Developing Students' Functional Literacy Through PISA Format Tasks

Aigul Aitan, Nazarbayev Intellectual School of Chemistry and Biology in Aktau, Kazakhstan
Kulpiya Amandossova, Nazarbayev Intellectual School of Physics and Mathematics in Almaty, Kazakhstan
Altynay Demisinova, Nazarbayev Intellectual School of Physics and Mathematics in Aktobe, Kazakhstan

The Paris Conference on Education 2024
Official Conference Proceedings

Abstract
In 2019, as a result of preparation for the PISA, it was revealed that the functional abilities of students are low. To solve this issue, the ActionResearch was done in 3 months. During the study, a survey among students, illustrated that they were not prepared to describe information, analyze/interpret graphic text, and search for data using a hyperlink text. Our research aims to create an individual who is able to:
• use gained information from text in everyday life;
• quickly overcome obstacles encountered in life;
• know how to solve problems and communicate in the implementation of their ideas.
We planned to use graphics/mobile texts, hyperlinks in the lesson process. Graphic texts were chosen, since it was concluded it will be more effective to work with moving text for the development of critical thinking skills. Methods as "FILA", "GROW", "FISHBONE", "SWOT" were used on the lessons. According to the results of the first trial PISA exam, 64% of 25 students could not complete tasks with hyperlink, with the second text in it. To assess the ability of students to process and analyze the data in texts the interview was taken, after which the formative assessments with hyperlink, graphic texts were added to a school programme. It helped to flourish their critical thinking skills. Consequently, 88% of students depicted higher results. Students of NIS Aktau demonstrated better marks on 2022 PISA, than in 2019. After these practices, the project was represented at the international conference held in Bremen and Prague.

iafor
The International Academic Forum
www.iafor.org

Introduction

One of the most pressing problems in the educational process is the low functional literacy of students. The development of functional literacy of young people in the modern era of rapid development of knowledge and technology is one of the planned steps in the education system. Because the main indicator in the education system is the performance of tasks based on Reading Literacy, which is analyzed, summarized, and evaluated at a comparable level worldwide (OECD) after the analysis based on the result of the PISA exam, I interviewed students. The interview questions were as follows:
-   Which question in the PISA task caused you difficulties?
-   What task in the PISA task did you not have time to deliver?
-   Which question in the PISA assignment did you read wrong?
-   Which question in the PISA task was more complicated? Caused trouble?

From the results of the interview with these questions, we can conclude that students:
-   We found that we ignore negative verbs without reading the questions in full until the end of the sentence;
-   We noticed that we have difficulty critically evaluating the information in the text;
-   We learned that hyperlinks could not save time when accessing text;
-   Has difficulty fully decomposing information in graphic text.

Together with our colleagues, we will discuss the topic: "How to improve the reading literacy of students? We had a professional conversation, looking for an answer to the question: "What is it?" In the course of a professional conversation, we decided that the problem could be solved by moving from the level of understanding and knowledge to analysis, discussion, and decision-making thinking in the process of completing tasks with text types.

In solving these problems, it is important that students can sort out the knowledge and information gained and apply it to their needs in life. Therefore, each teacher needs to develop skills with information in the fields of professional, public education, and science to improve reading literacy by working on tasks in the functional literacy of students in their subject. A sequential lesson was created on the section "biodiversity" and "nature protection", a common topic. During the lesson, we planned to use graphic and mobile texts.

Our Research Goal

Develop students' ability to sort and apply the information received by working with non-holistic texts.

Research Objectives

-   Learn to Interpret
-   Ability to Selectively Read Information
-   Direct to Make a Decision
-   Learn to Conclude

Functional literacy is a knowledge skill that is formed by a person with adapts to the social environment because of the connection between school education and the multidisciplinary activity of a person in everyday life. The main feature of functional literacy is characterized

by the ability to solve life problems based on Applied Knowledge in various areas of a changing society [1]. Functional literacy is considered the main factor that contributes to lifelong learning, where people overcome obstacles in the cultural, political, social, and economic spheres and find solutions through ideas. Therefore, functional literacy, it shows an indicator of the highest potential of society. This is the Prevention of our society in one direction to get out of the social crisis.

