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DIGITAL READING STRATEGIES FOR IMPROVING YOUNG ADOLESCENTS' READING COMPREHENSION IN ENGLISH LESSONS

MASTER'S THESIS

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DECLARATION OF ACADEMIC INTEGRITY

I declare that this study is my own and does not contain any unacknowledged work from any source.

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22 November, 2021

ABSTRACT

The given master's thesis has been written as the final work in the study programme of Teaching and Learning Competence with the aim to research the implementation of digital reading strategies and applications and its improvement on digital reading comprehension in English lessons in the particular Form 7. The topicality of this Paper is closely linked in the changes in the education process in Latvia that are being obtained in accordance with Education Development Guidelines for 2021-2027 entitled "Future Skills for the Future Society", where the ultimate goal of educational development for 2021-2027 covers digitization. However, this Paper focuses on the role of digital reading comprehension in Form 7, analyzing the implementation of digital reading strategies and applications in concurrent time and location.

The theoretical part of this Paper analyzes the researches, suggestions and conclusions of such experienced authors as M. Konnikova, V. Clinton, R. Pritchard and J. Dewey. Moreover, the digital reading comprehension support applications have also been analyzed in this Paper. After the completion of literature analysis the author of the Paper concludes that rather little research is carried in Latvia that would measure students' digital reading comprehension in a foreign language, however, they are exposed to changing environment of learning due to COVID-19 pandemic, testing digital literacy skills and digital reading comprehension, thus, it seems reasonable to aspire for improvement of digital reading comprehension in foreign language.

The research method is a case study that involves the author's teacher journal entries, attitude, behaviour and general tendency questionnaire carried out among students before and after implementing digital reading strategies and applications and semi-structured interviews with three subject-related teachers of School X, also, before and after the implementation process. Among some of the activities found to be contributing to the development of digital reading comprehension and digital literacy skills are note taking, highlighting, chunking, Venn diagram, mind mapping, hyperlink use and self-generated narrative, which positively correlate with development of deep reading strategies of annotation, connection making and chunking. Due to the digital characteristics of the activities, such applications as Google Classroom, Google Docs, Speechify, FreeMind and MindMup, Microsoft Word, Quizlet were chosen to be implemented on account of digital literacy skill development. In succession with the data gained in the research the Paper can be used as guideline for teachers, engaging in online teaching or working on digital reading comprehension skills in the classroom.

Keywords: digital reading comprehension, digital reading comprehension applications, strategies, digital literacy, online classroom

ANOTĀCIJA

Maģistra darbs ir izstrādāts Mācīšanas un Mācīšanās lietpratībai maģistra studiju programmas ietvaros ar mērķi izpētīt digitālās lasītprasmes stratēģiju un lietojumprogrammu īstenošanas procesu un ietekmi uz digitālo lasītprasmi angļu valodas stundās 7. klasē. Darba aktualitāte ir cieši saistīta ar izmaiņām izglītības procesā Latvijā saskaņā ar Izglītības attīstības pamatnostādnēm 2021. – 2027. gadam "Nākotnes prasmes nākotnes sabiedrībai", kur izglītības attīstības galvenais mērķis aptver digitalizāciju. Tomēr, šajā pētījumā galvenā uzmanība pievērsta digitālās lasītprasmes lomai 7. klasē, analizējot digitālās lasītprasmes stratēģiju un lietojumprogrammu ieviešanu reālā laikā un vietā.

Darba teorētiskajā daļā ir analizēti tādu pieredzējušu autoru kā M. Konņikovas, V. Klintones, R. Pričarda un Dž. Djūja pētījumi, priekšlikumi un secinājumi. Turklāt, šajā pētījumā ir analizētas arī digitālās lasīšanas izpratnes atbalsta lietojumprogrammas. Pēc literatūras analīzes darba autore secina, ka Latvijā tiek veikts salīdzinoši neliels pētījumu skaits, kas mērītu skolēnu digitālo lasīšanas izpratni svešvalodā. Taču skolēni ir pakļauti mainīgajai mācību videi Covid-19 pandēmijas dēļ, pārbaudot digitālās prasmes un digitālo lasītprasmi, tādējādi šķiet pamatoti tiekties uz digitālās lasītprasmes izpratnes uzlabošanu svešvalodā.

Pētījuma metode ir gadījuma pētījums, kas ietver autores skolotāja žurnāla ierakstu analīzi, attieksmes, uzvedības un vispārējo tendenču aptauju, kas sniegta aizpildīšanai skolēniem pirms un pēc Digitālās lasītprasmes stratēģiju un lietojumprogrammu ieviešanas, kā arī daļēji strukturētas intervijas pirms un pēc metožu izpildes ar trim X skolas skolotājiem, kuru priekšmetiem pastāv starppriekšmetu saikne. Tika atklāts, ka starp aktivitātēm, kas veicina digitālās lasīšanas izpratnes un digitālās pratības prasmju attīstību ir piezīmju veidošana, teksta izcelšana un sadalīšana, Venna diagramma, prāta kartēšana, hipersaišu izmantošana un pašveidota stāstījuma veidošana, kas pozitīvi korelē ar dziļās lasītprasmes stratēģiju apguvi, proti, anotāciju, savienojumu veidošanu un teksta sadalīšanu. Aktivitāšu digitālā rakstura dēļ tika izvēlētas tādas lietojumprogrammas kā Google Classroom, Google Docs, LucidChart, Speechify, FreeMind un MindMup, Microsoft Word un Quizlet, ņemot vērā digitālo prasmju attīstību. Kopā ar iegūtajiem datiem, pētījuma datiem par aktivitātēm, kas ietilpst digitālās lasītrpasmes stratēģijās un lietojumprogrammās digitālās lasītprasmes uzlabošanai 7. klasē, darbs var tikt izmantots kā vadlīnijas skolotājiem iesaistoties tiešsaistes mācībās vai strādājot pie digitālās lasītšanas izpratnes prasmēm klasē.

Atslēgvārdi: digitālā lasītprasme, digitālās lasītprasmes lietojumprogrammas, stratēģijas, digitālā pratība, tiešsaistes klase

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INTRODUCTION

Nowadays adolescents spend more time online and less time with traditional media, such as television, magazines and hard copy books (Twenge, 2017), indicating that time on digital media has displaced time once spent reading a book or watching TV. Nevertheless, digital reading technologies may be instinctively attractive as they offer a variety of possibilities, including interactivity, portability and instant satisfaction of demand for a particular reading piece, thus, digital books are more appealing to young adolescents and can be thought of as progressive. Moreover, the situation in Latvia due to COVID-19 pandemic forced teachers and students to engage in emergency distance education, emphasizing the necessity of modern technology and, consequently, digital reading skills as most of the students' communication, learning content and tasks were digital, in e-classroom or other digital platforms, emphasizing the need for digital reading skills.

Two years prior to the pandemic, the OECD's Programme for International Student Assessment (PISA) carried out a survey on 15-year-old student competence while reading in a digital setting (OECD, 2021). The results, presented in 2021, indicate that student ability to analyze the reliability of the digital information source is slightly higher than the OECD average, which is 0,03. Besides, a more accurate strategy for assessing the reliability of a digital source is for girls and students with higher family socio-economic status. In Latvia, 56,5% of students state that they have been taught at school how to decide whether information obtained on the Internet is reliable, while on average in the OECD countries the percentage is little higher – 69,3%. Results indicate that students with good reading performance use a variety of sources for information in a balanced way, hence, using both formats for reading – electronic and paper. Nevertheless, student achievement in comprehension exercises that use either one or multiple information sources is lower than in other OECD countries per average, which leads to conclusion that the reading competence of 15-year-old Latvian students in the OECD PISA 2018 survey is 479 points (OECD,2021), which is slightly below the OECD average of 487 points. This tendency indicates that reading comprehension practice in Latvia focuses on the information evaluation, however, the data highlights problems in retrieval and combination of information, in other words, students lack skillset when exposed to multiple information sources.

Little research is carried in Latvia that would measure students' digital reading comprehension in a foreign language; yet, analysing the centralised examination (CE) results for Grade 9 it can be stated that the situation improves gradually through the years as the average percentage has risen from 59,7% in 2017 to 62,7% in 2019 (VISC, 2020).

Education policy, which is the principles, objectives and action of the government in the field of education, provides a synergy between targeted individuals and national development objectives. Medium-term policy planning document the Education Development Guidelines for 2021-2027 entitled "Future Skills for the Future Society" set out the educational development objectives and action lines for the next seven years. Given that the educational process affects every citizen, the guidelines cover all forms and degrees of education. The ultimate goal of educational development for 2021-2027 is to provide quality educational opportunities for all Latvian residents, in order to promote the development and implementation of their potential throughout their lives and to build their capacity to change and manage permanent changes in society and the economy responsibly (IZM, 2020). Major horizontal changes also cover digitization, i.e. increasing the supply of e-learning in vocational, higher and adult education, the development of digital learning tools and supporting materials, the development of digital learning platforms and the development of digital skills as a cross-cutting competence. In the context of the future, digital skills, by their importance, are aligned with reading and counting, stressing that at least at the basic level they are and will be needed by everyone, regardless of their scope, consequently, it seems meaningful to develop digital tools that would improve both the necessary digital literacy and the fundamental ability to read. It is clear that education is an essential resource for the overall development of the individual and the state. The purpose of education in its wider sense is to "prepare individuals for life", which means three central aspects of life: the general, relevant to the development of personality and its potential, the ability to assess the culture of the society to which the individual belongs, as well as to make choices about the direction of his or her life; the involvement of the individual in social and political processes; and the professional focus; pivoting on the individual's ability to participate in economic activities as an employer or worker (Gingell, Winch, 2004).

Early findings claim that there is a significant correlation between printed and digital reading competences (Chin & Baoqi, 2018). Adolescents' online reading habits and strategies are reflective of their print preferences and behavior with physical books. This statement is also supported by research carried out by OECD (2021), where the evidence concluded that in Latvia, students who read books more frequently in paper format have 43 points higher achievements in the PISA 2018 reading test than students who hardly read books. About 19 points higher achievements are for pupils who read books more frequently using digital devices, while 20 points higher reading achievements are for students who read books uniformly often in paper format or digital devices. Nevertheless, as depicted in Clinton's (2019) analysis readers may be more efficient and aware of their performance when reading from paper compared to screens. Other experts (Delgado et al.,2018) think the glare and flicker of screens tax the brain

more than paper. Others (Singer & Alexander, 2017) argue that spatial memory for the location of a passage or a chart on a physical paper page can help a student recall information. Digital distraction and the temptation to browse or multi-task is an obvious problem in the real world, however, it can be overcome by teaching appropriate reading strategies, as the particular process is considered to be interactive, strategic and adaptable for each reader (Sousa, 2011), positioning teacher as a provider for variety of reading strategies to improve comprehension skills.

Development peculiarities must be taken into account when analysing comprehension abilities. Young students learn language based on the environment they are exposed to but have insufficient meta-cognitive skills to analyse and create strategies independently. However, adolescence marks a period of meta-cognitive skill development, and a research of Wilson and Horch (2002) has shown that the brain of an adolescent goes through a growth spurt and, by reaching puberty, a specific period of pruning is in motion. During this period, hardwiring of excessively used connections happens simultaneously with degradation of unused connections, meaning, intellectual activities with greatest practice opportunities are to influence learning outcomes and competences, building a solid base for further academic achievements or failure. The author believes that the positive correlation in both printed reading and digital reading strategies suggests a necessity to continue providing student based digital strategies for reading comprehension, favouring the hardwiring process, that could promote lasting foreign language competences.

However, certain methodological limitations were to be determined beforehand as a subjective process, evaluating the impact on results and conclusions. Sample size was considered a noteworthy limitation as it determines the possibility to identify significant relationships from the data, ensuring a representative distribution of groups of people to whom results are generalized and transferred. In this case, the sample size was rather small, consisting of 27 grade 7 students, of whom 15 are girls and 12 are boys, aged 12 – 13 years old. The chosen target group also highlights the next limitation – reliability of data. As adolescents were to fulfill questionnaires, which indicated the general digital reading practices and experiences, there was a possibility that students were likely to give socially desirable responses. As the author of the Paper evaluated and analyzed data independently, self-reported data was one of the limitations to be aware of. In this case, as the research consisted of semi-structured interviews and teacher's journal, selective memory, telescoping and attribution were biases that could influence research conclusions. Researcher limitations, such as, access to people was recognized as significant due to the situation in education facilities caused by Covid-19 pandemic, where learning and teaching manner is left insecure. Secondly, longitudinal effects, such as limited time to apply

methodology and gather results was noted as the students were to practice digital reading strategies for a month, thus, the time available to investigate research problem and to measure change over time was constrained.

Acknowledging the research limitations, the **aim** of the Master's Thesis is to examine how digital reading strategies can improve young adolescents' digital reading comprehension in English lessons.

In order to achieve the aim the following **objectives** are set:

1. To explore and analyse theoretical literature about components of digital reading comprehension and strategies for students during young adolescence;

2. To adapt digital reading strategies to use in the English language classroom;

3. To implement digital reading strategies in English lessons and observe how they work in the author's conducted lessons;

4. To analyse and compare students' opinion and reading-comprehension subject related teachers' opinion about the strategy effectiveness;

5. To fill in the teacher's journal about the author's experience using digital reading strategies in conducted English lessons.

The **research questions** for the Master's Thesis are the following:

1. what the components of digital reading comprehension are;

2. in what manner digital reading strategies can be applied to promote reading comprehension;

3. how digital reading strategies changed the students' digital reading comprehension in English lessons.

The author of the Master's Thesis chose a case study as a **research method**. The research sample is 27 students of Grade 7. There are 15 girls and 12 boys in the classroom, aged 12-13 from a variety of socio-economic backgrounds. The research was carried out in regular state funded secondary school Grade 7, however, the particular name of the school is not to be revealed due to data protection, for the sake of convenience, throughout the Thesis the name of the school is changed to School X. The research was conducted during September and October.

The author used following **data collection methods**:

1. Questionnaires to students before and after implementing the digital reading strategies to examine students' opinion and perception about the usefulness of the strategies and general digital reading practices.

2. Semi-structured interviews to reading-comprehension subject related teachers were carried out to determine, whether digital reading comprehension strategies have had a beneficial influence on academic performance in other subject related areas.

3. The author filled in the teacher's journal with entries after the lessons where digital reading strategy was used to give observational feedback of the overall situation in Form 7.

Outline of chapters:

Chapter 1 uncovers the concept of digital reading comprehension, its elements, and describes several digital reading comprehension strategies that can be used in the English language lessons.

Chapter 2 explains the essence of digital reading applications, their procedure and influence on reading comprehension.

Chapter 3 Introduces the findings of pilot study, justifies purpose and choice of survey questions and respondents. Presents and justifies the digital reading strategies and applications useful in this case.

Chapter 4 proposes the case study and the analysis of the data gathered in School X during months of September and October. It shows the examination of the author's journal entries and discloses the experience using digital reading strategies and applications for developing digital reading comprehension.

1. DIGITAL READING

The term “digital literacy” refers to a combination of text and other media resources in an electronic context (Knobel & Lankshear, 2014), while “digital reading” is the process of absorbing the presented information from a digital platform. However, not all texts read on the screen are considered as digital, as the texts must correspond to at least two features: integrating different reading types into modality patterns, i.e., writing, oral, visual, gestures, touch screen and 3-D, and with different types of connections in texts such as hyperlinks (MECD, 2010). Digital texts, thus not only constitute a different classification, but, as Nicholas (2011) describes, the change of how reading and thinking takes place. This author complements McLuhan’s (1964) idea that the environment constitutes the thinking process, thereby modifying it with a variety of tools in how a person participates in society, such as the learning process.

Barton un Lee (2013) define “digital reading” as a process of information extraction from a text that is on any form of digital device, namely, computers, tablets, mobile phones and e-readers and can be mediated via reading applications, such as iBooks. Digital reading as a process involves reading of multimodal digital texts, that is, combining embedded images, videos and other media elements as an addition to language in the text itself (Buccellati, 2008). Therefore, digital reading is a part of information literacy (IL) competence, which is defined as the ability to think critically and make balanced judgements about any information located and used (Chartered Institute of Library and Information Professionals (CILIP), 2018).

In digital reading it is argued that students need to develop deep reading strategies not only to search for specific information, but also to engage with information processing to draw inferences, construct complex arguments, and make connections to their own experiences (CILIP, 2018). Unlike print sources, digital reading is nonlinear, meaning that the reader can frequently jump around from source to source, using hyperlinks (Carter, 2014). However, one can argue that digital reading depends on the structure of the digital text presented, therefore, the author feels the necessity to depict different types of digital texts.

1.1 Types of Digital Texts

Analyzing the digital texts presented online, it is possible to distinguish four different manners in which a digital text is interpreted, depending on grammatical coding, degrees of complexity and display format envisaged (Buccellati,2008), however, as the types of digital texts vary in complexity and use, for the sake of clarity, the author of the Paper has created a summarising table, which includes the information about grammatical coding, model type and example for digital text in Table 1.1.1.

Table 1.1.1 **Summarising Table of Described Digital Text Types**

Type of digital text	Grammatical coding	Model	Example
Pre-configured narrative	None	Linear	PDF document, web page
Tally	Simple	Sequential list	Online shop directory
Matrix	Complex	Non linear matrix tabulation	Online bank statement
Self-generated narrative	Complex	Hyperlinked	-

The first manner is the **pre-configured narrative**, which corresponds to a linear text, channelling attention to preset direction, the one created by the writer. Thus, this type of digital text privileges writer's point of view, however, footnotes and cross-references can help the reader to redirect attention, initiate and pursue alternative paths. Two electronic format types can be identified – PDF and browser (Dobson et al.,2019). The first is similar to printed text, yet, it mirrors the advantages of search capabilities, while the latter is conceived digitally, depicting the drawback of the linear digital text as it weakens the perception of the whole (Dobson et al.,2019). In other words, one does not have a sense of the larger extent within which the individual pages fit. Major practical advantages, such as minimal costs, ease of access, unlimited possibilities of graphic documentation and ease of search use must be noted in the particular digital reading text type. It can be stated that this is a student-friendly format, where students can use the same reading comprehension strategies developed in print reading. Still, in order to excel, part of digital reading strategies for information finding and use of hyperlinks should also be taught.

The second digital media type is **tally,** which can also be considered as the first media technology, based on the definition that emphasizes that medium is a technology first and foremost for information storage or transformation (Underwood, 2019). This particular digital text keeps track of things one wants to count, hence, the level of organization is at its simplest, where a large amount of data is sequenced through a single sorting key, the alphabetical order allowing the reader to evaluate randomly data for an argument that is being developed outside the digital medium itself.

Next digital type of material is not taught at school and deviates greatly from what is considered as reading material as it is **Matrix database.** This digital text type stores information in a database as it consists of a series of cells assembled into rows and columns, where by clicking on an item in the matrix, it automatically allows a jump to corresponding record in the database (Iwan´kowicz, 2008).

The final type of digital text corresponds to schema theory, suggesting that self-questioning activates the reader's background knowledge, thus, improving metacognitive awareness as it is a self-generated **narrative.** It is considered to be an interactive process, resulting in narratives that uniquely and functionally represent writers or readers' own autonomous selves via ideas expressed in the narrative (Unsworth,et. al.,2011). In this digital type of text the argument is developed from within via systemic following up of the links related to inventory approach. In general sense, it means that one seeks evidence for an argument by defining concepts and objects. It is more interactive and developed than footnotes and cross-referencing, including a great number of hyperlinks.

Digital texts offer new possibilities for interaction with text as it is multimodal, engaging individual readers' preferences and reading styles. Digital multimodal texts are often embedded with hyperlinks, annotations and multimedia that promote exploration of key ideas beyond the given text. These embedded elements provide alternative ways for students to interact with the text as students can choose an audio reading of a poem or video of a movie adaptation of a book, for example. Nevertheless, digital texts in any form provide students with an unprecedented level of agency and interactivity in navigating their reading experience as compared to print reading. Hence, it feels reasonable to uncover the competences necessary for reading digital texts.

1.2 Digital Reading Competences

Researchers stress that reading text digitally is a different kind of experience, as with reading text on paper. One of the differences is that reading digital text is nonlinear. Reading a book or printed article follows the reading order, starting with the beginning of the text and continuing the text systematically. But when reading information online, jumps from source to source, using hyperlinks that redirect to another web link are possible (Carter, 2014). Secondly, reading itself, as a skill, is changing. Ziming (2012), studying the differences between reading digital and printed texts, concluded that reading digital texts uses competences such as browsing and scanning, searching for keywords and reading in less linear, more selective manner. Additionally, well-developed reading competence does not necessarily mean that digital reading competence will be equally well developed, as online texts require more self-control from pupils (Konnikova, 2014).

Digital reading requires students to develop new, other skills to understand successfully and obtain information from the text. First, online reading awareness appears to be taking place within the framework of research and troubleshooting activities (Castek & Coiro, 2010). In other words, reading online is an online exploration. Secondly, online reading is also closely

integrated into writing, due to written communication with others to learn more about the issues being studied and to the possibility of communicating individual intersections. Finally, and perhaps as a key point, it is the fact that reading online can require even more high-level thinking skills than reading offline (Leu et al., 2014). In a context where anything can be published, higher-level thinking skills, such as critical evaluation of the source and understanding the author's point of view, are particularly important online.

Digital reading competence requires certain skill sets that are interdisciplinary in nature. Warschauer and Matuchniak (2010) listed three competence sets of the 21st century competencies that individuals should master in order to be digitally literate: information, media and technology skills, learning and innovation skills and life and career skills; however, other experts (Aviram & Eshet-Alkalai, 2006) asserted that digital literacy is composed of different competences, uncovering the umbrella term used and dividing the competences in 5 types of literacies, which can be seen in Table 1.2.1.

Table 1.2.1. **Five Types of Literacies Encompassed in Umbrella Term of Digital Competence (Aviram & Eshet-Alkalai, 2006)**

Literacy	Competence
Photo-visual literacy	Competence to read and deduce information from visual material.
Reproduction literacy	Competence to use digital technology in order to create a new piece of work or to combine existing pieces of work together for individual purposes.
Branching literacy	Competence to navigate successfully in the non-linear medium or digital space.
Information literacy	Competence to search, locate, assess and critically evaluate information found on the Internet.
Socio-emotional literacy	Competence of social and emotional aspects by being present online, connected with socializing, collaborating and content consumption.

Digital competence in general is the most recent concept that describes technology-related skills, moreover, good digital skills are based on such academic skills as reading and writing (Ilomäki et al., 2011), however, the most essential characteristic of digital competence is multimodality. Hague and Williamson (2009) have created a definition which connects

digital competence to literacy, yet, expanding it, postulating that digital competence should not be about replacing existing competences, such as reading, writing and numeracy, rather than changing the content and the scope of basic competences, thus, so called 21st century competences were defined by Jenkins et al. (2006) as follows:

1. Play (the capacity to experiment with surroundings as a form of problem-solving);

2. Performance (the ability to adopt alternative identities for the purpose of improvisation and discovery);

3. Simulation (the ability to interpret and construct dynamic models of real world processes);

4. Appropriation (the ability to meaningfully sample and remix media content);

5. Multitasking (the ability to scan one's environment and shift focus);

6. Distributed cognition (the ability to interact meaningfully with tools that expand mental capacities);

7. Collective intelligence (the ability to pool knowledge and compare notes with others toward a common goal);

8. Judgment (the ability to evaluate the reliability and credibility of different information sources);

9. Transmedia navigation (the ability to follow the flow of stories and information across multiple modalities);

10. Networking (the ability to search for, synthesize and disseminate information);

11. Negotiation (the ability to travel across diverse communities, discerning and respecting multiple perspectives, and grasping and following alternative norms).

However, teenagers, aged approximately 10-14 years, who read using digital platforms, but have inadequate reading competence, may be considered as the new 21st century illiterates. Even with continual contact of information sources, they fail to develop maximum cognitive potential. Thereby, negatively impacting the country's economic and social growth. Describing young adolescent digital reading practice and reading literacy proficiency, which coincides with the mentioned PISA results, the educational sector is the most influential for improvement. Nevertheless, as stated before, digital reading competence is similar to print text reading competence, while demanding more self-control from the reader, therefore, next the author provides information on several digital reading strategies.

1.3 Digital Reading Comprehension Strategies

Reading in print is mostly a linear process, however, digital reading can be both linear and nonlinear, as students can navigate digital texts and decide their unique reading paths.

Therefore, for effective digital reading, students should possess linear strategies, usually associated with print reading (Hahnel et al.,2015). While reading digitally, students would need to develop the deep reading strategies associated with print reading (Turner & Hicks, 2015). However, it has been observed that students tend to dismiss familiar print-based strategies for improvement of comprehension when reading digitally. Herold (2014) notes that students almost reflectively skim or scan the surface of digital texts in search of specific information, rather than diving deeply in order to create interference, construct complex arguments or to make connections based on their own experiences. This indicates that, when reading on screens, students are less inclined to engage in metacognitive learning strategies and not to use such methods as setting goals, rereading difficult paragraphs and checking understanding of what has been read (Jabr, 2013).

Research has indicated that students have a tendency to activate certain schemas based on the type of medium. It has been found that readers adopt the strategy of power browsing, when reading on screen takes place, hence, the average time spent on digital reading text is short, from four to eight minutes (Rowlands et al., 2008) as they scan horizontally through titles, content pages and abstracts. Therefore, the typical screen-based reading strategy is characterized by more time spent on browsing and scanning, spotting the key words, one-time reading, non-linear reading and reading more selectively with less time spent on in-depth reading and concentrated reading (Liu, 2005). It must be noted that the use of speed reading, browsing and scrolling negatively affected students' text comprehension (Sanchez & Wiley, 2009) and contributed to an overall decline in the level of overall comprehension (Dyson & Haselgrove, 2000), especially targeting students with low working memory capacity.

Not knowing how to apply print reading strategies for reading digital texts, leave students unable to benefit from what they have been taught at school. Print texts are structured for linear reading, enabling ease of navigation, however, according to Hahnel et al. (2015), same linear reading processes are also required for comprehension of digital texts. Hence, as students navigate digital texts, they should choose specific strategies of hyperlink selection, for example, selecting a link in connection with reading goal or personal interest, also, they should be able to revisit relevant texts (Hahnel et al., 2015). Statements mentioned are consistent with early findings that students who read digital texts by including the ideas expressed in the text into coherent mental representation or schemata score higher in inferential comprehension that those students who follow less cohesive hyperlink routes (Salmerón & García, 2011).

Deep processing or deep reading strategies, which are commonly associated with print reading, also need to be developed as a part of effective digital reading. Study by Lauterman and Ackerman (2014) found that students, when guided, can achieve cognitive and

metacognitive processes necessary for in-depth processing of reading comprehension even when reading digitally. This leads to the idea that educators should guide students to learn how to use in-depth processing methods (Wolf & Barzillai, 2009) instead of using shallow processing strategies like scanning and skimming, which are almost reflective when reading on screen (Sidi et al.,2017). From practice point of view, in-depth processing can be developed by writing keywords to summarise the text (Lauterman & Ackerman, 2014), asking critical questions about specific parts in the text and checking for contextual and definitional information in order to verify reliability of claims made in the text (Delgado et al., 2018).

Educators should train students to use strategies of focused, critical, analytical, and deep reading for better comprehension of the text contents. Moreover, students, who grew up enabled with technology should be trained to avoid multitasking activities and switching (Salmerón et al., 2018) as it involves great cognitive load online, which is irrelevant to the text they are reading and, thus, will paralyse reading comprehension (Cho et al., 2015). In addition, productive multitasking, such as note-taking or consulting dictionaries while reading, is to be promoted (Tran et al., 2013). In order to sustain student motivation, educators can teach chunking, where text is broken into smaller sections for in-depth processing of important ideas and connections, broader conceptualisation and lateral thinking about topics (Patterson, 2000). Table 1.3.1 summarises the linear and deep reading strategies, providing description of the particular strategy.

Table 1.3.1. **Linear and Deep Reading Strategies (Lim & Toh, 2020)**

Linear and deep reading strategies	**Description**
Linear reading strategies	Reading for *gradual* understanding
Multiple (linear) reading pathways	Students read through the digital text multiple times linearly. For each reading, they will adopt a different entry point and pathway through the digital text by selecting different options (Jewitt, 2005). This reading strategy enables students to understand the multiple perspectives or interpretations presented by the digital text in reading comprehension.
Deep reading strategies	Reading for *in-depth* understanding
Chunking	Students break up great information in digital texts to ease the processing of the digital text content (Bolos, 2015).

Annotation	Students make a list of the key pieces of information relating to the topic, for example, phrases or single words, then group these pieces of information by searching for common factors. The list can be annotated in the digital text using the tools provided (Saaris, 2016).
Making connections	Students can make connections to facilitate their digital text comprehension in three ways: 1. By linking information from a paragraph of the digital text to another paragraph in the same digital text 2. By linking information (for example, definitions) from another digital text to the current digital text. 3. By linking information in the digital text to the real-world context (Park & Kim, 2016).

Developing students' knowledge of linear and deep reading strategies, including use of both printed and digital text and strategies is the foundation for well developed reading competence. The strategies mentioned above encourage students to ask critical questions during reading as a part of inquiry research. Students are also guided to evaluate the statements made by the author in the text and learn to understand that meaning is both constructed and contextual. Nevertheless, during COVID-19 pandemic teaching shifted from face to face instructions to digital setting, which challenged teachers to explore the realm of modern technology. Thus, in the light of digital reading comprehension, next chapter presents online applications for improving digital comprehension.

2. DIGITAL READING COMPREHENSION APPLICATIONS

In educational history several different theories have been developed to support different ways of learning. One of such theories is John Dewey's (1938) theory of inquiry, where either controlled or directed transformation takes place within an indeterminate situation, converting the elements of the original situation into a unified, determined whole. The process of inquiry learning is provided in the Figure 2.1

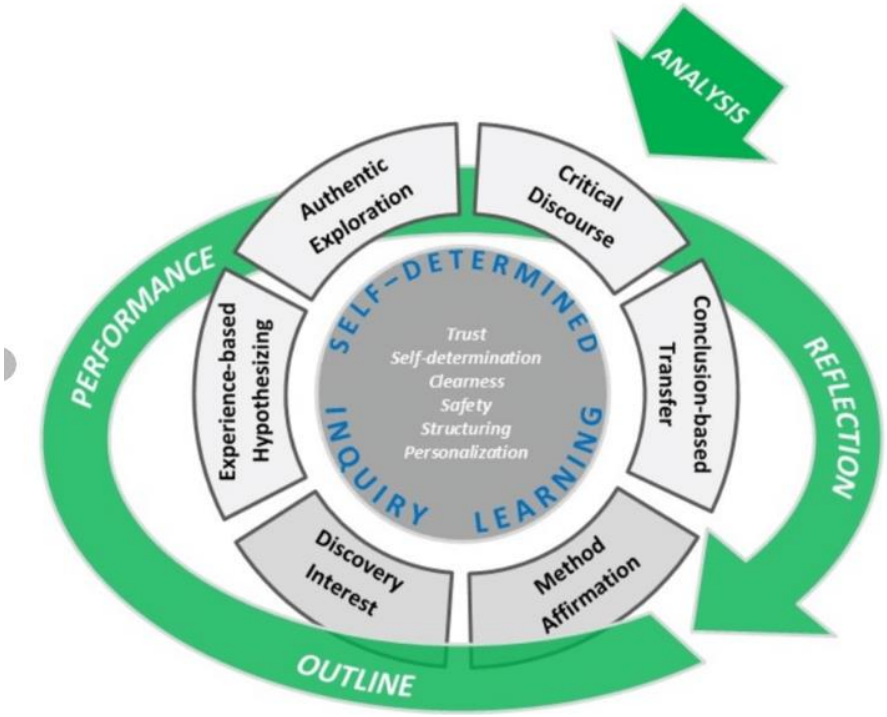


Figure 2.1. **Inquiry based learning structure (Reitinger et al., 2015)**

In other words, inquiry is a self-determined thinking process, facilitated by interest in the situation, and any hypothesis is made upon previous experience, exploration of what is unknown, followed by critical evaluation. However, education is founded on the basis that every child learns differently, thus, Howard Gardner's theory of multiple intelligences (2000) also needs to be taken into consideration, when creating learning experiences for students as for teachers to incorporate all types of intelligences in order to provide students with the opportunity to learn in a manner that best fits their educational needs. Gardner also suggested that by using multiple intelligences, students are exposed to an opportunity of solidifying content in a meaningful way. Therefore, incorporating digital reading applications into instructions provides students with experience that has potential to incorporate several types of multiple intelligences as they will have the liberty to explore personal curiosities.

Advances in digital technologies are not only altering the texts available for students, but also the tools that can be used by teachers. According to research (Biancarosa & Griffiths, 2012) technology can be a tool used in different ways for different types of learners. For learners who

struggle or are disabled, there are features that can help them access texts that they may not normally be able to in print, by using text-to-speech applications, for example, a struggling learner can hear a story read aloud to them and thus, increase overall comprehension. In the same research it is mentioned that technology can support readers by helping to enrich vocabulary and background knowledge that will allow them to develop their reading skills. Nevertheless, educators today have to respond to many new digital reading options for curriculum and teaching practices, yet, there is no empirical guidance. Most research is small-scaled in nature and focuses more on feasibility and efficacy in controlled contexts not on wide-scale use. However, study on digital reading technology tools needs to be examined in order to determine the most suitable applications for the use of empirical study.

2.1 Applications for Compensation and Instruction in Basic Skills

Digital technology has given promise in developing early reading skills and in giving readers with impairments, either visual or language-based, access to texts. One of most widely used features is already mentioned text-to-speech, in which a computer generated or human voice reads the digital text out loud for the student. It is often accompanied by synchronized highlighting of the text to draw the student's attention on words read aloud. Studies indicate that presenting high-quality books on computers with multimedia supports, for example, text being read aloud expressively with simultaneous highlighting of the words read aloud, helps to improve students' focus on and, successively, recognition of words from the text as well as vocabulary (Bus & Neuman, 2009). Other studies also compliment the statement of improved phonological awareness, word reading skills and vocabulary knowledge, revealing that these tools can be used to build procedural skills and conceptual skills, fostering reading acquisition (Korat, 2010). Research with older students has also indicated positive results of mentioned technology for a range of reading skills, such as fluency, vocabulary and comprehension. Computer-guided reading tutor that builds students fluency and comprehension using speech-recognition to give spoken and graphic feedback as students read texts aloud is one of the most promising tools for improvement of basic skills (Mostow et al., 2017). During the research it was found that second-language readers show improvements in fluency and spelling skills, comparable to those obtained with English as a Second Language without the use of technology enhancements. Similar program called Scientific Learning Reading Assistant has also generated evidence that speech-recognition applications within digital reading platforms can improve oral reading fluency skills from second through fifth grade readers (Adams, 2006).

It is clear that educators are not in the position to either develop a program on their own or, to buy for students' use. However, similar practices as mentioned above are provided by an

application called Speechify. The application is free of charge and includes automatic scrolling and text highlighting, as well as, the text reading out loud, where the student can choose the voice, depending on their preferences of nationality and English pronunciation, that is, either American or British English (see Appendix 1). It must be said that downloading of the particular program should be done in close connection with the IT teacher in order to promote interdisciplinary subject connection as well as, to eliminate possible errors and problems. Nevertheless, teachers should not only strive to develop basic reading skills but also advanced reading skills, necessary for discipline-specific text comprehension.

2.2 Applications for Supporting Strategic Readers

In all disciplines, reports of research results take specific form and present a number of challenges to the novice reader as the level of language, style of presentation, content and vocabulary can often seem unfamiliar. The combination of these factors indicates that a different way of reading must be learnt in order to make sense of the research article or report. Furthermore, students in college are expected to read complex texts with substantially greater independence and less scaffolding than students in typical high school programs, also, they are held more accountable for what they have read on their own in comparison with high school students (Pritchard et. al, 2007). Nevertheless, innovative technology applications show promise for supporting development of advanced reading skills. Self-paced tutorials have led to improvement in self-questioning, error detection, inference, summarisation, and concept-mapping skills and strategies to enhance readers' comprehension of texts.

Currently, two online interventions, Computer Assisted Strategy Teaching and Learning Environment and Improving Comprehension Online, have both indicated positive effects in mentioned skill areas in quasi-experimental studies. Grade six students using Computer Assisted Strategy Teaching and Learning Environment and Improving Comprehension Online outperform control group students in application of the targeted strategies (Sung et al., 2008). Moreover, monolingual and bilingual fifth-grade students using Improving Comprehension Online have shown improvement on norm-referenced and research-developed measures of vocabulary (Proctor et al., 2011).

Instructional agents, such as animated avatars that respond to student input in digital text or either human or computerized voices, have demonstrated benefit in increase of vocabulary, identifying inferences, developing metacognitive awareness regarding understanding and learning appropriate strategies (Dalton & Proctor, 2007). Instructional agents mimic teachers as they also give clear, immediate and individual corrective feedback. Nevertheless, as instructional agents and mentioned applications are out of reach for students in Latvia, graphic

organizers that provide readers with structure for strategically interacting with text have also shown to improve comprehension (Dalton & Proctor, 2007). Additionally, annotation or mind-mapping applications can assist students in note-taking by helping them summarise main ideas (Korbey,2014). One of such tools is Google Docs, where a student can copy a digital text and then add a comment, providing flexibility with the text. The document can also be shared, allowing other students to add their annotations to the document in a brainstorm manner, facilitating collaboration. Second application is Adobe Acrobat, which provides greater visual input, as the students can use sticky notes for annotations, highlight or strikethrough text and even comment on PDF type of digital text. For visual representation of the text mind-mapping is a useful strategy, moreover, such applications as Lucidchart and Freemind are free of charge and can be used online. Students visually map out ideas and capture brainstorming sessions, add additional content and even hyperlinks. When thinking about vocabulary improvement, educators can use Quizlet as it allows students to create flashcards of vocabulary items or play games with the information learnt from text, moreover, it is free and available as a mobile application and online, thus, can be used by a greater amount of students.

As mentioned in the report "Future Skills for Future Society" which is considered as educational doctrine in Latvia, one of the aspects educators should keep in mind when planning any type of activity is the relevance to real life. Hence, when evaluating digital reading tools and applications, the source of the text is also important.

2.3 Knowledge Building and Supporting Reading to Learn

In conventional classes, coursebooks have been used as the main source of learning and reading. Seldom if ever, teachers carry out a needs analysis to evaluate whether the materials presented in the coursebook suffice students' needs. Usually, coverage of reading topics, especially ones that discuss explanation text, do not fairly accommodate the topics that are tailored to major studies, such as natural and social sciences. In other words, the reading texts are not equally presented in the coursebooks, when covering a specific topic, which adds up to difficulty of reading comprehension as the vocabulary used is decontextualized (Maulida et al., 2021). As a subject, English introduced to a vast spectrum of sciences, for example, students learn about geography, when discussing travelling related topics, gain knowledge in history as the topics for learning to use Past tense are usually related to historical events, such fields as science, chemistry, mathematics and so on can be implemented in English language classroom based on topic, hence, as a subject it allows great interdisciplinary focus.

To deal with the limitations of the materials provided in the coursebook, students usually search for suitable materials through the Internet. Moreover, most of the students are digital

natives, who grew up using computers and cell phones and other types of technology. However, most of the students are not technologically literate, meaning that access to information is purposeless due to underdeveloped critical thinking skills necessary for operation with data presented (Berg, 2013). Thus, even though students are comfortable navigating the Internet, the skills at extracting information may need some refinement. Hence, educators might use digital texts, enabling more flexibility regarding content selection and layout of the text, as well as the means to modify content based on the particular needs of the students.

One of the possibilities is to use ancillary materials, that is, original source documents and alternative multimedia presentations of information. Research indicates that such practice has helped compensate for struggling readers' limitations in background knowledge and has enriched learning opportunities for all readers (Brown, 2016). Namely, teachers could use online multimedia resources from respected sources, such as BBC and National Geographic, to augment presentation of new content to all students and as a tool to build background knowledge for students who lack it (Pasnik & Keisch, 2004), while also teaching how to apply critical thinking skills to the information they find. As teachers have access to timely data, the ability to connect students with the content and activities that meet their individual learning needs and styles, they can personalize learning for more students at any given time and ensure that all students are reaching their full learning potential.

As mentioned before, in order to benefit from digital texts and use them purposefully, educators must know student individual learning needs, thus, needs analysis should be carried out. In the same manner, before implementing digital reading strategies and applications in a regular classroom, educators should conduct a survey, revealing students' attitudes, behaviours and needs, thence, chapter 3 provides results of pilot study performed during author's academic internship.

3. DESCRIPTION OF CURRENT SITUATION

3.1 Justification and Purpose of Selecting Survey Questions and Respondents

The survey has been developed in English and Latvian to ensure that pupils understand issues and claims. The survey used dichotomic scales for 3 questions represented on the nominal scale, 9 questions formed in the form of semantic differences (differential) binding, 2 questions formed on a legal scale, but one as an open answer.

The goal for dichotomous scales for questions no. 2, 3 and 5, was to obtain one true response from the options, thereby reflecting general information of the respondent, that is, gender (question no. 2), reason for reading (question no. 3.) and digital technology provision (question no. 5). Issues include "other", allowing pupils to show their attitudes and reading practices more accurately (see Appendix 2).

Semantic differential scales were used for questions no. 8, 9, 10, 11, 12, 13, 14, 15, 16, because the nature of these questions reflected students' perceptions, behaviours, social influences and personal meanings, therefore, more objective assessment is done by a series of polar statements arranged in the progressive increment of odd numbers. Various polar statements were made, stemming from the type of attitude or behaviour to be studied were formed (see Appendix 3).

Likert scales were used for questions no. 4, 7, because these questions analyze students' views on a particular statement or frequency of behavior (see Appendix 4), which is most clearly represented in the form of such a scale, ensuring students' objective answers to questions, understanding of the procedure, also, from an analysis point of view, such responses are easy to encode and retrieve data.

The open answer is used for the first question, in which students have to indicate their age. This is due to the fact that there is no reason to classify students into age groups when conducting a study within one class, recognizing that all students are about the same age, but by allowing students to record their own age, the teacher avoids self-fulfilling predictions related to age characteristics.

The choice to survey grade 6 students is based on the specific grandstand chosen by the Master's Thesis, which is the young adolescence. Although there is no consensus in the scientific literature on the beginning or end stage of the young adolescence, that is, some sources define it as a period of 10 to 14 years, others, for a period of 10 to 15 years, others for a period of 10 to 13 years, the only common denominator is the average age of the young adolescence age, which is 12, therefore, a reasonable choice to interview students of a particular age group is justified, assuming that representative data will be obtained in this way, moreover,

as the study is planned to continue further, thus, the particular students will reach grade 7, the average period of adolescence is to be illustrated more clearly.

Secondly, the choice to conduct a study specifically on the young adolescents is justified by the intense changes in both physiology and cognitive abilities marked by this age. In determining reading skills and changing habits, special attention is paid to cognitive abilities, which, along with the young adolescents, progress rapidly, develop metacognitive and independent thinking, curiosity to learn new and interesting topics. At this age, the capacity for abstract thinking increases, that is, the transition from a specific logical operational stage to higher-level thinking functions, such as hypothesis testing and analysis, data analysis and synthesis, understanding of complex concepts, metaphors and reflection takes place, which is vital in reading. Additionally, changes in physiology and cognitive abilities are to be observed over time by conducting a pilot survey in grade 6 and case study within the same group, while reaching grade 7.

As students at this age build knowledge based on individual experience and prior knowledge, it is particularly important to assess students' experiences and knowledge before embarking on the implementation of a particular digital reading strategy in the learning process. As experience plays a central role in developing the brain and facilitating meaning construction, digital reading strategies would be a meaningful tool, as students can use it individually to learn and construct knowledge.

3.2 Survey Analysis

It was observed that a total of 16 answers were submitted, although there are 23 students in the class, which means that 7 students did not give their opinion and did not fill in the questionnaire. Of the 16 pupils, 10 pupils or 63% are 13 years old and 6 pupils or 37% are 12 years old (see Appendix 5). The gender distribution according to the survey data is equal, i.e. 43.8% of students have indicated that they are male and the same percentage distribution reflects female respondents, however, 12.5% of the respondents do not want to indicate their gender (see Appendix 6).

When analyzing the reasons why students read most often, it can be observed that more than half of students read because of school, while only 37.5% do so for fun (see Appendix 7). On the other hand, analyzing the issue of reading practice in more detail, the data show that students read most often at school (see Appendix 8), sometimes students also read at home (see Appendix 9), while reflecting the practice of reading in the library, half of students noted that that they never do so (see Appendix 10). Similar answers were also given about reading while waiting or driving on public transport, where more than half of the students admitted that they

never read while driving or waiting for a bus (see Appendix 11), most also do not read in public places (see Appendix 12), but mention that sometimes read elsewhere (see Appendix 13).

