effort needed to move objects.<br><br>Design a device that uses simple machines.<br><br>Safely work with tools, materials, and equipment.<br><br>Describe the purpose of simple machines used by local First Nations, Métis, and Inuit. |

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| **Possible Links to the 1996 Science Curriculum** | **Living Systems (S): Understandings of the living world, Earth, and space are deepened by investigating natural systems and their interactions.**<br>**Guiding Question:** How do plants and animals interact? | | |
| **Grade 5**<br>**Topic E : Wetland Ecosystems**<br>5–10 Describe the living and nonliving components of a wetland ecosystem and the interactions within and among them.<br><br>**Grade 2**<br>**Topic: Small Crawling and Flying Animals**<br>5–10 Describe the living and nonliving components of a wetland ecosystem and the interactions within and among them. | **LEARNER OUTCOME**<br>3LS 1.1 Students analyze and describe how plants and animals interact with each other and within environments. | **UNDERSTANDING**<br>Plants and animals interact with each other in various environments in ways that can be represented with food chains<br>**KNOWLEDGE**<br>A food chain shows the order in which plants and animals depend on each other for food.<br><br>A food chain can be represented in many ways, such as<br>• illustrations<br>• diagrams<br>• stories<br>• words<br><br>A food chain represents one possible way that plants and animals interact.<br><br>Plants and animals are part of many different food chains. | **SKILLS and PROCEDURES**<br>Represent various food chains in local and other Canadian environments.. |
| | **LEARNER OUTCOME**<br>**3LS 1.2** Students analyze and describe how plants and animals interact with each other and with the environment. | **UNDERSTANDING**<br>Animals can be classified as carnivores, herbivores, or omnivores based on what they eat<br>**KNOWLEDGE**<br>Carnivores eat only animals.<br><br>Herbivores eat only plants.<br><br>Omnivores eat animals and plants | **SKILLS and PROCEDURES**<br>Classify animals in a food chain as carnivores, herbivores, or omnivores. |
| | **LEARNER OUTCOME**<br>**3LS 1.3** Students analyze and describe how plants and animals interact with each other and with the environment. | **UNDERSTANDING**<br>Plants and animals sense and respond to stimuli in order to survive.<br>**KNOWLEDGE** | **SKILLS and PROCEDURES**<br>Investigate and discuss how plants and animals respond to stimuli in their environments in order to survive. |

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| | | Plants and animals use their senses to respond to sensory stimuli, including<br>● water<br>● food<br>● temperature<br>● light<br>Animals can use senses to detect the presence of food, predators, or other plants and animals. | |
| | **LEARNER OUTCOME**<br>**3LS 1.4** Students analyze and describe how plants and animals interact with each other and with the environment. | **UNDERSTANDING**<br>Awareness and consideration of the interactions of plants and animals in local environments helps humans protect them.<br>**KNOWLEDGE**<br>Plants and animals in local environments can be protected by actions such as<br>● respectfully interacting with nature<br>● minimizing disturbance to plants and animals<br>● being aware of animal crossings following fishing and hunting regulations<br>● counting and tracking populations<br>●<br>Plants and animals may depend on each other and their environments for survival, such as for food and habitat.<br><br>First Nations, Métis, and Inuit knowledge of plants and animals within environments includes<br>● animal behaviour<br>● sources of food<br>● migration patterns<br>● seasonal patterns | **SKILLS and PROCEDURES**<br>Reflect on and share actions that can be taken to protect plants and animals in local environments.<br><br>Demonstrate respectful and safe practices during observations of plants and animals in local environments.<br><br>Explain interconnections in environments, including how plants depend on animals and how animals depend on plants to survive.<br><br>Discuss First Nations, Métis, and Inuit connection with environments and their knowledge of and relationships with plants and animals. |
| **Possible Links to the 1996 Science Curriculum** | **Earth System (ES): Understandings of the living world, Earth, and space are deepened by investigating natural systems and their interactions.**<br>**Guiding Question:** What visible changes can be identified by examining Earth's surface? | | |
| | **LEARNER OUTCOME**<br>**3ES 1.1** Students analyze changes in Earth's surface and explain how its layers hold stories of the past.. | **UNDERSTANDING**<br>Earth's surface changes over time.<br><br>Relationships with land have provided intergenerational knowledge of landscapes for many First Nations, Métis, and Inuit | **SKILLS and PROCEDURES**<br>Describe how natural events change Earth's surface.<br><br>Discuss changes to Earth's surface over time that are shared through stories and intergenerational knowledge of First Nations, Métis, or Inuit. |