Research Hypothesis

Why were graphic texts chosen? According to a joint approach, it was concluded that it would be more effective to work with graphic and moving text to develop reading skills, increasing the efficiency of reading. In the last interview tests, students were given the fact that graphic and mobile texts are most common, and they do not have the skills to perform them, they do not have time, and the development of digitalization literacy skills in students is considered.

Relevance of the Study

With frequent completion of tasks with non-holistic texts, the ability of students to read literacy develops.

Research Methodology

The main objects of PISA research are open-ended questions aimed at critical thinking, tasks based on analysis, and synthesis of information sorting, which find the main idea of the entire text. Students will like the tasks of summarizing (synthesizing) the information received from this text and making final thoughts. They use this knowledge and skill in solving obstacles encountered on the way of life, in differentiating the game. Therefore, we set ourselves the main goal of working with holistic and non-holistic texts and counting on time [2].

In the course of the study, we used the analysis, analysis, accumulation, and interpretation of the information obtained by the methods "FILA", "GROW", "FISHBONE", and "SWOT", depending on the influence of students on the development of functional literacy in the transformation of tasks through content differentiation in the direction of initial reasoning to turn a whole text into a non-whole text. The first time these methods were used in the lesson, the student could not immediately sort out the information, then the first and third times, when the tasks were built into these methods, we considered allowing the space of the thought process to be fully analyzed by describing the numerical information seen by the students, the accumulated information through graphic texts and speech with images.

We entered the second text with a hyperlink, integrated texts with information about the environment or endangered animals, and weather forecasts into the task of finding answers to the question and worked with a moving text: "search for answers to the question by accessing the link". In this regard, we have observed the effectiveness of the combined use of geographical and biological knowledge. The integrated knowledge contributes to the full transfer of the responsible soul.

In working with mixed texts, students were hampered by the inability to obey time. Therefore, it was recommended to read the questions before reading the mixed text, and then read the text. In this regard, it is possible to save time, since the student of the general text

understands that he should read the first question without first reading it, and then read the text.

The Result of the Study

In the case of the implementation of the purpose of the study, we focused on the implementation of the expected results:
- Can define the purpose of the text, and distinguish the form;
- Learn to use knowledge and make logical connections;
- Learn to think critically and formulate your own;
- Ability to apply their skills in life situations;
- Learn to evaluate their skills in comparison;
- Learn to read information selectively;
- Will be ready to overcome obstacles quickly;
- Can solve problems in the implementation of their ideas.

In tasks based on reading literacy, texts about situations that occur in real life are given to the student to develop the ability to think and give feedback. Our students only say "good" in one direction when giving feedback. This is the obstacle. What is the best part, and why? In the following lessons, we introduced the focus on answers to questions: "What are you talking about?"

To Search for Information in a Targeted Manner and to Obtain Information

- "Who?", "What?", "Where?", "When?", and "What did he do?" It is necessary to find specific material, taking as a basis the questions.
- Determine the topic of the text, and find the main idea.
- It is necessary to look for and identify information that is not clearly stated in the text.

The types of information are as follows: factual(fact); conceptual (inferential); and presented in a figurative or implicit form. There is no problem if the student understands this [3].

In the PISA program, texts should be selected on personal (self) topics -30%, public -30%, educational - 25%, professional-15%, so that they form public opinion as needed in life. For example, we have selected modern professional texts such as the profession of a flight attendant, the profession of a hairdresser, or an aviation engineer to know public opinion. It was also considered that the student should be aware of the information that is happening daily following the Times. The text of the assignment also included texts that provide the necessary information for life, such as the ethics of daily cleaning of teeth and the protection of personal rights. This is because the student uses the knowledge gained to make it easier for him to live his life as he needs it. For example, we have selected texts such as about the conditions to be considered in the delivery of glass material by mail. After all, in Student Life, a student should be careful when sending gifts, and parcels to his family from another city, and be able to use the information in the text in the life he needs.