When asked in detail about digital technologies, a clear 100% of respondents have admitted owning a mobile device of some kind, whether it was a computer, telephone, tablet, reader or other equipment (see Appendix 14).

However, by clarifying in more detail what kind of mobile equipment is most available to students, 100% of pupils say they have a mobile phone with an Internet connection, more than half of them have a tablet, while half of them have a different kind of digital device (see Appendix 15).

In the analysis of specific questions in the questionnaire, which focused on the use of specific strategies for digital literacy, students were asked to rate their attitudes towards the usefulness of the strategy on a Likert's scale. The first strategy mentioned was taking notes on a mobile device, in the reading process, which was considered useful by 44% of respondents, 31% of respondents partially agreed with its usefulness, 19% took a neutral position, but 6% did not find it useful (see Appendix 16). The second strategy was to highlight the main parts of the text and statistical representation is visible in Figure 3.2.2.

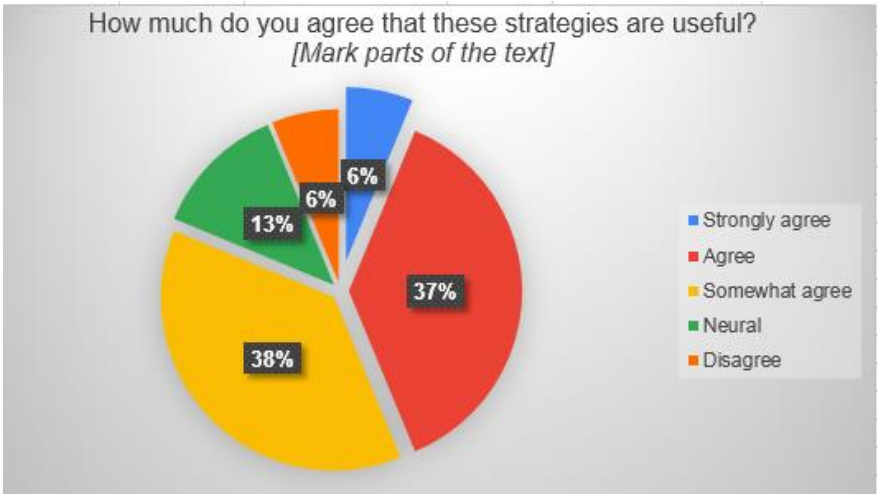


Figure 3.2.2. **Statistical Representation of Usefulness for Strategy *"marking parts of the text"***

It is visible that 6% of respondents consider the strategy to be very valuable, 37% agree that it is useful, 38% partially agree with its usefulness, but 6% consider it useless. Another strategy to fall into the category of note-taking is to write down key terms from the text, which in general are welcomed by more than half of the students as a useful strategy (see Appendix 17). More than half of the respondents consider the organization of annotations as a useful strategy (see Appendix 18), while, when asked about the practice to rank annotations in terms of importance, 13% of students do not partially consider the organization of annotations as a

strategy, one quarter of students take a neutral position on this issue, 12% consider it very useful, but one quarter agrees with its usefulness (see Appendix 19).

The next section of strategies includes students' active metacognitive participation, where memorizing parts of the text was suggested as one of the strategies. This strategy was found to be very useful by 19% of students, 37% agreed with its usefulness, while 19% partially agreed, but only 6% of students did not find it effective (see Appendix 20). Text evaluation is considered a useful strategy for formulating an opinion as a useful strategy, a quarter of students partially agree with the effectiveness of such a strategy, while 6% partially do not support it (see Appendix 21). Similar results, with minor changes, are reflected in the strategy for combining and synthesizing parts of the text (see Appendix 22). Interesting results are depicted in the strategy of understanding the author's goal for writing, where a quarter of students rate it as very useful, 25% find it effective, but the already mentioned 25% partially agree with the effectiveness of such a strategy (see Appendix 23). Understanding the author's stance is recognized as an effective strategy by half of the respondents, but it is partially supported by 25%, while 6% of students strongly oppose the effectiveness of such a strategy (see Appendix 24). Understanding the structure of the text is assessed as a useful strategy by more than half of the respondents, moreover, no student objects to the effectiveness of such a strategy (see Appendix 25).

Searching for specific information is considered useful by more than half of the students (see Appendix 26), as well as analyzing the text to determine its accuracy (see Appendix 27), summarising the text in own words is considered very useful by a quarter of students, while 38% consider it as useful, but 25% consider it partially effective (see Appendix 28). Highlighting key ideas in the text is assessed as effective by 50% of students, but 6% do not confirm its effectiveness (see appendix 29). Creating a text outline is indicated as useful by 37%,while 38% partially agree with it, although 6% do not consider such a strategy to be effective in general (see Appendix 30). Similar situation is observed with the flowchart strategy, where although the majority of students acknowledge the effectiveness of such a strategy, almost a fifth of students do not consider it beneficial to use such a strategy (see Appendix 31). Reading the introductory and concluding paragraphs is recognized as an effective method of expression by more than half of the students, a quarter abstain, but 6% strongly disagree with the usefulness of such a strategy (see Appendix 32). Regarding cross-referencing from classroom materials and digital information, half of respondents believe that such cross-referencing is useful, while 25% consider it only partially effective, 6% partially disagree with the use of such a strategy to improve reading comprehension (see Appendix 33). In the strategy

of oral reading, 13% consider this strategy to be ineffective, 37% partially agree with its effectiveness, but 12% fully support it (see Appendix 34).

The next question asks students to evaluate their attitudes using the Osgood Semantic Differential Scale method. When assessing reading attitude to the question "How would you describe your typical reading style when reading a book or printed text that you are very interested in?" Pupils most often chose the number 3, which is closer to *quick review* (see Appendix 35), a similar situation is reflected in the students' answers about reading style when reading digital text, where most students chose the attitude number 4, which is also closer to the subject “quick review” (see Appendix 36). Analyzing the correlation for the above issues, the statistics show that the correlation coefficient is 0.4, which means that there is a weak correlation between print reading and digital reading attitudes and practices.

The next question assesses students' ability to use Internet technology to search for information. In this case, the two opposites for student choices were *slow and deliberate search*, repeating the search with slightly different words, or *fast and efficient*, obtaining what was needed on the first attempt. In this case, most students noted that they obtain information efficiently and quickly, and the linear progression curve is positive (see Appendix 37). Similar answers were obtained to the question “What do you typically do when a question arises while reading something that interests you? The majority marked the number 4 as their choice (see Appendix 38), indicating that they would try to find the answer as soon as possible.

The next group of questions focuses on students' attitudes and practices for keeping their attention. For the question “How typical are you to do several things at once?”, where the opposite was to focus on only one thing (1) or to do several things at the same time (5), most students chose an answer with a value of 2 (see Appendix 39), respectively, without carrying out several works at the same time. On the other hand, in the question “How much contact with friends do you maintain while reading the material you are interested in?”, where the attitude scale 1 represents no contact, but the value 5 means constant contact, most students marked answer 3, which shows that contact with classmates is maintained. (see Appendix 40). Next question, "How do you proceed when reading a material with a lot of hyperlinks?" reveals the peculiarities of students' persistence and attention, representing a value of 1 as reading the entire text before going to the hyperlink, while a value of 5 means going to the links as soon as they are reached. Half of the students marked answer 1, but only 2 students chose a value of 4, meaning that they do not hesitate to click when seeing hyperlinks (see Appendix 41). The situation is different when it comes to paying attention to reading text with a lot of graphics and images, that is, value 1 identifies students' practice of paying more attention to text than visual materials, and value 5 to focus on visual images rather than text. In this case, 6 students marked

a value of 2, four students marked a value of 3, and five students marked a value of 4, which means that most students state that they pay more attention to visual information than to the text (see Appendix 42). When determining the correlation for the mentioned questions, it has been determined that the value of the correlation coefficient is 0.64, which is considered to be a moderately strong correlation.

Finally, when it comes to collaborative work, that is, attitudes towards learning alone or with friends, where a value of 1 would mean independent learning and a value of 5 would mean learning with friends, most students express their attitudes in the range 1-3, which means that students like to study alone rather than together (see Appendix 43).

3.3 Survey Conclusions

The pilot study shows that all students correspond to the young adolescents age group, respectively, 63% of students are 13 years old, but 37% are 12 years old, and 43.8% are boys whose 13-year threshold marks the onset of puberty and mental maturation, which, for girls, according to scientists, begins as early as 12 years. Thus, with this age distribution, it can be said that the target group of the study has been chosen appropriately and the data will be representative based on the scientific literature on the cognitive characteristics of the young adolescents.

The pilot study shows that the decrease in the number of students who read for pleasure, ie the school as an institution, becomes the most important cornerstone in the development of students' reading skills, which is also confirmed by 62.5% of pupils who read for school-related reasons. This is also confirmed by the students' answers about a specific place to read, that is, almost half of the students admit that most often they read at school, but also at home this number is relatively high, which means that school and home are interconnected, thus, when targeted, a purposeful development of student reading skills may occur in these communities. Unfortunately, students' answers indicate that the time spent on public transport is not used effectively, as most students never read while waiting or on the bus, it can be concluded that students do other things during their time, and reading is rarely done in other public places such as cafes. It must be said that the number of students reading in the library is dramatic, so it can be concluded that the library should be promoted as an infrastructure in order to develop students' interest. Students answer that they sometimes read in other places, but as it is not directly defined in which, when analyzing the previous answer variants, it can be assumed that the pupils have provided socially desirable answers to the specific question.

The unambiguous number of students who have access to mobile devices, which is 100%, positively reflects the need for research and also eliminates possible limitations, where

disadvantaged families can be judged for their opportunities with technological support. Also, when describing in more detail the specific devices that students own, 100% of students own a mobile phone with an Internet connection, which is a positive indicator and will have a positive effect on the research base and the development of methodological tools. More than half also have tablets or laptops, so it can be concluded that, when creating digital reading tasks, technical provision will not affect students' performance.

Analyzing students' thoughts on useful reading comprehension strategies, most students agree with strategies such as taking notes, writing key terms, creating annotations, reading the material, highlighting parts of the text, searching for specific information in the text, performing text analysis to assess accuracy, text synthesis, evaluating the text to form one 's own opinion, understanding the author' s point of view and position, understanding the structure of the text, narrating the text in one 's own words, underlining the main ideas in the text and creating a text outline. It should be noted that a statistically significant proportion of students do not have a clear view of strategies such as reviewing chapters by reading the introductory and concluding paragraphs, making cross-references based on lesson topics in the classroom and digital material at home, and creating a flowchart. This ambiguity may have arisen because students have not yet sufficiently developed the scanning skills needed to read texts, and students find it difficult to perceive information as an interconnected (interdisciplinary) scheme, also IT skills could be a reason why students have little knowledge of creating a flow chart. It should be noted that most students do not support oral reciting as a useful text comprehension strategy, which could mean that students feel ashamed of presenting ideas orally because they are unsure of their foreign language skills.

The Osgood Semantic Differential Scales revealed that when reading a printed text, students are usually not slow, but rather quickly read the text, as they are used to it, while reading digital material, a significant number of students classify themselves as slow readers, but some perform fast screening. This dissonance of answers is possible because some students are not used to this format when reading digital texts and behave pragmatically, while others believe that they know the technology enough not to pay much attention to the text. As a result, by correlating the two questions, it can be concluded that print text reading practice and attitudes correlate with digital text reading skills or attitudes with a coefficient of 0.40, meaning that students with developed printed text reading skills may not have developed digital reading skills and vice versa. This correlation is also the main benefit of the pilot study, which confirms the views and studies reflected in the scientific literature.

A positive indicator is the attitude of students towards the ability to search for information on the Internet, where the linear curve is ascending, which means that most students are able to

quickly find the answer to their question using the Internet. On the other hand, students' socially desirable answers can be observed with questions about doing several jobs at the same time, where, initially, most students have chosen not to do so, however, when asked about keeping in touch with friends while reading, it is acknowledged that contact is almost constant. It can be concluded that students perform several tasks at the same time**,** which affects reading performance.

Students' responses to visual reinforcements refer to the scientific literature, which states that students perceive information better in the form of pictures or diagrams than in text. Thus, it can be concluded that when developing digital reading strategies in order to maximize learning outcomes, materials should be made visually appealing. On the other hand, their ability to keep curiosity is indicated by the ability of students to read the text and only then go to the above hyperlinks, respectively, students have sufficiently developed self-regulation, while curiosity is high and can be suppressed if individual factors arise to find the issue immediately rather than wait.

Interestingly, in most cases, students answered that reading skills are improved individually rather than collaboratively, as mentioned in the scientific literature, however, it can be assumed that this position is due to COVID-19 as the students have lived a long period of time in isolation. This indicator is to be kept in mind when creating digital reading materials for collaboration.

In general, it should be said that the pilot study updated and indicated the areas that need to be considered when creating lesson materials, as well as the forms of cooperation in which to conduct lessons. Also, the pilot study raised issues that were not previously considered because the impact of COVID-19 on students' mental development was not taken into account. However, after reflecting on gathered data from the pilot study, strategies and applications observed in the literature review, a model for sequential, cyclical use of digital reading strategies is constructed and presented in the following chapter.

3.4 Implementation of Digital Reading Comprehension Strategies and Applications in the Classroom

Based on pilot study, where most students agreed such strategies as taking notes, writing key terms, creating annotations, reading the material, highlighting parts of the text, searching for specific information in the text, performing text analysis to assess accuracy, text synthesis, evaluating the text to form one 's own opinion, understanding the author' s point of view and position, understanding the structure of the text, narrating the text in one 's own words, underlining the main ideas in the text and creating a text outline, it can be concluded that

students acknowledge necessity of deep reading strategies, such as annotation and making connections. It is clear that the educator can teach these strategies in the classroom, presenting a printed text, however, when using pre-configured narrative text, such as PDF material, it can be useful for students to use digital reading comprehension applications. In the particular case, in order to improve annotation and connection skills, such applications as Google docs and Adobe Acrobat might be useful, as it allows to comment and collaborate with other classmates, moreover, these applications, especially Adobe Acrobat, provide great visual reinforcement in terms of sticky notes and highlighting possibilities. In order to develop the ability to understand the author's purpose and point of view, as well as the structure of the text and narrating skills, students can use mind mapping and chunking. This strategy can also be implemented in the regular classroom in terms of story map, however, when assigning a digital reading material, educators should also introduce digital mind maps, for example, Lucidchart and Freemind, so the students are able to benefit from modern technology and use it purposefully.

Due to the dissonance of answers revealed in Osgood Semantic Differential Scales, it is clear that students struggle with self-regulation and persistence of attention, which is challenged by desire to multitask, hence, when assigning digital texts, teachers should initiate the use of such application as Speechify, which allows students to maintain attention by reading out loud and highlighting the specific word read. As the students believe they have developed the ability to search for information on the Internet, educators should teach purposeful selection of hyperlinks, which is based on the individual goals rather than low self-control.

Students' responses to visual reinforcements indicate that in the learning process visual aids should be used, for example, diagrams, flow charts and vocabulary flashcards. Also, as the reading material should be visually appealing, educators should consider texts that have ample letter size and spacing. However, when reading digital text, educators can use the Quizlet application for vocabulary improvement and flashcard creation. Moreover, flashcards can be created by the students, facilitating motivation, self-regulation.

In a regular classroom students are used to collaboration tasks to some extent, yet, COVID-19 pandemic and the long period of isolation has changed the way students interact. Nevertheless, the author of the Paper believes that this skill is important and, notwithstanding the drawback the pandemic has caused, students are to be socialised and should learn to gain knowledge from peers as well as from educators and modern technologies. Thence, pair work, group work, presentations, both online and in the classroom are to be implemented. Still, it is clear that in order to achieve great collaboration, small steps must be taken first, for example, commenting on other students' work either in the classroom or on digital platform, the author

of the Paper has created the following Table 3.4.1 in order to summarise model for teaching digital reading comprehension in the classroom and, hence,

Table 3.4.1. **Summarisation of Possible Implementation of Digital Reading Strategies and Applications**

Deep reading strategies	Description of use in the classroom	Reading comprehension application	Description of use
Annotation	Students take notes while reading text, either writing key terms, highlighting parts of the text or main ideas in the text. It can be done either individually or as a collaborative work.	Google Docs; Adobe Acrobat; Quizlet;	Students can highlight parts of the text on a digital platform, add comments and notes, make flashcards for key terms or vocabulary items.
Making connections	Students fill in a story map or Venn Diagram to show understanding of the author' s point of view and position, as well as the understanding of the structure of the text. It can be done either individually or as a collaborative work.	Freemind; Lucidchart;	Students can create a visual map of the text they have read.
Chunking	Students are exposed to a great deal of text and taught to divide it in smaller sections, for example, introductory and concluding paragraphs.	Speechify	When exposed to a lengthy text, students can listen to and see the highlighted words of the text being read aloud.

Skillful readers use varied reading strategies, yet, most individuals have personal strategies that they develop as ways to understand what they read. Developing students' knowledge of linear and deep reading strategies, including use of both printed and digital text and strategies is the foundation for well developed reading competence. Also, when planning any type of activity relevance to real life must be considered. Hence, when evaluating digital reading tools and applications, the source of the text is also important. To conclude, digital reading strategies are similar to print reading strategies, yet, they demand more self-control and self-regulation from students. The applications above can be considered as aid for improving self-discipline when exposed to a digital text, moreover, cooperatively with classroom

instructions and strategies led by the educator, enhances the young adolescent hardwiring and pruning process.

4. CASE STUDY ON DIGITAL READING STRATEGIES TO EVALUATE THE IMPROVEMENT IN DIGITAL READING COMPREHENSION

During the first and second lockdown caused by Covid-19 pandemic, where the students left their usual classroom and engaged in online learning, the digital competence became primary in order to obtain information and achieve learning objectives. In the course of online learning certain problems with digital reading comprehension came into sight as not only parents but also teachers realised that students were having complications following instructions and executing tasks in an online setting. The author of the Paper also works as a teacher and has experienced that students struggle with digital reading comprehension as they have insufficient meta-cognitive skills to analyse and create strategies independently and are a victim of digital distraction and the temptation to browse or multi-task. Moreover, digital texts differ from printed texts students are used to and have a certain skill set working with. Digital reading demands students to develop deep reading strategies, besides, unlike print sources, digital reading is nonlinear, meaning that the reader can frequently jump around from source to source, using hyperlinks.

Even though nowadays teens spend more time online and less time with traditional media, such as television, magazines and hard copy, suggesting obtaining necessary skills for successful digital reading experience as young students learn language based on the environment they are exposed to, student achievement in comprehension exercises that use either one or multiple information sources is lower than in other OECD countries per average. The analysis of the theoretical literature leads the author to believe that adolescents' online reading habits and strategies are reflective of their print preferences and behaviour with physical books. In other words, digital reading comprehension should be taught the same way as printed text reading comprehension, however, emphasizing deep reading strategies and digital setting for the tasks.

When analysing the deep reading strategies presented in Table 3.4.1, the author found certain activities and applications to be significant based on the needs analysis questionnaire depicting the current situation. Firstly, during the author's teaching practice specific Google Classroom was developed (see Appendix 44), where all the exercises, instructions and materials could be found in case of online learning. Secondly, context clues worksheets were developed and given to students (see Appendix 45,46), while also teaching to use Google Docs and using highlighting of the key words in a digital setting. Thirdly, note taking worksheet while reading was presented to students (see Appendix 47) as well as chunking exercise (see Appendix 48),

digital Venn diagram using LucidChart (see Appendix 49), digital mind mapping worksheet using MindMup (see Appendix 50), quizlet application was used for creating flashcards for the keywords (see Appendix 51), and opinion graphic organizer worksheet was created and delivered (see Appendix 52) in order to promote students' annotation, connection making and chunking skills. Based on the needs analysis, the author also believed it beneficial to include work with online dictionaries on everyday basis (see Appendix 53) and Speechify application (see Appendix 1) to improve vocabulary and fluency.

In order to confirm the findings about the effect of digital reading strategies and applications on digital reading comprehension, the author of the Paper carried out a case study from September until October in 2021 in school X. The chosen research sample was 27 Form 7 students, who participated in the pilot study when studying in Form 6. However, the author concludes that additional 6 students have joined in the particular grade, even though they did not participate in the pilot study due to not attending the educational institution of the research. Accordingly, the aim of the empirical research was to examine how the chosen digital reading strategies and applications can promote students' digital reading comprehension to design guidelines for teachers.

To achieve the aim, firstly, eleven author's teacher journal's entries were examined to evaluate the change in student digital reading strategy routines, procedures, habits and comprehension level, determining useful strategies and applications. Secondly, students were asked to complete a questionnaire before and after the use of digital reading strategies and applications for comparative analysis, in other words, to verify whether the students agree on the beneficial strategies and applications examined in the teacher's journal, also indicating the problem areas they have had, allowing to create more accurate guidelines for teachers in the future. Lastly, three subject-related teachers, social science, history and mathematics, were interviewed before and after implementing the strategies and applications to discover their opinion about digital reading comprehension and possible change in students' digital reading practices and abilities as means of triangulation.

4.1 Data Analysis of the Author's Teacher Journal Entries

The first component in the evaluation process of digital reading strategies and applications and the interconnection it had on digital reading comprehension was the author's personal observation of students, when exposed to chosen digital reading strategy activities and applications. While questionnaires provide information about the perception students have of themselves and interviews may lack objectivity as the teachers have been acquainted with the students for a long time and, thus, have developed a certain opinion or bias, teacher's journal

can be considered as more reliable because it provides plain view of the activities, strategies and applications implemented, details student actions and reports student thoughts on activities and applications, hence, it is more intelligible to envision the medium and action points taken to achieve advancement in the field of digital reading comprehension. The teacher's journal was completed during a two-month period, from September 6, 2021 until October 11, 2021.

During the first day, the author wanted to know how the students address using mobile phones for educational purposes and, whether, they are all able to open a digital text using mobile devices and fulfill the context clues activity, which they have usually done on paper (see Appendix 54). Results presented in Table 4.1.1 showed that students had some technical problems at first, as they had to log into their own Google accounts and Google Classroom, however, with clear instructions from the teacher, and help from their seatmates, all students were successful and capable of receiving the information stored in Google Classroom. The technical problems indicate that even though the students may be considered as digital natives, they are unfamiliar with solving technological problems. As the teacher mentioned highlighting and underlining as useful strategies to better navigate in the text, only a handful of students use it, indicating that students detach strategies they have been taught on paper from those they might use in an online setting. During the discussion, the students revealed that they have enjoyed reading the particular text and that the touch screen possibility was exciting. It can be believed, therefore, that the students are able to focus attention and withstand obstacles if they consider the activity engaging.

Table 4.1.1. **Author's Teacher Journal Entries**

Date / time / Reading material	Used digital reading strategy	Description of the activity	Hot reflection	Students' feedback on the activity	Teachers' feedback on the activity
06.09.2021. 10:10 – 10:50 What is Sound *(K5)*	Making connections (context clues) via Google docs	Before anything, the students are given a questionnaire, that asks them to evaluate and express their practices when exposed to a digital text. After that, students go to google classroom and open a file. They choose the possibility to open it via Google docs programm. **Students read the text and try to give meaning to the words in bold. They can highlight text if necessary.**	Students had some **technical troubles** logging into google accounts and google classroom itself, however, once the technical issues were under control, they managed to read the story quite quickly. **Some students underlined** the parts of the text were the meaning of particular vocabulary item was mentioned. It seemed as if the students enjoyed doing such acitivity by using their smartphones.	Students revealed that they enjoyed using their smartphones for such purpose and admitted that such activity was easy and fun. They agreed that **the text was interesting** as majority of them are interested in natural sciences. They **liked the touch screen possibility for underlining.**	As this activity was meant to be easy and just an introduction to what digital reading and digital reading strategies are, there was no surprise that all students got their answers correct and rather quickly. However, it is clear that some students have pronunciation problems.

The next activity focused on using text-to-speech application Speechify, as it can improve language fluency, while also developing vocabulary as it is one of the key factors for reading

comprehension, using context clues (see Appendix 55). The activity demanded students to download the application to mobile phones independently and then, following the hyperlink sent to their mail, connect to Google Classroom and the digital text presented for that day. Reflection of the procedure presented in Table 4.1.2 revealed that students experienced great troubles upon downloading the application, accentuating the digital divide the students are in based on the skill set they have and what society believes digital native skill set is. However, no obstacles were indicated upon logging into Google Classroom and Google Docs, which can lead to believe that if the students are shown a particular strategy when in a digital setting, they can easily incorporate it in their everyday knowledge and follow it, hence, the students need specific instructions and example beforehand in order to operate independently and successfully in the future. During the context clues activity, the majority of students used highlighting in order to navigate the text better. It was also clear that the students are keen to receive information in audio format and are quick to investigate the possibilities of the new application, using earphones and switching speaker accents, indicating well developed audio visual literacy. However, all students agreed that the particular application would work best for computers as the mobile phones are less reliable.

Table 4.1.2. **Author's Teacher Journal Entries**

09.09.2021. 8:30 – 9:10 How we hear sounds? *(K5)*	Making connections (context clues) via Google docs. Introducing Speechify.	The students go to app store, search "Speechify" and download it. They are then to find the google classroom link in their mailbox. When opening it, they click on the file and open it via Google docs. They have a play button on their top right corner. They are to listen to the text or specific words if necessary as well as	This time **technical problems were caused by downloading the application.** It is clear that this application works better on a computer than it does on a smartphone. However, once all students were able to download the application, they were ready to go into google classroom, which, this time, caused no problems upon logging in.	Students said that they were **pleasantly surpised that the voice in Speechify does not sound like Google Translate**, meaning, the speaker reads the text with accurate intonation and uses pausing. The students liked that **they could choose whichever English pronunciation they liked** (British, American, Australian), which has given	It can be stated that the use of **Speechify was a success as the students made little to no errors when reading complicated and unusual words.** However, the teacher understands that in order to fully benefit from the particular application, **it should be downloaded on the computer and used accordingly**. Considering the interactive nature of Google
		highlight text for their purposes.	When students found the text file and started to navigate Speechify use they were **surprised and keen to choose and switch speakers and accents.** Some students asked to use headphones or earplugs, which was allowed. Context clues activity caused no problems when disussed, as students have **highlihted text sentences** in order to find particular sentence in the text when asked about what gave the meaning away.	them a sense of freedom and ability to express individuality. Students agreed that this activity would be **better for computer** use as their mobile phones run low on memory or battery. They suggested this activity to be done **using headphones even if working on the computer as in headphones the pronunciation** of the words is in better quality and "reaches the ear". **They also stated that they have enjoyed highlighting by using touchscreen.**	docs and Speechify, it can be speculated that students are likely to use the presented strategies independently as well.

After the students had grown more comfortable using Google Classroom platform for their exercises and Google Docs for online fulfillment, the teacher provided students with a more challenging strategy that incorporates previously obtained knowledge and applications. In order to improve digital reading comprehension, students must develop deep reading strategies, one of which is annotation. This time (see Appendix 56) the students were introduced with note taking, while also asked to highlight specific parts of the text and main ideas. The students were encouraged to use Speechify if they felt the need to as the text was lengthier and more complicated that before (see Appendix 57). It was revealed that the students have developed an efficient work ethic when working online as they proved to have no problems finding and interacting with the digital reading material. It also was evident that students use Speechify when exposed to large text, either as a form of self-control tool or due to relying on audio visual knowledge.

However, when presented with a worksheet in a paper format, the students admit to having felt confused as to why the reading material was not presented in the same format as well. This indicates that the students are unaware that print reading and digital reading strategies are correlated, hence, consider them as two independent skills and platforms which are not likely to overlap. The fact that the students seemed more confident using Speechify leads to believe that they have practiced or even used it for different purposes outside the classroom. It is clear that when students are presented with a note taking worksheet, they show good work ethic and reasoning, while, it must be determined in the future, how they would interact with text if they were to create notes on their own.

One of the strategies which can enable students to understand the most of the text is chunking. As this is one of deep reading strategies, it challenges students in terms of text length and summary skills after reading. It can be seen in Table 4.1.3 that even though specific chunking worksheet was developed for better outcome, the students still had problems with summarisation and describing the main idea using their own words rather than words from the text (see Appendix 58), leading to take up more time of the lesson than previously planned. Hence, it can be stated that summary skills are underdeveloped. However, during the discussion, the students revealed to use Speechify not only for pronunciation purposes or due to developed audio literacy but as a form of self-control tool, as it engages them to stay focused, reading and highlighting one word at a time. Students mentioned working on a computer as more beneficial for better task fulfillment, which leads to believe that the students have come to a conclusion that even though mobile phones are an everyday necessity, it gives limited options for the use in educational settings.

Table 4.1.3. **Author's Teacher Journal Entries**

16.09.2021. 8:30 – 9:10 World's Largest Marsupial *(Guy Belleranti)*	Chunking (depicting main idea, parahprasing paragraphs, writing key words)	Students go to Google classroom and open a file on their mobile phone that contains the text. Students are given chunking worksheet and **asked to read a paragrpah and then immediately put in writing what the paragraph was about in short and indicate any key words that support the idea**. Students are asked to **highlight key words** and main ideas in each paragraph by using google docs. They are allowed to use Speechify. After finishing the work, they are to engage in a discussion about key word meanings and	No technical issues arise during this activity. Students **seem to have adjusted highlighting main ideas and key words using mobile phone**. **Paraphrasing** paragraphs in their own words, however, **asked for more time than previosuly anticipated,** therefore, students were left to finish few paragraphs as homework, as the teacher was keen to execute a discussion about the activity.	**Students agree about feeling comfortable and familiar with the work structure**, use of Google Classroom and Google Docs during lessons. They also state that feel good while navigating the text using mobile phone, however, **still believe it would be even better and more efficient on the computer due to the size of the screen and possibility to use mouse and keyboard.** Many students reveal that they **enjoy using Speechify as it reads the text before them and highlights the word read at the moment, allowing them to fully understand the text and eliminate attention errors**.	It is clear that the students are digital natives, meaning, **they adjust well in use of certain technology when exposed to it.** They also **use visual and audial recognition as a main comprehension strategy. Speechify is used not only as a tool for pronunciation improvement but also as a self-control too**l. Students are **able to paraphrase and chunk** paragrpahs, however, **summariziation asks for more time as it is underdeveloped skill.**
		summarization of each paragraph.			

As mentioned before, digital reading and print reading strategies are connected and correlated, thus, providing student based digital strategies for reading comprehension, favouring the hardwiring process, could promote lasting foreign language competences. The students have already been acquainted with Venn diagrams in print format, however, in order to promote the ability to make connections, which is one of the deep reading strategies, the students were exposed to this task in a digital setting. Table 4.1.4 depicts student confusion, frustration and joy, when learning English using IT classroom. Firstly, when students understood the task's agenda, they carefully watched and listened to how the LucidChart application is to be used, which highlights their digital native characteristic to absorb and apply information that is connected with modern technologies. Secondly, after being presented with the text, the students began highlighting information and keywords, suggesting that they have connected and found a particular strategy useful for both text types. Moreover, as students had no limitations in terms of depicting the differences, students felt free to express their creativity by adding pictures of the animals and even videos to Venn diagrams (see Appendix 59), which agrees with Dewey's theory of inquiry, as one can state the particular self-determined thinking process was facilitated by interest in this digital setting of situation, and, actions along hypothesis were made upon previous experience or exploration of what is unknown, followed by critical evaluation.

One of such critical evaluations was brought to light when the students admitted that there should be rules for choosing a particular image to appear in an assignment, as certain criteria, such as quality and importance must be taken into account. Hence, it can be concluded that the students are able to search for information online and can easily find necessary information using search engines, they are also interested in the exploration process, gaining confidence in working on a digital platform. Furthermore, they show understanding in evaluating information

found on the Internet, even in the form of images. Additionally, when asked to pair up and compare the work, students gave thoughtful comments about possible improvements, while also expressing the positive feedback, which led to believe that the students are emotionally mature and able to cooperate in a healthy way even after not having a chance to work collaboratively for more than a semester. When the teacher asked for student feedback, they all agreed that pair work has been long forgotten due to the restrictions the pandemic has caused, yet they felt happy to socialize with classmates while also fulfilling the tasks aim. During the introduction with LucidChart, it was evident that some students had problems with basic tasks, such as logging in, while other students immediately knew that they were to use free trial possibilities, indicating previous knowledge caused by similar situations. It can be hypothesized that students from lower socio-economic backgrounds are the ones having problems adjusting in online platforms as they are not exposed to them on a regular basis.

Table 4.1.4. **Author's Teacher Journal Entries**

20.09.2021. 12:45 – 13:25 World's Largest Seal *(Guy Belleranti)*	Making connections (Venn diagram) Lesson takes place in IT calssroom.	During the start of the lesson the teacher introduces LucidChart to students, showing how to create a Venn dieagram, how to add text and import pictures, videos, etc. When students have opened LucidChart on their computer and had each written some information in the provided LucidChart, the teacher allows students to go to Google classroom and open a reading file. Students are asked **to read the text and fill in the Venn diagram**. They are encouraged to **highlight parts in the text where differences between seals on land and in the water are mentioned**, as well as certain key words. Once everyone has finished, the teacher asks students to copy the Venn Diagram in Google docs and **puts students in pairs.** The pairs then have to **analyze their diagramms and, if necessary, they can add information.** When discussion has finished, students are shown the Venn diagrams on the interactive board, they have to give feedback upon what they see.	Students were confused of having English lesson in the IT classroom, however, the idea of having to work with computer seemed to lighten their spirits. Acknowledging LucidChart was easy for most of the students, however, **some students experienced slight problems with navigation**. **All students used highlighting, moreover, in different colours**. When filling in Venn diagram some **students got creative and added pictures as well as videos**. When paired up, students combined their ideas, **corrected classmates spelling errors** and gave positive feedback about certain things.	Students agree that English lesson in IT classroom was a shock, however, knowing that our English lessons differ from the usual, adjusted fast. They admit **having enjoyed reading the text on a bigger screen than mobile phone,** however, **express fruturation with LucidChart, stating that it is rather poor developed and hard to depict information**, as it does not allow copying. They suggested using either word document for such purposes or a different graphic organizer online. Students express **joy in the fact that they were allowed pair work** as due to COVID-19 they no longer work collaboratively. Students revealed that they thought adding pictures and video was fun and that not a lot of students would have thought about it and **were surprised when that turned out false. However, they believe that there are certain points to be taken into account when choosing a picture.**	Student behaviour indicates that **screen size as well as brightness and contrast are to be taken into account when giving a digital text task**. The fact that majority of students did not have any problems navigating in LucidChart, while handful of students felt frusturated, indicates the **technological void between students from different socioeconomic backgrounds**, which needs to be taken into account when creating further activities. **Students have sense of self and individualism as they creatively added pictures and videos even when not asked to do so in particular**. This indicates that the students have strong photo-visual literacy.

Making connections can be considered a critical reading comprehension strategy as it enables students to give meaning to what they are reading. In a digital setting, making connections can be delivered in a similar manner as in print reading strategies using either of the graphic organizers. As students were already introduced with Venn diagram in both print

and digital settings, it was a decision to introduce students with mind mapping in a digital setting as well. However, after the last lesson, the particular class went into quarantine due to possible close contact with someone with the virus, hence, the study process was relocated to an online classroom. Here, it must be mentioned that the author of the Paper had taken precautionary measures for such a scenario and, thus, concomitantly to preparing materials for regular classroom setting, also established the same learning environment in Google Classroom. This situation, nevertheless, influenced the outcome of the particular task as visible in Table 4.1.5, where students admit being able to carry out the assignment only due to the teacher's created video tutorial. Even though the students have grown comfortable using Google Classroom and Google Docs for educational purposes and show the necessary meta-cognitive skills to absorb the new information independently, it can be estimated that more time than usual is spent to execute the tasks. The students admitted consulting an online translator for unknown words not only in the text but also in the application as well, indicating that they feel comfortable using the Web to search for specific information.

As previously anticipated, students from low socioeconomic backgrounds had to overcome not only language obstacles but also technical difficulties, which highlights the problem in education system, as even though the Education Development Guidelines for 2021-2027 entitled "Future Skills for the Future Society" say to promote and cover digitization, increasing the supply of e-learning possibilities in all levels of education, the technical support for certain social groups is overlooked. When evaluating the activity, it is visible that the students have yet again included images, and, this time, they have also played with formatting in the applications (see Appendix 60), which leads to believe that their confidence level using digital tools has increased. However, students, who have had technical problems have created minimalistic mind maps, in spite of that, still providing thoughtful and well written examples, leading to believe that tasks in digital settings allow language skill development (see Appendix 61).

Table 4.1.5. **Author's Teacher Journal Entries**

23.09.2021. 12:45 – 13:25 Spitting to Survive *(Liana Mahoney)* ONLINE	Making connections (mind mapping via mindmup.com)	Students are to go to google classroom and find the attached theme for today. They are to introduce themsevles with **online mind mapping tool called mindmup.** The students open the example of teacher's created mind map draft and watch the video tutorial on how to add sibling, children and root nodes and pictures. They then are to **create a free mind map themsevles, based on the text provided in the link.** They can open the text via Google Docs and use highlighting for ideas and topics. After finishing the work, they are to post the link to the mind map in the comments and **evaluate each others work by writing a comment**.	Students are used to work with Google classroom and Google Docs, however, they had **troubles understanding how to sign in mind mup** in order to create a free mind map. It can be noted, that teacher's created **video tutorial was useful and eliminated possible errors.** Majority of students **completed the task and sent in bright, creative and picturesque mind maps**, yet it is unknown**, how much time it took for students to complete the task.** Some students, however, have made **basic mind maps with little information, possibly due to limited English language understanding or technical problems.**	**Majority of students regarded video tutorial as beneficial** as they made the draft for their mind map **while watching the video**. Some students said that they **liked to get acquanited with mind mup on their own** and agreed that this was a good task to be given online as they **had unlimited time** and resources. Students stated that they **used google translate for words they did not know** before in order to create mind map in the application. Some students **admitted having technical problems as tablet computers limit the navigation and writing functions in the nodes.**	It is clear that after having spent more than half of the semester in distance learning the **students are skilled enough to independetly introduce themselves with new learning platforms if the video tutorial is provided.** Students are **keen to work with new technologies and do not mind spending more time than in a usual classroom** in order to finish a task. During this task it was clear that **students from low socioeconomic backgrounds feel frusturated and benefit little as the technical problems they go through cloud the learning outcomes**.

While graphic organizers allow to logically store great deal of information, chunking demands students to fully comprehend a smaller bit of a whole, challenging summarisation skills. As students have already done chunking as a guided activity, this time they were asked to carry out the task in the form of collaborative work. Table 4.1.6 shows that students were to choose a number which corresponds to the paragraph they were to read and write a summary of, later presenting it to the whole class, which means that after the activity, each student will have read one paragraph but will have the overall knowledge of the whole text. Due to the previous events, some students did not participate in the class, thus, they had to carry out the activity individually.

During the activity, it was evident that students are resourceful and able to use mobile phone for their advantage, that is, for text-to-speech application use, for online dictionary or translator use, furthermore, they also feel comfortable enough to interact with text by highlighting or underlining information or key words. This change in disposition when working with a digital text indicates not only development in confidence when exposed to such texts but also belief to possess necessary strategies and help in terms of applications to solve problems and execute the requirements of the task. Students proved to have developed summary skills as well as, firstly, the activity did not take extensive amounts of time compared to previous summarisation and, secondly, all students agreed to have understood the subject matter of the text and even expressed eagerness to read the whole material on their own. Also, when a class discussion was fostered in order to evaluate the reliability of the particular source, students gave sensible examples for believing the information provided, stating that data and source title are two factors they consider as noteworthy.

However, some students continued the discussion indicating that it is possible to create unreliable sources by copying the logo of a respected source, while some stated that data can also be faked. This leads to the belief that the students have general understanding how to determine the reliability of any source, despite that, they express little knowledge in strategies for determining authentication. Students were granted their wish to read the whole document due to the independent homework, where they had to create quizlet flashcards based on the key words of the text. It was evident that the students are familiar with quizlet application, thus, they have used it in different subjects as well and the fulfillment of this task was of high quality for all students.

Majority of students also provided images for the definitions, indicating not only the ability to search information and resources using the Internet but also to use photo-visual literacy for memory improvement (see Appendix 62). It must be mentioned that quizlet application in this case is used as vocabulary improvement as a part of digital reading

comprehension development, as the students are to write the key words and their meanings independently and later can exchange hyperlinks and practice, moreover, quizlet is simple in nature, enabling students to use it form variety of devices.

Table 4.1.6. **Author's Teacher Journal Entries**

27.09.2021. 12:45 – 13:25 Under poaching pressure, elephants are evolving to lose their tusks *(Dina Fine Maron)*	Chunking, annotation and determining reliability of the source. HOMEWORK: Quizlet for key words and terms.	Students are given a number from 1 to 21. They are then asked to open the text file on their mobile phones **and read the paragraph according to their number.** After reading the paragrpah they are to **write a summary of the particular paragraph**. Each student then reads the summary, allowing other students to understand what the whole text is about. Then, the students are to **carry out a discussion on the reliability of the source, indicating why or why not they believe the information provided in the text.** Their home task is to **read the whole text and prepare a quizlet based on the key words of the text.**	Students quickly navigated the paragrpahs and had **no problems understanding which paragrpah in particular they are to read.** They made logical and thorough summary, using key words from the text in such manner that **even students who did not read the particular piece of information understood the meaning.** Upon giving opinion on the reliability of the source students were timid at first, however, later provided solid reasons for believing the information written. It is clear that **source with data immediately feels trustworthy for students**. As students know quizlet and have been using in in different subjects, the homework seemed to cause no problems but rather eagerness.	Students admitted that they liked to read only a pragraph not the whole text as it looked rather challenging and lengthy. They stated that upon **hearing how other classmates depicted the information provided in different paragraphs made them want to read the whole document** on their own as well. Upon **determining the reliability of the source the students indicated that depiction of statistics data and the source name itself were the key indicators** of why they would trust the source. Some of the students stated that **data can be manipulated as well**, thus, not always can be trusted. Students admitted feeling good about the upcoming homework as they like to work with quizlet.	When students are asked to chunk the text and create a summary form a particular chunk they seem to have little to no problems, indicating that **they are able to process and critically evaluate short digital text.** Their responses when **deciding upon reliability of the source indicate that the students have well developed critical thinking, however, they can be manipulated via visual representation**, that is, statistics and data depiction. Students are **well aquainted with quizlet** and it can be used further for vocabulary improvement in the classroom.

Digital reading comprehension means not only the ability to read text, process it and understand its meaning but also having the skill set to reasonably use hyperlinks presented in the text. Therefore, as this lesson was to be delivered in an online setting again due to rolling schedule policy administered in school X due to threats of Covid-19 spread, the teacher provided students with instructions using Google Classroom. As hyperlinks can confuse young, inexperienced readers, the teacher believed it best to start with a text the students already knew in order to determine whether they understand what hyperlink is and how it works proceeding to a task they are also familiar with, that is, Venn diagram (see Appendix 63). Table 4.1.7 shows that students had understanding of what hyperlink is and what it does, however, when presented with a text that consists of more hyperlinks, they felt confused, which could affect their reading comprehension. In spite of this, the students shared that keeping the main goal in mind, in this case, describing the differences and similarities between elephants, when reading helped not to get lost in the hyperlinks.

It indicates that, firstly, students do set a goal in mind when fulfilling reading comprehension tasks, thus, purposefully interact with text and, secondly, purpose setting positively correlates with self-control, which is crucial when exposed to a digital text as it challenges not the reader not only due to the interactive setting but also due to external factors like screen light and size. During this activity, the students were also introduced with an online

dictionary, as it came to the teacher's attention that they are experienced Google Translate users, hence, could benefit more from an official dictionary. Students later admitted that presented online dictionaries are of higher value than previously used Google Translate because they were able to choose types of English pronunciation they wanted to hear and also were presented with the word in the sentence, which allowed them to understand how it should be used. Interesting realisation was the fact that the majority of students admit to have disregarded the Speechify application due to enjoying searching for unknown words and pronunciation using the provided online dictionary. This highlights the essential aspect for previously mentioned theory of inquiry, which is, independent adaptation to learning environment, in other words, as students are more exposed to digital environment and digital texts, they tend to grow more comfortable with it and, hence, are able to learn and adapt learning skills they already have for connected purposes.

However, some students still admitted using Speechify, indicating that it allows them to hear pronunciation of the words. The author of the Paper believes that students with highly developed language skills benefit little from text-to-speech application use, while students who are struggling are of favour, as they are the ones lacking confidence and skill set to independently search for unknown words and, thus, can use this type of application for fluency and vocabulary.