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| | | **KNOWLEDGE**<br>Changes that can occur to Earth's surface over a long period of time include<br>● mountains wearing down<br>● rivers changing course<br>● lakes and seas drying out and refilling<br>● glaciers moving, advancing, and receding<br>Natural events that can change Earth's surface in a short period of time include<br>● volcanic eruptions<br>● earthquakes<br>● landslides<br>● tsunamis<br>● floods<br>● melting and<br>● freezing<br>Changes to Earth's surface can be shared through<br>● scientific knowledge<br>● stories<br>● traditional knowledge | Investigate natural events that have changed Earth's surface in Alberta. |
| | **LEARNER OUTCOME**<br>There is no **3ES 1.2** KUSP LINE | | |
| | **LEARNER OUTCOME**<br>**3ES 1.3** Students analyze changes in Earth's surface and explain how layers of the landscape hold stories of the past. | **UNDERSTANDING**<br>Water can shape the landscape of Earth.<br>**KNOWLEDGE**<br>Wind, water, or ice can move or remove material as it flows.<br><br>Glaciers are the remnants of very thick ice sheets that once covered all of Canada.<br><br>Melting glacier ice creates runoff that forms and maintains many of the major rivers in Alberta.<br><br>Earth is warming up from natural and human causes, which is accelerating the melting of glaciers.<br><br>Interactions with wind and water have shaped Earth's surface, including Alberta's badlands and the Grand Canyon in the United States. | **SKILLS and PROCEDURES**<br>Represent how the movement of water and wind changes Earth's surface over time.<br><br>Represent the flow of water from glaciers to an ocean.<br><br>Investigate glacier-fed rivers that are found locally or in Alberta. |
| | **LEARNER OUTCOME**<br>There is no **3ES 1.4** KUSP LINE | | |

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| | **LEARNER OUTCOME**<br>**3ES 1.5** Students analyze changes in Earth's surface and explain how layers of the landscape hold stories of the past. | **UNDERSTANDING**<br>Plant, human, and other animal activities can cause changes to Earth's surface.<br>**KNOWLEDGE**<br>Human activities that can change Earth's surface include<br>● living on the land<br>● building towns and cities getting and using resources growing crops and farming (agriculture)<br>● polluting<br>● Stewardship<br>●<br>Plant and animal activities can change Earth's surface, such as<br>● overpopulation<br>● using resources<br>● parasite infestation; e.g., mountain pine beetle<br>● animals burrowing | **SKILLS and PROCEDURES**<br>Relate human activities to changes in Earth's surface.<br><br>Relate activities of plants and animals to changes in Earth's surface.<br><br>Discuss the interconnectedness between human activities and responsibilities for maintaining Earth.<br><br>Investigate how changing Earth's surface by farming and growing crops contributes to daily life in Alberta. |
| | **LEARNER OUTCOME**<br>3ES 1.6 Students analyze changes in Earth's surface and explain how layers of the landscape hold stories of the past. | **UNDERSTANDING**<br>The history of Earth's surface can be explained by examining its layers.<br>**KNOWLEDGE**<br>Earth's surface contains layers that have been deposited over long periods of time.<br><br>Fossilized dinosaur bones found in many locations around the world show that dinosaurs lived on Earth millions of years ago.<br><br>Millions of years ago, Earth's surface in Alberta included lush tropical forests and an inland sea that supported dinosaur life and the preservation of dinosaur bones.<br><br>Fossilized dinosaur bones can be collected from the surfaces of Earth or by digging up (excavating) its layers. | **SKILLS and PROCEDURES**<br>Examine how layers of Earth's surface hold information about the past.<br><br>Explain how paleontologists know that dinosaurs lived on Earth millions of years ago.<br><br>Investigate fossilized dinosaur bones that have been found in Alberta and the dinosaurs they belong to.<br><br>Identify and discuss where fossilized dinosaur bones have been found or are on display in Alberta. |

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| | | Fossilized dinosaur bones have been found in several locations in Alberta, such as<br>● Alberta's badlands<br>● the Grande Cache area<br>● the Fort McMurray area<br><br>Dinosaur Provincial Park, located in Alberta's badlands, has been classified as a UNESCO World Heritage Site.<br><br>Many dinosaurs lived in Alberta, such as<br>● Albertosaurus<br>● Edmontosaurus<br>● Nodosaurus<br>● Tyrannosaurus<br><br>Displays of fossilized dinosaur bones can be viewed in museums in Alberta such as the<br>● Royal Tyrrell Museum in Drumheller<br>● Philip J. Currie Dinosaur Museum in Wembley<br><br>A scientist who studies fossilized dinosaur bones is called a paleontologist. | |
| **Grade 3**<br>**Topic A: Rocks and Minerals**<br>3–5 Demonstrate knowledge of materials that comprise Earth's crust, and demonstrate skill in classifying these materials. | **LEARNER OUTCOME**<br>3ES 1.7 Students analyze changes in Earth's surface and explain how layers of the landscape hold stories of the past. | **UNDERSTANDING**<br>● Soil is a continually changing upper layer of Earth's surface.<br><br>**KNOWLEDGE**<br>Soil includes<br>● living plants and animals decaying plants and animals rock particles<br>● air<br>● water<br><br>Soil provides a habitat for many animals.<br><br>Habitats are environments where plants or animals establish a home.<br><br>Soil can change due to the influence of plants and animals, such as<br>● plants and crops growing<br>● worms tunneling and eating matter | **SKILLS and PROCEDURES**<br>Examine soil and its components in the local community.<br><br>Identify local habitats provided by soil.<br><br>Describe how soil is changed by plants and animals. |