Another aspect to consider when creating a task is that information must be present in a system focused on Search, Selection, integration and interpretation, analysis, and evaluation. For example, "Who can be a donor? it is intended that the student will be prepared for various situations that will occur in life by receiving a text on the topic" [4].

It was assumed that the created criteria of success and expected results would allow students not only to achieve their educational goals but also to reflect on the future in the context of globalization to use their knowledge for the benefit of the country. And how to achieve this? Of course, to achieve results, we have selected the methods, tasks, and resources that will be performed in the process of the research lesson, so that they are available for our research purposes together so that public and professional information is received. The goal is to build a self–governing personality, ready for environmental and economic situations, aimed at choosing a future profession, to form a relationship with the environment. The main goal of reading literacy is also to interpret the information received by these students and apply it to their life needs. The tasks are provided to identify and evaluate the information provided in the text. In most cases, the advantages and disadvantages of the problem are evaluated in comparison. In a study by Vincent R. Ruggiero, a professor at the State University of New York, "critical reading strategies", we followed the principle that "before reading any text and relying on the information contained in it, everyone should use a four-step Critical Reading Strategy: Review, analysis, reading, and evaluation".

Discussion of Research

With the rapid development of technology in the current course of life, if the human world is functionally literate, a person will undoubtedly be formed who will be able to live and effectively apply the acquired knowledge to himself. Therefore, it is necessary to consider the impact on the thinking process when compiling a question, depending on the need and availability of the text for the daily task of the student per the requirements of the time. Only then will the ability to functional literacy be formed. People with high reading literacy make their life easier by determining the route of routes at the Daily stop, without disturbing anyone, without losing time, taking medications from a pharmacy with instructions after a doctor's appointment, allowing them to choose the direction and time they need from a graph text with a table.

The main reason for working with solid and non-solid texts and considering time is that working with graphic text teaches students to sort, analyze, and analyze information. Effective ways to work with mixed and aggregated texts, not as holistic as looking for answers in the second text through a hyperlink, are important for learning to look for modern information and to reckon with time. We also remember that tasks aimed at performing through hyperlinks are often based on increasing the use of knowledge gained from many other disciplines in life, and the ability to search for information by the Times is formed. The idea is that students need to get used to the effective use of time to access the hyperlink and find the answer to the highlighted question.

In working with mixed texts, students were hampered by the inability to obey time. Therefore, it was recommended to read the questions before reading the mixed text, and then read the text. In this regard, it is possible to save time, since the student of the general text understands that he should read the first question without first reading it, and then read the text.

In tasks aimed at analyzing information in mixed texts, they read different points of view and two-way opinions and conclude. He will be able to make comparisons and stop at the information he needs. This is the problem that we also consider when creating the main task questions, interpretation, and comparison questions. The student must be free and balanced in

his own game. To create conditions for this, it is also advisable to use questions at the level of constant analysis, application, and evaluation of the thought process [5].

The use of systematized information in the ecotourism eco-project based on a theatrical poster and diagrammatic results for the development of reading literacy in the majority of tasks based on functional literacy also gave good results. As proof of this, the project representing Kazakhstan took first place at the international scientific conference "Ecology: The School of Ecology: Thinking, Research, and Action" held in Bremen, Germany. At the international level, he defended the international group held in Germany and was awarded a special diploma (Research team members, scientific supervisors: Aitan A.L., Kazakh language teacher; Baimukhanbetova A., German language teacher; research students in the project: 11th-grade students Altybai Nesibeli, Ospanova Farida, and Abil Amina).

Students' ecological literacy increases as they care for the environment. In the lessons on "Biodiversity," they collect information about animals, birds, and plants included in the Red Book, make brochures, summarize the information, and write a compact text. Practical works were made to interest the reader and were distributed to students and other schoolchildren at the bus stops, and they also contributed to the development of environmental literacy.

Clean up the seashore and say, "Let's protect nature!" I sent the baton to the schools of the National Academy of Sciences in other cities: Almaty NIS PhM, Petropavl PhM, and Kokshetau PhM. As a result, there were several relay movements on environmental issues in society.