Table 4.1.7. **Author's Teacher Journal Entries**

30.09.2021. 11:45 – 12:25 Under poaching pressure, elephants are evolving to lose their tusks *(Dina Fine Maron)* ONLINE	Making connections, use of hyperlinks	Students are to go to Google classroom and find the text file they have already read. **They must find two hyperlinks in the the text** (African elephant and Asian elephant). Upon finding the hyperlinks, **they have to read both peaces of information and create a Venn diagram depicting the differences and similarities between both types of elephants**. Students are instructed to use speechify (highlight the text, press right mouse button and press read or ALT+Q) if necessary or search for unknown spelling or terms using Cambridge Dictionary online. They are asked to send Venn diagrams electronically via E-klase or Google Docs, adding a comment about hyperlinks in the text (how it felt to read a text with hyperlinks, did they click on the hyperlinks or not).	Students have **spent quality time creating Venn diagrams, providing pictures and using key words and terms from the text. Some students have created a glossary as well**, as an addition for the Venn diagram, indicating what kind **of words were unknown and searched using online dictionary**. Students were able to find the hyperlinks in the text independently as they knew what it is. **Majority of students did not use Speechify,** however, a handful of students consider it beneficial still. Students were not confused when exposed to a text with more hyperlinks as **they kept in mind the purpose of reading and did not allow themselves to press on any hyperlinks before finished reading**. It can be stated that **students are able to create connections and use modern technology for their advantage when encouraged.**	Students agree **that they do not use Speechify as they better like to search for unknown words independently.** However, some students consider Speechify useful as it eliminates possible pronunciation errors and allows them to grasp the meaning of the text better. Students claimed that they had no problems finding the hyperlinks in the text provided, however, **when reading the new texts, they felt confused to see so many hyperlinks**. **They agreed that they first read the texts and finished the task before allowing their curiosity to click on any of the hyperlinks**. Some students stated that such jumping from link to link **captivated their attention and they had found themselves reading about the topic for over an hour.** Students stated that **no problems arise filling in the Venn diagram and that they have enjoyed searching for pictures and gladly made a glossary for extra credit.** They also stated that **using the provided onlinje dictionary has been a good experience as they could choose the accent of English they want to listen to** and also they immediatley had the particular word included in the sentence, thus, they **regarded this dictionary higher that commonly used Google translate.** It must be noted that students who usually had technical problems created the Venn diagram on paper.	It can be concluded that **Speechify is considered as useful to those students who are unsure of their English language skills,** while students with high English language skills avoid using it. **Students understand the nature of hyperlinks**, meaning that they have discussed such terms in IT subject. Yet, **a lot of hyperlinks in the text tend to confuse students and challenge their attention and self-control**, which, in this case, is well developed. Students **show independence as they quickly grasp the concept of online dictionary and use it efficiently**. Students who are less equipped with technology can still participate in basic digita text reading, understanding the difference between digital texts and printed texts, nevertheless, having done the tasks on paper not online. Hence, it can be concluded that **indeed, print reading strategies and digital reading strategies are complementary in nature.**

As the end product for the particular learning cycle is to create a self-generated narrative, it felt reasonable to introduce students with a digital text that contained a fair amount of hyperlinks along with an activity to fulfill an opinion graphic organizer that showed understanding of causal relationship. As evident in activity description in Table 4.1.8, the task included all three deep reading strategies, fundamentally, annotation, whilst students were allowed and even encouraged to highlight and underline text as they please for better comprehension, secondly, making connections, due to having to show understanding of author's point of view as well as the position the author is in when depicting the situations in the text and, lastly, chunking, which is done independently, due to students having to fulfill the graphic organizer after reading a particular section of the text where each new reason and evidence is provided, hence, it can be stated that activities tend to get more complicated by the lesson.

Moreover, using Google Docs, the hyperlinks open differently than when reading a material on the Web, in this case, students were able to get a gist of information when moving the cursor to hyperlink. Upon inspecting student practices when exposed to digital text that contain such hyperlinks, it was evident that students used them for comprehension purposes, that is, to understand what kind of dog breed is mentioned by looking at the image, for example, yet, the majority did not follow the hyperlinks during the task, indicating self-control. When introduced with the particular graphic organizer, the students recalled having had similar assignment in other subjects before writing an essay and agreed on having no problems (see Appendix 64), thus, they have a developed a sense of interconnected relationship between subjects. An interesting finding is that the students have adapted a unique annotation style, that is, they have chosen to use colour identification for specific ideas in order to better navigate in the text.

As mentioned, it indicates the growth in independence but, more importantly, it provides a belief that the students have developed unique schemata when exposed to digital texts, where existing strategies are improved to fit individual needs and preferences. Due to the lesson taking place in the IT classroom, the hypothesis that socioeconomic background is of influence regarding IT skills and digital reading skills was confirmed as certain students carried out the task well, yet, explained that at home it would not be possible due to limited access to technology. This also calls attention to the nature of digital reading comprehension improvement, which requires practice and repetition.

Table 4.1.8. **Author's Teacher Journal Entries**

04.10.2021. 12:45 – 13:25 What Do K-9 Police Dogs Do? *(American Kennel Club)* IT classroom	Making connections (from text to arguments)	Students are to go to Google classroom and **open the example of opinion graphic organizer.** The teacher explains **how opinions are supported by reasons and evidence.** Students go through the provided graphic organizer about dog being the best pet. Students read out reason which is supported by evidence. **Once the students understand the complimentary nature of reason and evidence based on opinion, the teacher introduces them with today's text.** Students open the text using Google Docs. They are asked to read the text, **encouraged to use Cambridge Online dictionary, highlighting and speechify if necessary**. They are also instructed that the text **contains hyperlinks, the teacher shows how hyperlinks open in Google Docs.** The students are given the whole of the lesson to fulfill the	Students were pleasantly surprised having English lesson in the IT classroom again. This time, students immediately knew how to log into their Google accounts and Google classroom. They found today's work easily without any problems. When talking over **opinion graphic organizer students claimed that it looks rather simple and that they have done similar exercise in Latvian language**, before writing an essay. When students were introduced with the text on Google Docs, they quickly **moved the cursor of the mouse to hyperlinks and found out how these hyperlinks open by themselves.** Some students read and engaged in the hyperlinks, while other students read without using hyperlinks. Students **highlighted text with different colours for each reason and evidence**. **Some students used online**	Students agreed that as they have had English lesson in IT classroom before, they were not surprised anymore, some students indicated that they **liked this setting as it enables them to do the work more efficiently, without the technical problems they might face in the regular classroom** or at home. They also mentioned that **hyperlinks in Google Docs show in visually more attractive way, as it does not immediately transport them to a new tab but creates a square on top of the text, containing the key information, so they can choose whether or not to look into the particular hyperlink.** Students enjoyed **seeing particular animal breed pictures in the hyperlinks as it allows them to better understand what type of dogs can be taught for police necessity.** When asked about the opinion graphic organizer students agree that they have already	It can be concluded that **socioeconomic background is of influence, regarding IT skills and even digital reading skills** as some students cannot be exposed to hyperlinks, online dictionaries and online worksheets due to **limited access to technology.** It is clear that **practice and repetition is of high importance in order to establish and improve skills,** as students are now quicker and more efficient to work on online platforms and search for information. **Students have developed unique annotation style,** which indicates that they **deliberately use technology for their advantage and have the skillset to do so.** Students have well developed self-control and attention management, which allows them to **efficiently use hyperlinks and navigate the text,** however, **inexperienced students are at risk to fall off track when stumbling upon a lot of hyperlinks in the text**
		opinion graphic organizer worksheet, where the **opinion is already given as "Police dogs must be a special type of dogs"**. When finished the work, students must send their Google documents on E-klase or comment in the Google Classroom the link for everyone to see. They are to engage in group discussion about the opinion as well.	**dictionary for unknown words. When giving their opinion in a form of discussion, it was clear that students have forgotten linking words**, yet, the quality of the work was suficcient.	talked about something similar in other subjects before writing an essay on their own **so it was not entirely new for them**. When assembling information in the worksheet they expressed that **different colouring helped them to navigate the text better and that they have used copy & paste option, then edited the formatting**. Students admitted that they **have forgotten linking words, however, they stressed that they know these words, yet, were preoccupied** in their minds to use them in the particular situation.	as they are less acquainted and more eager to find out the infotmation. Students should be reminded of the linking words **or the possibility to search linking words online** when similar tasks are carried out in order to maximize English language acquisition.

Previous activity asked students to create arguments from text, however, when creating a self-generated narrative like an opinion essay, students are to create arguments first and later the text follows based on the chosen action points. Therefore, it felt reasonable to discuss argument making with students in order to eliminate possible errors and meanwhile also introduce them to the expected outcome. During this lesson the teacher worked as a guide and facilitator, explaining the creation of arguments, supporting evidence for such claims, while also reminding of the digital nature of the task (see Appendix 65). The students were to create arguments for an essay topic "What are the things one should consider before adopting a pet?" using whichever platform or application they fancied, despite, only a handful of students used LucidChart Application (see Appendix 66), while majority of students used Google Docs due to the fact that mobile phones responded poorly to such applications as MindMup or Lucidchart, hence created idea spider there (see Appendix 67). After discussing their arguments, the teacher

showed a digital text about a related topic on the interactive board that contained a lot of hyperlinks in order to prompt discussion. Students actively engaged in the discussion, pointing out the reasons when and why to follow a hyperlink, concluding that one could follow the hyperlink when either the whole text has been read or if the hyperlink references to information regarding the posed argument.

Despite students recalling opinion essay structure and vocalizing having done such tasks in both English and Latvian language, they were surprised when presented with referencing. Students admitted that they have never done such activity on their own, however, they have seen how text that contains references looks like either while searching the Web or due to having older siblings. When the teacher showed how to navigate the online referencing platform, students agreed that it looked logical and, for better understanding, asked for an example. The fact that the students asked for an example leads to believe that they have highly developed visual intelligence, corresponding to Gardner's theory of Multiple Intelligences. Upon explaining the homework, the students felt confident enough in their abilities as no student asked to do the work on paper, which indicates that for writing assignments students tend to rely on digital technology as it allows copying and pasting the information. One can conclude that the students are able to connect knowledge gained in different subjects to excel in others, indicating that students have developed the ability to see subjects as complimentary. Students feel more comfortable using Google Docs, which leads to believe that based on the similar structure Google Docs and Microsoft Word document has, they can navigate it more efficiently, besides, it eliminates technical errors students with limited technological supply can experience. As referencing was a rather new topic for the students, it can be considered as future practice to work in connection with an IT subject teacher in order to develop lesson plans focused on development of the particular skill.

While the students created their opinion essays at home, they were to have feedback during the final lesson intended for digital reading comprehension. The students were asked to share links to their essays (see Appendix 68) so that other students based on a random principle were able to read, give comments and encouragements for future reference. Table 4.1.9 shows that even though the essays varied in length, language used and referencing style, all students have completed the homework, which leads to believe that the chosen activity was successful due to incorporating a topic which was important to each of the students individually. The students were able to give thoughtful feedback, highlighting the particular passage of the text they referred to, indicating that they consider such digital reading strategies to better visualize certain action points. During the discussion, the students admitted experiencing overall joy of using modern technology in the lessons, however, expressed the opinion that mobile phones

can not replace computers, hence, such belief, which is sometimes heard from parents, is false. Students also indicated to have enjoyed working in Google Classroom, using Google Docs and Quizlet, while highly regard Venn diagram and graphic organizers, yet, vocalize a need to create a more comprehensible platform. It is evident that even though at the beginning all students were interested in Speechify, majority now considered it beneficial for students who are struggling with English language, which can be explained by the increase in sense of independence and by the inquiry based learning module, which allowed students to actively search information, thus, allowing to rely on their own knowledge and skills. Even though students knew how to use Google Translate, they never tried other online dictionaries, hence, they highly valued being presented with additional dictionaries and integrating their use in everyday life.

Table 4.1.9. **Author's Teacher Journal Entries**

11.10.2021. 8:30 – 9:10	FEEDBACK	The teacher provides each student with a link, in order for them to read classmate's essay. **After reading the essay, the students must write a feedback in Google Docs, indicating 3 things that were good, 3 things that one should improve or think about next time and 2 questions that arose after reading the essay**. When it is done, the teacher carries out a discussion, asking for students opinion on the platforms used during the lessons as well as their thoughts on digital and printed text pros and cons. **They are asked to complete a questionnaire, which is to indicate the general stance and practice when exposed to a digital text**.	Essays **varried in language, length and referencing style**, however, all students had done the task. The students **wrote thoughtful and useful comments, highlighting the parts of the text they talk about**. Students **actively engaged in the discussion and when presented with the questionnaire used online dictionary for unknown words**.	Students agreed that they have **enjoyed having to use modern technologies and programms in learning**, however, they stated that belief that **mobile phone can replace computers is misleading**. They indicated that they **liked to work in Google Classroom and Google Docs as it looked easily understandable**, allowed highlighting and copying phrases, as well as with **Quizlet** because they have done it in other subjects as well. Students explain that **the idea behind Venn diagram and mind mapping really allows them to understand text better, yet, the platforms made it hard to format their thought** process and would be **more beneficial if done in word document or on paper**. Students regarded **Speechify as interesting, however, suggests it to be used by students who are struggling** with English language and pronunciation. All students admitted that they **liked how the teacher showed different online dictionaries** and talked through the **use of hyperlinks** as they have **never thought about it on their own** and no other teacher shows them how to use the internet for their benefit. Students also agreed that **referencing took more time than finding the evidence for arguments**. They mentioned that **IT teacher has promised to show referencing in Microsoft Word after the holidays**.	In conclusion, it must be stated that students are **qucik to grasp information presented online** and **can easily find information online**, if they have been showed where and how to look for it. Students **use highlighting the most, as well as copying fragments** of the text, while **support for pronuncation via Speechify is regarded for struggling readers**. It is clear that the students feel as if the activities such as **Venn diagram and mind mapping were beneficial for their reading comprehension**, however, **different platfrom should be used to maximize the ease of use**.

Data provided by the author's teacher journal entries reveal the influence digital reading strategies and applications have on development of deep reading strategies, which can be

considered as ardent component not only for digital reading improvement but also summarising skill development as it demands to set purpose when reading, using dictionaries for reassurance and overcome obstacles using the Internet for one's own benefit. Improvement of annotation is also evident and can be detected in highlighting, whereas by using different colours for specific parts of the text, as well as in note taking worksheets, as these tasks encouraged students to interact with digital text. Moreover, graphic organizers, such as Venn diagram, mind map and opinion graphic organizers show improvement in connection making, while also improving analysing abilities, which are crucial when evaluating information online. Development in resourcefulness is also evident and can be detected in hyperlink activity, when downloading a particular application as well as in online dictionary and referencing use, which expanded student digital native abilities and perceptions, facilitating the inquiry based learning, which is essential during modern century and obstacles education system has to face today. Author's teacher journal entries consisted of two feedback views, teacher's and students. Even though such an organization form allows slightest development to be detected, it also works as a speaking practice, challenging students to use the vocabulary learnt or phrases seen in particular digital texts to be used when expressing self-evaluation. Be that as it may, in order to decide, whether student perception of the digital reading strategies and applications they personify favour the data depicted in author's teacher journal statistical information gathered by questionnaires should be provided.

4.2 Justification for Comparative Study of the Questionnaires Enacted Among Form 7 Students

Having examined the theoretical literature about digital texts and reading comprehension, tasks and applications supporting deep reading strategies were developed and implemented in the classroom. Therefore, for annotation improvement such tasks as context clues, highlighting, keyword writing, note taking, and flashcard creation were executed both in the classroom and in digital setting, favouring such applications as Google Classroom, Google Docs, Quizlet and Speechify. Annotation improves summarising skills and benefits vocabulary development, thus, limiting cognitive dissonance and feelings of unease and tension, allowing to focus on comprehension related areas. In consequence, the ability to make connections was developed by performing tasks like Venn diagram, opinion graphic organizer, context clues and mind mapping as these activities contribute to information retention, improving recalling memory skills necessary for thoughtful and deliberate reading process. The tasks were supported by such applications as Google Docs, LucidChart and MindMup. Furthermore, chunking skill was expanded by such activities as chunking worksheet and collaborative guided reading and

summarising activity, accompanied by use of Speechify application for audio-visual reinforcement. As chunking allows students to divide text into manageable fragments, students are in a favourable position to focus on identifying key words, organizing ideas and synthesizing information presented in the text, thus, enabling students to use previously mentioned deep reading strategies for comprehension purposes. In order to prepare for the interactive nature of the strategies, students were educated in terms of hyperlinks, source reliability, referencing and online dictionary use, fostering inquiry-based learning. In addition, challenging activity with a gist of collaboration was implemented during the final week of the research to evaluate overall digital strategies used when exposed to a difficult task, determining the level of digital reading comprehension and skill set available to successfully execute requirements by overcoming and solving problems in an online setting.

In order to verify the findings on the improvement digital reading atrategies and applications have on digital reading comprehension, author's created questionnaires for Form 7 students were performed based on the answers to needs analysis questionnaire presented in Chapter 3 (see Appendix 69,70). Although the main aim of the questionnaires was to gain information about changes in students' digital reading comprehension before and after implementing digital reading strategies and applications, the questions revealed more information about the strategies and applications students use when being exposed to digital reading material as well as common practices and attitudes.

Firstly, the questionnaire carried out before implementing digital reading strategies and applications used dichotomic scales for two questions presented on the nominal scale as well as polynomic scales for four questions portrayed in similar manner using nominal scale. One question was formed in semantic differential scale, two questions used Likert scale, but three as an open answer. Even though questionnaires before and after implementation of digital reading strategies and applications consist of 12 questions in total, there are certain differences in design. Accordingly, the questionnaire executed after includes two questions in Thurstone scale, while having one less question in dichotomic and polynomic scales.

Objective for dichotomous scales for questions no. 1 and 2, was to obtain one true response from the options, thereby reflecting general information of the respondent, that is, gender (question no. 1), reason for reading (question no. 2.), whereas in questionnaire after only reason for reading is asked to be mentioned, believing all respondents have sustained the same gender as identified. Options include the answer "other", allowing students to show their attitudes and more accurately, supporting their privacy.

Polynomic scales were used for questions 3, 4,6 and 8, while, in questionnaire after digital reading strategy and application implementation, questions 2, 4 and 6 were created in such a

manner. Due to the possibility that answers assumed more than 2 possibilities, thus, data became less linear, the main goal was to determine technical supply students have access to as well as practices and procedures using technology devices for study purposes.

Question no. 7 and question no. 5 in questionnaire after strategy and application implementation was created in semantic differential scale, because the nature of these questions reflected students' behaviours, therefore, more objective assessment is done by series of polar statements arranged in the progressive increment of odd numbers. Various polar statements were made, originating from the type of behaviour to be studied.

Likert scales were used for questions no. 5, and 9 in questionnaires observing the data before implementation, whereas the same scale was used for questions no. 3 and 7 obtaining data after execution of mentioned strategies and applications. As these questions analyze students' views on a particular statement or frequency of behavior, it is most clearly represented in the form of such a scale, ensuring students' objective answers to questions, understanding of the procedure, also, from an analysis point of view, such responses are easy to code and retrieve data.

In addition to Likert scale, in questionnaires presented after digital reading strategy and application implementation, Thurstone scale was used for questions no. 8 and 9, due to questions exploring students' attitude and feeling towards a specific strategy or application, allowing multiple answers from which, prediction of future behaviour trends can be calculated.

The open answer is used for the final three questions of both questionnaires, that is, question no. 10, 11 and 12. This is due to the fact that Grade Point Average (GPA) intervals might lead students to inaccurately determining their grade, moreover, when analysing data, it can lead to problems in terms of summarisation. By allowing students to record their own GPA score, the teacher avoids self-fulfilling predictions related to age characteristics and possible oblivion.

However, the task of this Paper is not to study particular student's digital strategies and applications used for digital text comprehension, but to examine the general tendencies, therefore, the author introduces the main findings in the following subchapter.

4.3 Comparative Analysis of the Questionnaires Carried Out Among Form 7 Students

Due to early findings claiming significant correlation between printed and digital reading competences (Chin & Baoqi, 2018), supported by research carried out by OECD (2021), where the evidence concluded that in Latvia, students who read books more frequently in paper format have 43 points higher achievements in the PISA 2018 reading test than students who hardly

read books, Figure 4.3.1 has been provided to demonstrate the general reading practice among Form 7 students, before implementing digital reading strategies and applications. It is evident that a rough majority of students, namely, around 85%, read only for study purposes, while somewhat 11% indicated reading for pleasure. One student has mentioned reading for other purposes, which could mean entertainment or social nature reading experiences.

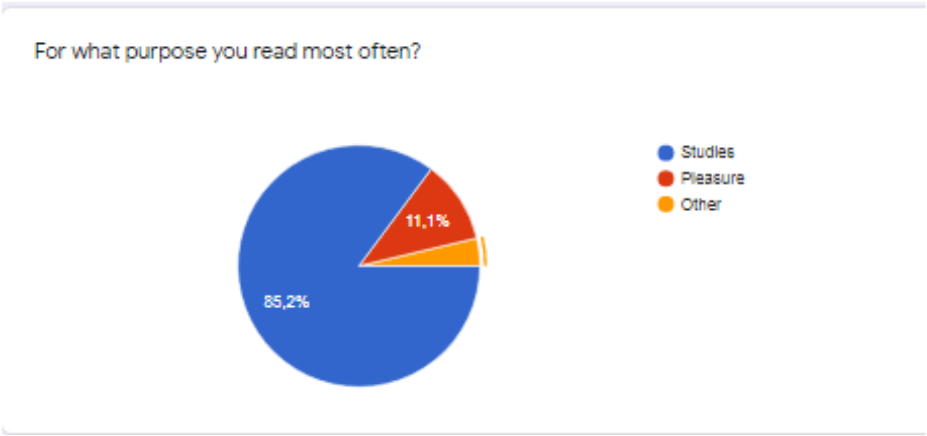


Figure 4.3.1. **Response Categorization for Purpose of Reading Before Implementing Digital Reading Strategies and Applications**

In order to visualize the comparison between overall reading practice among Form 7 students after implementing digital reading strategies and applications, Figure 4.3.2 is presented. The evidence shows that, even though the majority of students, that is 66%, still have a tendency to engage in reading practice due to studies, a noteworthy proportion of students in terms of 25% had indicated to be reading for pleasure. This is an important change in common behaviour among young adolescents due to existing correlation between printed and digital reading competences, which influence reading achievements for up to 43 points based on the medium used for the activity (OECD,2021). Minority of students, 7%, had indicated reading for other purposes.

Figure 4.3.2. **Response Categorization for Purpose of Reading After Implementing Digital Reading Strategies and Applications**

Regardless of positive correlation in terms of strategy use and comprehension, theoretical literature observed postulates that digital reading is fundamentally different from the experience of reading print materials, hence, certain digital skills and attitudes towards digital setting need to be taken into account due to change in environment. Figure 4.3.3 presents the overall preferred technology students use when doing homework. It shows that 85% use the computer, while the use of mobile phones is also highly supported by almost a half of the students. The results display that ten students tend to use both digital devices, that is, both computer and mobile phone, when doing homework. Minority of students, that is 11%, have indicated using tablet computers while around 14% have other digital devices used for educational purposes.

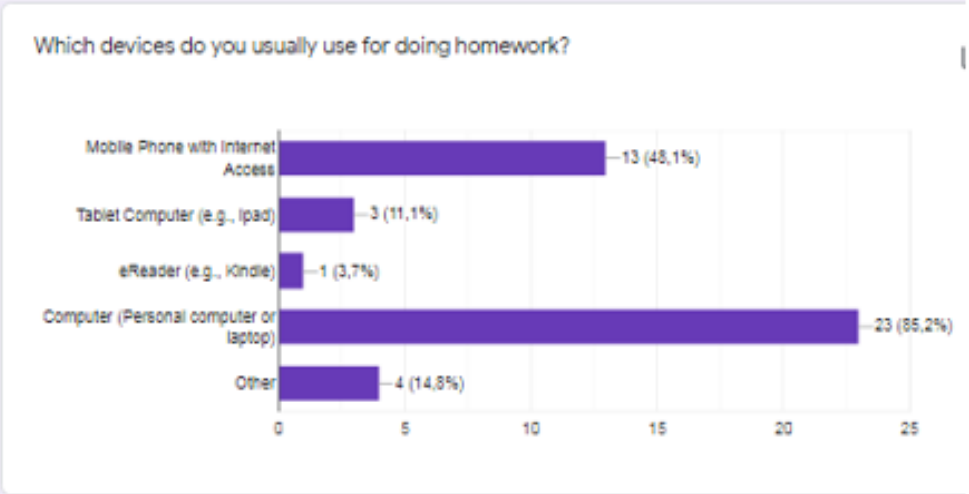


Figure 4.3.3. **Response Categorization for Technology Used in Execution of Homework Before Implementing Digital Reading Strategies and Applications**

However, Figure 4.3.4 highlights the change in overall technology use practice. It is evident that most students, 92%, have now chosen to use computers, while mobile phones are still highly supported by 15 students. This leads to a conclusion that eleven students use both technology devices for educational purposes. By comparing information provided by both tables, an increase in both leading technologies is evident, demonstrating change in student attitude upon preference. The increase can be explained as the activities presented allowed students to explore possibilities of both digital devices, and, as the tasks grew in complexity, students relied on both technologies for success. Moreover, during the first part of the semester, distance learning was implemented as one of the policies limiting Covid-19 spread. Therefore,students from low socioeconomic backgrounds, with limited technology supply (see Appendix 71), were equipped with either laptop or tablet computers to ensure a positive learning outcome.

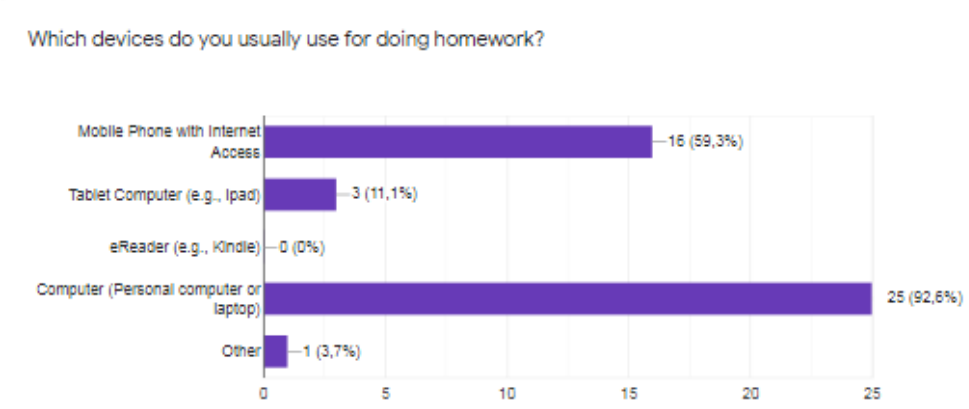


Figure 4.3.4. **Response Categorization for Technology Used in Execution of Homework After Implementing Digital Reading Strategies and Applications**

Second indicator of digital reading comprehension improvement is the strategies students consider useful and, thus, are skilled to apply when exposed to a text in either format. Students were asked to evaluate their attitude in terms of practicality for all strategies used during the implementation process, that is, note taking, highlighting, chunking, using graphic organizers, making connections, using dictionary and text-to-speech.

Within the frame of the first strategy, meaningful positive linear association, that is R^2= 0,4521, is evident and presented in Figure 4.3.5.

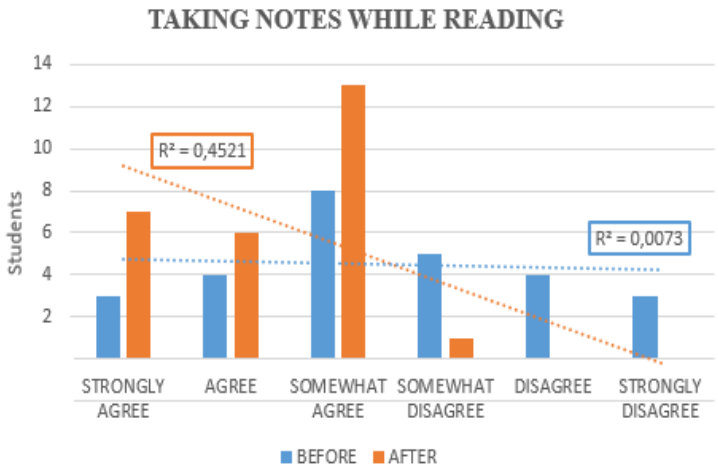


Figure 4.3.5. **Response Categorization for Attitude on Taking Notes Strategy Practicality Before and After Implementing Digital Reading Strategies and Applications**

An increase in general tendency among Form 7 students can be expressed by a coefficient of 0,44. Considering that in such disciplines as social science, where research uncovering attitudes and behaviours for human beings is done, similarly to the research agenda within the framework of this question, R^2 coefficient of significance is 0,35. It is evident that after implementing note taking in both digital and print format as a part of strategy for reading comprehension improvement, more students have developed a positive attitude towards it,

fostering its use upon situation. Similar increase is also evident in terms of the second strategy implemented, namely, highlighting. Within this strategy, however, the proportion of students who already used the particular strategy was substantial, leading the coefficient before implementation to be 0,37, however, it increased up to 0,57 after implementation (see Appendix 72). It is noteworthy that even though many students already used the particular strategy, either knowingly or not, by presenting students with possibilities to use the strategy in a more digital setting, likelihood for other students, considerably strong print readers, to adapt and benefit, hence, improving digital reading comprehension expands.

In favour of possible improvement of digital reading comprehension caused by Digital Strategy and Application use is also the coefficient of linear regression trendline, presented in Figure 4.3.6. The figure also reveals that before implementing chunking as a part of both digital and print reading strategy, students generally experienced a negative attitude towards it, confirmed by the direction of the regression trendline. Moreover, to determine linear regression value, the square of the correlation coefficient was estimated, namely, $R^2 = 0{,}0867$ and $R^2 = 0{,}5318$. It can be concluded that the general tendency has improved by 0,44, which is considered as meaningful. The evidence shows that by providing more practice in chunking, while also developing engaging activities and promoting collaboration, students experience change in overall attitude, thus, one can conclude that negative attitude towards certain strategies might stem from ignorantness. In other words, students have limited knowledge about the activity and have had little practice, clouding their judgement.

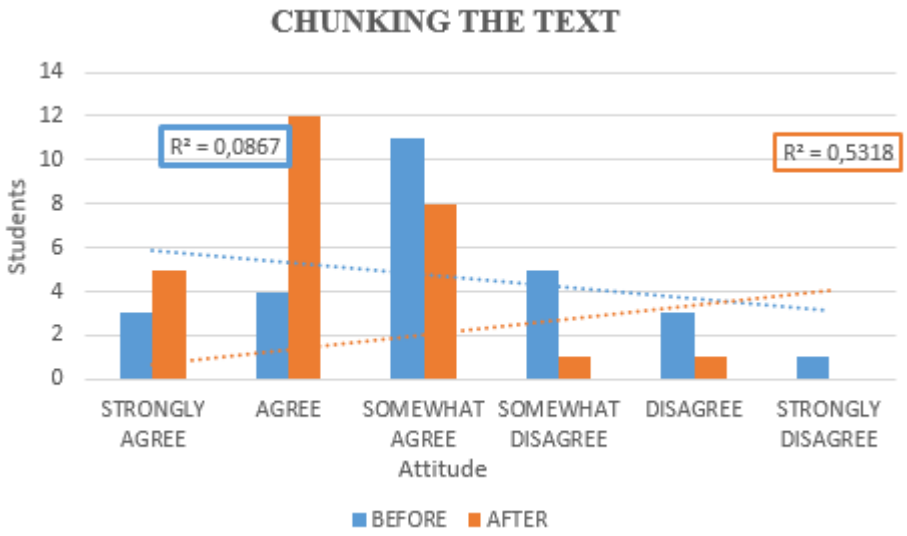


Figure 4.3.6. **Response Categorization for Attitude on Chunking the Text Strategy Practicality Before and After Implementing Digital Reading Strategies and Applications**

Similar tendency is evident when evaluating responses to attitude towards graphic organizer use for structuring thoughts. Evidence indicated that after executing tasks that

demanded to organize the thinking process using such graphic organizers as Venn diagram and mind map, using both paper and digital format, square value of the correlation between constructed strategy and the response variable favouring practicality, had doubled, being 0,48 (see Appendix 73). It can be deduced that even though students were familiar with the basis of the strategy using traditional pen and paper, the interactive environment, stimulating individual inquiry, is a factor for such student responses as the activities in the digital setting allowed to add images and videos as well as choose colour settings, therefore, were more challenging yet engaging.

Making connections, along with chunking and annotation, are deep reading strategies, necessary for improvement in reading comprehension. Researchers believe that this strategy is critical as it enables students to make deep, complex and perceptive connections regarding the text. However, in a more digital sense, this strategy is also fundamental for development of meta-cognitive skills responsible for critical evaluation. Figure 4.3.7 indicates that after the implementation of connection making activities like context clues, and graphic organizers Venn diagram, mind map and opinion organizer, the majority of students somewhat agree that this strategy is practical and useful when reading. Three students, however, strongly agree to benefit from this strategy, moreover, before implementing this strategy no students believed to have such an attitude towards it. Even though the amount of students who either somewhat disagree or disagree is lessened, such attitudes are still evident after implementation, consisting of eight students overall. Nevertheless, by summarizing the data provided, it can be concluded that 22 students out of 27 consider the strategy of making connections to be practical in a degree, therefore, might be used by students when faced with necessity.

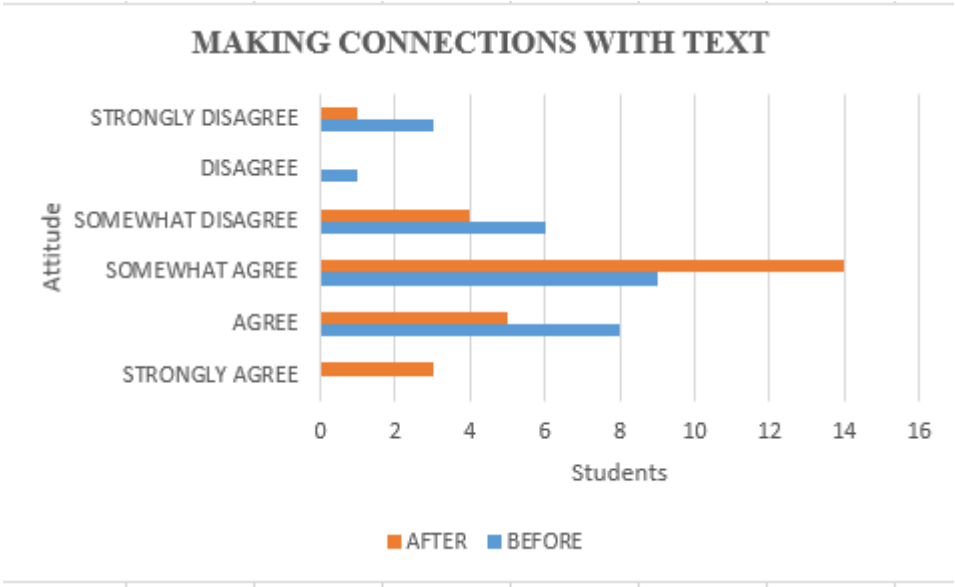


Figure 4.3.7. **Response Categorization for Attitude on Making Connections with Text Strategy Practicality Before and After Implementing Digital Reading Strategies and Applications**

Not all activities executed in or outside the classroom focus solely on reading comprehension improvement as digital literacy is also a component to be taken into account based on the interactive environment. As work with online dictionaries was also implemented during the case study, responses for practicality of such activity are presented in Figure 4.3.8. The data shows that students both before and after implementation had a somewhat positive attitude towards such support strategy and the value of linear regression has increased by 0,027 which can be considered as little. This can be explained by the fact that the students were actively using Google Translate application before being introduced with Cambridge Online dictionary, thus, have already had practice in uncovering meaning for unknown words. Also, the general preference has already been developed by them actively using Google Translate for a great duration of time, hence, they have grown comfortable in routine and are resistant to change. Additionally, Cambridge Online dictionary also does not translate words, which, for students with limited language skills might not be the most beneficial solution.

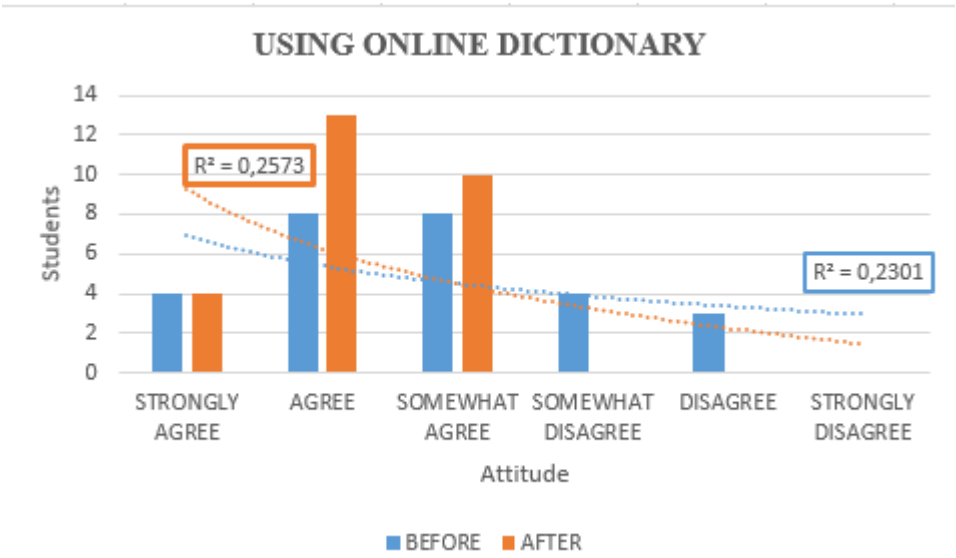


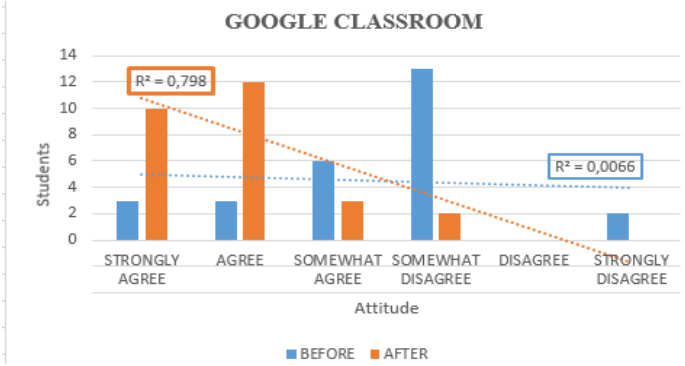
Figure 4.3.8. **Response Categorization for Attitude on Using Online Dictionary Making Strategy Practicality Before and After Implementing Digital Reading Strategies and Applications**

Lastly, students' attitude to text-to-speech application strategy was revealed (see Appendix 74). The evidence shows that before implementing text-to-speech applications for digital reading comprehension, more than a half of students had a negative view on the practicality of such strategy, while 12 students believed it to have some positive effects. However, after implementation, no student had indicated to strongly disagree with the usefulness of text-to-speech application for digital reading comprehension. Moreover, the majority of students expressed a positive view by demonstrating to either strongly agree, agree or somewhat agree. There are still a significant number of students who disagree with the

practicality to some extent. It can be concluded that even though the general attitude towards this strategy experienced positive change, linear regression value reaching 0,2, due to technical problems caused by the application, a certain proportion of students regard it as less practical, hence, are not likely to use it when exposed to a digital text.

During the implementation process the above mentioned strategies were developed and adjusted using a certain digital platform or application to foster, firstly, digital skill development and, secondly, to create interactive situations the students might find themselves in later, when independently browsing the Web. It was clear that some strategies students have found less useful due to having problems with the application the strategy was executed with. Next question, therefore, gives evidence to which applications and platforms students consider beneficial for positive learning outcomes. The students were asked to evaluate all platforms and applications they were faced with during the implementation process, that is, Google Classroom, Google Docs, Speechify, LucidChart, FreeMind / MindMup, Online Dictionaries, Microsoft Word, Quizlet and Online Referencing.

When asked to evaluate Google Classroom as an application for digital skill improvement it is evident in Figure 4.3.9 that the majority of students had a negative attitude towards it, two students indicated to strongly disagree, while thirteen expressed to somewhat disagree the practicality of the application. Rough minorities indicated to either strongly agree or agree to the usefulness of the application. Accordingly, improvement in both student attitude and digital skills is favoured by the general answer tendency after Google Classroom was implemented in the education process. Majority of students, 22 from 27, had indicated to either strongly agree or agree to the practicality, while three students agreed to some extent. It is visible that linear regression value has increased significantly from 0,006 to 0,798. The change in attitude can be explained by the fact that students were unfamiliar with the application at first, yet, when instructed and prepared, having to engage in online learning either willingly or not due to safety policy regarding Covid-19, they were exposed to the environment and as digital competence improved, grew comfortable with the particular application as well. As more than 70% of



students had indicated not having problems with the particular application (see Appendix 75), it can be argued to be of high suitability for organizing education material in a digital setting.

Figure 4.3.9. **Response Categorization for Attitude on Using Google Classroom Application Before and After Implementing Digital Reading Strategies and Applications**

Google Classroom application is closely related with Google Docs, that is, information provided using Google Classroom can be opened and completed using Google Docs, hence, it felt reasonable to explore student attitude towards Google Docs as many strategies, such as opinion graphic organizers, highlighting, context clues and summarizing were executed using the particular application. The evidence in Figure 4.3.10 shows that the students had positive attitude towards the application before it was deliberately implemented, however, after implementing this application more frequently, the amount of students who had negative attitude towards the application lessened, furthermore, more students had indicated to strongly agree with the practicality of the application. The positive attitude before can be explained due to other subject teachers using Google Docs during online learning, hence, the students were somewhat familiar with the application, also, as it is similar to Microsoft Word, which students have been taught in IT lessons, they have the necessary skills to operate within the application without frustration, which also corresponds to student responses when determining the problems caused by the application, where 65% indicated not having any problems, while 7% have indicated problems in terms of downloading it and it being supported by the technology device used (see Appendix 76).

During the implementation process, students were exposed to interactive nature distinctive from the mentioned Microsoft Word, broadening digital skills and, as a result, more students found it easy to use and practical. Moreover, even though students had a positive attitude towards Microsoft Word before implementing the particular application in the education process, the data revealed that after executing applications for digital reading improvement, students, while considering Microsoft Word to be useful, have a tendency to disregard it when contemplating practicality (see Appendix 77). Such change can be explained as both applications are similar in nature and one can even download or upload files using Microsoft Word, meaning that students are more likely to develop a positive attitude on practicality for applications that are digital and interactive in nature. However, the problems caused within the application refer to having supported email address and necessary technical supply as 93% of students did not experience any problems when using Microsoft Word application (see Appendix 78).

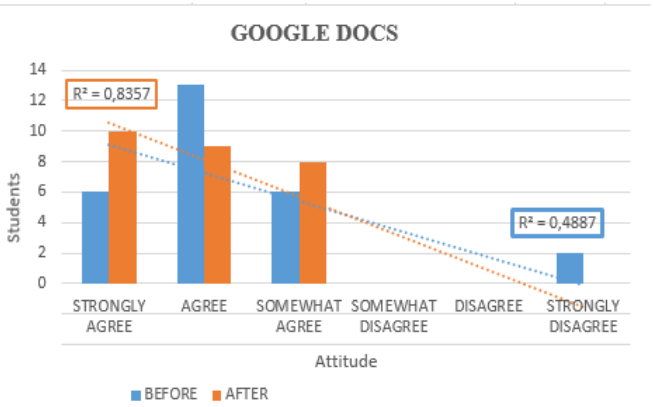


Figure 4.3.10. **Response Categorization for Attitude on Using Google Docs Application Before and After Implementing Digital Reading Strategies and Applications**

As mentioned before, strategies students have indicated are deeply rooted in applications used as a medium. Even after implementation of the strategy to use text-to-speech for digital reading comprehension, a significant number of students still expressed a somewhat negative attitude towards it, which is also evident in the question regarding the text-to-speech application, Speechify, used. The evidence in Figure 4.3.11 shows that before implementing Speechify, the majority of students, 18 out of 27, regarded disagreeing with the practicality of the application, while a minority of students, 9 out of 27, somewhat agreed it to be useful for digital reading comprehension. Even though after it was thoroughly implemented in the education process, fostering the use of it in both classroom and digital setting, a certain number of students still regarded it as impractical, indicating a negative attitude in five students out of 27. Nevertheless, 22 students have developed a positive attitude towards the application, hence, are likely to use it for digital reading comprehension independently. The existing attitude towards the support application might be caused by the problems students faced when downloading it. Despite 52% of students indicating not having any problems with the application, 30% have mentioned having faced problems in this particular area (see Appendix 79). Moreover, 7% have faced problems in terms of following the instructions within the application while 4% were not able to use the application as it was not supported on the digital device used. Therefore, it can be concluded that even though the application has received positive student feedback, the technical problems are to be eliminated if the application is to be used further in the education process.