| Possible Links to the 1996 Science Curriculum | **Computer Science (CS):Problem solving and scientific inquiry are developed through the knowledgeable application of creativity, design, and computational thinking.**<br>**Guiding Question:** How does creativity contribute to computational thinking? | | |
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| | **LEARNER OUTCOME**<br>3CS 1.1. Students investigate creativity and its relationship to computational thinking. | **UNDERSTANDING**<br>Computational thinking is a problem-solving process that uses creativity.<br><br>**KNOWLEDGE**<br>Computational working backward if a mistake was made<br>Computational thinking includes<br>● breaking a task into smaller chunks<br>● finding patterns and similarities in tasks<br>● identifying the important details when reading or solving a problem<br>● designing instructions<br>● working backward if a mistake is made<br><br>Computational thinking can be used by humans to communicate with computers more efficiently; e.g., apps, virtual reality, and robotics. | **SKILLS and PROCEDURES**<br>Create a set of instructions that could be followed by a human or a machine to complete a task.<br><br>Identify computational thinking used to solve problems or achieve desired outcomes. |
| | **LEARNER OUTCOME**<br>3CS 1.2. Students investigate creativity and its relationship to computational thinking. | **UNDERSTANDING**<br>Creativity involves divergent thinking and can be used to develop different ways to achieve the same outcome.<br><br>Creativity involves imagination, observation, and making connections.<br><br>**KNOWLEDGE I**<br>The same outcome, such as arriving at school, can be achieved in different ways.<br><br>Divergent thinking is the process of generating multiple unique ideas or solutions.<br><br>Creativity is an important part of computer science, technology, and engineering; e.g., computer programming, robotics.<br><br>Creativity involves combining, changing, or reapplying existing ideas to produce something new.<br><br>Canadians are responsible for many creative | **SKILLS and PROCEDURES**<br>Collaborate to write two sets of instructions that achieve the same outcome.Collaborate to write two different sets of instructions that achieve the same outcome.<br><br>Relate creativity to engineering, computing, and the development of new technologies.<br><br>Create something new by combining, changing, or reapplying existing ideas.<br><br>Examine a Canadian invention.<br><br>Identify examples of creativity in computer science, technology, or engineering. |

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| | | inventions, such as the Canadarm. | |
| **Possible Links to the 1996 Science Curriculum** | **Scientific Method (SM): Investigation of the physical world is enhanced through the use of scientific methods that attempt to remove human biases and increase objectivity.** | | |
| | **LEARNER OUTCOME**<br>3SM 1.1 Students engage in investigation and consider its potential to build understanding of the natural world. | **UNDERSTANDING**<br>Investigations build on previous knowledge by supporting or contradicting existing knowledge<br>**KNOWLEDGE**<br>Techniques that can be used to improve the accuracy of data include choosing appropriate tools, carefully measuring, and demonstrating objectivity.<br><br>Accuracy of data refers to the correctness of a recorded observation.<br><br>Objectivity is an attempt to remove the influence of personal thoughts, feelings, and expectations.<br><br>Data can come from many sources, such as<br>● investigations<br>● texts<br>● Websites<br>● Elders or Knowledge Keepers<br>● community members<br>● personal observations<br><br>Data can be considered accurate when it comes from a trustworthy source, such as<br>● textbooks<br>● scientific articles (peer-reviewed journals)<br>● official government websites<br>● Elders or Knowledge Keepers<br><br>Data can be analyzed by<br>● making connections to previous knowledge<br>● comparing for accuracy<br>● asking questions<br>● noticing changes<br>● discussing<br>● collaborating<br><br>Analysis of data can spark new questions for investigation. | **SKILLS and PROCEDURES**<br>Reflect on how conducting an investigation contributes to building knowledge.<br><br>Collect data using techniques to improve the accuracy of data.<br><br>Analyze data collected during investigations.<br><br>Compare the trustworthiness of sources of data.<br><br>Develop new questions for further investigations. |