The international scientific research article held in the Czech Republic won 1st place in the world selection in the "perspective of geographical research" section and received a special award. Students in the 11th grade wrote the research article together with the students of Tilegen Sayazhan and Yeraly Kundyz.

To use underground water sources in Mangistau by the times and to solve the problem of drinking water, for several years now intellectuals have been encouraging students to think about solving social problems and to open blocked springs. Underground water sources in the regions of Beineu, Uzen, Taushyk, Fort, Jingyldi, and Shayyr were taken as the object of research. Research is still ongoing, and updates are being developed. In previous academic years, the research project won a prize in the Republican "Zerde" competition (Shansharbekova Venera and Muratkyna Asel).

He is conducting intra-school research with students in grades 10–12 in the section "environment" on the topic "Harmful Impact of Gravel Production and Processing on the Environment." An extended study is currently underway, and this topic was previously awarded a prize in a national competition. He is still looking into the future, revealing one of the reasons for the ecological consequences of the local area and making recommendations and warnings to prevent bad weather. With such public works and research projects aimed at restoring the balance between nature and humans, young people are developing environmental literacy.

We published a children's magazine, "Aikorkem," with my 10th–11th grade students. At that time, their comics, created by themselves, gathered a special audience. By drawing comics, we increase students' interest in reading works of art. My student, Nurlykhan Utegaliev, works especially hard at drawing comics. Like Botagoz, my 8th grader turned into a comic

based on Y. Altynsarin's work "Father and Child" and won a prize in the online, Republican competition on the topic "Comics: A New Approach." The editor-in-chief of the magazine, the designer Dzhazilya Berdeshbaeva, wrote stories herself, taught moral values, solved the language problem, and wrote a thought-provoking story to participate in the eco-project. On the occasion of that story, the student himself will make an illustration according to the main idea. At this time, students can adapt to functional literacy. This is also an achievement.

If the human world is functionally literate in the period of rapid development of technology in modern life, a person who is inclined to live and who can effectively use the acquired knowledge will be formed. Therefore, it is necessary to consider the impact on the thinking process when choosing a text for the student's daily task based on the need and availability of questions. Only then will he be fully formed as a functionally competent person.

Based on the task, it is necessary to consider the correct setting of the questions given to the thinking process, and the impact on critical thinking. In tasks based on functional literacy, the use of systematized information about the work of ecotourism, eco-projects based on theatrical posters, and schematic results gave a good result for the development of educational literacy of the public. In the future, it is planned to group tasks based on reading literacy and present them to other colleagues as a methodological booklet.

Conclusion

can describe and analyze information in graphic texts. On the contrary, the ability to analyze is increased by using information in a whole text, turning it into graphic text, such as a table, or diagram, which is not a whole. Students use the results of their lives to promote the formation of a functionally competent person who can apply the acquired knowledge in life and make rational decisions in difficulties. By sorting and analyzing information, knowing the knowledge you need, understanding, evaluating, and analyzing it, you can easily switch from thinking to thinking. As a result, students will be ready to quickly overcome the difficulties and obstacles that they face in life. He knows how to solve problems and communicate in the implementation of his ideas.

References

[1] The Center for the assessment of the quality of education of the IOSO RAO. (2003). The international program PISA 2000. – M, p. 8.

[2] National Academy of Education named after I.Altynsarin. (2013). Features of the formation of functional literacy of high school students in the subjects of the social and humanitarian cycle. Methodical manual. – Astana-2013. – p. 41.

[3] Rozhdestvenskaya L., Logvinova I. Formation of functional reading skills. A teacher's manual. [electronic resource]. URL: https://slovesnic.ru/attachments/article/303/frrozhdest.pdf

[4] Nazarbayev Intellectual Schools, Branch of the Center for educational programs. (2020). Methodological guidelines for the formation of reading literacy of students Nur-Sultan-2020, pp. 22-26.

[5] PISA Test Questions// URL: http://www.oecd.org/pisa/pisaproducts/pisa-test-questions.htm