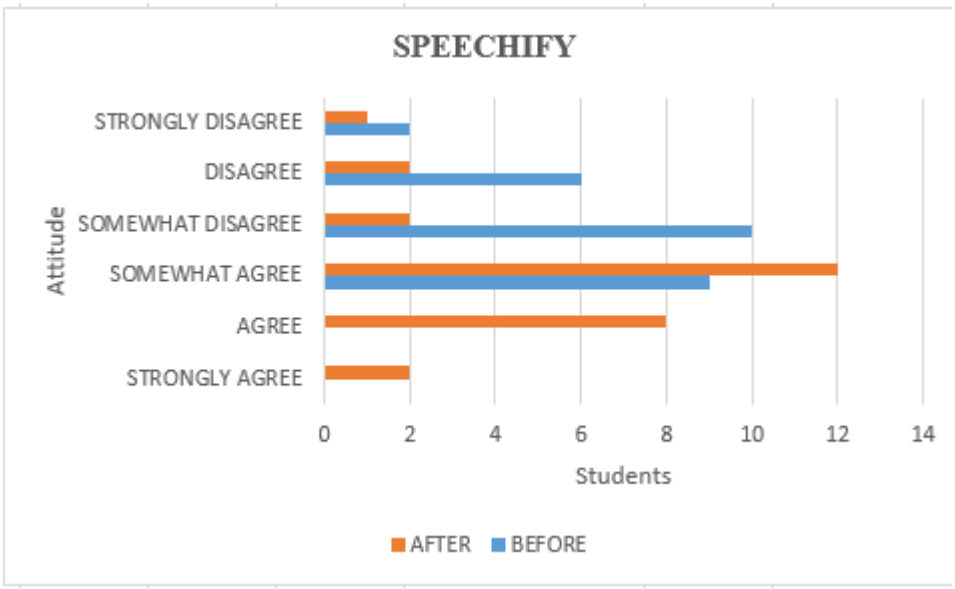


Figure 4.3.11. **Response Categorization for Attitude on Using Speechify Application Before and After Implementing Digital Reading Strategies and Applications**

For connection making purposes the next application, LucidChart, was implemented in the process, in connection with such strategies used as Venn diagram and mind mapping. The evidence shows that students had already developed a positive attitude towards such application as 17 out of 27 students indicated to somewhat agree to the practicality. Only a handful of students were regarded to have a negative attitude towards this application before it was implemented in the education process. Nevertheless, after this application was used, providing instructions and even video tutorial, eight students had indicated to agree with the usefulness of the application, moreover, such response was not evident before. Also, the number of students who strongly agree with the practicality of application has increased twofold, while students who either somewhat or strongly disagreed have decreased in half (see Appendix 80). Additionally, in order to evaluate the problematic nature of the application and determine the implementation policy and guidelines for future reference, it was clear that majority of students faced no problems when using the application, while handful of students experienced problems in terms of copying the information, following instructions or downloading it (see Appendix 81). This leads to a conclusion that this application is easily implemented in the digital setting, however, instructions and tutorials need to be presented for students. Similar tendency is also evident in connection with FreeMind and MindMup, which was also used for connection making skill improvement. That is, students expressed having a rather positive attitude before it was implemented in the English classroom, while afterwards, the negative attitude indicators were lessened by half (see Appendix 82).

The positive attitude which was already evident before implementation can be described due to other teachers using similar applications in their teaching methods, hence, enabling students to draw similarities and use pre-existing knowledge when exposed to the application.

Figure 4.3.12 indicates certain problems students came across when independently working with the application. It is evident that even though 60% of students did not experience any problems, 13% had problems following instructions, hence, executing the task requirements. Furthermore, 10% were not able to use either of the applications as it was not supported by the digital device used. 14% experienced problems in terms of downloading the application. The data leads to a conclusion that one of the key factors when choosing to implement any application should be the ease of use, which would eliminate errors when following instructions or downloading it.

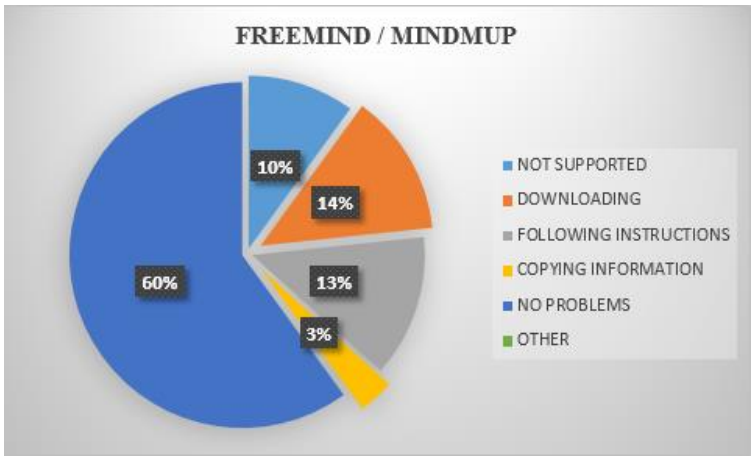


Figure 4.3.12. **Response Categorization for Attitude on Experiencing Problems Using FreeMind / MindMup Application**

As students were exposed to extensive texts in the digital setting, they were also taught to consult online dictionaries for better reading comprehension. Even though in Figure 4.3.8 it was evident that students already had a positive attitude towards such strategy, it felt reasonable in terms of the research to determine specifically student attitude using the introduced Cambridge Online dictionary as it differs from Google Translate students were keen to use before. Data revealed in Figure 4.3.13 show that before implementing the particular application, the linear regression value was 0,22, while afterwards it increased to 0,52, indicating an overall growth by 0,3.

This finding favours the digital reading comprehension development as by preferring to use Cambridge Online dictionary students are more likely to learn synonyms, antonyms and are able to determine the use of a vocabulary item in the sentence, hence, improve vocabulary necessary for reading comprehension. Analyzing problems students faced, which could influence the general tendency to use the particular application, it is visible that 67% have not faced difficulties, while 15% experienced downloading to be one of the factors for errors (see Appendix 83). It can be concluded that certain digital skills need to be developed in order to successfully operate within the particular application, hence, it should be first presented as a guided activity. Similar tendency is also evident when analysing online referencing application,

where even though majority of students, 19 out of 27, indicated to have positive attitude towards the practicality of such application even before it was implemented in the classroom, afterwards the regression value increased by 0,07 (see Appendix 84). It can be concluded in regard of slight improvement in attitude towards online referencing, that students due to their education level have not yet been exposed and taught how to cite articles used when writing essays, hence, do not fully feel the benefit of using such application on daily basis, indicating that performance is not limited due to technical problems as 89% experienced none (see Appendix 85).

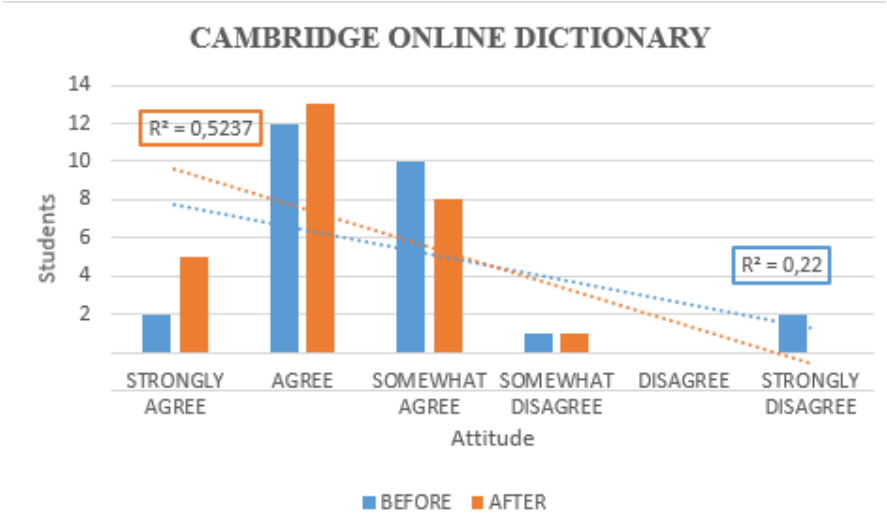


Figure 4.3.13. **Response Categorization for Attitude on Using Cambridge Online Dictionary Application Before and After Implementing Digital Reading Strategies and Applications**

When evaluating the Quizlet application which was used for key word writing, annotation skill improvement and overall vocabulary development, the evidence presented in Figure 4.3.14 led us to believe that students had a strong positive attitude towards the application use and practicality. It is visible that after this application was implemented during the education process by flashcard creation, students have grown to have an even more positive attitude towards it, expressed by a regression value of 0,55. The author believes that the positive attitude before implementing the particular application was caused by other subject teachers who are likely to use the application during the study process for similar reasons, that is, either terminology knowledge practice or as an interactive knowledge test on a particular subject. The positive fact that 64% of students experienced no problems when working with the particular application supports the argument of it being familiar, while more than one fifth of students faced difficulties when following instructions, indicating the necessity to guide the use of this application more thoroughly before allowing an independent work (see Appendix 86). The growth in positive attitude, however, can be speculated to occur due to students being instructed

and introduced with more activities that can be done using the application. Hence, do not fully feel the benefit of using such applications on a daily basis.

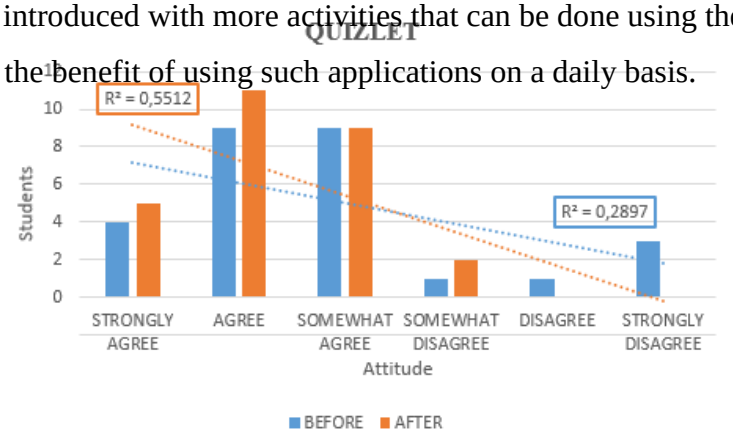
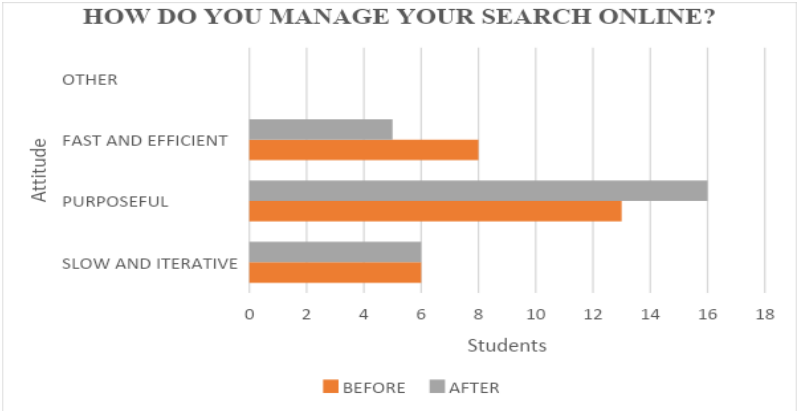


Figure 4.3.14. **Response Categorization for Attitude on Using Quizlet Application Before and After Implementing Digital Reading Strategies and Applications**

The next indicator of digital reading comprehension improvement lies in the overall digital literacy skill refinement. Due to the activities introducing various pathways of information and allowing the use of search engines to uncover the meaning of keywords, the students gradually were introduced to searching the information online. Moreover, the last activity, which demanded to create a self-generated narrative, challenged the ability to search for information using the Web to a great extent. Figure 4.3.15 represents the overall change between student perception of how they execute search online. It is evident that before implementing digital reading strategies and applications, the majority of students believed to have well developed the particular digital literacy skill, indicating that they either find information fast and are efficient or have a purpose in mind when searching, while only six students believe to be slow and repetitive searchers. After the students were exposed to more interactive strategies and also used several digital applications, the change in overall attitudes is visible as after the implementation majority of students, 16 out of 27, indicate that they are rather purposeful and even though the amount of students who believed to be fast and efficient searchers is lessened it can be considered as beneficial factor for development of digital reading comprehension and digital literacy skills. Explanation for such change and the beneficial factors can be deduced by the fact that students now have better judgement of the amount of



information available online as well as criteria for information reliability determination, hence, the tendency to rush decreases.

Figure 4.3.15. **Response Categorization for Behaviour When Managing Search Online Before and After Implementing Digital Reading Strategies and Applications**

Another indicator that is more connected with digital literacy skills than digital reading comprehension, however, is interrelated, is behaviour towards hyperlinks. Due to hyperlinks being one of the criteria for a text to be considered as digital and, thus, allowing the ability to read in a nonlinear way, hence, challenging deep reading strategies, it is reasonable to observe the general tendency in the particular Form. Figure 4.3.16 reveals that before implementing digital reading strategies and applications 52% of students proceeded to hyperlinks only after having read the main text, 22% of students avoided following hyperlinks, while the same percentage of students engaged in hyperlinks as soon as they were presented. Interesting is the fact that 4% of students indicated to click on the hyperlinks without acknowledging the main text. Particular behaviour can be explained as digital reading demands for more self-control and ability to focus attention, as the students lacked these skills, they either avoided hyperlinks to balance attention for the main text or were not able to contain themselves, hence, following hyperlinks immediately or even without reading the text.

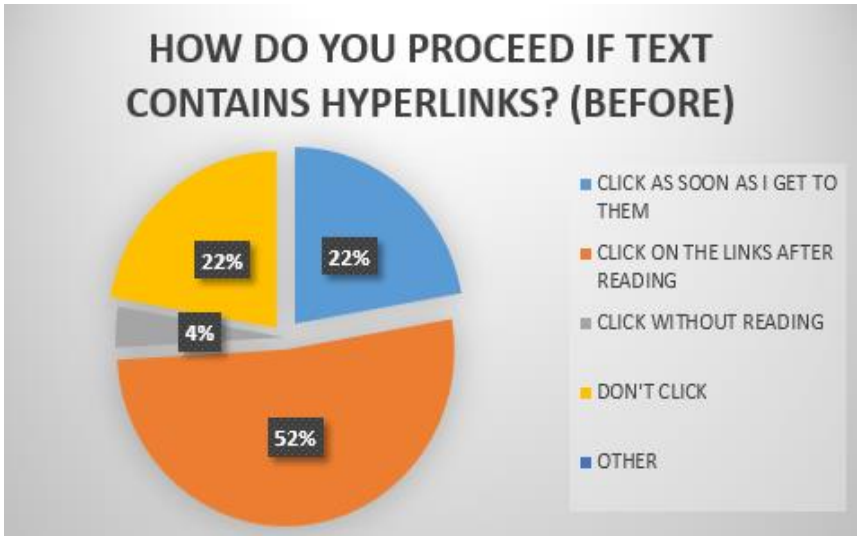
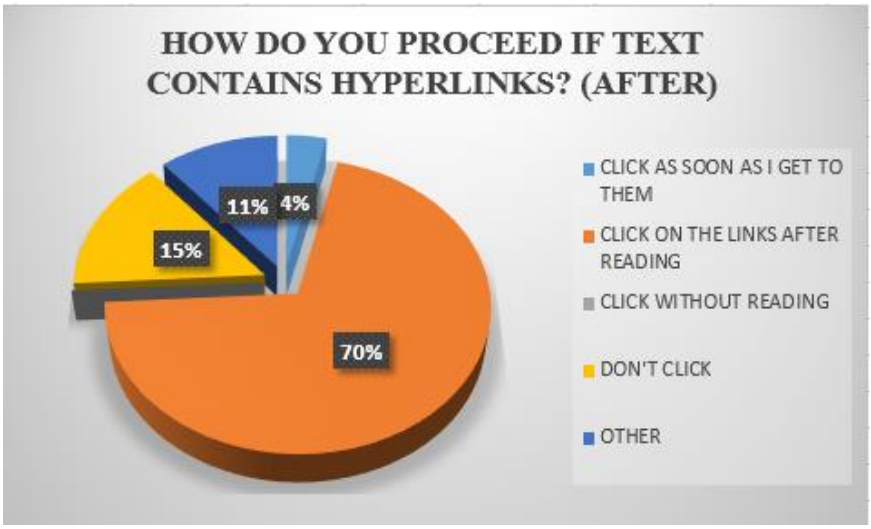


Figure 4.3.16. **Response Categorization for Behaviour When Text Contains Hyperlinks Before Implementing Digital Reading Strategies and Applications**

In contrast, Figure 4.3.17 provides information after implementing digital reading strategies and applications. It can be seen that 70% of students click on the hyperlinks after reading the main text, while 15% avoid following hyperlinks, 11% consider to follow hyperlinks in different manners but 4% reveal to engage with hyperlinks as soon as the text presents them. In comparison, it is clear that the increase of students who go after hyperlinks after finishing the main text file is by 18%. Percentage of students who ignore hyperlinks is

also decreased by 7%, while by 18% the amount of students who follow hyperlinks as soon as possible is reduced. There are also no students who consider observing hyperlinks without reading the text material itself. This change in behaviour can be explained by potential growth



in student self-control which was fostered by support reading application Speechify as well as the chunking strategy, allowing students to focus attention better.

Figure 4.3.17. **Response Categorization for Behaviour When Text Contains Hyperlinks After Implementing Digital Reading Strategies and Applications**

In connection with attention and self-control, the question indicating attention balancing between text and graphics was asked and results of the general response categorization is presented in Figure 4.3.18. It can be observed that the majority of students, 37% and approximately 33%, indicated to focus more attention to graphic images than the text. While one student has indicated to completely focus on graphics rather than the text. One fourth of students, namely 18% and 7%, considered focusing more on the text than the graphic images. This suggests that students are used to obtaining information presented in visually appealing manner, which might be the common phenomenon caused by social media sites.

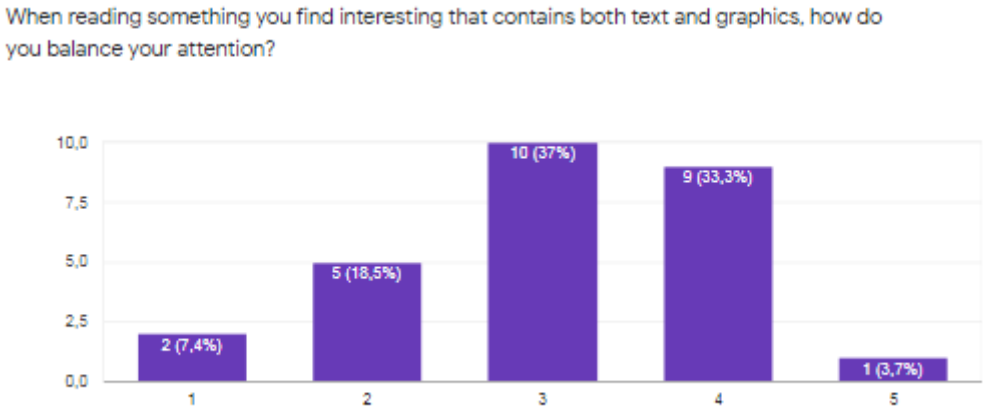


Figure 4.3.18. **Response Categorization for Behaviour When Reading Text that Contains Text and Graphics Before Implementing Digital Reading Strategies and Applications**

Despite visual attraction to be of high importance even after the implementation process, favoured by 40% of students, Figure 4.3.19 reveals the growth in the amount of students who try to focus more on text itself than visual imagery. 25% of students have chosen the attitude value of 2, stating to concentrate more attention to text than graphics, while 14% strongly agree on paying attention to text not images. Nevertheless, almost one fifth of students are more interested in graphics than the text. It can, however, be concluded that the amount of students who focus attention to graphics more than the text is lessened by roughly 18%, while the amount of students, who try balancing attention equally to both types of media, has increased slightly. Most noticeable change is visible in terms of students who focus more attention to text than graphics, leading to an overall percentage of 14%. The behavioural change can be explained by growth in student self-control, that is, ability to engage in the text rather than searching for visual reinforcements fostered by support reading application Speechify as well as graphic organizers and connection making activities, also, vocabulary improvement might be an indicator for student appreciation of text compared to graphics.

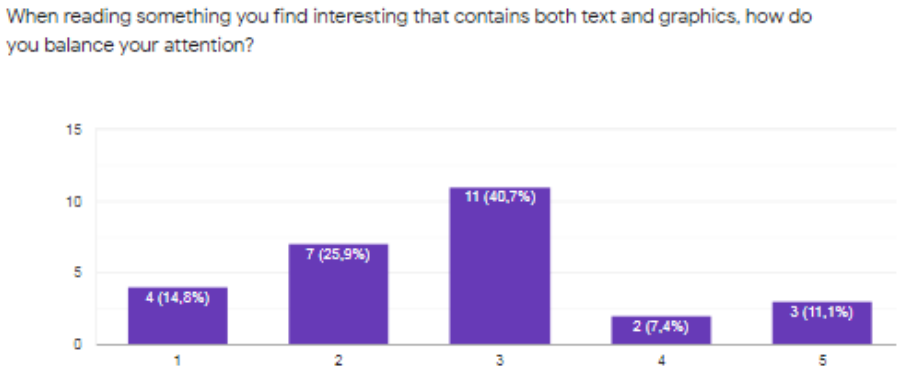


Figure 4.3.19. **Response Categorization for Behaviour When Reading Text that Contains Text and Graphics After Implementing Digital Reading Strategies and Applications**

Finally, in terms of academic achievement, GPA is commonly used as an indicator, Latvia being no exception. Even though the new education policy that focused on improved curriculum, increased the role of formative assessment in terms of percentages, points, passed or failed marks or comprehension levels, the outcome does not affect the mark at the end of the school year and is more for the teacher to adopt justified decision about the further education process steps necessary. However, due to the student stage of development, highlighted by yet evolving sense of self-motivation, students tend to disregard such assessment and thus, it does

not represent true level of comprehension or skill. That being said, the author of the Paper further explains the change in GPA scores in three subjects, namely, English, History and Social Science as these subjects are in close relation with reading comprehension and, based on the setting, digital reading comprehension. For clarification purposes it must be stated that even though the research was carried among the particular Form 7 students in English lessons, the tasks were not assessed by a mark and, the author is not the English teacher for the research group.

Even though before implementing digital reading strategies and applications the average GPA in English for the class was 7,85, where 37% of students indicated to obtain a mark of 7, 19% embraces the average of 8, 26% indicated the GPA to be 9, while 7% have earned 10 (see Appendix 87). 4% of students have expressed to have an average of 5, while 7% have 6. However, after implementing digital reading strategies and applications a change in both individual GPA scores and overall subject GPA score is evident in Figure 4.3.20. It is visible that an increase by 0,98 points has occurred, while the percentage of students who have received GPA of 10 has grown, now being 30%, and the percentage of students who have earned 9 has decreased by 8% (see Appendix 88). Moreover, a decline in the overall percentage of students who obtain an overall mark of 7 is to be noted as now it is 11%. Such change might be evident due to skillful students gaining more confidence and knowledge, using digital reading strategies and applications for independent purposes, thus, improving GPA scores, while students who experience challenges in terms of the subject experience one of two outcomes, either slightly elevating their GPA score due to being able to use digital skills and applications presented and fostered or yield under pressure of having too many challenges, hence, losing the score they already had.

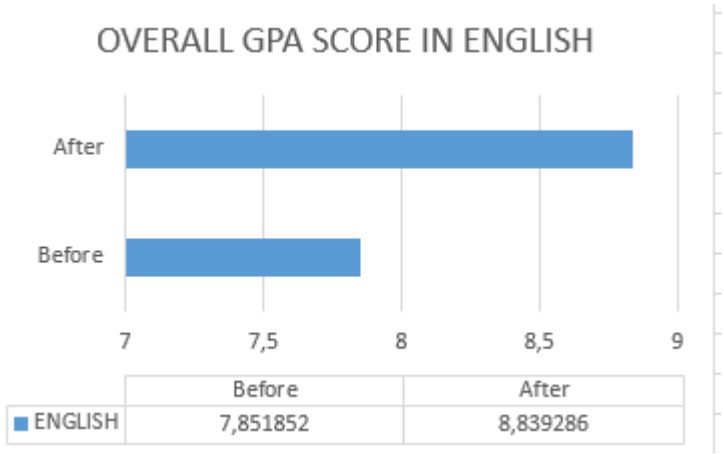
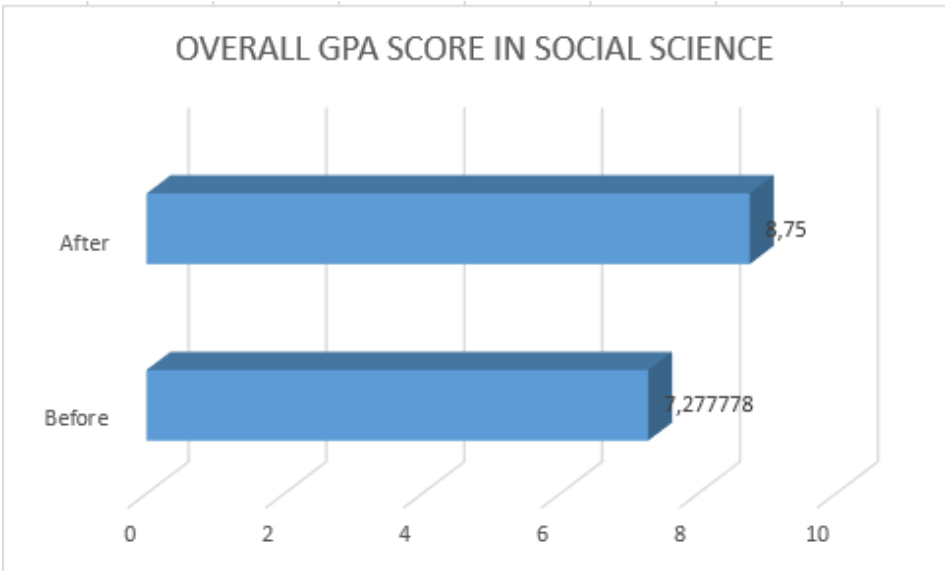


Figure 4.3.20. **Representation of Grade Point Average (GPA) Score in English Before and After Implementing Digital Reading Strategies and Applications**

Second subject to be evaluated in terms of student GPA scores is Social Science as it also includes reading practices in both digital and classroom settings, challenges student ability to

evaluate, analyze and retrieve information provided, making connections to human behaviour and relationships as well as ethics and other social constructs. Figure 4.3.21 indicates the overall GPA score result before and after implementing digital reading strategies and applications. It is visible that before implementation, the GPA was 7,27, with 18% of students obtaining GPA of 5, 15% having 6, 30% indicating 7, while 19% have earned 9 and 11% have scored the highest possible mark (see Appendix 89). After the implementation, on the other hand, overall GPA score had increased by 1,48 points, additionally, 33% of students indicated to obtain a mark of 9, 37% had a mark of 8 (see Appendix 90). Besides, the percentage of students who have scored either 5 or 6 has decreased by 14% and 11%. It can be concluded that there is evident growth in terms of above average GPA scores as, for example, occurance of mark 8 is increased by

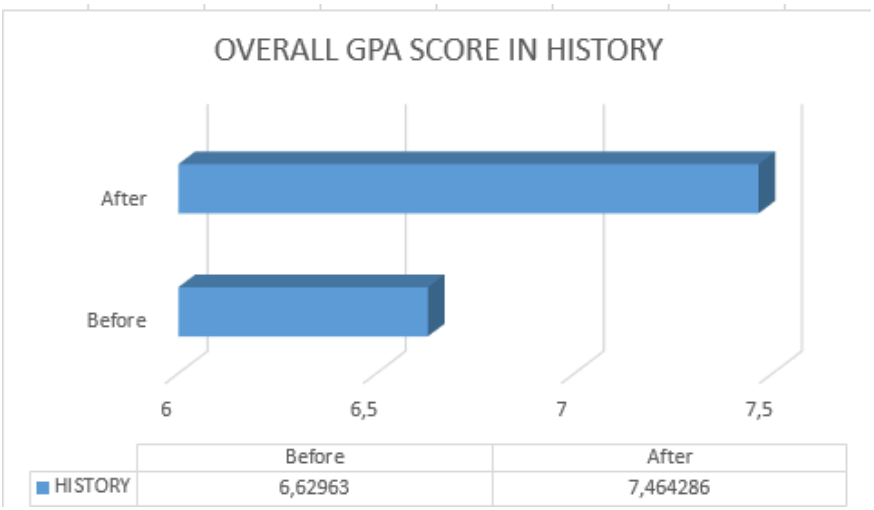


31%. Explanation for the change of GPA scores could be founded on improved chunking and annotation skills, which at the same time, improved self-control, enabling students to successfully manage extensive texts by either underlining key words, dividing it in smaller sections to understand meaning and keep attention.

Figure 4.3.21. **Representation of Grade Point Average (GPA) Score in Social Science Before and After Implementing Digital Reading Strategies and Applications**

Lastly, the history subject also presents extensive reading material in both digital and classroom settings, from which students are to collect knowledge and be able to make connections about causal relationships in society and world in general, taking century peculiarities into consideration. As Figure 4.3.22 indicates, particular student overall GPA scores have gone through an evident change, as before implementing digital reading strategies and applications, the GPA score was 6,62, while after executing the mentioned strategies and applications, it increased up to 7,46, hence, by 0,84 points. In detail, 29% of students previously found themselves between either a GPA of 4 or 5, while 34% positioned in the interval of 6 to7 (see Appendix 91). In comparison, after the implementation, intervals of 4 to 5 as well as 6 to

7 were represented by 41% of students, depicting an improvement within the middle level of students (see Appendix 92). Previously the interval of 9 to 10 was exhibited by 15% of students,



however, afterwards an increase in terms of 3% is evident. Such turnaround can be unfolded due to improved connection making skill and chunking, as the strategies used throughout the case study focused on mind mapping, Venn diagrams and use of other graphic organizers, thus, allowing students to better organize their mind and enable the use of pre-existing knowledge.

Figure 4.3.22. **Representation of Grade Point Average (GPA) Score in History Before and After Implementing Digital Reading Strategies and Applications**

To summarize, it is evident that students have gone through certain changes that cover attitude towards reading in general, beneficial and support strategies and applications available to solve problems and help construct meaning from text. It is also clear that due to the digital nature of the activities and online learning policy, students have also developed digital literacy skills such as searching for information and hyperlink use. Based on peculiarities of the particular stage of development, moreover, students being digital natives, the growth spur along with the tendency to absorb digital information rather quickly, students were able to use the gained knowledge in subject-related settings, hence, improving GPA scores. It is clear, however, that certain criteria must be taken into account when presenting applications for digital reading comprehension improvement as well as technical supply and learning preferences. In order to determine whether subject-related teachers also noticed a change in student attitudes, behaviours and practices, the interview analysis is to be provided next, displaying a more objective point of view.

4.4 Data Analysis of Interviews Carried Out Among Subject Related Teachers of Form 7

Another noteworthy factor in the evaluation of digital reading strategy and application effect on digital reading comprehension was the author's interview with subject related teachers. While teacher's journal entries give general information about strategies and applications

carried out during study process and questionnaires provide information of the student perception of themselves when using mentioned strategies and applications, interviews can be thought as more reliable as they provide third person view of how students interact with digital texts in general, outside English classroom, yet, using the knowledge and skill set gained. Therefore, the main aim of the interviews was to collect information on teachers' experience working with students exposed to a digital text and their awareness of students' reading practices and interest in potential strategies and applications for improving digital reading comprehension.

Six semi-structured interviews were conducted in total, the first three interviews were settled during the first day of teaching practice, that is, September 6. After implementing the digital reading strategies and applications in and outside the classroom, the same teachers were interviewed again in days succeeding the final lesson, subsequently, October 12, 13 and 14. The interview before digital reading strategy and application implementation consisted of seven base questions (see Appendix 93), while the interview after had one less question (see Appendix 94), however, some additional questions or clarifications were added during the interviewing process. As the teachers are subject-related, hence, not specifically English teachers, it justifies the language used during the interviews which was Latvian.

The first teacher to be interviewed was a social science teacher (see Appendix 95). As social science deals with topics relating to human beings, their growth, development, behaviour and resources used, alongside with institutes they require to function and successfully carry on life, it felt reasonable to choose this subject related teacher due to communicative and meta-cognitively challenging nature of the subject. The second interviewee was a history teacher (see Appendix 96). The particular teacher was chosen due to the fact that history as a subject presents extensive reading material from which students are to acquire knowledge and make connections about cause and effect relationships in society and the world throughout centuries. The last teacher (see Appendix 97) was chosen due to the fact that mathematics as a subject correlates with reading comprehension in a way that it affects not only the outcome in term of a grade but also ability to think logically using reasoning, which is essential in problem-solving and deep reading strategy development. Further, teacher's answers to interview questions before and after implementation of digital reading strategies and applications are interpreted.

The first question demanded the teachers to answer how important they consider reading comprehension, based on the subject taught. The reason for such a question was to determine the teacher's general view of academic success in the particular subject, guaranteed by reading comprehension. This question also highlighted the reason why particular skill is important, that is, based on the tasks students are exposed to, where reading comprehension is relevant in

general. The results showed that all three teachers regard reading comprehension to be of high importance in order to prosper in the particular subject. Primarily, the ability to understand, interpret, analyse and make connections to the information are main factors for students to be able to engage in a meaningful education process in the classroom. In subjects that are humanitarian by definition, that is, social sciences and history, students are expected to accomplish more demanding tasks, involving reading comprehension, for instance, social science teacher reflected that she expected for her students to analyse and compare challenging themes and topics, determine reliability of information and be able to distinguish which information is to be used depending on the situation. It is clear that the students are repeatedly exposed to difficult and extensive texts and are to use annotation in order to determine main ideas, specific keywords or theorems. History teacher suggested reading comprehension to be one of five cornerstones for successful execution of demands the education system has postulated, while also enabling individuals to adequately integrate in society, developing overall well-being. Therefore, all subject-related teachers agree on reading comprehension to be an important criterion for not only academic success but also overall well-being.

The next question concerned teachers' observation of student navigating skills when independently searching for information online. All subject-related teachers expressed that students lack independence when information is to be found online and need guidance. Moreover, the social science teacher stated that, in her opinion, the ability to search, filter and evaluate information online is to be taught as a separate skill as usually students need step-by-step guidance, even though students spend the majority of time online. Mathematics teacher also agreed and stated that students are more effective in searching the information online when presented with an example. History teachers regarded family involvement as a precondition for developing ability to independently search and obtain information online. The answers brought to light the phenomenon occurring within a particular age group, that is, despite young adolescents to be considered as digital natives, having access to technology since birth, they lack the skill set to purposefully use technology for their own benefit.

The following question was developed in order to find out the teacher's opinion about students' ability to use deep reading and analyse information found online. All teachers again agree that the ability to obtain and describe information online is trifling as the students either copy and paste the first thing they come across, without determining the suitability or have problems using their own words due to limited vocabulary. Mathematics teacher indicated that there is an evident void between students who are well oriented in a digital setting and those who are experiencing problems.

Regarding challenges that students might face when reading online in a digital setting, all subject-related teachers regarded the amount of text to be of importance. Social science teacher expressed the belief that text length correlates negatively with student ability to concentrate, meaning, the longer the text, the worse student concentration is due to possible boredom. Mathematics teacher added to that belief, stating that insufficient vocabulary could also be one of the factors why students might face problems when reading online. Low media literacy was highlighted as another of the challenges by both mathematics and history teachers who stated that due to the infinite amount of information provided online, students either cannot critically evaluate the reliability of the source or have problems choosing from such a vast spectrum. Mathematics teacher also expressed the opinion that students have an underdeveloped sense of their strengths, thus, are unable to obtain information in a manner most suitable for them, while history teacher added students being keen only to visually appealing information.

Next question concerned reading strategies, thus, it was developed to find out the teacher's opinion and recollection of most commonly used comprehension strategies among students. It was clear that teachers were talking about print reading strategies, however, knowing the positive correlation and complementary nature they have on digital reading comprehension, the answers are to be considered as useful. Both social science and mathematics teachers agreed that students tend to visualise information provided in a textual format to increase comprehension, either as a form of drawing or making a poster or presentation. Moreover, the social science teacher stated that students usually use underlining of key words or main ideas in order to grasp the text better. On the other hand, history teacher considered skimming and scanning as strategies used by students for reading comprehension.

Due to the unusual education setting taking place throughout last semester, the next question purposefully demands teachers to express their opinion on digital reading comprehension involvement in task fulfillment. When asked how the teachers had determined whether the task was hindered due to digital reading skills or insufficient knowledge about the topic, all teachers agreed that based on student response they were able to decide which factor was at fault. Mathematics teacher stated that reading comprehension and knowledge go hand in hand, therefore, if a student has not read a particular topic, it is obvious that there is going to be a lack of knowledge. She also postulated that during this unusual study process, students had to be very self-regulated and self-motivated, which are the skills only starting to develop during this age of development. History teacher added to that, regarding student self-control as one of the aspects why task requirements were not met, indicating copy and paste answers to questions, without consideration.

Lastly, the teachers were asked to vocalize their opinion on ways to improve digital reading comprehension. One of the ways, mentioned by all three teachers, was to, firstly, present students with interesting and relatable reading materials. Another way, which can be considered as a strategy, is to organize information in diagrams. Moreover, the social science teacher indicated two applications used for such purposes, which are padlet.com and micro.com. Adding to this, history teacher also expressed belief that online applications can improve student recalling ability as well as vocabulary, indicating the use of student created crossword puzzles or flashcards using kahoot. Social science teacher also indicated that use of presentations in either format could improve digital reading comprehension if the students are asked to write just the main idea not plain text when creating slides, however, allowing to create speech on paper.

To summarize the answers of all three subject-related teachers before implementing digital reading strategies and applications, it could be concluded that all believe reading comprehension to be a determining factor for academic success in the particular subject. Moreover, all teachers agreed that insufficient digital skills are one of the reasons why students are struggling in terms of finding and evaluating information online, other factors, such as limited vocabulary, lack of self-control and self-motivation, were also stated. Positive correlation between family input and digital skills was expressed by one of the teachers, indicating the influence socioeconomic factors have on both digital skill development and reading comprehension. Even so, all teachers believed that the main reason for problems in digital reading comprehension stem from the characteristics of digital setting in general, that is, its unlimited information and depiction of it. When analysing the common practice determining whether task fulfillment was affected due to lack of digital reading comprehension or knowledge about the topic, it can be justified that teachers tend to look for copy and paste patterns when evaluating, however, there is no objective way to clarify the performance. Although all teachers agreed on the fact that students tend to have problems in terms of summarising, they do not mention the possible strategies for improvement, additionally, teachers have sufficient knowledge for improving vocabulary using digital applications and strategies, while they are unaware how to develop digital skills necessary for students to participate in an online setting in the first place, or how to improve student concentration abilities.

Above interpreted interviews allowed the author of the Paper to prepare for a variety of factors when designing and executing tasks for digital reading strategies and applications. For example, the interviews revealed that the students are used to being guided, when presented with a task to search for information and thus, lack independence, which needed to be fostered.

Also, the digital skill void was considered when creating tasks and choosing applications for reading comprehension purposes. Moreover, the necessity of relatable and interesting reading material, as well as, the difference in technical supply was taken into account when planning work outside of the classroom. Due to interviews before exposing such detailed information, it is in the authors best interest to reveal the interpretation of the interviews after implementing digital reading strategies and applications (see Appendix 98, 99, 100).

The first question asked teachers to answer how they regard the change in general reading practice both in print and digitally. The aim of the question was to observe whether students' universal attitude towards reading has changed and if so, what is the common practice now. The responses revealed that the students have developed a sense of confidence when exposed to reading material, thus striving to independently manage the task without complaints and comments. This indicates a sense of change in behaviour as prior it was frequent practice for students to wait for teacher to guide through the activity. As stated by mathematics teacher, students seemed to be more attentive towards the reading material, this statement was supported by social science teacher, who also indicated that the students appeared less confused and with more self-control, therefore, able to work even with texts that usually are considered as boring. Such change could be explained due to students having to chunk lengthy texts and provide summary statements for paragraphs within the digital reading strategies, hence, when exposed to a challenging text, they now are able to divide information in smaller, more manageable fragments, focusing attention to each paragraph and constructing meaning, rather than skimming or scanning the whole text aimlessly.

Regarding reading strategies, the next question was supplied and its main aim was to discover whether students execute the strategies presented during English lessons and what strategies have been practised the most by students. All teachers interviewed declared having noticed certain strategies students do when interacting with a text. History teacher stated that students have developed a strategy for attention and self-control, that is, they now follow the text with a finger when reading. This change could be explained as the application used for text-to-speech generating, Speechify, highlighted specific words that were being read aloud, fostering attention and self-control. This teacher also recalled a conversation between students he had overheard, where one of the students admitted making hand-written synopsis with key words and highlighting when preparing for the test, however, the other student has encouraged the use of idea spiders for making associations. Firstly, even though the medium used is not digital, the student showed ability to create annotation, which was implemented through various ways within digital reading strategies. Secondly, idea spider as a form of graphic organizer was presented during implementation of digital reading strategies, using LucidChart application,

thus, one can speculate, it had resonated with the particular student, however, interesting is the idea of making associations as during the digital reading comprehension strategy and application implementation, at no point teacher carried out such activity, that is, to create associations. Yet, one could assume that by allowing students to add pictures to the graphic organizers, they have indeed developed a sort of association, therefore, have upgraded the strategy for their unique learning needs. Adding to this, the social science teacher stated that students have discussed their routine preferences before writing an essay, stating that the majority use idea spiders as a form of thought organizer. Another digital skill improvement is mentioned by a mathematics teacher, who indicated that sometimes, when students were presented with homework in a digital setting, she would inspect certain pieces of text to be underlined. Moreover, she mentioned that during the online study process, some students felt free to comment on Google Docs files, leading to spark a conversation on the application, which allowed the teacher to quickly determine where and why a particular mistake was made. This leads to a conclusion that the students have acquainted themselves with working on Google Docs and have developed digital skills necessary to interact with the material in a more meaningful way due to having had sufficient practice and repetition using the particular application with a variety of tasks. Students also have gained more confidence in using the Web for their benefit, as history teacher indicated seeing students using mobile phones to discover meaning for unknown words, leading to believe that online dictionary use as a part of digital reading comprehension strategy was of success.

Next question was directly connected with the previous one, however, with more emphasis on subject-related teacher point of view, deciding upon the most beneficial digital strategy or application used by the students in order to comprehend the material in a digital setting. This question allowed to understand what particular teacher considered valuable in the subject area of their expertise, knowing that subjects differ and each teacher rates peculiar qualities to be practical for comprehension in the field. As history and social science is known for complex, extensive reading material where one has to make meaning in terms of relationships in society and cause and effect regularity deduction, it was revealed by both subject teachers that they considered any type of mind mapping or graphic organizer use as crucial strategy to obtain in order to comprehend the material. Mathematics teacher, on the other hand, highlighted strategies needed for digital reading comprehension from a more technology based point of view, advocating for strategies that upskill abilities to search and reasonably judge information online. This opinion was also supported by a history teacher, who expressed that students should be taught how search engines work. Nevertheless, neither of the teachers

provided a clear strategy students could use for improvement of such a digital skill within the subject framework.

With reference to digital reading applications a question for teachers to express opinion on support applications Speechify, Quizlet and Adobe Acrobat was asked. Even though the gained insight about specific teacher attitudes on digital literacy should not be considered as an overall general tendency in the education system, certain predispositions can be noted. First of all, all teachers approved text-to-speech application Speechify to be useful, especially, indicating that students with strong audio-visual intelligence are of benefit. Also, teachers noted that due to young adolescent general tendency to avoid reading in the traditional sense, it could be the tool used for fostering the likelihood of comprehending educational material in an easier way. Secondly, all teachers knew and used Quizlet during their everyday lessons, acknowledging the benefit flashcards and their creation have on vocabulary improvement, and, therefore, comprehension. Teachers have adapted the application to fit the subject needs as well, admiring the ease of use. However, it must be mentioned that all possibilities within the particular application were unknown for teachers, indicating that more practice and repetition should be granted. Lastly, two from three teachers admitted not being able to download Adobe Acrobat due to technical problems, which highlights one of the research limitations as well. Technical supply in both school and home is of high importance in order to acquire digital skills as due to the pruning process active during young adolescence, practise and repetition is of high importance. Education policy cannot require all households to obtain advanced technology, however, relevant lessons from subject teachers are to be considered as mentioned by history teacher, who suggested Adobe Acrobat to be introduced within the IT classroom.

Next question, similarly to previous, invited teachers to share attitude and opinion on mind mapping applications and use of graphic organizers. All three teachers supported mind mapping as a beneficial strategy to improve ability to analyse and retrieve meaning from text as well as summarise and understand causation. It was clear that two teachers have used mind mapping strategy during their lessons either in traditional manner or using modern technology, however, the majority agreed that FreeMind as an application is more likely to be used in the classroom as it is simple and has drafts to pick from in an instant. It can be therefore acknowledged that in order for teachers to willingly implement digital technology provided tools in the classroom, they must firstly be easy and simple to grasp rather than being complicated and perplexing.

The last question of the interview asked the teachers to evaluate the improvement digital reading strategy and application had on general digital comprehension and skill set. It was clear that all teachers considered that the students are now more aware of the possibilities and amount

of information found online, regarding them having basic strategies to become an analytical reader. Moreover, all teachers agreed that the students have shown potential in terms of structuring the information, expressing willingness to modify, customize and adapt print reading strategies to excel in new settings. However, teachers also indicated that the process should be rooted in practice and repetition, noting that more practice needs to be provided by the teachers in order for students to be exposed to more repetition.

To sum up, the teachers agree on students using highlighting, key word writing and summarising, when decoding text fragments, which means that annotation strategy has improved in students. Teachers also accord the service of mind mapping among students, as means of thought organizer strategy, which means that connection making strategy has been fostered. The strategies teachers consider of importance differ due to the subject matter, however, all teachers consider the ability to search, analyse and retrieve information as fundamental. Moreover, all teachers agreed graphic organizers to be of use in order to encourage the mentioned abilities. The fact that the students are able to use a digital application used in a language subject in another subject, adding unique meaning to the learning process and adjusting to the needs of a subject, leads to believe that individual inquiry was unknowingly put in motion due to the change in environment. The teachers admitted that they are familiar with Quizlet application and adjusts it to fit the needs of the subject, however, by the answers expressed in mind mapping application use, it can be concluded that the teachers are in stage of discovery themselves, thus, practice and repetition is not only needed for students, but also teachers. Furthermore, as teachers regard general reading comprehension level to be improved and consider students somewhat equipped with strategies necessary for interaction online, it can be deduced that self-motivation and self-control to practice and repeat behaviour is a determinative factor for improvement.

DISCUSSION

Evaluating digital reading strategies and applications and their link to digital reading comprehension improvement, the author concludes that strategies and applications implemented are executed in accordance with print reading comprehension, hence, forming a continuity for pre-existing knowledge. This conclusion refers to an idea expressed by Hague and Williamson (2009), postulating that digital competence should not be about replacing existing competence but rather changing the content and setting of basic competences.

In order to develop deep reading strategies, such as annotation, making connections and chunking, competence-based practice of implementation was created. When assessing the performance of activities, it can be concluded that students have refined competence in all three deep reading strategies, that is, annotation, making connections and chunking. It can be analyzed based on questionnaires and interviews that students are likely to use highlighting when reading an extensive text for navigation purposes. Even though highlighting as a strategy refers to the linear reading process, for effective digital reading, students should possess linear strategies, usually associated with print reading (Hahnel et al.,2015). Evidence also showed that students have taken up activities that referred to connection making, that is, Venn diagram and mind mapping and use of graphic organizers in order to comprehend the text better, which is a positive indicator for comprehension improvement as mentioned by Herold (2014) that students almost reflectively skim or can the surface of text in search for specific information, rather than diving deeply in order to construct complex arguments or to make connections based on their own experiences. The theoretical literature agrees that graphic organizers have shown to improve reading comprehension, hence, mind mapping and annotation applications such as LucidChart, FreeMind, MindMup, Google Docs can assist students in note-taking by helping them summarise main ideas (Korbey,2014).

Teacher interviews indicated that students tend to use digital applications supporting reading comprehension, such as Speechify or LucidChart, in other subjects, adding unique meaning to the learning process and adjusting to the needs of a subject. This finding resonates with Reitinger's (2015) supplemented theory of inquiry based learning, where self-determined thinking process is facilitated by interest in the situation, and any hypothesis is made upon previous experience, exploration of what is unknown, followed by critical evaluation. Furthermore, improvement in inquiry based learning also enabled students to successfully take

advantage and adapt to digital settings and opportunities presented via developed search engine and online dictionary use.

By evaluating student attitude and practice towards hyperlinks it can be concluded that they choose specific strategies for hyperlink selection, majority visiting the hyperlinks after reading the whole text. This indicates the connection print texts and digital texts hold as both can be executed in linear manner, enabling ease of navigation. Therefore, the hypothesis of study carried by Lauterman and Ackerman (2014) has proven to be confirmed again as the students were guided by the teacher in terms of hyperlink use and selection and, afterwards, indicated achievement in cognitive and metacognitive processes necessary for in-depth processing of reading comprehension even when reading digitally.

The general view on modern technology use in the classroom presented in teacher interviews leads to a deduction that even though the tendency to incorporate modern tools for improved comprehension is growing, teachers are yet in a stage of discovery themselves. Moreover, modern technology, when used, corresponds to information organizing by using mind maps or vocabulary improvement using Quizlet, however, teachers overlook chunking strategy, which would positively influence student motivation and in-depth processing of important ideas and connections, broader conceptualisation and lateral thinking about topics based on Patterson (2000).

Evaluating the applications used within the digital reading comprehension improvement strategies and activities, it can be concluded that applications for compensation and instruction in basic skills, such as Speechify, have influenced student focus, word recognition and vocabulary. It resonates with research done by Korat (2010), where phonological awareness, fluency and vocabulary was improved for students who used text-to-speech or speech-to-text applications. However, as the mentioned application had to be downloaded, it caused certain problems among students, therefore, such application implementation should be done closely with IT teacher.

Analyzing teacher answers to interview questions with theoretical literature on knowledge building and supporting reading to learn, the author presumes that teachers are using ancillary materials, online multimedia resources from respected sources for augment presentation of new content to all students and as a tool to build background knowledge for students who lack it, therefore, facilitating development of student individual schemata. Timely material is praised by Brown (2016) to be a compensating practice for readers, who experience limitations in terms of background knowledge.

As the research is qualitative, there are certain strengths and limitations that need to be described and analyzed. Firstly, the issues presented in the research can be analyzed and

examined in depth, allowing to generate new or complementary theories from findings. Secondly, qualitative methods enable to collect rich data in an efficient manner, hence, respondents are not limited pre-defined questions and, therefore, the possibility to explore new concepts can arise. As interviews are not restricted to specific questions it can be guided by the researcher in real time, permitting to ask clarification questions, thus revealing opinions and attitudes of the respondents. Also, subtleties and complexities about the research topic and subjects can be discovered, which are often missed in quantitative research. Even though data collected corresponds to few individuals and the findings, therefore, cannot be generalized to a larger population, they can be transferable to another setting.

On the other hand, the volume of data makes analysis and interpretation time consuming, thus, haste can cause misinterpretation and bias. As research quality is heavily dependent on the individual skills of the researcher, results are more easily influenced by personal biases and idiosyncrasies. One method, how to avoid such a subjective approach in terms of the used data collection method teacher journal is to provide data as soon as the activity or the lesson has taken place to avoid selective memory, telescoping and attribution influencing conclusions. The author believes that selective memory and telescoping bias can be lessened by filling the teacher's journal during and after the lesson with a particular target group, hence, incontinently depicting the information gathered rather than marking time. Attribution can be minimized by subject-related teachers' interview analysis, where both positive and negative events are to be stated from a third person's point of view. Also, student questionnaires will help to determine whether negative events and outcomes are due to external forces or one's own agency. Sample size was considered a noteworthy limitation as it determines the possibility to identify significant relationships from the data, ensuring a representative distribution of groups of people to whom results are generalized and transferred. In this case, the sample size was rather small, consisting of 27 grade 7 students, of whom 15 are girls and 12 are boys, aged 12 – 13 years old. The chosen target group also highlights the next limitation – reliability of data. As adolescents were to fulfill questionnaires, which indicated the general digital reading practices and experiences, there was a possibility that students were likely to give socially desirable responses. In order to create the research more reliable, lie scales should be generated for questionnaires. Researcher limitations, such as, access to people was recognized as significant due to the situation in education facilities caused by Covid-19 pandemic, where learning and teaching manner is left insecure. Secondly, longitudinal effects, such as limited time to apply methodology and gather results was noted as the students were to practice digital reading strategies for a month, thus, the time available to investigate research problem and to measure

change over time was constrained, leading to conclude that for future reference, more time should be provided to evaluate the change over time.

The research can be argued to have adequate internal validity as the pieces of evidence that support particular strategy and application cause and effect on digital reading comprehension have little alternative explanations for the findings, looking at the evidence in a more general way. External validity, on the other hand, should be improved as the results of the study cannot be generalized to and across other situations, people, stimuli and times. In order to develop greater external validity, larger sample size needs to be included. Internal construct validity is executed by determining particular digital reading strategies and applications for digital reading improvement, thus, the translation of ideas and theories is competently done into actual programs.

The research can be further developed by involving greater sample size, thus, uncovering the overall tendency in young adolescents' digital reading habits and, presented with the chosen digital reading strategies and applications, evaluate the change and preferences when reading digitally.

The author of the Paper believes that the students show characteristics of digital natives as they are quick to grasp concepts and ideas presented online, such as hyperlinks, referencing and online dictionaries, they are able to work with challenging applications, download them and adjust them to their fancy, on the condition that they are first shown how to do so. In other words, the students are keen to learn and digital setting inspired their creativity, which was evident in the individual performance when asked to create Venn diagram or either of the graphic organizers, however, they need to be presented with such opportunities from teachers as practice and repetition are of high importance for the hardwiring process that takes place in young adolescents' brain during this growth spurt period. Also, as the print and digital reading strategies are complementary in nature, students who have limited access to technology can carry out the reading comprehension tasks on paper. The author suggests the education facility to purposefully plan teacher attraction to digital technology use as well as overall modern device use implementation in the learning environment, hence, the author suggests the following principles to be regarded:

1. Provide teachers with meaningful professional development courses with an emphasis on the use of digital technologies;

2. Organize the involvement of students (young adolescents) in the pedagogical process, ensuring an objective choice of strategies and applications used in and outside the classroom;

3. Develop IT subject curriculum based on interdisciplinary teaching;

4. Funding for teachers who demonstrate high competence in digital skills.

CONCLUSIONS

In this Paper international research and world-renowned researcher main findings about elements of digital text were examined. It can be concluded, therefore, that digital text can be read in a non-linear way, comparing to print text and, in order for a text to be considered digital it must either consist of hyperlinks or be presented in modern technology device. Digital reading competence was also analyzed, leading to deduce that well-developed reading competence does not necessarily mean that digital reading competence will be equally well developed due to online texts requiring more self-control from pupils. Moreover, digital reading competence works as an umbrella term for competence sets listed as 21st century skills individuals should master. Researcher suggestions for digital reading comprehension strategies suggested development in deep reading strategies, namely, annotation, connection making and chunking, however, in order to reach the aim, the use of activities regarded in print reading were found to be useful. Digital application use for compensation and instruction in basic skills as well as for supporting strategic readers and knowledge building were examined and it can be concluded that even though some applications demand high technology supply and are expensive, other applications can be found online free of charge. The author of the Paper establishes that digital reading comprehension competence improvement in Latvia agrees with world experience and practice, considering the critical source evaluation necessity, ability to use search engine for information, including graphic organizers and mind mapping to organize thoughts as well as using some of modern applications for vocabulary improvement. By analyzing the digital reading comprehension improvement in Form 7, it can be seen that more practice and repetition is necessary in order to facilitate inquiry based learning.

The aim of the Paper, which was to examine how digital reading strategies can improve young adolescents' digital reading comprehension in English lessons, is executed. In order to classify which strategies and applications can be regarded as useful, regarding international research findings and needs analysis of the particular Form 7, author developed interviews with three subject-related teachers, as well as questionnaire for students before and after implementation of strategies and applications, in order to expose attitudes, behaviours and practices regarding digital reading. The author also depicted the experience using digital reading strategies and applications in teacher journal, which crystallized and led to the following preconditions:

1. A clear and understandable instruction is to be given for students when using digital applications. Not all students comprehended the instructions, which hindered the progress of the process.

2. Subject related teachers need to understand the structure of the presented digital reading activity or application as well as the connection with a particular subject in order to benefit from the strategy.

3. Before implementing digital reading strategies and applications, student strengths and weaknesses as well as technical supply needs to be observed to successfully plan and organize the process.

4. Motivating teachers, developing competence to implement change.

The strategies and applications described within the research could be developed into a guideline or digital workbook that consists of activities regarding digital reading strategies and applications. Due to evidence that digital reading strategies and applications correlate with improvement in digital literacy, it could be developed as an interdisciplinary course within an IT classroom.

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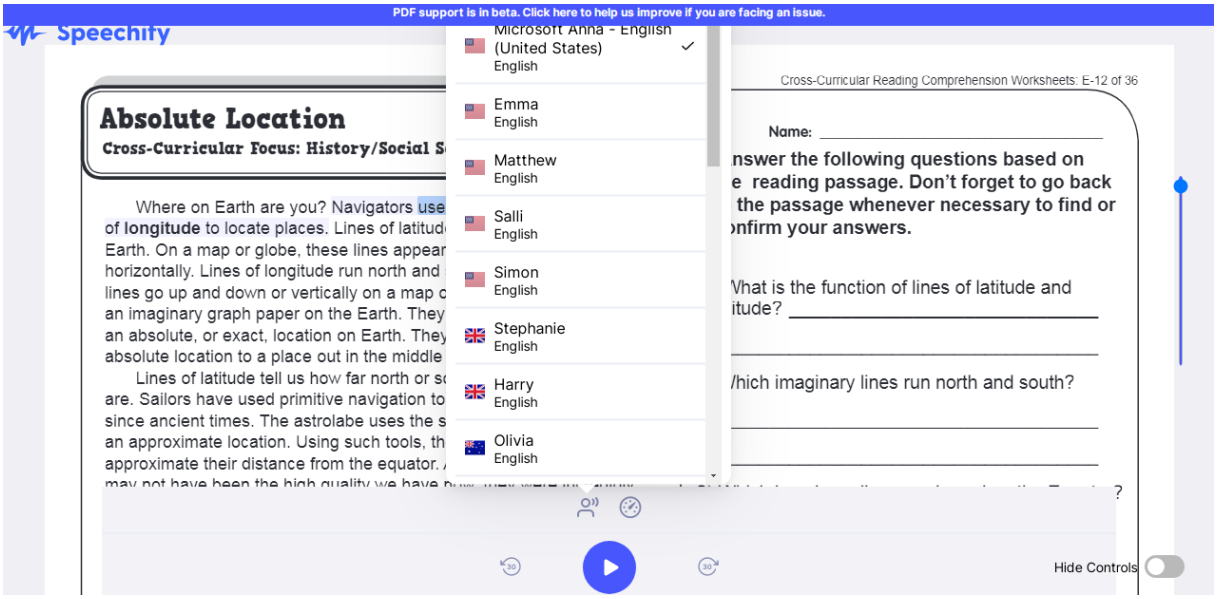
APPENDICES

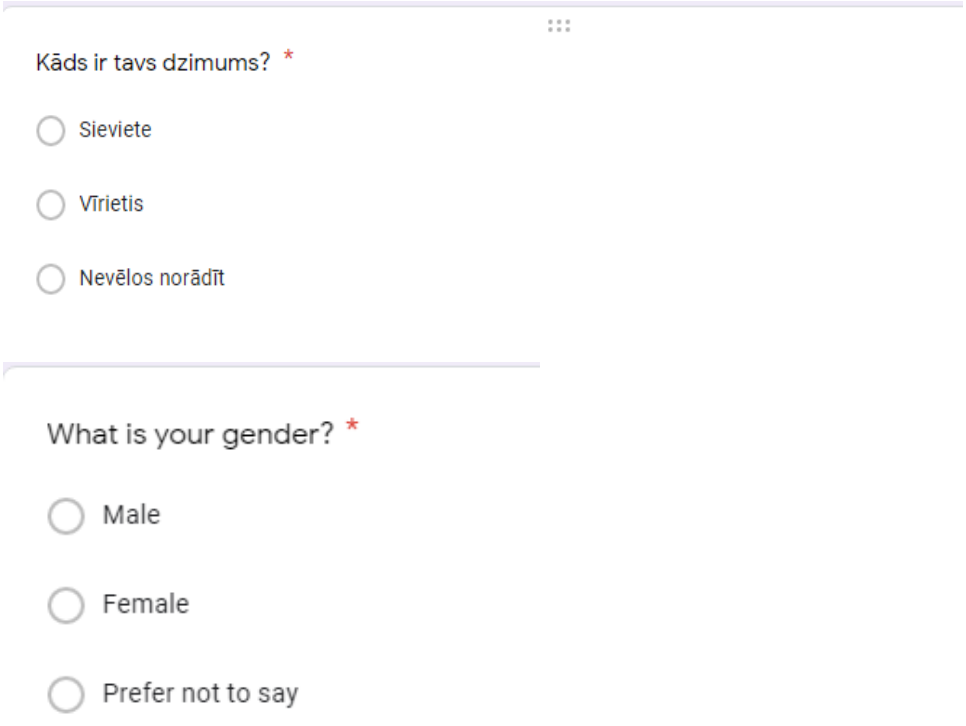
Appendix No.1

Example of Speechify Application for Read Aloud Text Fragment



Appendix No.2

Examples of Dichotomous Question Scales for Questions 2, 3 and 5 in Latvian and English



Kāda iemesla dēļ lasi visbiežāk? *

- Mācību
- Prieka
- Cits

For what purpose do you read most often? *

- Studies
- Pleasure
- Other

Vai tev ir kāda mobilā ierīce (piemēram, telefons, planšetdators, EReader, u.tml.) *

- Jā
- Nē

Do you own any mobile devices (e.g., mobile phone, Ipod Touch, eReader, tablet)? *

- Yes
- No

Appendix No.3

Examples of Semantic Differential Scales in Latvian and English for Questions 8-16

How would you describe your typical reading style when reading something from a book or printed page that you are every interested in? *

	1	2	3	4	5	
slow and deliberate	○	○	○	○	○	rapid scanning

Kā tu aprakstītu sev tipisko lasīšanas stilu, lasot internetā ieinteresējošu materiālu?

	1	2	3	4	5	
Lēns un apzināts	○	○	○	○	○	Ātra caurskatīšana

How would you describe your typical reading style when reading something on the Web that you are very interested in? *

	1	2	3	4	5	
slow and deliberate	○	○	○	○	○	rapid scanning

Kā tu veic meklēšanu internetā, mācoties par sev interesējošām lietām? *

	1	2	3	4	5	
Lēni un atkārtoti (atkārtojot meklēšanu ar nedaudz atšķirīgiem vārdiem)	○	○	○	○	○	Ātri un efektīvi (iegūstot vajadzīgo ar pirmo mēģinājumu)

When using the Web to learn about something that really interests you, how do you typically manage your search (e.g., using Google or some other search engine)? *

	1	2	3	4	5	
Slow and iterative (repeating search with slightly different terms)	○	○	○	○	○	Fast and efficient (getting what I need on the first attempt)

While reading something that really interests you, how much do you typically "multitask" (e.g., watch TV or text friends while reading)? *

	1	2	3	4	5	
Focus on one thing at a time	○	○	○	○	○	multitask constantly

Kā tu rīkojies, lasot materiālu, kurā ir daudz hipersaišu? *

	1	2	3	4	5	
Izlasu visu materiālu pirms noklikšķinu uz saitēm	○	○	○	○	○	Noklikšķinu uz saitēm tiklīdz tur nonāku

When reading a very interesting web page that contains a lot of hyperlinks, how do you proceed? *

	1	2	3	4	5	
Read straight through the page before clicking any links	○	○	○	○	○	Click on all the links as soon as I get to them

Appendix No.4

Examples of Likert Scale Questions 4 and 7 in Latvian and English

Kā tu rīkojies, ja, lasot tekstu, rodas jautājumi? *

	1	2	3	4	5	
Pierakstu jautājumu, lai to noskaidrotu pēc materiāla izlasīšanas	○	○	○	○	○	Tūlīt meklēju atbildi

If you think of a question while reading something that interests you, what do you typically do? *

	1	2	3	4	5	
make a note of my question so I can look for the answer later	○	○	○	○	○	find the answer immediately

Kā tu noturi uzmanību, lasot materiālu, kas satur gan tekstu, gan attēlus? *

	1	2	3	4	5	
Vairāk uzmanības veltu tekstam nevis attēliem	○	○	○	○	○	Vairāk uzmanības veltu attēliem nevis tekstam

When reading something you find interesting that contains both text and graphics, how do you balance your attention? *

	1	2	3	4	5	
Focus more on text than on graphics	○	○	○	○	○	Focus more on graphics than on text

Cik daudz kontakta ar draugiem tu uzturi, kamēr lasi sev interesējošu materiālu? *

	1	2	3	4	5	
Nemaz	○	○	○	○	○	Pastāvīgu

...

While reading something that interests you, how much contact do you maintain with your friends, including all forms of contact such as face-to-face, online, calling, texting, etc. *

	1	2	3	4	5	
no contact	○	○	○	○	○	constant contact

Cik bieži lasi minētajās vietās? Atzīmē katrai vietai vienu izvēli *

	Ļoti bieži	Dažkārt	Reti	Nekad
Mājās	○	○	○	○
Skolā	○	○	○	○
Bibliotēkā	○	○	○	○
Gaidot / Esot sabie...	○	○	○	○
Citās sabiedriskās ...	○	○	○	○
Cits	○	○	○	○

How often do you do your reading in the following places? Tick one option for each place * *

	Very often	Sometimes	Occasionally	Never
At home	○	○	○	○
At school	○	○	○	○
In a library	○	○	○	○
While waiting for / r...	○	○	○	○
In other public plac...	○	○	○	○
Other	○	○	○	○

Cik lielā mērā tu piekrīti, ka minētās stratēģijas ir lietderīgas? *

	Ļoti piekrītu	Piekrītu	Daļēji piekrītu	Neitrāli	Daļēji nepiekrītu	Nepiekrītu	Ļoti nepiekrītu
Lasot veikt pierakstus mobilajā ierīcē (piemēram, datorā, planšetdatorā, telefonā)	○	○	○	○	○	○	○
Izcelt teksta fragmentus (piemēram, izcelt konkrētu teikumu, lai to vēlāk atrastu)	○	○	○	○	○	○	○
Izprast lasīto (piemēram, atbildēt uz jautājumiem par tekstu un diskutēt, izmantojot savus vārdus)	○	○	○	○	○	○	○

Pierakstīt atslēgas terminus no teksta	○	○	○	○	○	○	○
Organizēt pierakstus citā formātā	○	○	○	○	○	○	○
Sarindot pierakstus pēc svarīguma	○	○	○	○	○	○	○
Rezumēt tekstu saviem vārdiem	○	○	○	○	○	○	○
Izcelt galvenās idejas tekstā	○	○	○	○	○	○	○
Veidot teksta izklāstu	○	○	○	○	○	○	○
Veidot teksta plūsmkarti	○	○	○	○	○	○	○
Iegaumēt teksta fragmentus	○	○	○	○	○	○	○
Meklēt konkrētu informāciju tekstā	○	○	○	○	○	○	○
Analizēt teksta precizitāti	○	○	○	○	○	○	○
Novērtēt tekstu, lai izveidotu viedokli	○	○	○	○	○	○	○
Sintezēt lasīto (piemēram, kombinēt informāciju, lai novērtētu, kā tā saistīta)	○	○	○	○	○	○	○
Izprast autora mērķi	○	○	○	○	○	○	○
Izprast autora nostāju	○	○	○	○	○	○	○
Izprast teksta struktūru	○	○	○	○	○	○	○

Apskatīt katru nodaļu, izlasot ievada un nobeiguma rindkopas, virsrakstus, apakšvirsrakstus, vizuālos materiālus u.tml.	○	○	○	○	○	○	○
Veidot savstarpējās atsauces no stundu pierakstiem un informācijas no digitālās lasītprasmes materiāla	○	○	○	○	○	○	○
Mutvārdos paust izlasīto pēc katras nodaļas vai galvenā temata	○	○	○	○	○	○	○

How much do you agree that these strategies are useful? *

	Strongly agree	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Strongly disagree
Take notes on a digital device while reading (e.g., laptop, smartphone, tablet)	○	○	○	○	○	○	○
Mark parts of a text (e.g., highlight specific sentence, to find it later)	○	○	○	○	○	○	○
Comprehend what I read (for example, be able to answer questions about it and discuss topics in my own words)	○	○	○	○	○	○	○

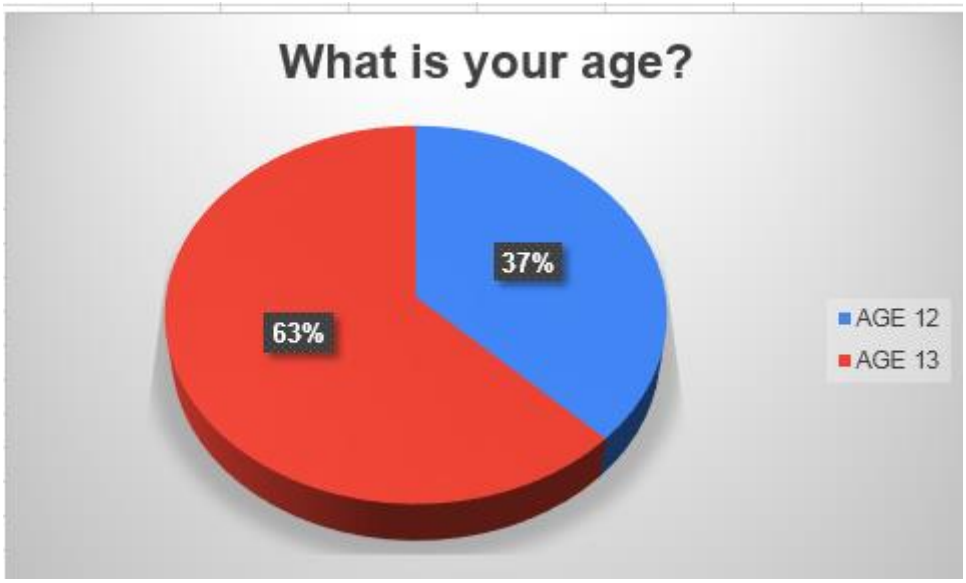
Understand the author's stance	○	○	○	○	○	○	○
Understand the structure of the text	○	○	○	○	○	○	○
Make notes of key terms in the text	○	○	○	○	○	○	○
Organize annotations (i.e., notes) into a different format	○	○	○	○	○	○	○
Rank my annotations (i.e., notes) in order of importance	○	○	○	○	○	○	○
Summarize text in my own words	○	○	○	○	○	○	○
Memorize parts of the text	○	○	○	○	○	○	○
Search for a specific piece of information	○	○	○	○	○	○	○
Analyse the text for accuracy	○	○	○	○	○	○	○
Evaluate the text to form my own opinion	○	○	○	○	○	○	○
Synthesize what I read (e.g., combine information to see how it all fits together)	○	○	○	○	○	○	○
Understand the author's purpose	○	○	○	○	○	○	○

Cross-reference information from lesson notes and information from the assigned digital reading material	○	○	○	○	○	○	○
Orally recite what I have read after each section/ main topic	○	○	○	○	○	○	○

Mark main ideas in the text	○	○	○	○	○	○	○
Make an outline of the text	○	○	○	○	○	○	○
Make a flow chart of the text	○	○	○	○	○	○	○
Survey each chapter by reading the introductory and concluding paragraphs, headings, subheadings, visual captions, etc.	○	○	○	○	○	○	○

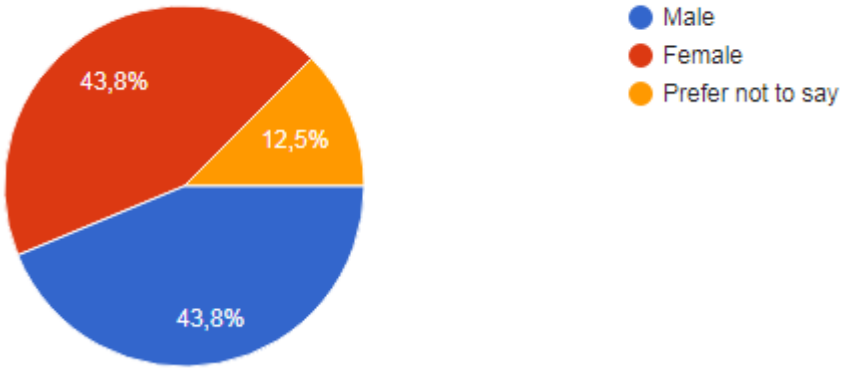
Appendix No.5

Display of Answers for Question *"What is your age?"*



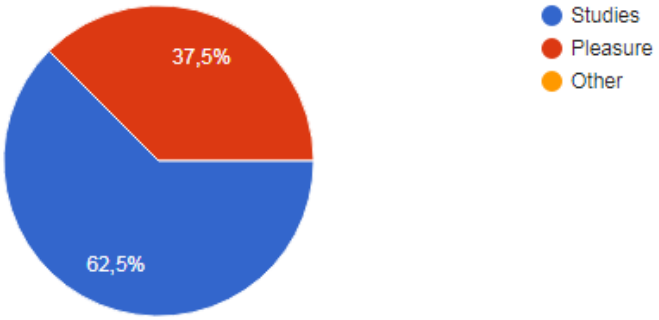
Appendix No.6

Statistical Distribution of Responses for the Question *"What is your gender?"*



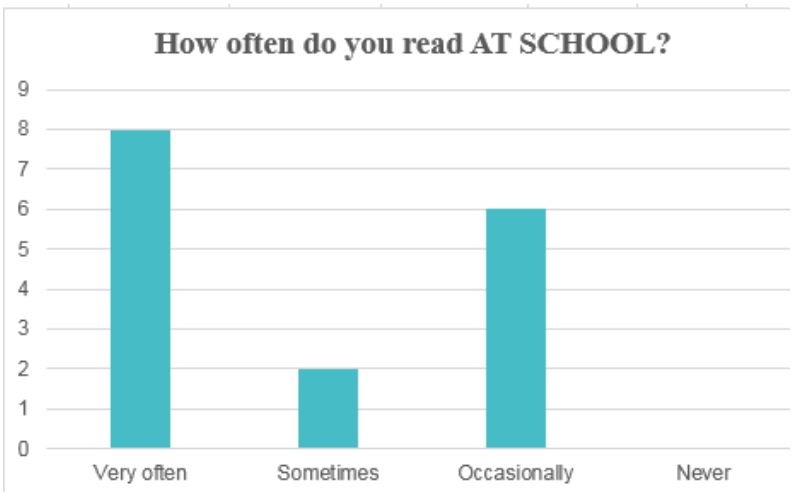
Appendix No.7

Statistical Distribution of Responses for the Question *"For what reasons do you read most often?"*



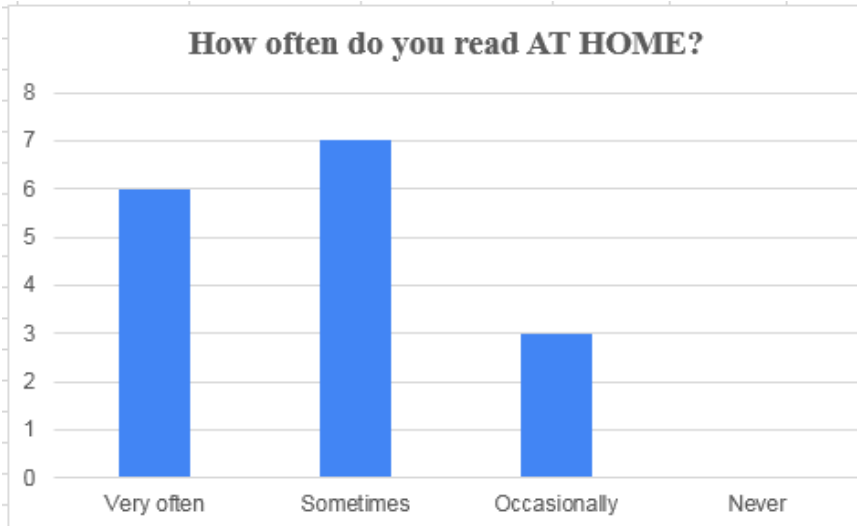
Appendix No.8

Statistical Representation of Responses to Question *"How often do you read at school?"*



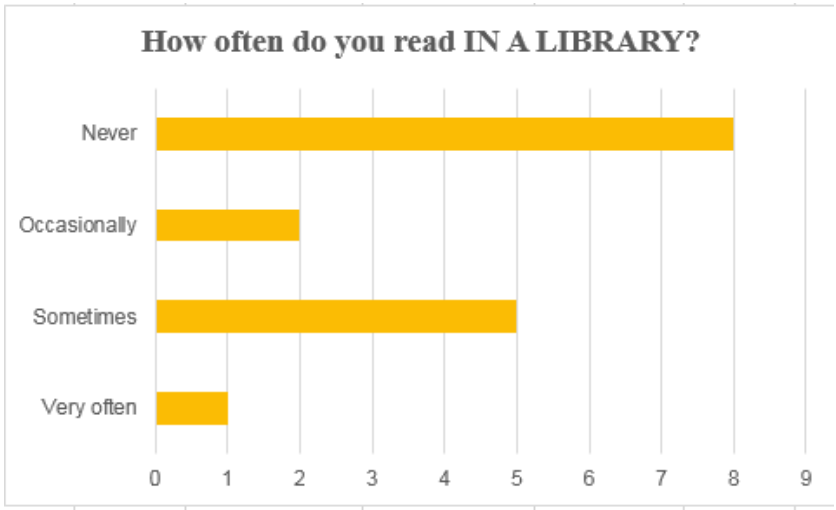
Appendix No.9

Statistical Representation of Responses to Question *"How often do you read at home?"*



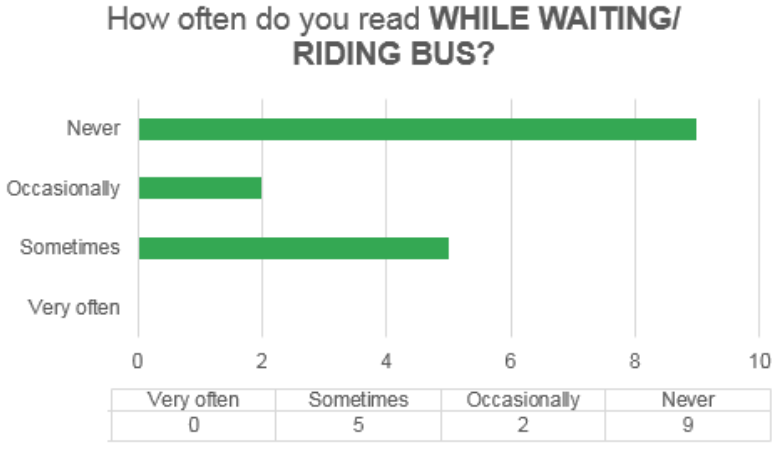
Appendix No.10

Statistical Representation of Responses to Question *"How often do you read in the library?"*



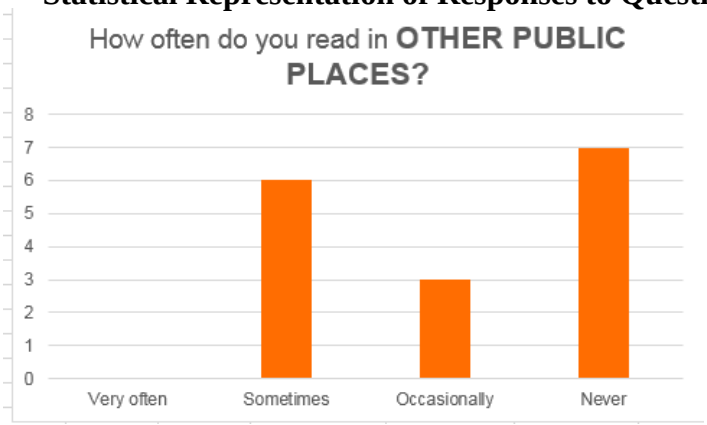
Appendix No.11

Statistical Representation of Responses to Question *"How often do you read while driving or waiting for public transport?"*



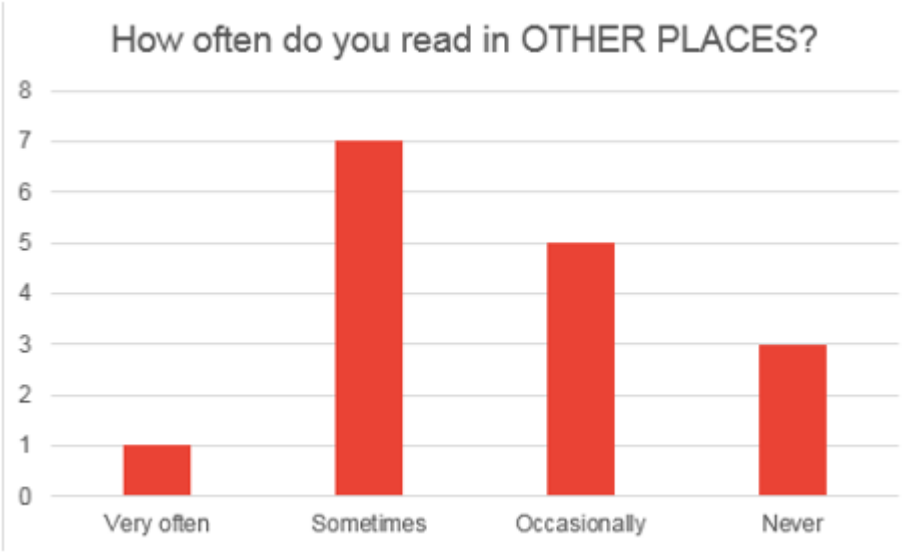
Appendix No.12

Statistical Representation of Responses to Question *"How often do you read in other public places?"*



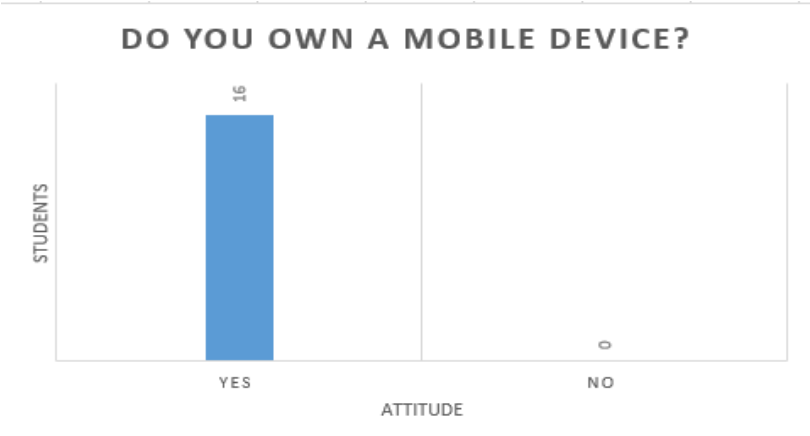
Appendix No.13

Statistical Representation of Responses to Question *"How often do you read in other places?"*



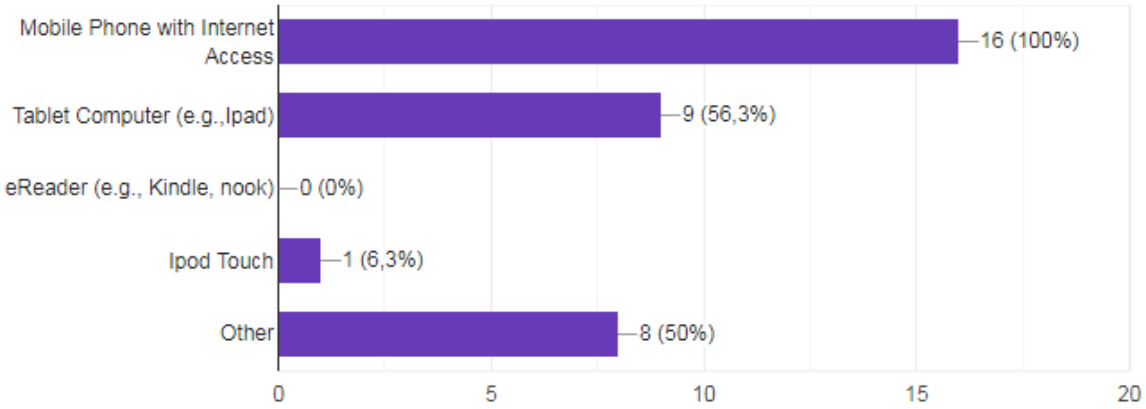
Appendix No.14

Respondents' Answers to the Question *"Do you have a mobile device?"*



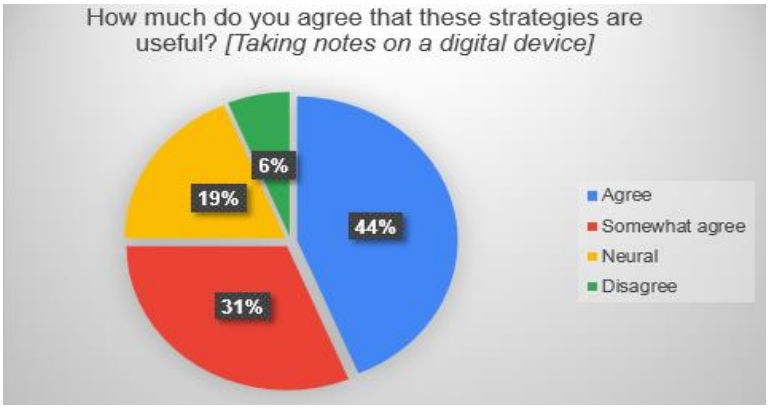
Appendix No.15

Answer Chart for the Question *"Which of these mobile devices do you own?"*



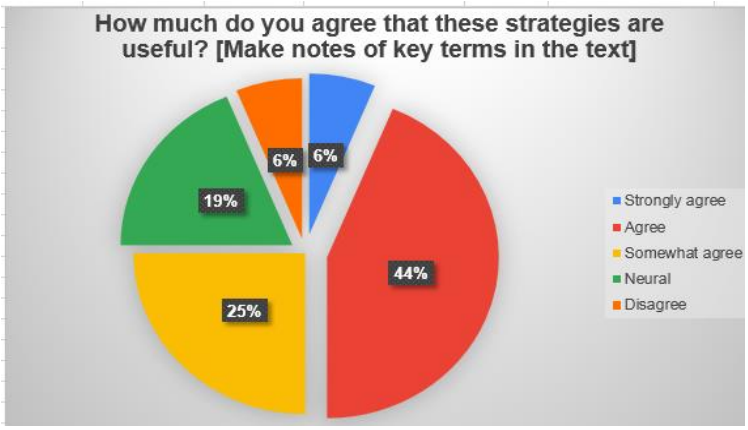
Appendix No.16

Statistical Representation of Survey Question *"How much do you agree that this strategy is useful?"* Answers for Strategy *"taking notes on a digital device"*



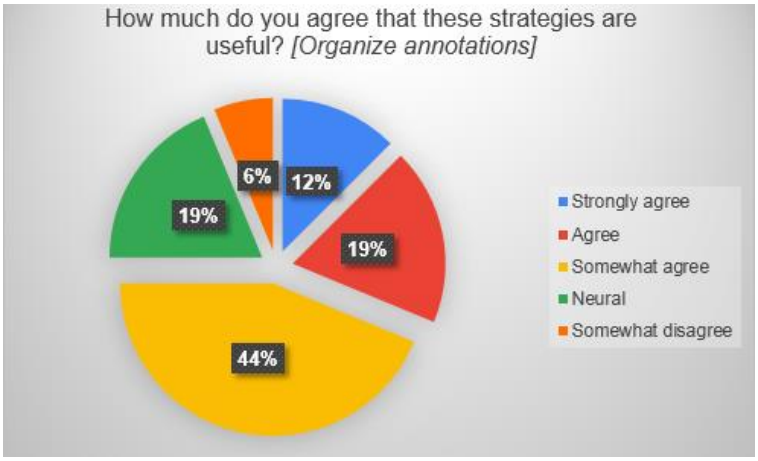
Appendix No.17

Statistical Representation of Question *"How much do you agree that this strategy is useful?"* Answers for Strategy *"make notes of key terms in text"*



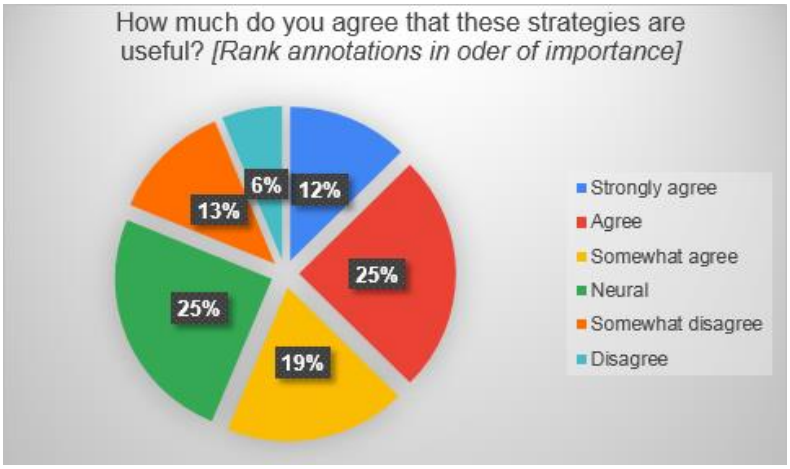
Appendix No.18

Statistical Representation of Question *"How much do you agree that this strategy is useful?"* Answers for Strategy *"organize annotations"*



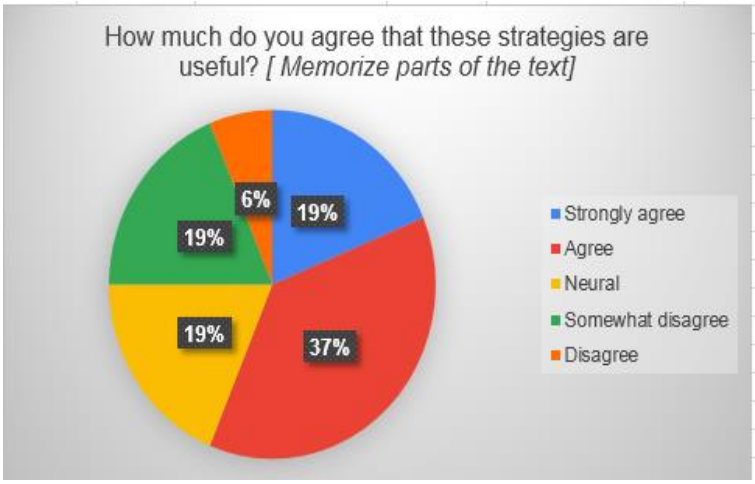
Appendix No.19

Statistical Representation of Question *"How much do you agree that this strategy is useful?"* Answers for Strategy *"rank annotations in order of importance"*



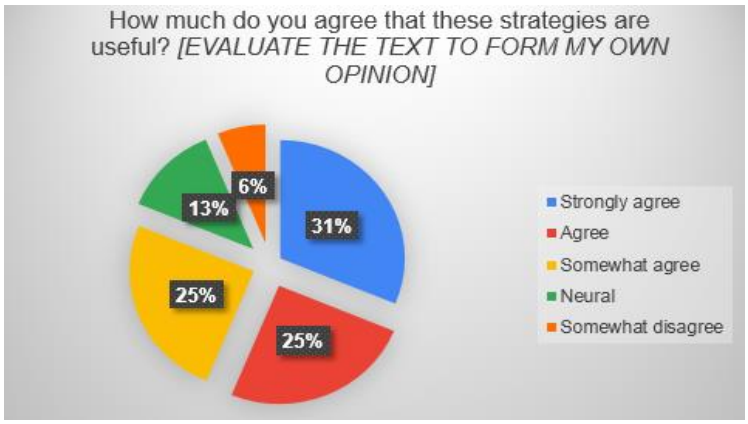
Appendix No.20

Statistical Representation of Question *"How much do you agree that this strategy is useful?"* Answers for Strategy *"memorize parts of the text"*



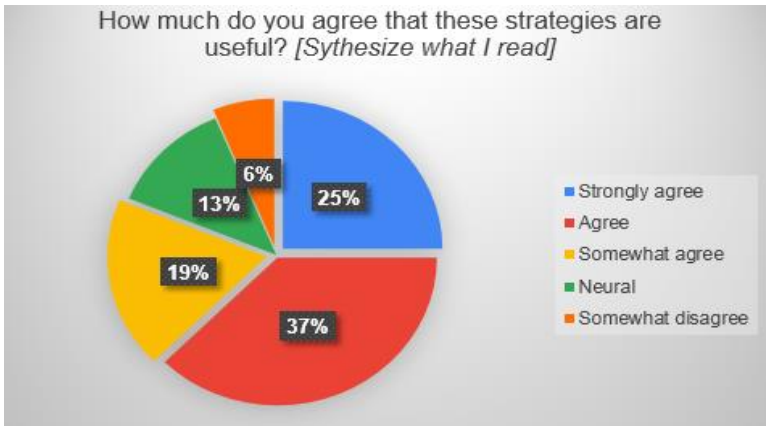
Appendix No.21

Statistical Representation of Question *"How much do you agree that this strategy is useful?"* Answers for Strategy *"evaluate the text to form opinion"*



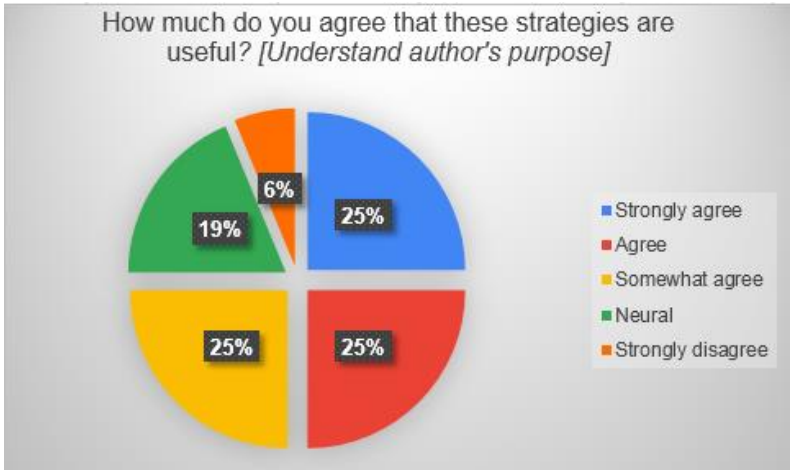
Appendix No.22

Statistical Representation of Question *"How much do you agree that this strategy is useful?"* Answers for Strategy *"synthesize what is read"*



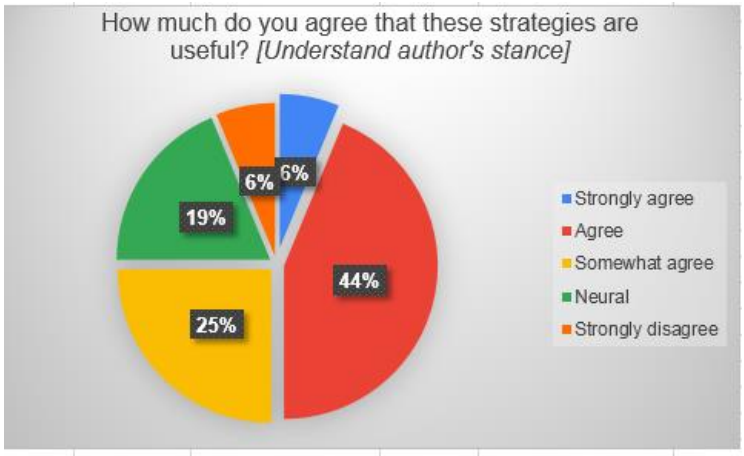
Appendix No.23

Statistical Representation of Question *"How much do you agree that this strategy is useful?"* Answers for Strategy *"understand author's purpose"*



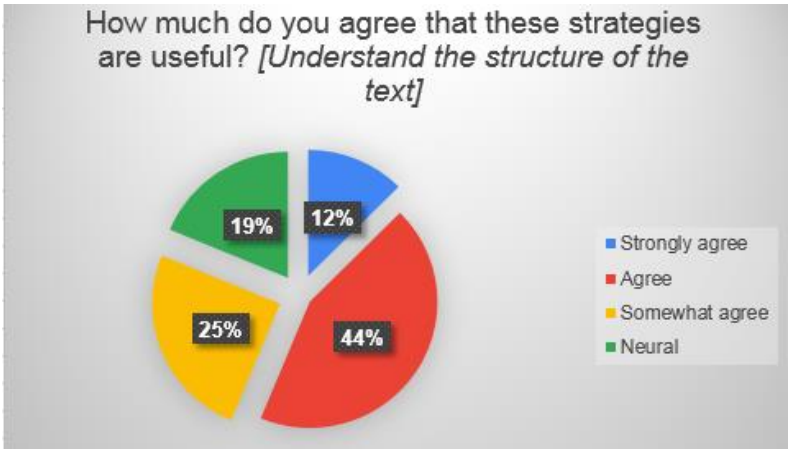
Appendix No.24

Statistical Representation of Question *"How much do you agree that this strategy is useful?"* Answers for Strategy *"understand author's stance"*



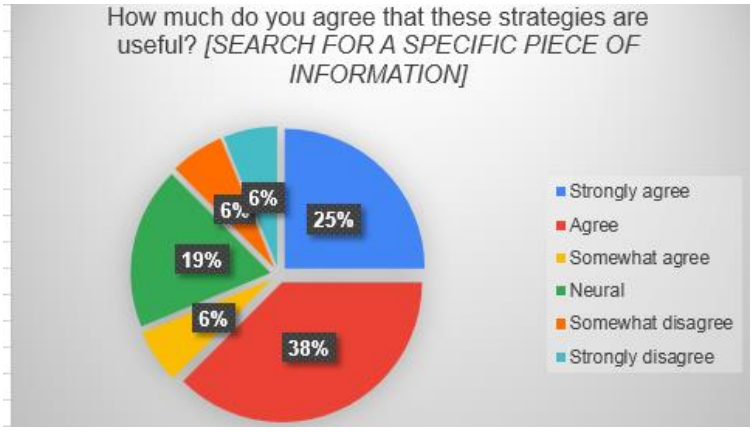
Appendix No.25

Statistical Representation of Question *"How much do you agree that this strategy is useful?"* Answers for Strategy *"understand the structure of the text"*



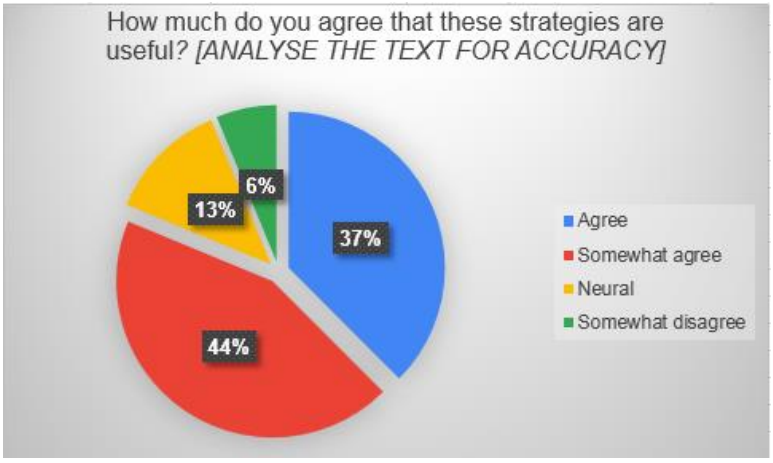
Appendix No.26

Statistical Representation of Question *"How much do you agree that this strategy is useful?"* Answers for Strategy *"search for specific piece of information in the text"*



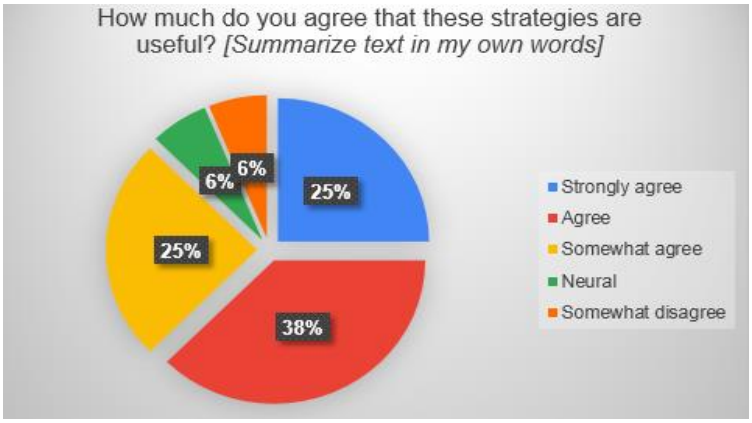
Appendix No.27

Statistical Representation of Question *"How much do you agree that this strategy is useful?"* Answers for Strategy *"analyse the text for accuracy"*



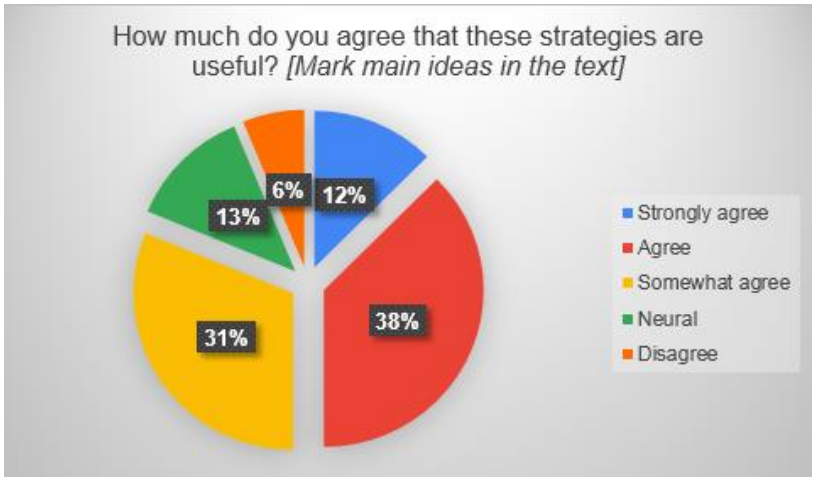
Appendix No.28

Statistical Representation of Question *"How much do you agree that this strategy is useful?"* Answers for Strategy *"analyse the text for accuracy"*



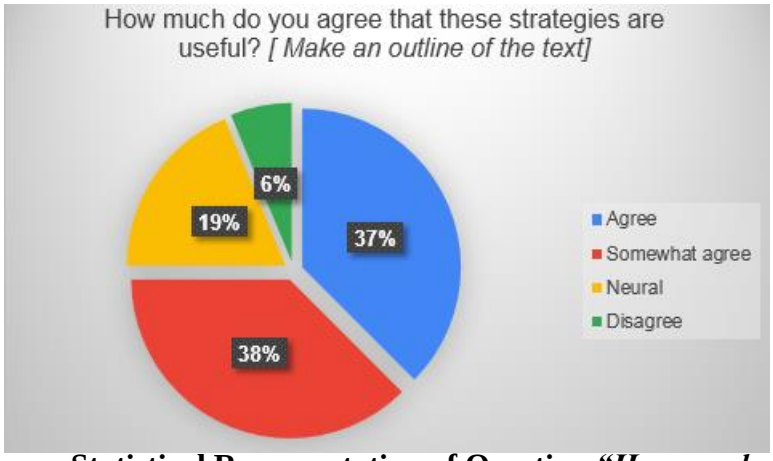
Appendix No.29

Statistical Representation of Question *"How much do you agree that this strategy is useful?"* Answers for Strategy *"mark main ideas in the text"*



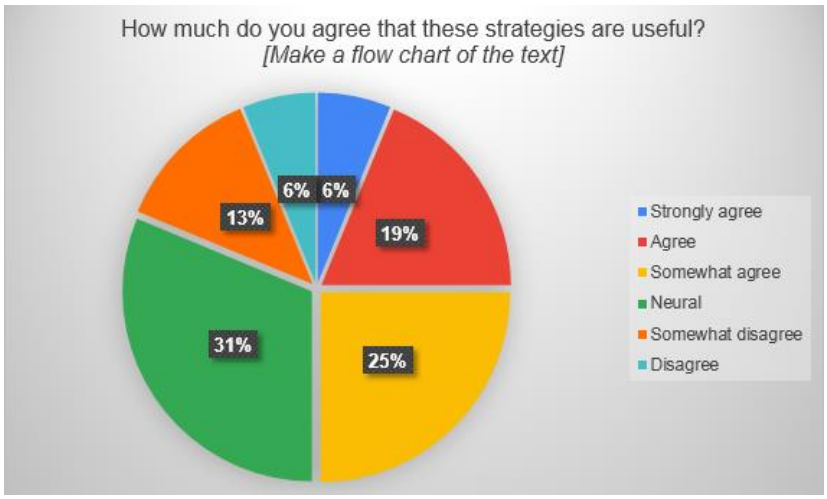
Appendix No.30

Statistical Representation of Question *"How much do you agree that this strategy is useful?"* Answers for Strategy *"make an outline of the text"*



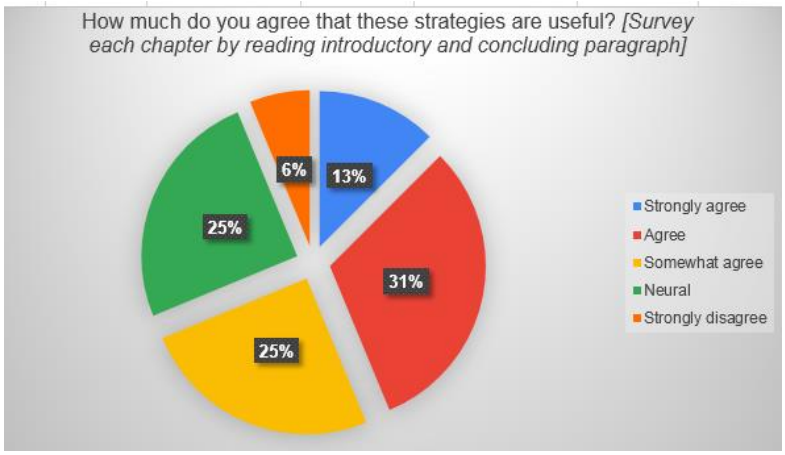
Appendix No.31

Statistical Representation of Question *"How much do you agree that this strategy is useful?"* Answers for Strategy *"make a flow chart of the text"*



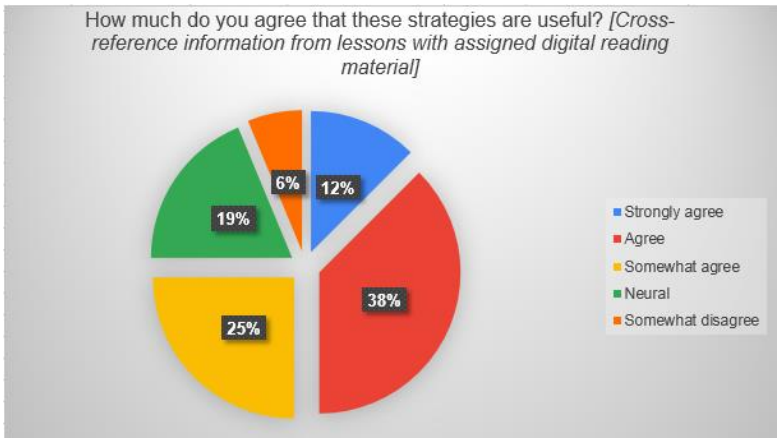
Appendix No.32

Statistical Representation of Question *"How much do you agree that this strategy is useful?"* Answers for Strategy *"survey each chapter by reading introductory and concluding paragraphs"*



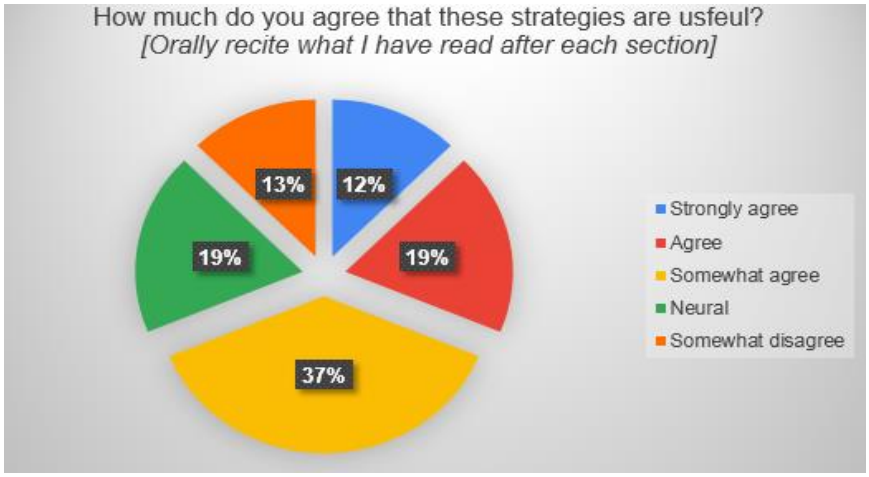
Appendix No.33

Statistical Representation of Question *"How much do you agree that this strategy is useful?"* Answers for Strategy *"cross-reference information from lessons with assigned digital reading material"*



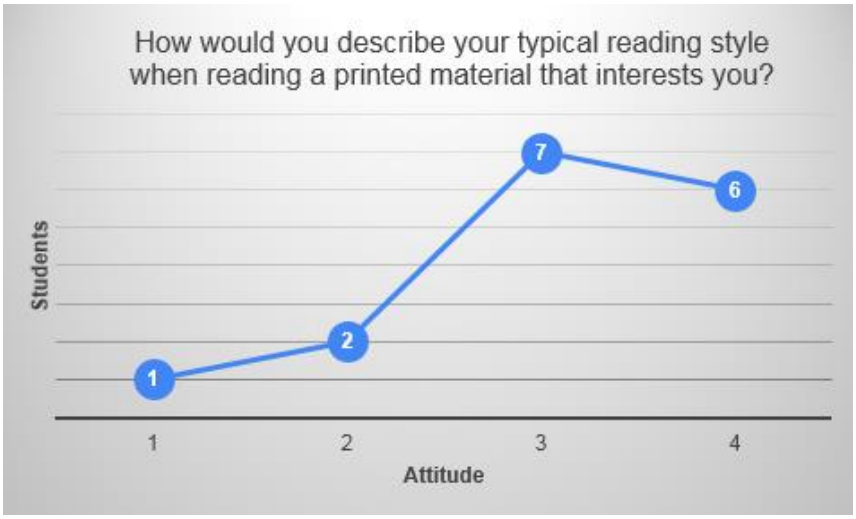
Appendix No.34

Statistical Representation of Question *"How much do you agree that this strategy is useful?"* Answers for Strategy *"orally recite what I have read after each section"*



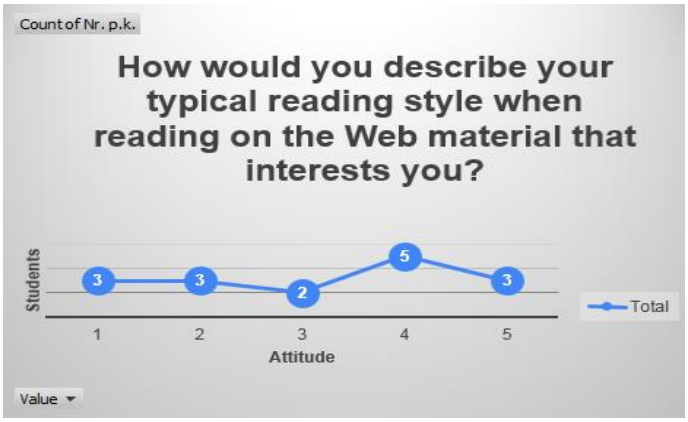
Appendix No.35

Statistical Representation of Question *"How would you describe your typical reading style when reading a printed material that interests you?"*



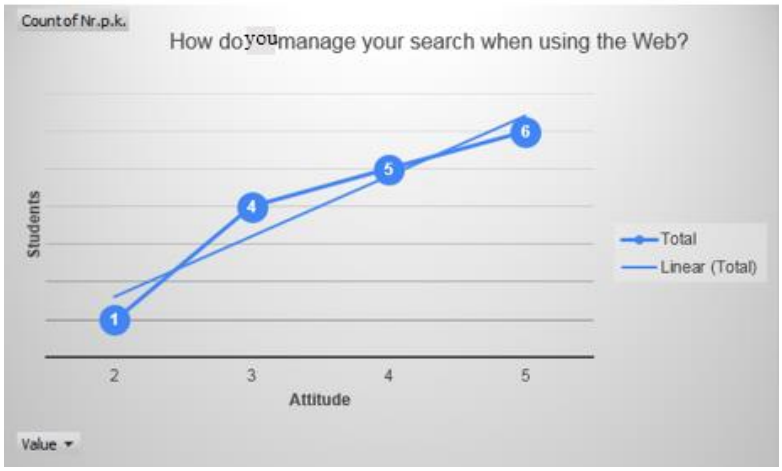
Appendix No.36

Statistical Representation of Question *"How would you describe your typical reading style when reading on the Web material that interests you?"*



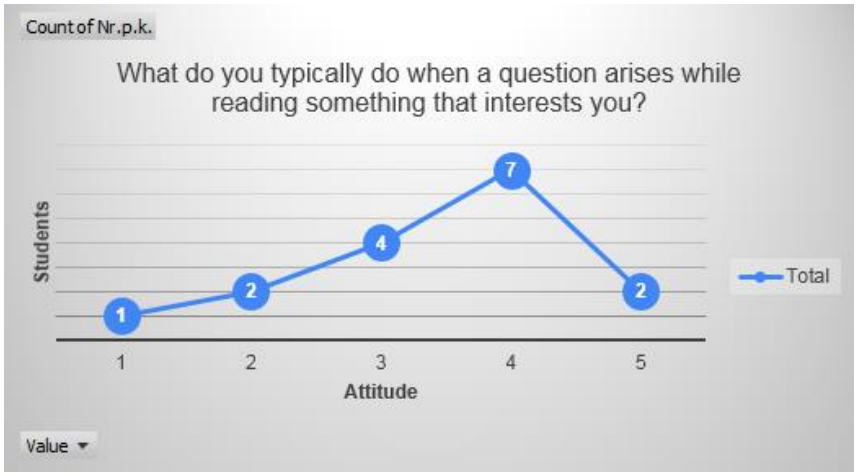
Appendix No.37

Statistical Representation to Question *"How do you manage your search when using the Web?"*



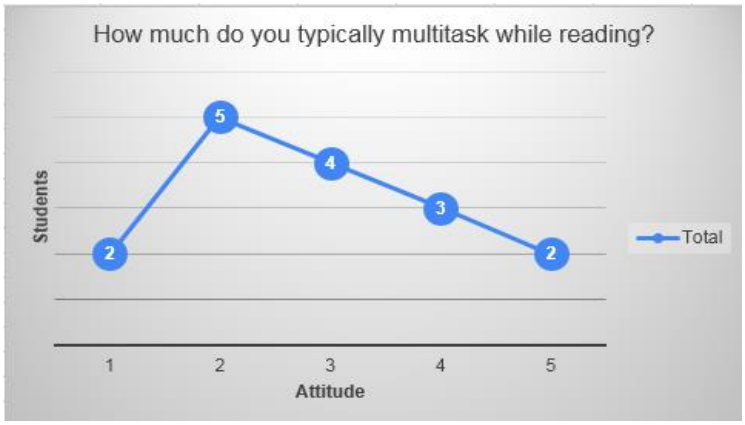
Appendix No.38

Statistical Representation to Question *"What do you typically do when a question arises while reading something that interests you? when using the Web?"*



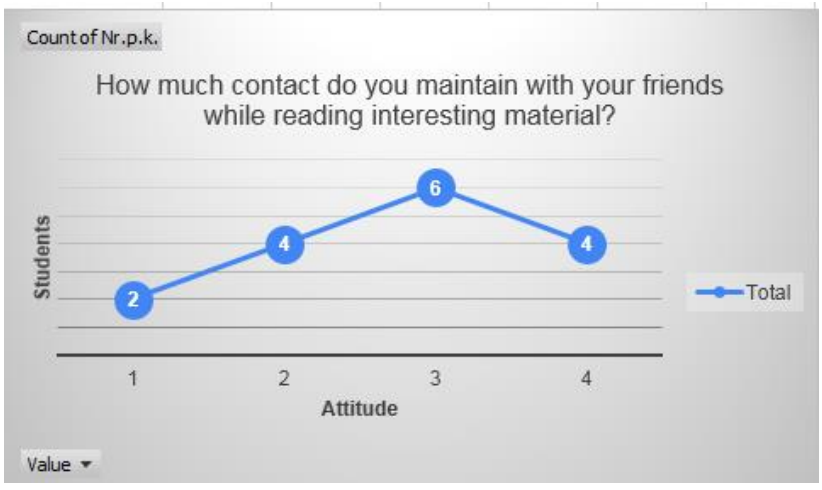
Appendix No.39

Statistical Representation to Question *"How much do you typically multitask while reading?"*



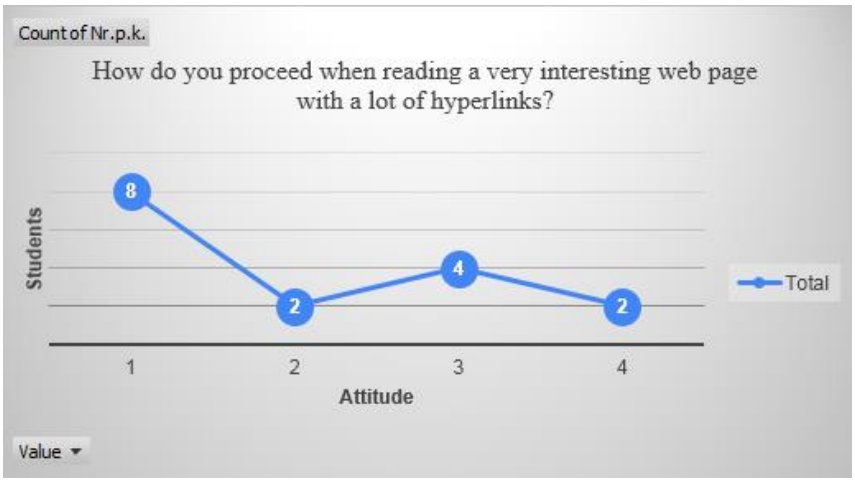
Appendix No.40

Statistical Representation to Question *"How much contact do you maintain with your friends while reading interesting material?"*



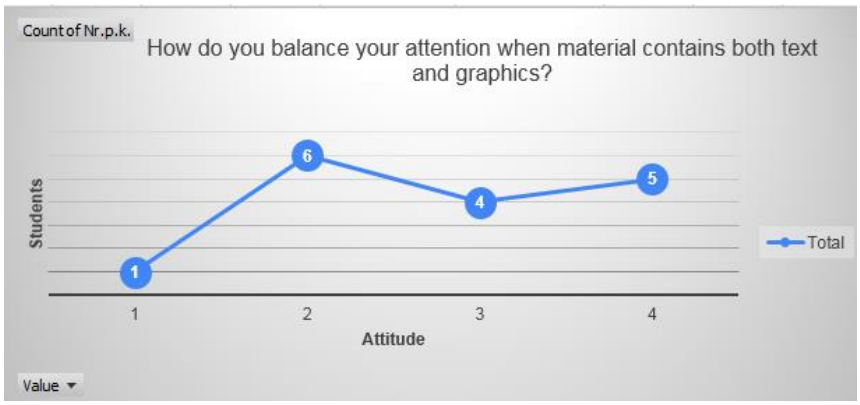
Appendix No.41

Statistical Representation to Question *"How do you proceed when reading a very interesting web page with lots of hyperlinks?"*



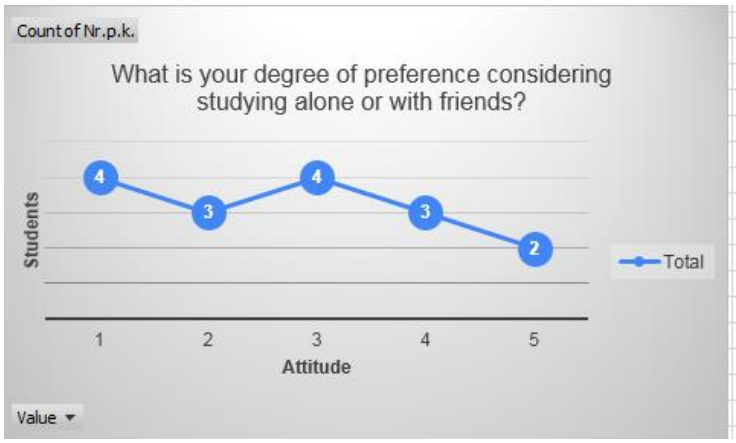
Appendix No.42

Statistical Representation to Question *"How do you balance your attention when material contains both text and graphics?"*



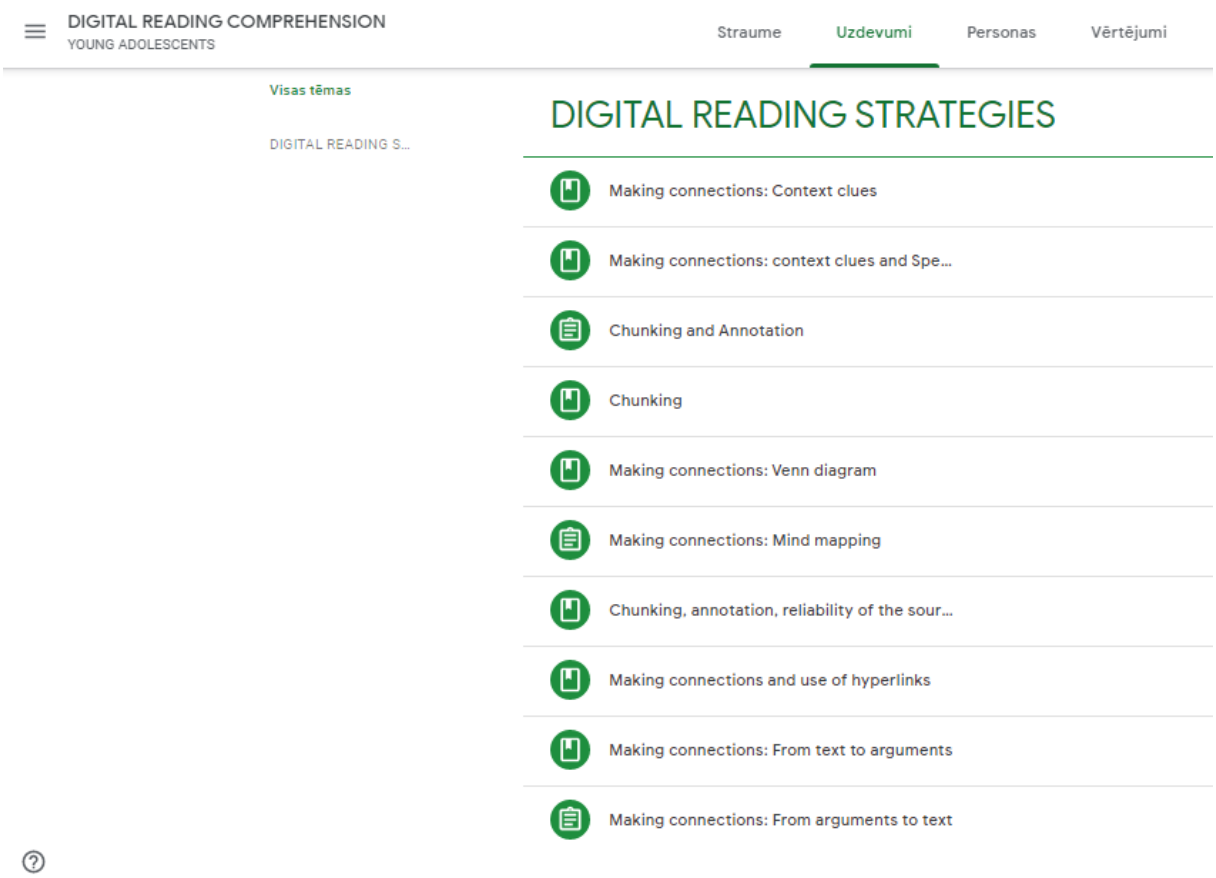
Appendix No.43

Statistical Representation to Question *"What is your degree of preference considering studying alone or with friends?"*



Appendix No.44

Example of Google Classroom



Appendix No.45

Example of Context Clues

Worksheet

Select which context clues give a hint to the meaning of each of these words.

1. acoustics

A. …filled with sounds…

B. …surrounded by sound…

C. …study of…

2. vibration

A. …hit with a drumstick…

B. …shakes rapidly…

C. …bump into…

3. high-pitched

A. ...move up and down…

B. …made to vibrate…

C. ...high note in a song…

4. low-pitched

A. …move up and down…

B. …made to vibrate…

C. …low note in a song…

5. volume

A. …sound is louder…

B. …hit very hard…

C. …hit lightly…

6. energy

A. ...or force…

B. …depends upon…

C. …caused to vibrate…

7. In the third paragraph, what word tells you that there is a context clue for the meaning of the terms "high-pitched" and "low-pitched"?

Appendix No.46

Example of Context Clues Worksheet

Select which context clues give a hint to the meaning of each of these words.

1. sources

A. …travels from…

B. …or causes…

C. …different kinds…

2. pinna

A. …helps to catch the sound waves…

B. …different kinds of sound waves…

C. …part of the ear that is outside our head…

3. eardrum

A. …enters the ear…

B. …thin layer of skin…

C. …stretched tight…

4. membrane

A. …the eardrum…

B. …causing it to vibrate…

C. …thin layer of skin…

5. the hammer, the anvil, and the stirrup

A. …three tiny bones…

B. …just behind the eardrum...

C. …no larger than a pea…

6. cochlea

A. …the inner ear…

B. …spiral-shaped tube…

C. …carries the sound wave…

7. In the second paragraph, what words tell you that there is a context clue for the meaning of the terms "the hammer, the anvil, and the stirrup"?

Appendix No.47

Example of Note Taking Worksheet

NOTE TAKING WORKSHEET

Before you read, and as you're reading, keep track of your knowledge and new facts. After you finish reading, think of questions you still have.

TITLE: _____

BEFORE you read

I already know…

AS you read

Facts I've learned:

1.

2.

3.

4.

AFTER you read

Questions I still have:

1.

2.

Appendix No.48

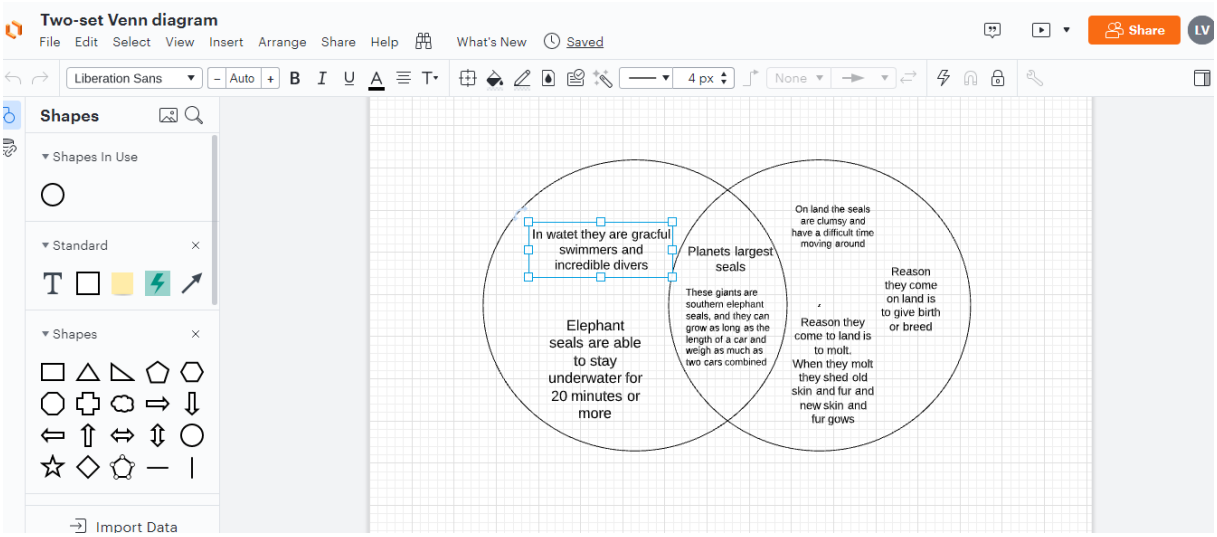
Example of Chunking Worksheet

CHUNK IT!
Name: _____
Reading material: _____

PARAGRAPH 1	
Summary statement	Key words
PARAGRAPH 2	
Summary statement	Key words
PARAGRAPH 3	
Summary statement	Key words
PARAGRAPH 4	
Summary statement	Key words
PARAGRAPH 5	
Summary statement	Key words

Appendix No.49

Example of Digital Venn Diagram Using LucidChart

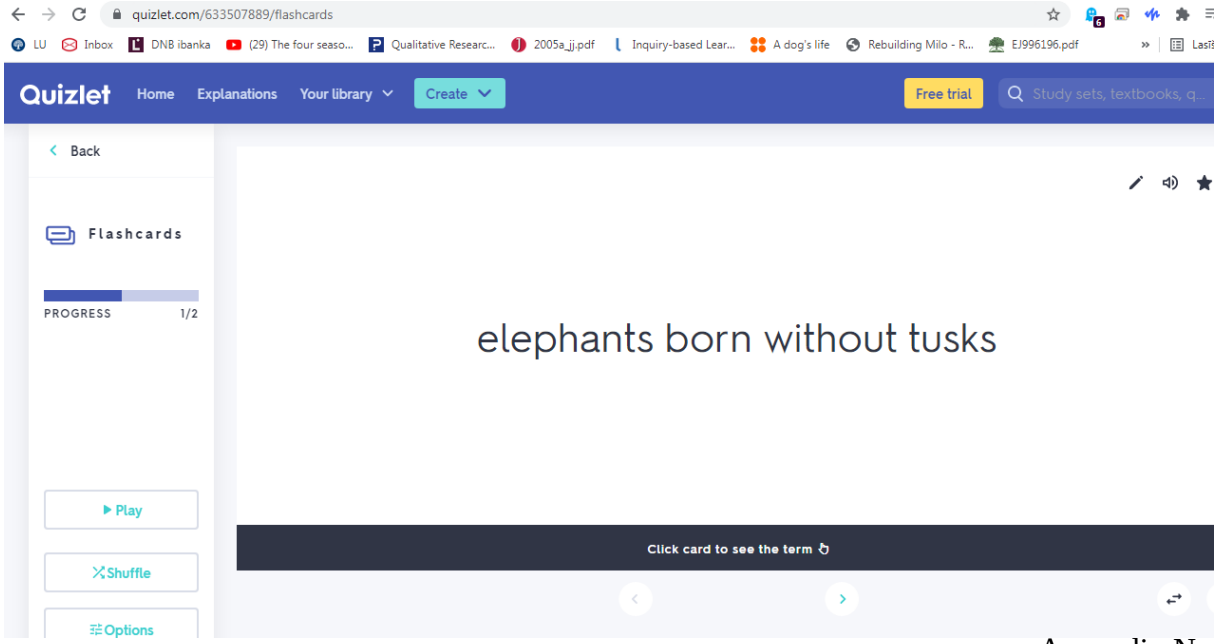


Appendix No.50

Example of Digital Mind Mapping Worksheet Using MindMup

Appendix No.51

Example of Quizlet Application Flashcards



Appendix No.52

Example of Opinion Graphic Organizer

OPINION GRAPHIC ORGANIZER

Topic: What Do K-9 Police Dogs Do?
Opinion: Police dogs must be a special type of dog.

Reason 1
Evidence 1
Reason 2
Evidence 2
Reason 3

Appendix No.53

Example of Online Dictionary

Appendix No.54

Evidence of Context Clues Worksheet Using Google Docs

What is Sound?

The world around us is filled with sound. There are loud sounds and soft sounds. There are pleasant sounds and unpleasant sounds. At this very moment, you are surrounded by sound. Where does sound come from? How does it get to your ears? Why are there different kinds of sound? The study of these questions **about sound** is called acoustics.

Imagine a cymbal hit with a drumstick. The cymbal shakes rapidly, and this vibration causes the tiny particles in the air around it to vibrate. These vibrating air particles, called molecules, bump into the air particles next to them and make them vibrate. This spreading vibration moves outward in every direction from the cymbal in waves.

When a small object is made to vibrate, the sound waves move up and down very quickly. This produces a high-pitched sound, like a high note in a song. When a **large object is made to vibrate, the sound waves move up and down more slowly.** This produces a low-pitched sound, like a low note in a song. Hitting a small cymbal makes a more high-pitched sound than hitting a large cymbal.

The volume of a sound depends upon the **amount of energy, or force, applied to the object that is caused to vibrate. If** the cymbal is hit very hard with the drumstick, the volume of the sound is louder than if it is hit lightly. The sound wave created by a hard hit carries the energy of the hit along with it. When a sound wave hits an object, the force that the sound wave carries causes movement in the object it hits. An extremely loud sound wave, such as the sound of thunder, can actually make the ground shake.

Select which context clues give a hint to the meaning of each of these words.

1. acoustics

A. …filled with sounds…

B. …surrounded by sound…

C. …study of…

2. vibration

A. …hit with a drumstick…

B. …shakes rapidly…

C. …bump into…

3. high-pitched

A. ...move up and down…

B. …made to vibrate…

C. ...high note in a song…

4. low-pitched

A. …move up and down…

B. …made to vibrate...

C. …low note in a song…

5. volume

A. …sound is louder…

B. …hit very hard…

C. …hit lightly…

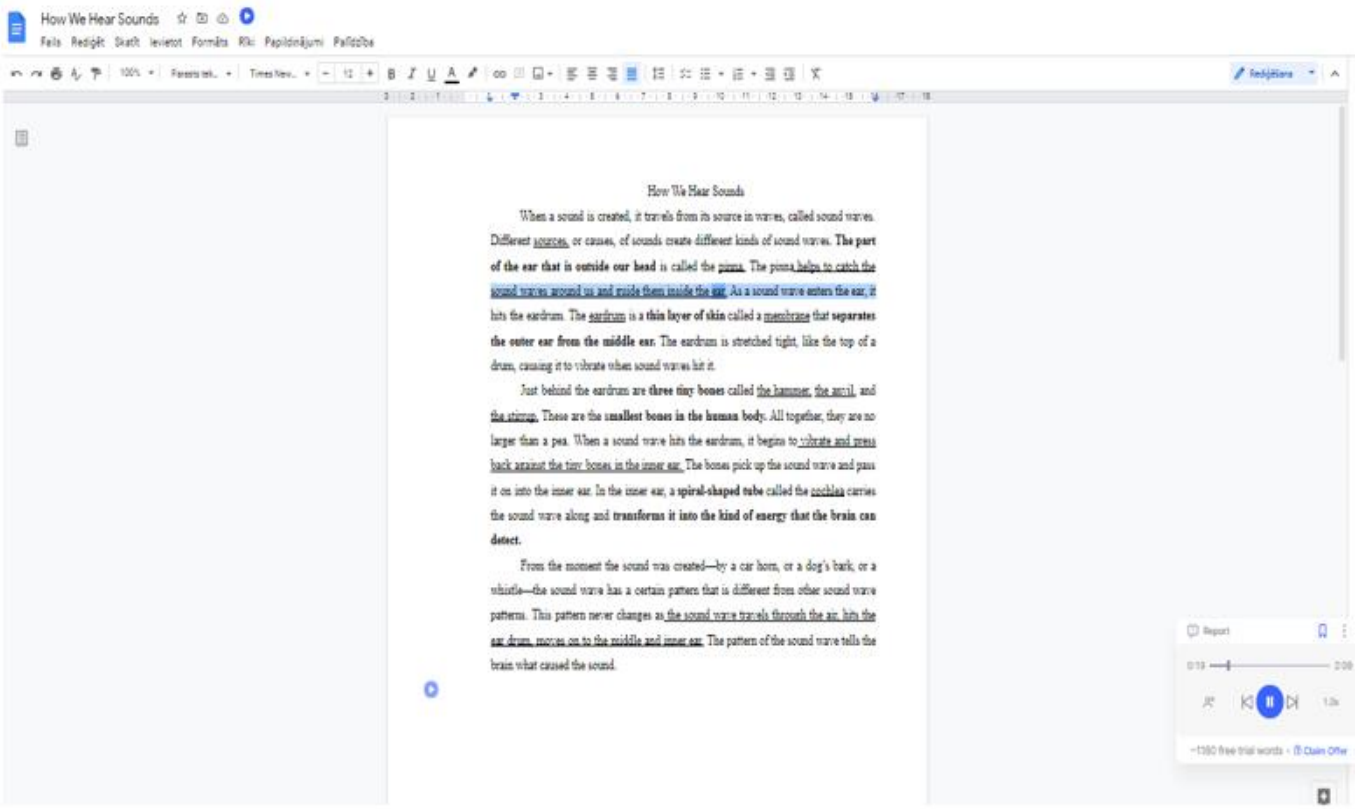
6. energy

A. ...or force…

B. …depends upon…

C. …caused to vibrate…

Evidence of Context Clues Worksheet Using Google Docs and Speechify



Select which context clues give a hint to the meaning of each of these words.

1. sources

A. …travels from…

B. …or causes…

C. …different kinds…

2. pinna

A. …helps to catch the sound waves…

B. …different kinds of sound waves…

C. …part of the ear that is outside our head…

3. eardrum

A. …enters the ear…

B. …thin layer of skin…

C. …stretched tight…

4. membrane

A. …the eardrum…

B. …causing it to vibrate…

C. …thin layer of skin…

5. the hammer, the anvil, and the stirrup

A. …three tiny bones…

B. …just behind the eardrum...

C. …no larger than a pea…

6. cochlea

A. …the inner ear…

B. …spiral-shaped tube…

C. …carries the sound wave…

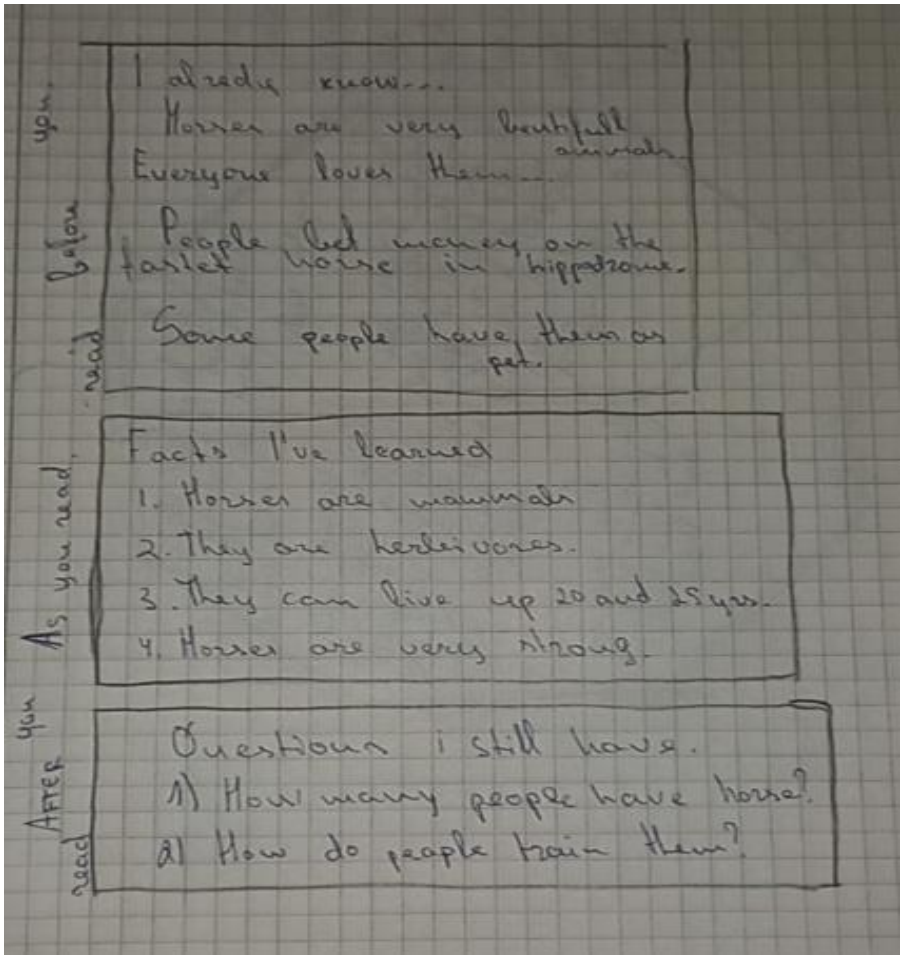
Appendix No.56

Author's Teacher Journal Entries

13.09.2021. 10:10 – 10:50 Horses *(K5)*	Annotation (note taking while reading text, highlighting parts of the text / main ideas)	Students go to their google classroom and find the attached story. They open in using their mobile phones. Teacher gives them note-taking worksheet as well. **They are instructed that they are to read the topic and write in the note-taking worksheet** details that they already know about the topic. Also, while reading, they must write down facts they did not know before or found interesting. After reading the text they are to write at least one question about the text. **Teacher encourages students to use highlighting for facts found in the text as well as to use Speechify if they are unsure of pronunciation**. They are to be ready for the class discussion afterwards.	At first students **felt overwhelmed due to the length of the text**, however, when allowed to use Speechify, many students looked releived and searched for their earphones. Students indeed wrote down facts they already knew about the topic before reading the whole text. **Students read differently** – <u>some students read a paragraph</u> (chunk) <u>and filled in facts</u>, <u>some read the whole text, just highlighting the facts they didn't know before, writing in the worksheet only after reading.</u>	Students agree on feeling discouraged when faced with this text due to its length, however, they **admit that Speechify, as it allows to listen while reading the text, was more interesting** and "got them through the text". Students indicate feeling **confused about why the text material was not presented as printed text if the task was to be done on the paper. Students who highlighted the facts and then wrote down the information say that they got acquainted with the text better** and grew comfortable navigating it.	When presented with specific worksheet for note-taking students show good work ethic and no errors. The teacher is **yet to determine what happens if the students are allowed to take notes on their own terms**. It is also clear that students are unaware that **print reading and digital reading strategies are correlated, hence, consider them as two independent skills and platforms.** Speechify seems to be of high value in the classroom as the students enjoy using it and it seems have used it outside the classroom as well due to no confusion this time. Highlighting seems to be a common practice for students as they were quick to do so while writing unkown facts.

Appendix No.57

Evidence of Note Taking Worksheet



Appendix No.58

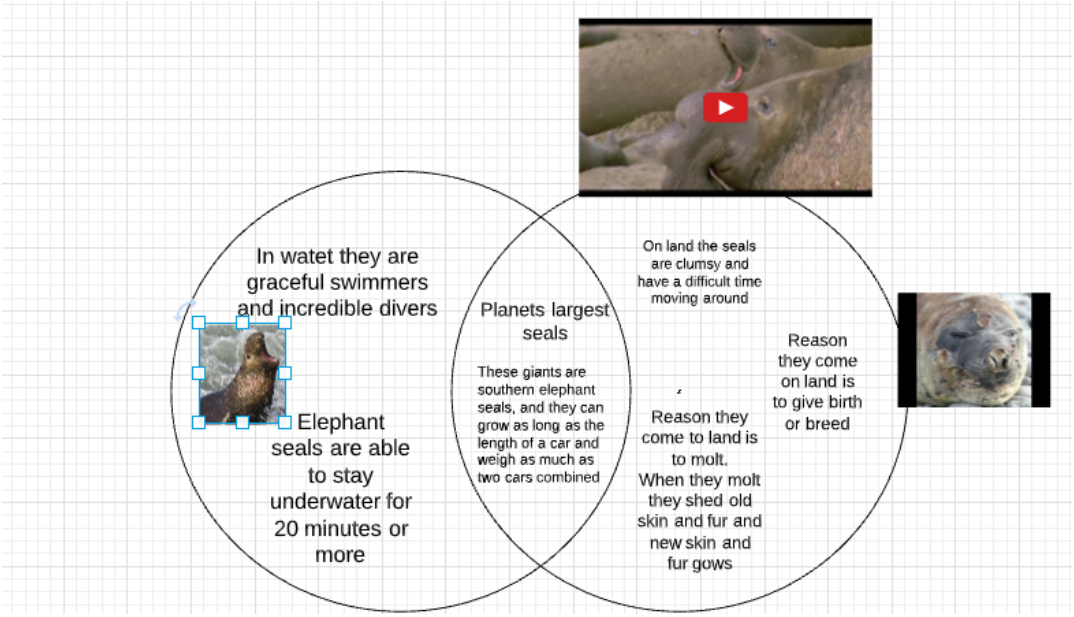
Evidence of Chunking Worksheet

Reading material: Worlds Largest Marsupal

PARAGRAPH 1	
Summary statement	Key words
The red kangaroo is slightly bigger than the grey kangaroo which makes it the world's largest marsupial.	
PARAGRAPH 2	
Summary statement	Key words
A marsupial is a female kangaroo that carries around her young in a pouch.	mother, mammal
PARAGRAPH 3	
Summary statement	Key words
The newborn baby stays in their mother's pouch until they are eight months old. Until then the baby is sleeping, nursing and growing. Even after they leave their mother's pouch they stay near their mother until they can live on their own.	tiny, sleeping, nursing, growing, frightened, eight months old
PARAGRAPH 4	
Summary statement	Key words
Red kangaroos are good swimmers but they are even better at hopping. They have big, powerful, and long feet that allow them to hop faster, They use their tail for balance and steer.	good swimmers, hopping abilities, grassy, shrubby, desert habitats, balance, steer
PARAGRAPH 5	
Summary statement	Key words
They eat grass, leaves, and other vegetation.	grass, leaves, vegetation,

Appendix No.59

Evidence of Venn Diagram Using LucidChart Application

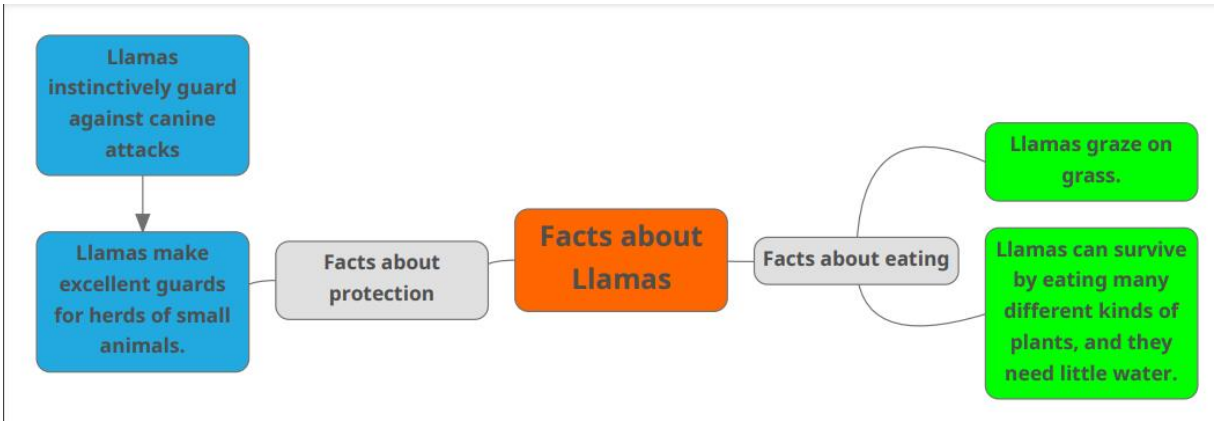


Appendix No.60

Evidence of Mind Map Using MindMup Application

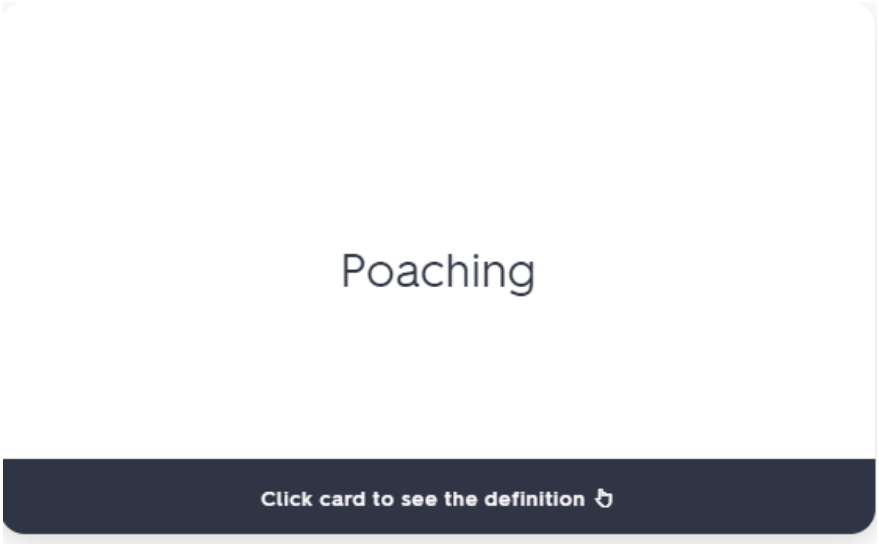
Appendix No.61

Evidence of Mind Map Activity Using MindMup Application



Appendix No.62

Evidence of Vocabulary Activity Using Quizlet Application



Illegal hunting of protected animals

Click again to see the term

2/11

Appendix No.63

Evidence of Venn Diagram Using Google Docs Application

VENN DIAGRAM ON AFRICAN AND ASIAN ELEPHANT

Appendix No.64

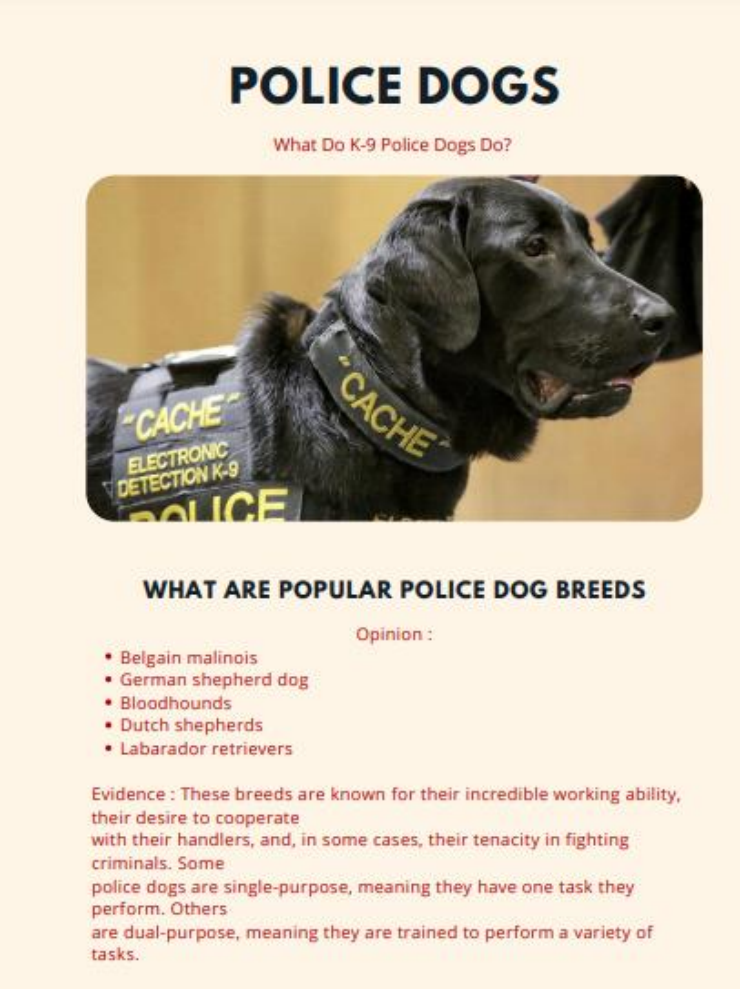
Evidence of Opinion Graphic Organizer using Google Docs

OPINION GRAPHIC ORGANIZER

Topic: What Do K-9 Police Dogs Do?

Opinion: Police dogs must be a special type of dog.

Reason 1 Because different species are more reliable
Evidence 1 "Labrador retrievers are known for their desire to cooperate."
Reason 2 Because the other species aren't that fast.
Evidence 2 "Dutch Shepherd was originally used by farmers who needed someone to guide the flock."
Reason 3 They need to be trained in a special school for them.
Evidence 3 Some breeds are easier to be trained in dog school.
Reason 4 "Belgian Malinois are considered smart, protective and easily trained."

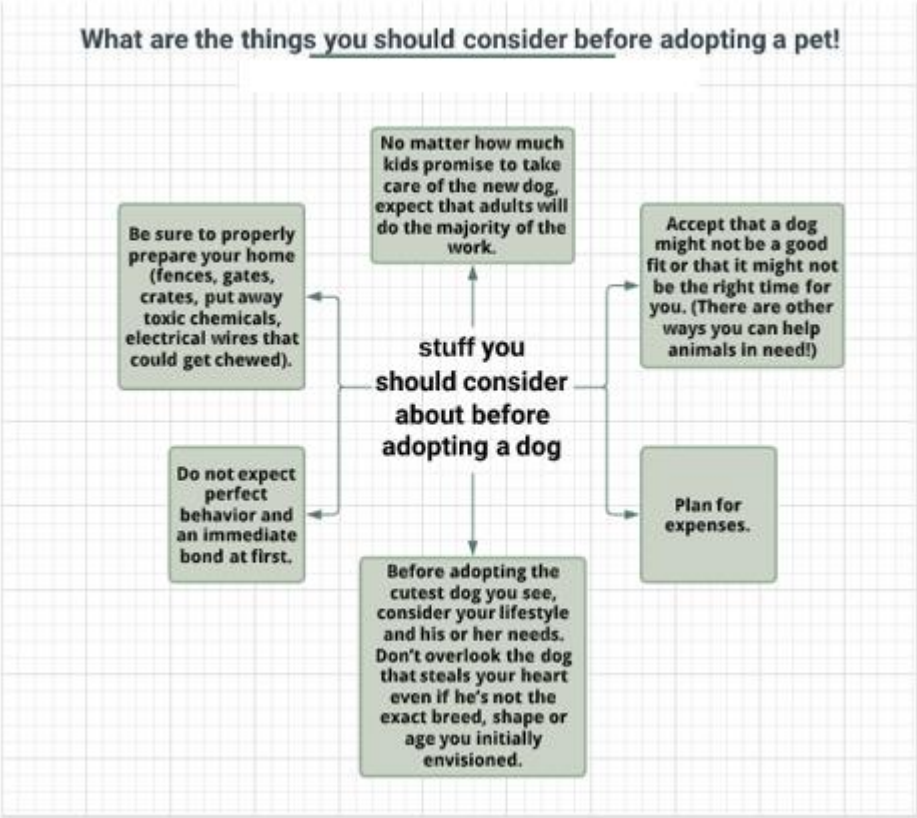


Author's Teacher Journal Entries

07.10.2021. 12:45 – 12:25	Making connections (from arguments to text)	Students are introduced with the **structure of opinion essay.** They are asked to **create arguments for the essay topic "What are the things one should consider before adopting a pet?"** using either of the mind mapping applications (FreeMind, Lucidchart) or Google Docs. They are to send their works and have a classroom discussion afterwards. After introducing teacher to the arguments, students are presented with a **digital text about things to consider before adopting a dog.** The teacher shows the text on the interactive board and reminds students that **when they will search for information that supports their arguments, they will stumble upon digital texts that contain hyperlinks.** The teacher discusses the **procedure one should follow when exposed to a hyperlink**. The teacher also reminds that students are **able to use Speechify or consult online dictionaries** for unknown vocabulary. Students then are **introduced with referencing in online site:** https://www.citethisforme.com/. Students are then introduced with their homework: writing an opinion essay on the topic, **supporting the arguments discussed in the classroom with evidence found on the internet, referencing the evidence using online platfrom.** The work is to be done in Microsoft Word document and sent via Google Docs in Google Classroom.	When introduced with the **essay structure the students claimed that they already have previous knowledge** as they have done similar writing in Latvian language as well as in English last year. When asked to create arguments using digital tools the students used mobile phones and had troubles using applications, hence, **used google docs as their mobile phones respond better to that particular programm**. The students went into detail and carried out **solid, thoughtful arguments for the topic, including that pets are not only cats and dogs but also exotic animals.**When students are exposed to a digital text they **immediately recognize hyperlinks and started a discussion on why and when to follow the link on their own,** without the teacher having to prompt the discussion. Students agreed **following the hyperlink only if it reflects their argument or after reading the whole document. Referencing was unusual for students** and they looked shocked. Some students, who had older siblings, mentioned that they have seen how text with references looks like, however, all students agreed on **never referencing the text on their own.** When introduced with the **online platform for referencing, the students stated that it looks rather logical**. They asked for an example and the teacher provided one for them. When telling the homework, the students did not look surpirsed, however, **enjoyed that it is to be done digitally, hence, it can be observed that the students rather write on the computer than with pen.**	Students stated that the **most valuable part of the lesson was the online referencing tool**, which they will use and also **show their older siblings**. They indicated that essay topic is **topical for them as during the pandemic many students' families are visiting animal shelters** and planning to adopt a pet. Students **agree on feeling familiar with mind mapping tools now, yet, their favourite platform for such works is Google Docs** as it allows to do everything **one would do on a sheet of paper.**	It can be concluded that the **students are familiar with opinion essay writing structure,** thus, are able to **connect knowledge** gained in different subjects to excel in others, which indicates that the students **see subjects as complimentary and connected.** Students, even after being introduced with different online platforms, choose to work in **Google Docs,** which might indicate that they **are more familiar with it** and that the particular **platfrom allows working from whichever device without impacting the quality**. Referencing was a new topic for the students and, in order for students to better understand, **how to incorporate references in the text, IT sciences teacher should be consulted in order to create complimentary lessons on the subject.**

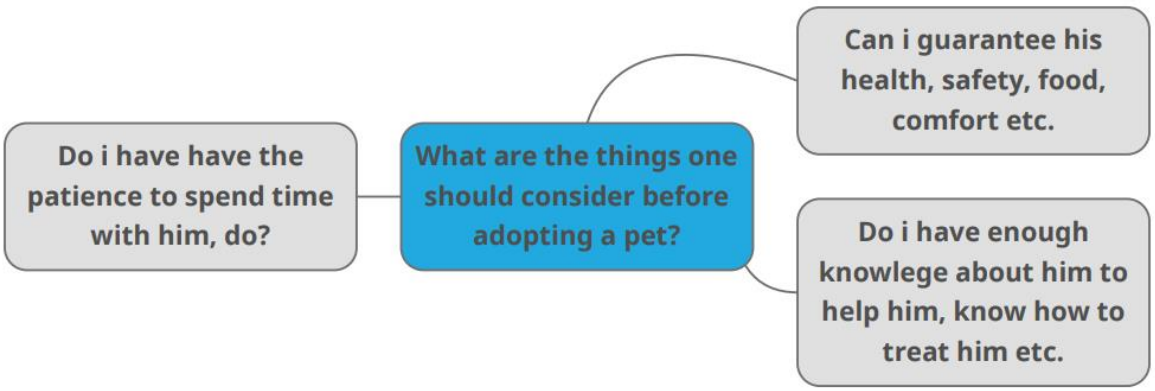
Appendix No.66

Evidence of Argument Idea Spider Using LucidChart



Appendix No.67

Evidence of Argument Idea Spider Using Google Docs



Appendix No.68

Evidence of Opinion Essay Written Using Google Docs and Online Referencing

What are the things one should consider before adopting a pet?

What are the things one should consider before adopting a pet? I personally think the most important thing would be if you would be ready for a pet, if it's a dog, u might get him from the adoption center, get him the needed stuff as food, bed etc, tho not done enough research as, maybe you haven't realized how much u will need to spend on grooming, food, vet visits, and also deal with morning walks in cold weather, fur all over the house, etc. Would you be ready to take him on walks and spend time with him? Especially in the pandemic people got more pets, tho when it started to settle down and end, people returned them.

Research shows a lot of people struggle when first getting a pet, they might not have gotten the best cage as for pets like guinea pigs, if it has a cage too small it might have huge stress.
https://pethelpful.com/rodents/5-Most-Common-Guinea-Pig-Owner-Mistakes

In 2020 when there was a big pandemic because of the coronavirus people got pets to have a buddy while alone at home, tho when things were settling down and covid was "disappearing" people returned them which is sadly disappointing. Tho i don't feel like that's true for some reason, sure it's not like EVERYONE returned them of course ,but wouldn't they stick to them more and love them more because they spent time with them while alone in the pandemic, maybe they don't have friends and the pet is their only friend yet their returning it? I don't feel like that may be true honestly, there's so many reasons for it to not be real, i wouldn't let go of the pet i paid over 500$+. (500$+ for stuff like the pet itself if its a special breed or is just for money and not free, the vet, toys, bed etc.)
https://www.bloomberg.com/news/videos/2021-05-09/pandemic-pets-are-being-returned-video

So in total you should know how to be ready for ur pet, do research about him, find out what things would usually disturb other pet owners and if it will disturb you, the cost of all the things for the pet as like the toys, vet, pet itself and if your home is ready for a pet.

Appendix No.69

Questionnaire on Strategies and Applications for Improving Young Adolescents' Digital Reading Comprehension in English Lessons Before Implementation

Strategies and Applications for Improving Young Adolescents' Digital Reading Comprehension in English Lessons

I, Master's student of the University of Latvia at the Faculty of Pedagogy, Psychology and Art, Līga Vilcāne, do a research on students' reading practices in a digital setting to improve the teaching methodology for digital reading and comprehension strategies. This survey will include questions about your experiences and opinions. There are no correct or incorrect answers to these questions.
Participation in the survey is voluntary and can be withdrawn by any respondent at any time. However, please answer all questions, unless they cause you great inconvenience. All your answers will be combined with the answers of other respondents to find out various statistical characteristics, hence no respondent will be able to be identified. All your answers will be completely confidential. I will publish the research in my Master's Thesis, which will be published online at dspace.lu.lv

What is your gender? *

- Male
- Female
- Prefer not to say

For what purpose you read most often? *

- Studies
- Pleasure
- Other

Which of the following devices do you own? Please tick ALL that apply. *

- [ ] Mobile Phone with Internet Access
- [ ] Tablet Computer (e.g., Ipad)
- [ ] eReader (e.g., Kindle)
- [ ] Computer (Personal computer or laptop)
- [ ] Other

Which devices do you usually use for doing homework? *

- [ ] Mobile Phone with Internet Access
- [ ] Tablet Computer (e.g., Ipad)
- [ ] eReader (e.g., Kindle)
- [ ] Computer (Personal computer or laptop)
- [ ] Other

How much do you agree that these strategies are useful when reading a digital text? *

	Strongly agree	Agree	Somewhat agree	Somewhat disagree	Disagree	Strongly disagree
Taking notes while reading	○	○	○	○	○	○
Highlighting parts of text	○	○	○	○	○	○
Chunking the text in smaller sections	○	○	○	○	○	○
Organizing thoughts using graphic organizers (e.g., Story map)	○	○	○	○	○	○
Making connections with text (e.g., Venn diagram)	○	○	○	○	○	○
Using online dictionary	○	○	○	○	○	○
Using text-to-speech audio-readers	○	○	○	○	○	○

When using the Web to learn about something that really interests you, how do you typically manage your search (e.g., using Google or some other search engine)? *

- ◯ Slow and iterative, I repeat search with slightly different terms
- ◯ Purposeful, I know how and where to search for information
- ◯ Fast and efficient, I get what I need on the first attempt
- ◯ Other

When reading something you find interesting that contains both text and graphics, how do you balance your attention? *

	1	2	3	4	5	
Focus more on text than on graphics	◯	◯	◯	◯	◯	Focus more on graphics than on text

How do you proceed, when reading a text that contains hyperlinks? *

- ◯ Click on the hyperlinks as soon as I get to them
- ◯ Click on the hyperlinkslinks after reading the whole text
- ◯ Click on the hyperlinks without reading the text
- ◯ I don't click on the hyperlinks
- ◯ Other

How much do you agree that these platforms are useful? *

	Strongly agree	Agree	Somewhat agree	Somewhat disagree	Disagree	Strongly disagree
Google Classroom	◯	◯	◯	◯	◯	◯
Google Docs	◯	◯	◯	◯	◯	◯
Speechify	◯	◯	◯	◯	◯	◯
LucidChart	◯	◯	◯	◯	◯	◯
FreeMind / MindMup	◯	◯	◯	◯	◯	◯
Online Dictionaries (e.g., Cambridge online dictionary)	◯	◯	◯	◯	◯	◯
Microsoft Word	◯	◯	◯	◯	◯	◯
Quizlet	◯	◯	◯	◯	◯	◯
Online referencing	◯	◯	◯	◯	◯	◯

What is your current mark in English? *

Jūsu atbilde

What is your current mark in Social Sciences? *

Jūsu atbilde

What is your current mark in History? *

Jūsu atbilde

Appendix No.70

Questionnaire on Strategies and Applications for Improving Young Adolescents' Digital Reading Comprehension in English Lessons After Implementation

Strategies and Applications for Improving Young Adolescents' Digital Reading Comprehension in English Lessons

I, Master's student of the University of Latvia at the Faculty of Pedagogy, Psychology and Art, Līga Vilcāne, do a research on students' reading practices in a digital setting to improve the teaching methodology for digital reading and comprehension strategies. This survey will include questions about your experiences and opinions. There are no correct or incorrect answers to these questions.
Participation in the survey is voluntary and can be withdrawn by any respondent at any time. However, please answer all questions, unless they cause you great inconvenience. All your answers will be combined with the answers of other respondents to find out various statistical characteristics, hence no respondent will be able to be identified. All your answers will be completely confidential. I will publish the research in my Master's Thesis, which will be published online at dspace.lu.lv

* Nepieciešams

For what purpose you read most often? *

- ◯ Studies
- ◯ Pleasure
- ◯ Other

Which devices do you usually use for doing homework? *

- ☐ Mobile Phone with Internet Access
- ☐ Tablet Computer (e.g., Ipad)
- ☐ eReader (e.g., Kindle)
- ☐ Computer (Personal computer or laptop)
- ☐ Other

How much do you agree that these strategies are useful when reading a digital text? *

	Strongly agree	Agree	Somewhat agree	Somewhat disagree	Disagree	Strongly disagree
Taking notes while reading	◯	◯	◯	◯	◯	◯
Highlighting parts of text	◯	◯	◯	◯	◯	◯
Chunking the text in smaller sections	◯	◯	◯	◯	◯	◯
Organizing thoughts using graphic organizers (e.g., Story map)	◯	◯	◯	◯	◯	◯
Making connections with text (e.g., Venn diagram)	◯	◯	◯	◯	◯	◯
Using online dictionary	◯	◯	◯	◯	◯	◯
Using text-to-speech audio-readers	◯	◯	◯	◯	◯	◯

When using the Web to learn about something that really interests you, how do you typically manage your search (e.g., using Google or some other search engine)? *

- ◯ Slow and iterative, I repeat search with slightly different terms
- ◯ Purposeful, I know how and where to search for information
- ◯ Fast and efficient, I get what I need on the first attempt
- ◯ Other

When reading something you find interesting that contains both text and graphics, how do you balance your attention? *

	1	2	3	4	5	
Focus more on text than on graphics	◯	◯	◯	◯	◯	Focus more on graphics than on text

How do you proceed, when reading a text that contains hyperlinks? *

- ◯ Click on the hyperlinks as soon as I get to them
- ◯ Click on the hyperlinkslinks after reading the whole text
- ◯ Click on the hyperlinks without reading the text
- ◯ I don't click on the hyperlinks
- ◯ Other

How much do you agree that these platforms are useful? *

	Strongly agree	Agree	Somewhat agree	Somewhat disagree	Disagree	Strongly disagree
Google Classroom	○	○	○	○	○	○
Google Docs	○	○	○	○	○	○
Speechify	○	○	○	○	○	○
LucidChart	○	○	○	○	○	○
FreeMind / MindMup	○	○	○	○	○	○
Online Dictionaries (e.g., Cambridge online dictionary)	○	○	○	○	○	○
Microsoft Word	○	○	○	○	○	○
Quizlet	○	○	○	○	○	○
Online referencing	○	○	○	○	○	○

Which platforms caused problems? (TICK ALL THAT APPLY) *

- ☐ Google Classroom
- ☐ Google Docs
- ☐ Speechify
- ☐ LucidChart
- ☐ FreeMind / MindMup
- ☐ Online Dictionaries
- ☐ Microsoft Word
- ☐ Quizlet
- ☐ Online referencing

What problems did you face using these platforms? *

	It was not supported on the digital device I use (e.g., couldn't open using mobile phone)	I could not download it	I had problems following instructions (e.g., spent more time reading instructions to understand what to do)	I had problems copying the information (e.g., the platform does not allow copy&paste action)	No problems	Other
Google Classroom	☐	☐	☐	☐	☐	☐
Google Docs	☐	☐	☐	☐	☐	☐
LucidChart	☐	☐	☐	☐	☐	☐
Speechify	☐	☐	☐	☐	☐	☐
FreeMind / MindMup	☐	☐	☐	☐	☐	☐
Online Dictionaries	☐	☐	☐	☐	☐	☐
Microsoft Word	☐	☐	☐	☐	☐	☐
Quizlet	☐	☐	☐	☐	☐	☐
Online referencing	☐	☐	☐	☐	☐	☐

If you chose "other" for previous question, please indicate the platform and what kind of problems you had

Jūsu atbilde

What is your current mark in English? *

Jūsu atbilde

What is your current mark in Social Sciences? *

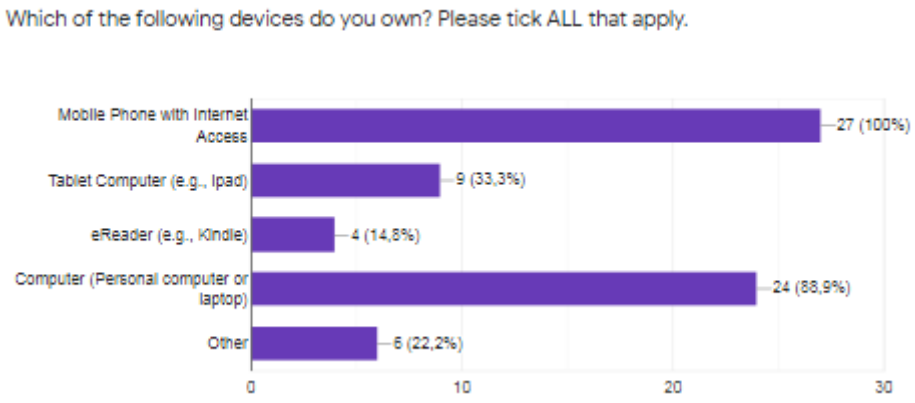
Jūsu atbilde

What is your current mark in History? *

Jūsu atbilde

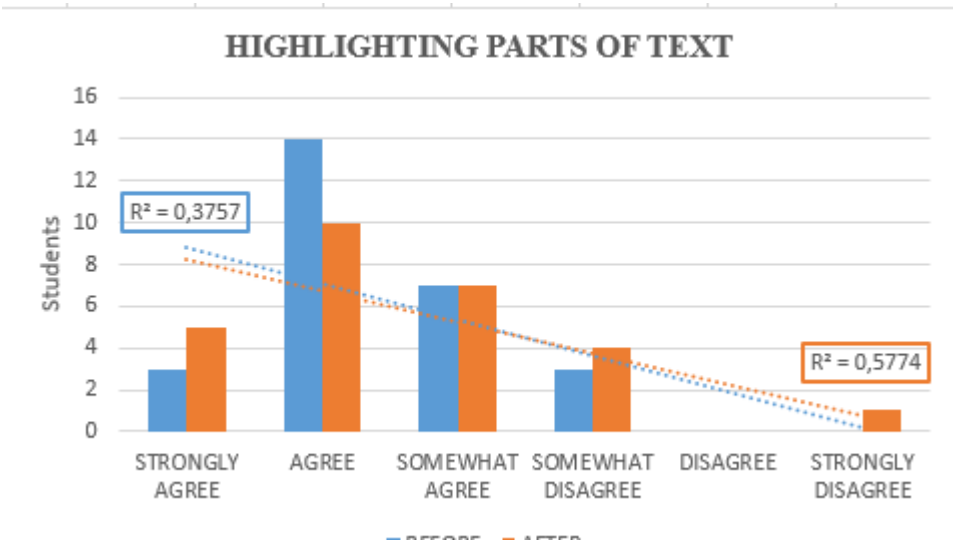
Appendix No.71

Response Categorization for Possessiveness of Digital Devices



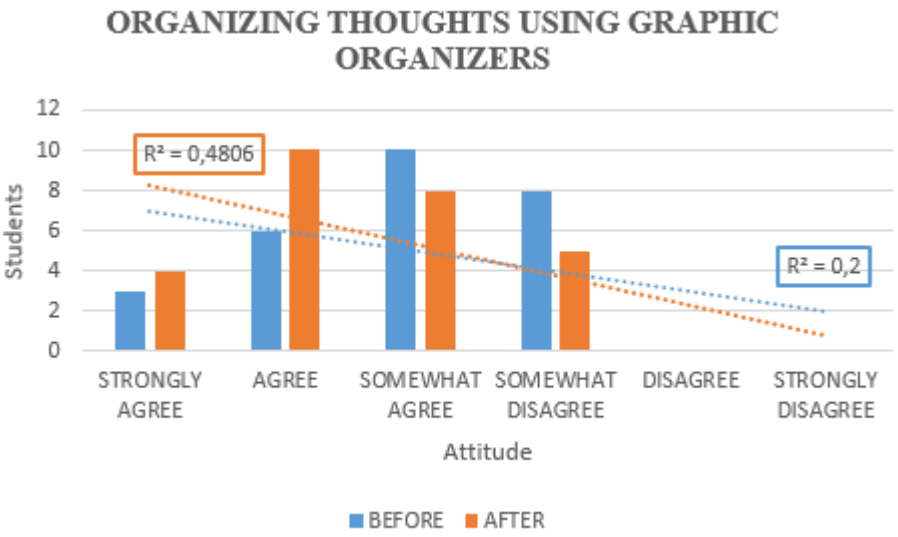
Appendix No.72

Response Categorization for Attitude on Highlighting Parts of Text Strategy Practicality Before and After Implementing Digital Reading Strategies and Applications



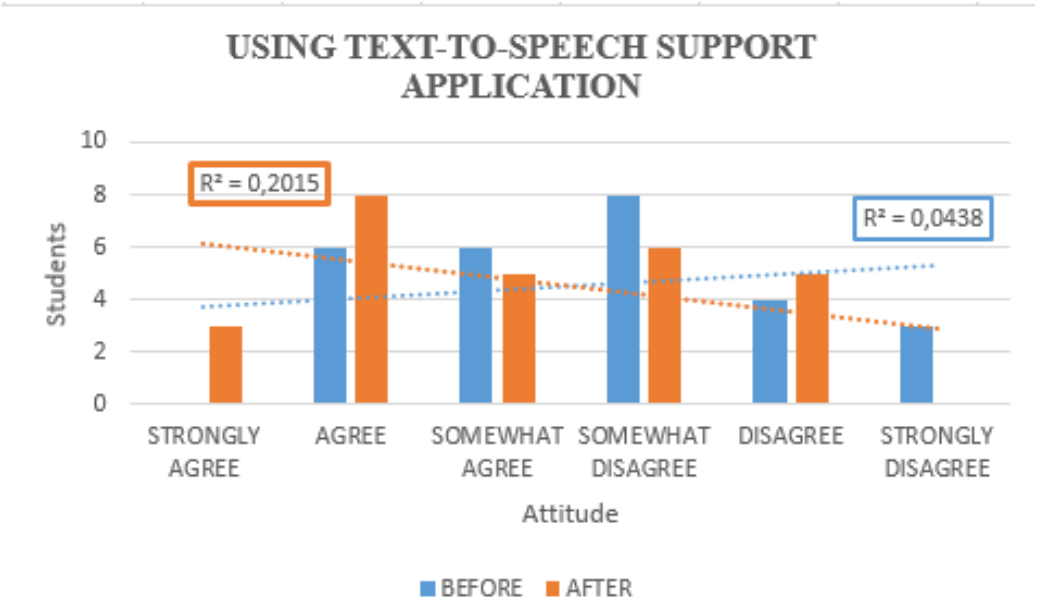
Appendix No.73

Response Categorization for Attitude on Organizing Thoughts Using Graphic Organizers Strategy Practicality Before and After Implementing Digital Reading Strategies and Applications



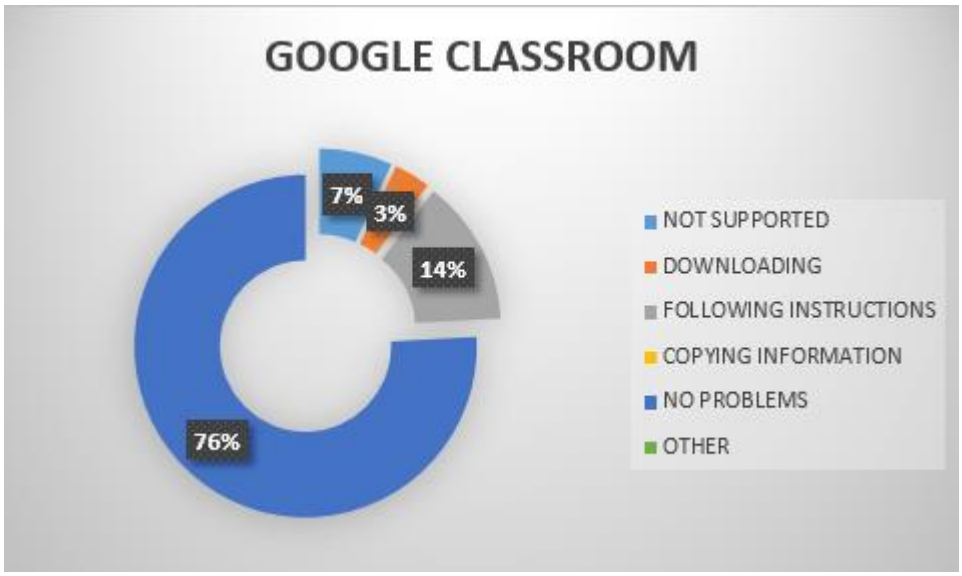
Appendix No.74

Response Categorization for Attitude on Using Text-to-Speech Application Practicality Before and After Implementing Digital Reading Strategies and Applications



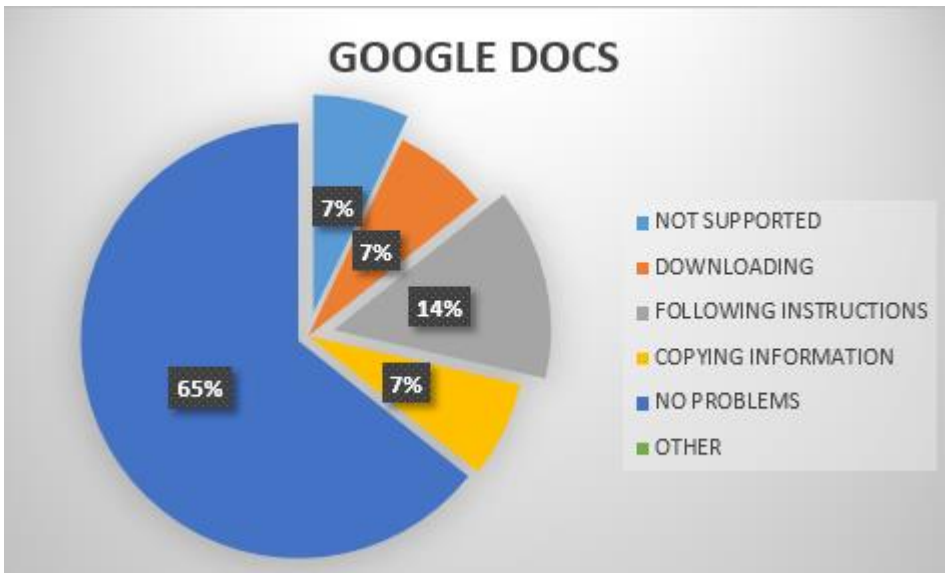
Appendix No.75

Response Categorization for Attitude on Experiencing Problems Using Google Classroom Application



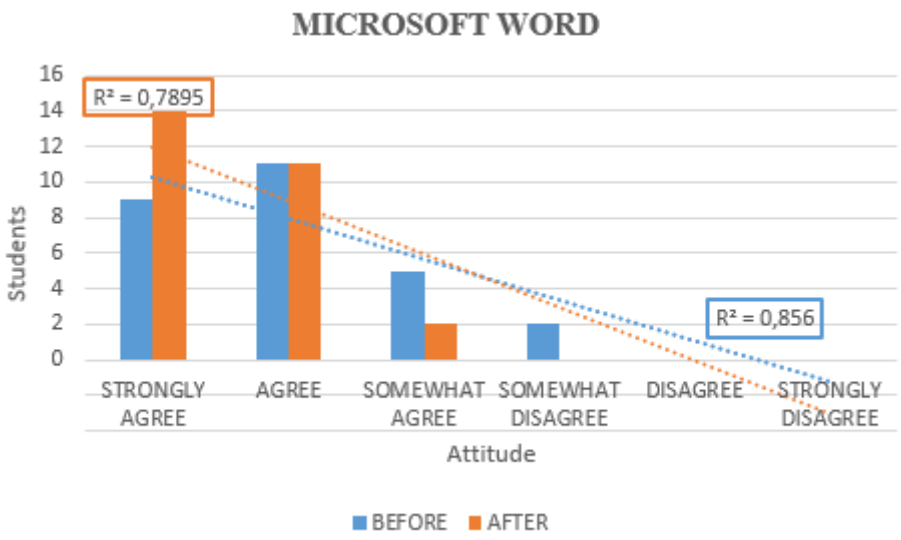
Appendix No.76

Response Categorization for Attitude on Experiencing Problems Using Google Docs Application



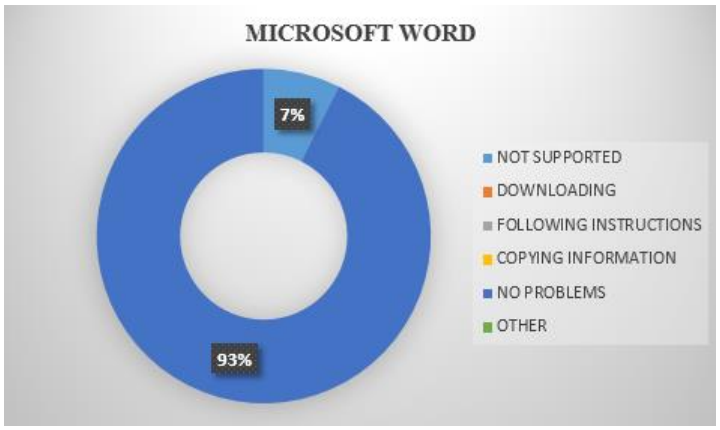
Appendix No.77

Response Categorization for Attitude on Using Microsoft Word Application Practicality Before and After Implementing Digital Reading Strategies and Applications



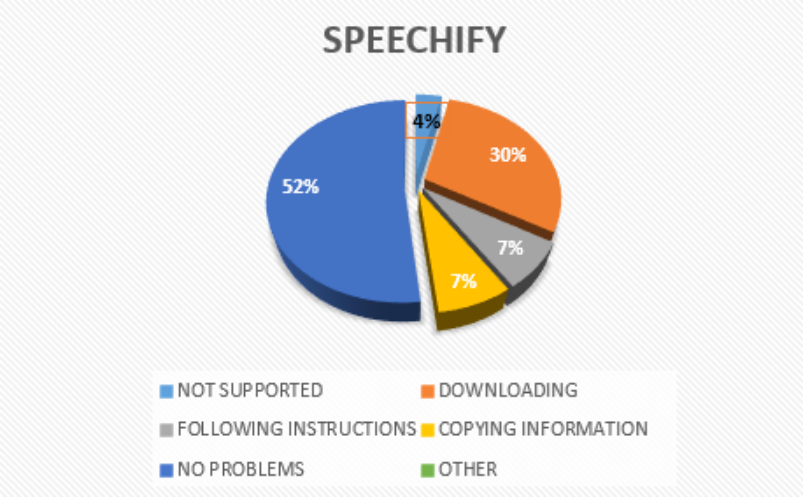
Appendix No. 78

Response Categorization for Attitude on Experiencing Problems Using Microsoft Word Application



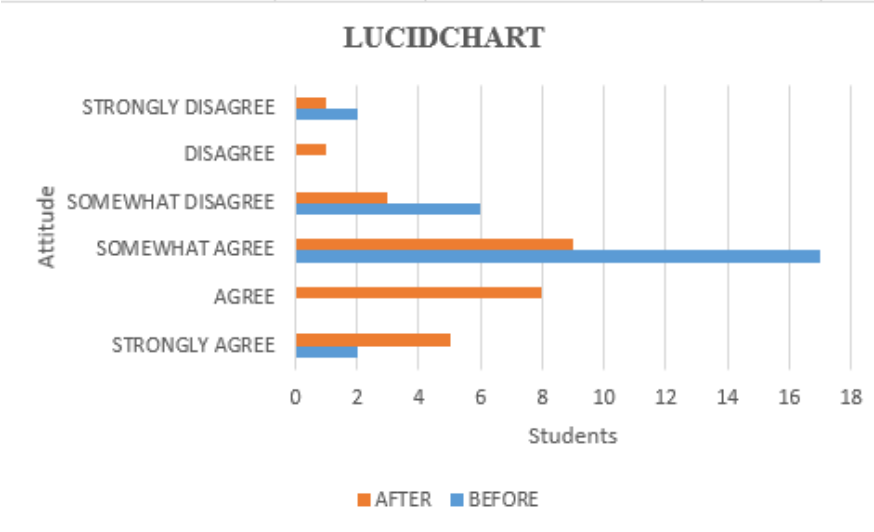
Appendix No. 79

Response Categorization for Attitude on Experiencing Problems Using Speechify Application



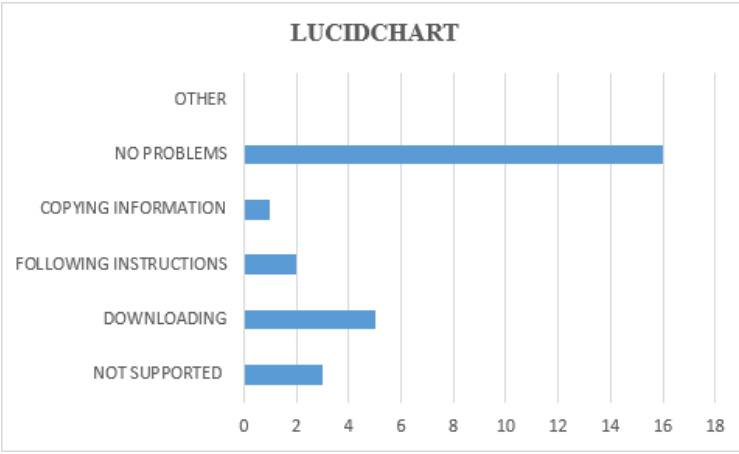
Appendix No.80

Response Categorization for Attitude on Using LucidChart Application Practicality Before and After Implementing Digital Reading Strategies and Applications



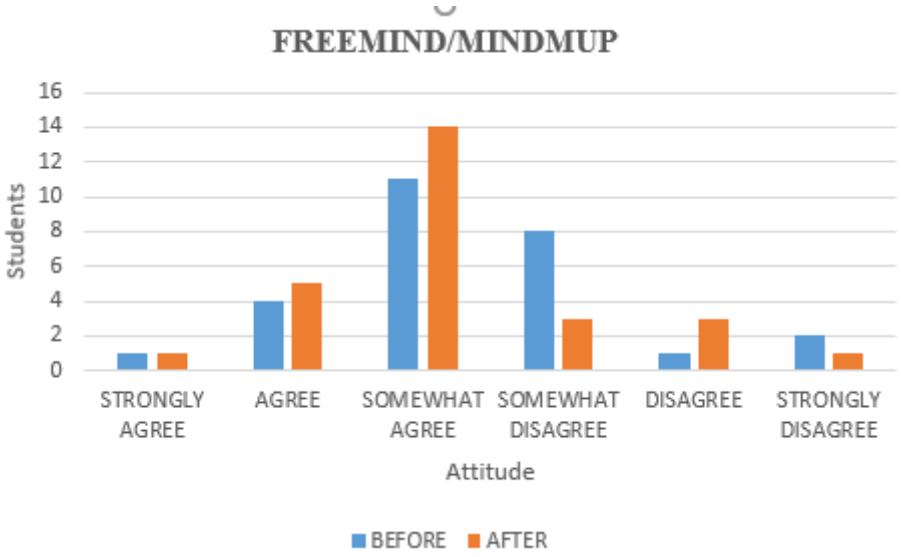
Appendix No.81

Response Categorization for Attitude on Experiencing Problems Using LucidChart Application



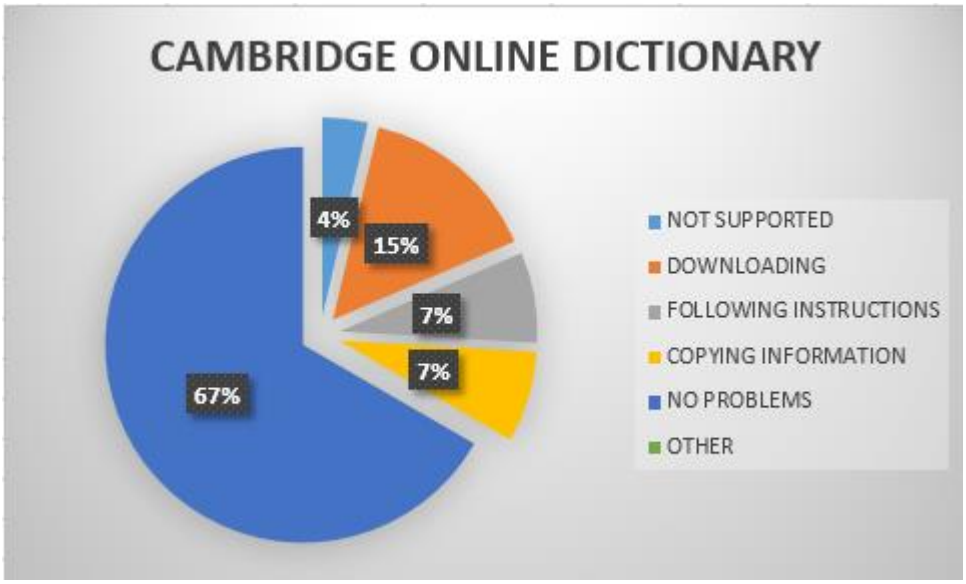
Appendix No.82

Response Categorization for Attitude on Using FreeMind /MindMup Application Practicality Before and After Implementing Digital Reading Strategies and Applications



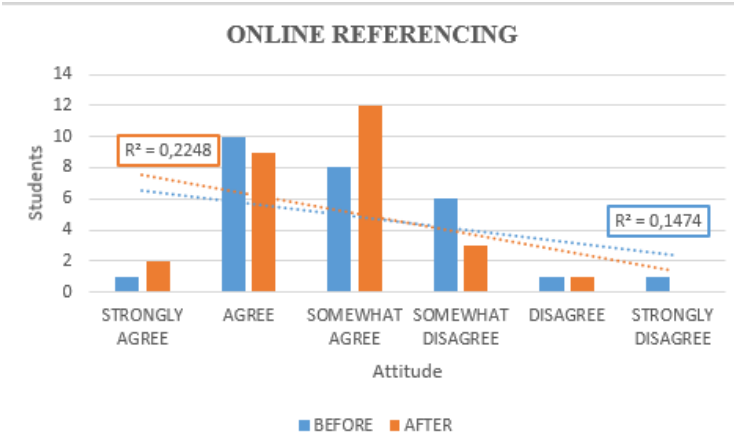
Appendix No. 83

Response Categorization for Attitude on Experiencing Problems Using Cambridge Online Dictionary Application



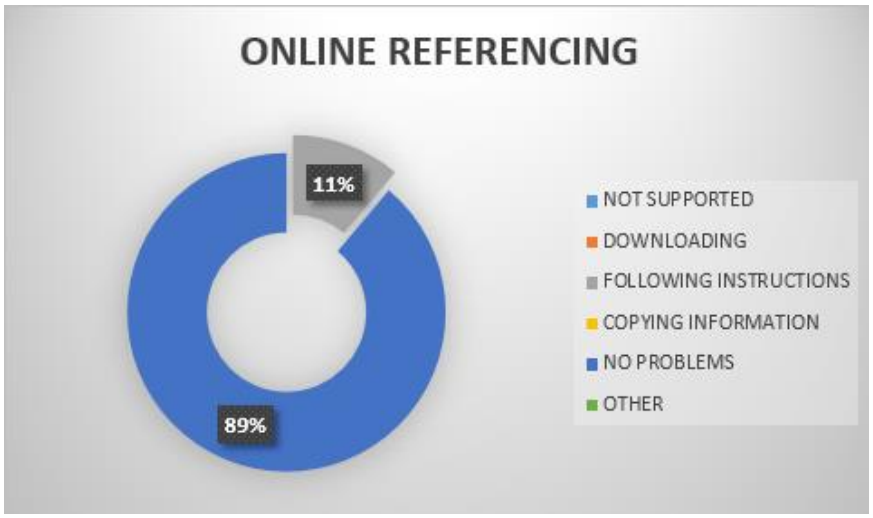
Appendix No.84

Response Categorization for Attitude on Using Online Referencing Application Practicality Before and After Implementing Digital Reading Strategies and Applications



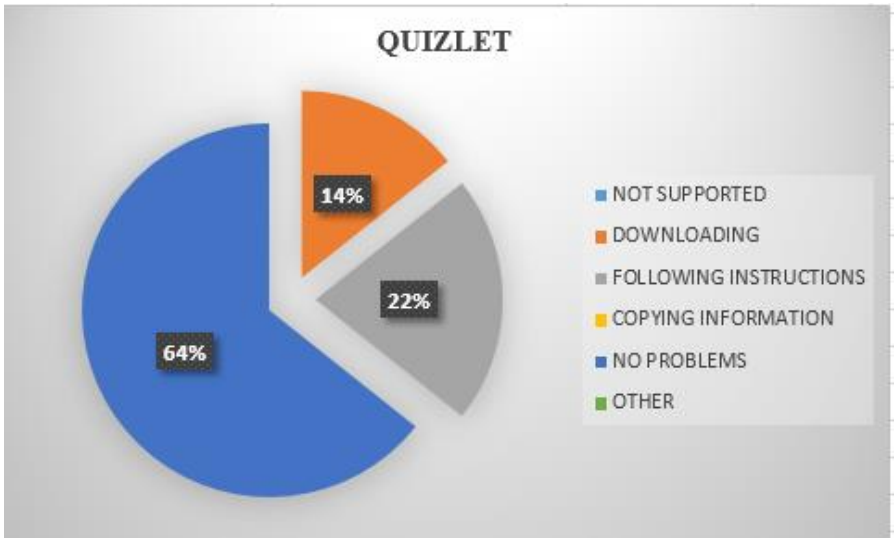
Appendix No. 85

Response Categorization for Attitude on Experiencing Problems Using Online Referencing Application



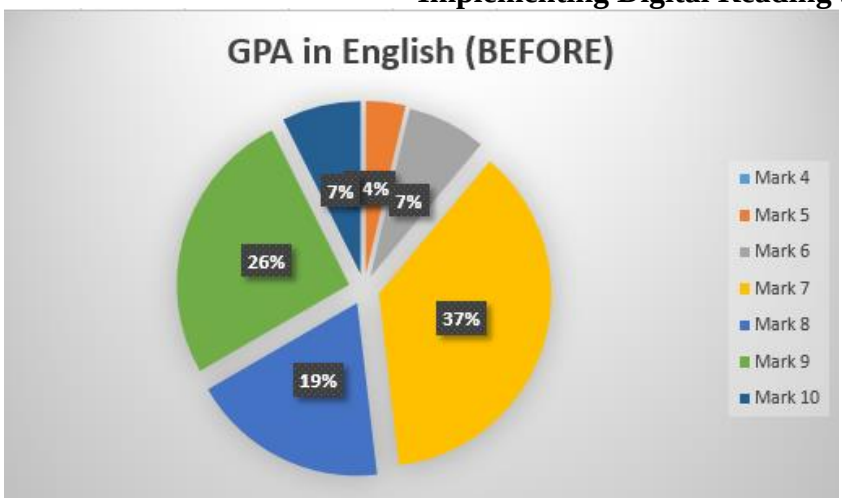
Appendix No. 86

Response Categorization for Attitude on Experiencing Problems Using Quizlet Application



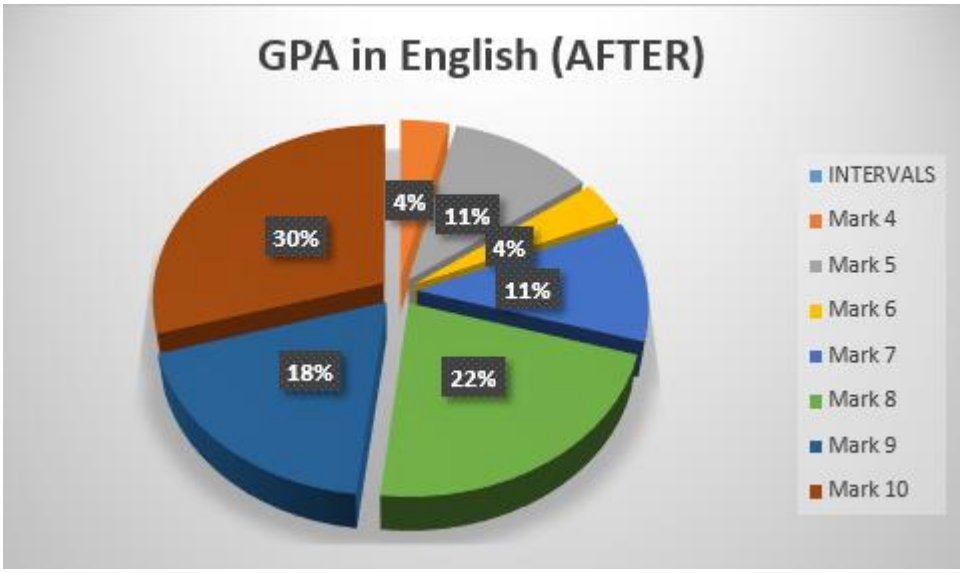
Appendix No. 87

Representation of Grade Point Average (GPA) Score in English Before Implementing Digital Reading Strategies and Applications



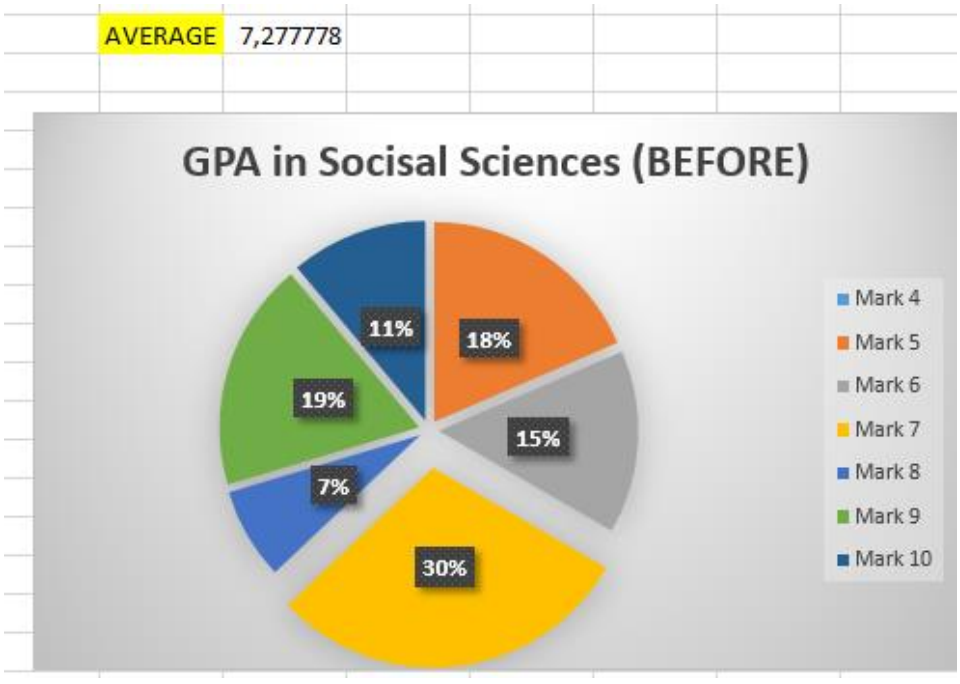
Appendix No. 88

Representation of Grade Point Average (GPA) Score in English After Implementing Digital Reading Strategies and Applications



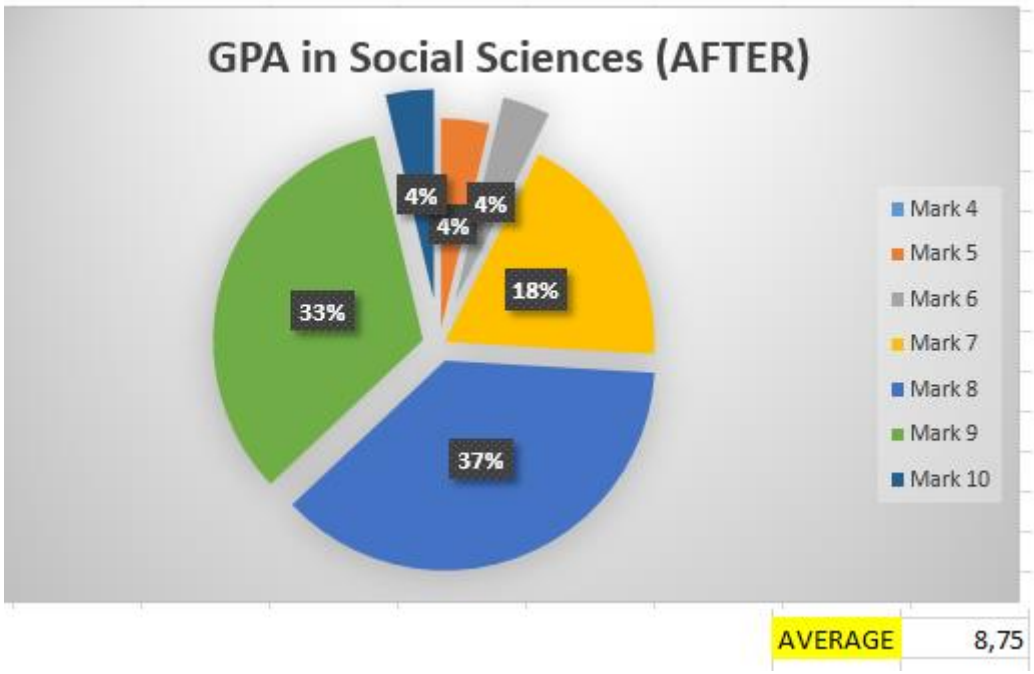
Appendix No. 89

Representation of Grade Point Average (GPA) Score in Social Science Before Implementing Digital Reading Strategies and Applications



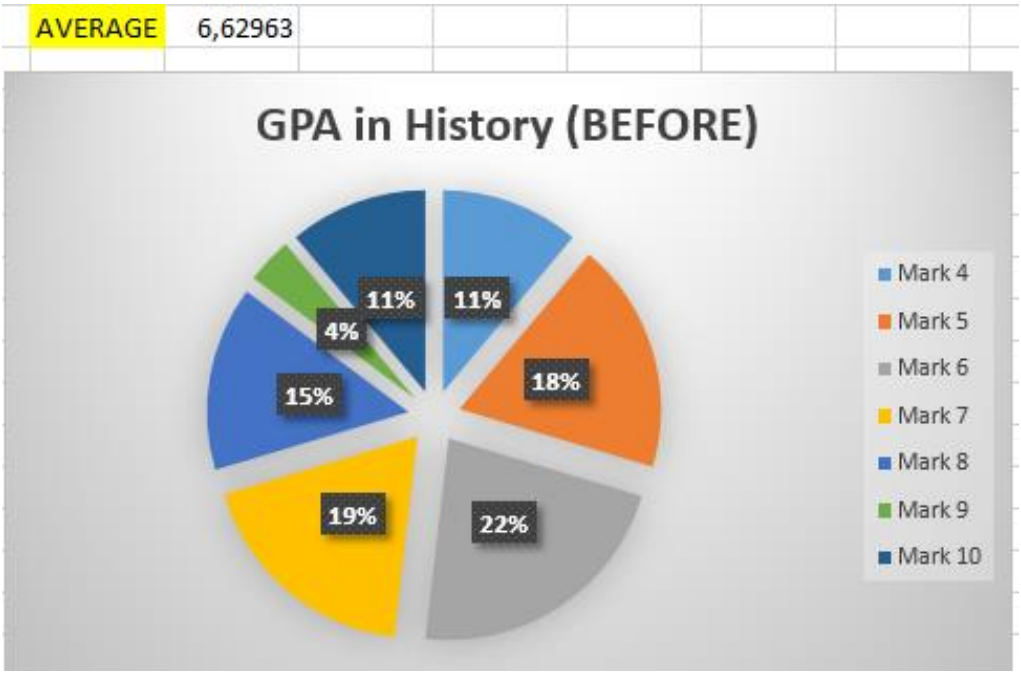
Appendix No. 90

Representation of Grade Point Average (GPA) Score in Social Science After Implementing Digital Reading Strategies and Applications



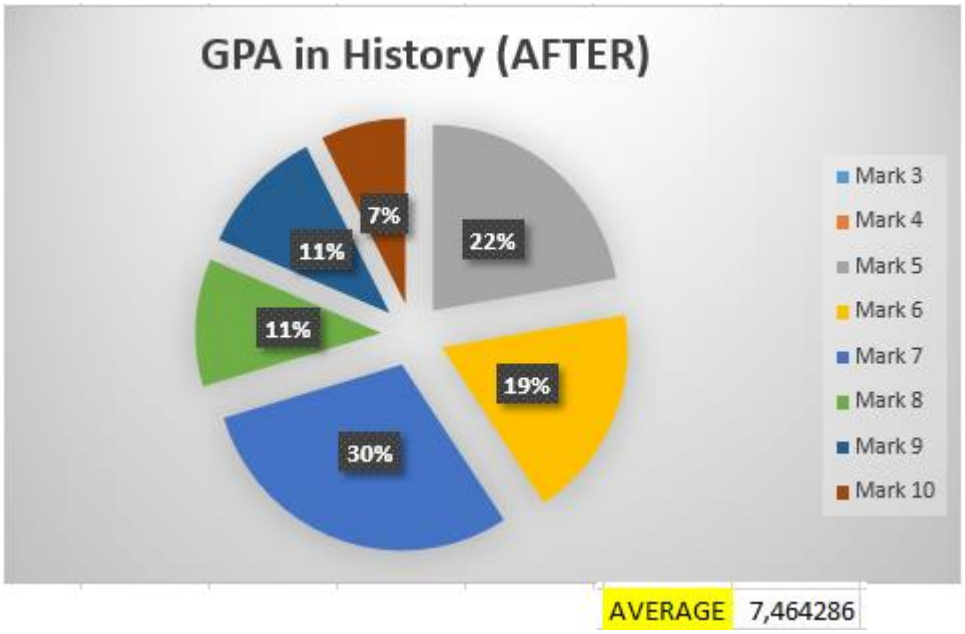
Appendix No. 91

Representation of Grade Point Average (GPA) Score in History Before Implementing Digital Reading Strategies and Applications



Appendix No. 92

Representation of Grade Point Average (GPA) Score in History After Implementing Digital Reading Strategies and Applications



Appendix No. 93

Interview Base Questions Before Implementing Digital Reading Strategies and Applications

1. Cik svarīga ir lasītprasme Jūsu priekšmetā?
2. Cik lielā mērā skolēni spēj patstāvīgi atrast nepieciešamo informāciju izmantojot internetu?
3. Kā Jūs vērtētu skolēnu spējas izgūt un aprakstīt informāciju, kas atrasta patstāvīgi internetā?
4. Kādi, Jūsuprāt, ir skolēnu galvenie izaicinājumi, lasot interneta vidē?
5. Vai esat ievērojis/usi kādas īpašas lasīšanas stratēģijas bērni izmanto, pārrunā, lai lasot digitāli labāk izprastu tekstu? Ja tā, vai varat nosaukt?
6. Kā nosakāt, vai, attālināti mācoties, uzdevuma izpildē traucējusi lasītprasme vai nepietiekamas zināšanas par konkrēto tematu?
7. Kā, Jūsuprāt, iespējams bērnos pilnveidot digitālo lasītprasmi?

Appendix No. 94

Interview Base Questions After Implementing Digital Reading Strategies and Applications

1. Vai un kā mainījusies skolēnu attieksme pret lasīšanu Jūsu priekšmetā?
2. Vai esat ievērojis/usi kādas īpašas lasīšanas stratēģijas bērni izmanto, pārrunā, lai digitāli lasot labāk izprastu tekstu? Ja tā, vai varat nosaukt?
3.Kas, Jūsuprāt, ir visvērtīgākā stratēģija, ko jaunieši izmanto lasot digitāli un kāpēc?
4. Kā Jūs novērtētu lasītprasmes veicināšanas lietojumprogrammas (Speechify, Quizlet, Adobe Acrobat) izmantošanas lietderīgumu lasītprasmes pilnveidei?

5. Kā Jūs novērtētu digitālo prāta kartēšanas stratēģijas (LucidChart, Freemind) lietderīgumu digitālās lasītprasmes pilnveidē?
6. Kā šobrīd novērtētu konkrētās klases vidējo digitālās lasītprasmes līmeni?

Appendix No. 95

Transcription of the Interview With Social Science Teacher Before Implementing Digital Reading Strategies and Applications

Date: 06.09.2021. Time**:** 8:00-8:25 Location: Saulkrasti, empty classroom

Labrīt!

Labrīt! Nāc iekšā un droši iekārtojies!

Paldies! Gribu tev teikt lielu paldies par to, ka atradi laiku, lai īstenotu šo interviju. Šī intervija nepieciešama mana maģistra darba ietvaros un dati netiks publicēti. Visas atbildes, ko sniegsi, ir anonīmas un paredzētas tikai, lai atspoguļotu vispārējās tendences.

Labi, prieks dzirdēt! Es…emm...esmu gatava taviem jautājumiem!

1. Sākumā pastāsti, cik svarīga ir lasītprasme tavā priekšmetā?

Vadu ekonomiku un sociālās zinības un lasītprasme ir ļoti svarīga abos priekšmetos. Sociālās zinībās bieži ir jālasa dažādi likumi, nu...emm.. piemēram, administratīvais likums, vai krimināLatbildības likums, jāpārzina savas un darba tiesības, jāspēj izlasīt arī grāmatas un pats svarīgākais…. no visa teksta daudzuma jāspēj izvilkt to svarīgāko, tad to informāciju pārbaudīt, kas nozīmē, ka jāorientējas dažādos tekstos un valodas stilos, sākot ar zinātnes valodu un beidzot ar literatūras valodu. Līdzīgi arī ekonomikā, tikai ekonomikā klāt vēl jāspēj izprast likumsakarības starp vienas tēmas ietekmi uz otru, jāspēj izprast ekonomikas likumus un formulas, un lai tos saprastu ir ļoti nepieciešama koncentrēta lasītprasme, jo jāspēj filtrēt informāciju. Lasītprasme tieši palīdz atšķirt vienu ekonomikas likumu no otra, piemēram orientēties pieprasījuma un piedāvājuma likumsakarībās un atšķirībās..

2. Tu minēji, ka svarīgi, lai skolēni spētu orientēties dažādos tekstos un izvilkt svarīgāko, kā tev šķiet, cik lielā mērā skolēni spēj patstāvīgi atrast nepieciešamo informāciju izmantojot internetu?

Nu...*(pauze)*...Gribētos, lai varētu labāk, jo…kā saka… skolēnus meklēt informāciju, filtrēt to un pārbaudīt ir jāmāca ka atsevišķu prasmi. Jaunieši ļoti daudz laika pavada tehnoloģijās, bet

tajā pat laikā, kad ir uzdevums pārbaudīt hipotēzi vai konkrēta likuma pantu, samulst un nesaprot ar ko sākt. *(pauze)*...ļoti bieži vajag izrunāt, ko darīt pa soļiem, lai spēj sameklēt vajadzīgo informāciju.

3. Kā tad tu vērtētu skolēnu spējas izgūt un aprakstīt informāciju, kas atrasta patstāvīgi internetā?

Godīgi sākot švaki *(nopūšas),* špikerus skolēni taisīt nemāk, plus, ņemot vērā, ka no interneta nevajag pārrakstīt ar roku, pietiek nospiest copy un paste, līdz ar to skolēni pierod pārrakstīt, nevis izvilkt galveno domu…Bieži nākas saskarties ar prezentācijām, kur nolasa tekstu, kas pārkopēts un, kad prasi, lai tagad izstāsta saviem vārdiem, sākas misēkļi un problēmas. Nolasot tekstu skolēns jau nefiltrē, ko nolasījis, nolasa nevis priekš savas sapratnes, bet vairāk priekš manis kā skolotājas. Es vienmēr cenšos dot speciālus lasītprasmes uzdevumus, kur obligāti jāpasvītro atslēgasvārdi, vai jāizvelk galvenās domas un jāapraksta ar saviem vārdiem, lai rodas izpratne par nolasīto tekstu.

4. Tu jau minēji dažus izaicinājumus saistībā ar tehnoloģiju ietekmi uz atmiņu, bet, kādi, tavuprāt, ir skolēnu galvenie izaicinājumi, lasot interneta vidē?

Lasīt bezjēgā, nespēt koncentrēties tajā, ko lasi. Jo bieži to, ko uzdod lasīt nav jau izklaides literatūra un ja nav lasītprasmes tad skolēna vai vispār cilvēka smadzenes, ja paliek garlaicīgi vai liekas nevajadzīgi atslēdz izpratni… un jauniešiem ar koncentrēšanos ir ļoti švaki, tāpēc… jo lielāks teksta apjoms, jo lielāks izaicinājums to tekstu izprast, ja skolotājs nesadala pa gabaliem un nedot lasītprasmes uzdevumus. Kā saka, jaunietis pazūd teksta blāķī.

5. Lai, kā saki, nepazustu tekstā, kādas lasītprasmes stratēģijas esi novērojusi jauniešus izmantojam?

Cik es pati novēroju, visvieglāk jaunieši darbojas ar atslēgvārdu pasvītrošanu un galvenās domas izvilkšanu. Ja vēl šim klāt nāk kāda vizuālizācija, piemēram bukleta vai plakāta izveide, tad skolēnam vieglāk gan saprast par ko viņš lasa vai par ko konkrēta tēma, gan izstāstīt tā, ka saprot gan viņš par ko ir runa, gan pārējie. Vismazāk strādā Power Point prezentācijas, vai tad ir jāaizliedz teksti, bet jāļauj savai domai piemeklēt tikai bildi. Vizualizācija pie tekstiem jauniešiem patīk.

6. Nav noslēpums, ka pagājušajā gadā lielākoties strādājām attālināti. Kā tu nosaki, vai mācoties attālināti, uzdevuma izpildē traucējusi lasītprasme vai nepietiekamas zināšanas par konkrēto tematu?

Tie paši copy paste teksti. Un cik pilnas atbildes sniegtas uz jautājumiem, ko es uzdevu, kā skolotāja tēmas beigās.

7. Kā, tavuprāt, iespējams bērnos pilnveidot digitālo lasītprasmi?

Ar vizualizācijām, uzdodot veidot video par apgūto tēmu. Man ekonomikā bija labs piemērs, kad attālināti mācījāmies par ekonomiskām krīzēm un likumsakarībām starp tām. Arī bija ļoti daudz tekstuālā materiāla, jo mazliet tika paķerta vēsture. Un tad pirmais uzdevums bija izveidot tīkla diagrammu, kas jau licis izvilkt svarīgāko un salikt piemēram Padlet.com vai Miro.com savā ziņā prezentācijas, bet bez copy paste teksta blāķiem. Tas licis jauniešiem arī tekstu sev pierakstīt ar roku un varēja just, ka katra runa tika diezgan pārdomāta. Un tad beigās viņiem vajadzēja izveidot esošas krīzes Valdības sižetu iejūtoties Valdības ādā... tad darbs ar tekstiem iet raitāk, arī digitāli.

Liels paldies par tavām atbildēm un veltīto laiku!

Nav par ko, ļoti patīkama saruna, lai tev veicas!

Appendix No. 96

Transcription of the Interview With History Teacher Before Implementing Digital Reading Strategies and Applications

Date: 06.09.2021 Time**:** 12:25 – 12:45 Location: Saulkrasti, Teachers' lounge

Labdien!

Laba diena! Nāc droši sēdies, kamēr neviens vēl nav atnācis!

Paldies! Gribu tev teikt lielu paldies par to, ka atradi laiku šai intervijai. Šī intervija nepieciešama mana maģistra darba ietvaros un dati netiks publicēti. Visas atbildes, ko sniegsi, ir anonīmas un paredzētas tikai, lai atspoguļotu vispārējās tendences.

Viss kārtībā, zinu, kā šādas intervijas norisinās! Jūties ērti un droši jautā, kas jautājams!

1. Sākumā vēlos, lai pastāsti, cik svarīga lasītprasme ir tavā priekšmetā?

Ļoti svarīga. Bez lasītprasmes vēstures procesus un vēsturi kopumā nevar nedz apgūt, nedz izprast. Teiktu, viens no pieciem stūrakmeņiem (valodas lietojums, klausīšanās prasme, runātprasme, rakstīšana un lasītprasme), lai indivīds vispār varētu veiksmīgi izpildīt izglītības sistēmas prasības, integrēties sabiedrībā un veidot dzīves labklājību.

2. Tu minēji piecus stūrakmeņus, kā tev šķiet, cik lielā mērā skolēni spēj patstāvīgi atrast nepieciešamo informāciju izmantojot internetu?

Es teiktu, ka procentuāli patstāvīgi spēj atrast 12% no izglītojamiem, tie, kuriem vai nu vecāki brāļi, vai māsas mācījuši, kā meklēt informāciju izmantojot internetu, vai tie, kuri paši izkoduši moderno tehnoloģiju līkločus... Bet nu, tāpat, ja pat informāciju var atrast, nu iegūglēt pareizo terminu, izgūt to galveno, to esenci no teksta, var ļoti ierobežots skaits skolēnu… Bet vēsturē informācijas apjoms ir pamatīgs.

3. Tu jau minēji, ka jauniešiem, pat atrodot informāciju, ir problēmas no tās izgūt svarīgāko, kā tu vērtētu skolēnu spējas izgūt un aprakstīt informāciju, kas tomēr ir atrasta patstāvīgi internetā?

Diezgan zemas, attālinātā mācību procesā šis līmenis ir krietni krities. Jauniešiem trūkst izpratne par lasīto, zems vārdu krājums, ļoti vāja mēdijpratība. Manuprāt, skolēniem dzimtajā valodā sagādā grūtības aprakstīt informāciju, kur nu saprast cēloņsakarības, kas saistītas ar vēstures procesiem. Jaunieši arī atrasto informāciju reti saista ar mācību priekšmetu, nu, piemēram, kad vēsturē bija jāatrod terminu skaidrojumi, jaunieši varēja mierīgi izmantot internetu, taču, kādas tik atbildes es nesaņēmu uz jautājumiem par to, kas, piemēram, ir demokrātija, kas ir Divupe un tamlīdzīgi. ...*[pauze]*... Man rodas sajūta, ka skolēni pagrābj pirmo avotu, kas ir atrasts un, pat neizlasot, par ko ir teksts, sāk pārkopēt, lai tik ir atbildēts jautājums.

4. Tu minēji attālinātās mācības, kā vienu no iemesliem zināšanu līmeņa izmaiņām, kas, tavuprāt, ir skolēnu galvenie izaicinājumi, lasot interneta vidē?

Zema mēdijpratība un viena viedokļa skatījums. Skolēni reti, ja vispār, apskata vairākus avotus un tos salīdzina… Viņi neatšķir īstenību no viltus un tāpēc nespēj lasīto kritiski izvērtēt. Tas gan ir interesants fenomens, manuprāt, jo jaunieši visu laiku ir pielipuši mobilā telefona ekrānam, kur taču ir jābūt kaut kādai informācijai teksta formātā, bet, cik novēroju, rūgtā realitāte pierāda, ka jaunieši pievērš uzmanību tikai attēliem un video, kas arī ietekmē spējas lasīt.

5. Ja runājam konkrēti par lasītprasmes stratēģijām, vai esi ievērojis kādas īpašas lasīšanas stratēģijas bērni izmanto, lai, lasot digitāli, labāk izprastu tekstu?

Pārskatīšana un caurskatīšana jeb tā sauktā lasīšana pa diagonāli.

6. Kā, attālināti mācot, noteici, vai uzdevuma izpildē traucējusi lasītprasme vai nepietiekamas zināšanas par konkrēto tematu?

Nu, ja nav zināšanu par konkrētu tēmu vai arī nav viedokļa, tad skaidrs, ka problēma ir nepietiekamās zināšanās. Ja, savukārt, tiek iesniegtas atbildes, kas vairāk izskatās pēc vārdu savārstījuma no kāda avota, tad varētu teikt, ka traucējusi lasītprasme, respektīvi, skolēnam nav pietiekoši attīstīta paškontrole, lai tekstu izlasītu un nav attīstītas kritiskās domāšanas prasmes, lai no teksta izgūtu svarīgāko un to aprakstītu saviem vārdiem.

7. Kā, tavuprāt, iespējams bērnos pilnveidot digitālo lasītprasmi?

Piedāvāt interesantus un mūsdienām aktuālus tekstus un pēc tam iesaistīt uzdevumu izveidē digitālās platformās. Mani favorīti personīgi ir krustvārdu mīklu veidotājplatformas un kahoot.

Liels paldies, ka atradi laiku šai intervijai!

Nav par ko, lai tev veicas!

Appendix No. 97

Transcription of the Interview With Mathematics Teacher Before Implementing Digital Reading Strategies and Applications

Date: 06.09.2021 Time**:** 15:00 – 15:25 Location: Saulkrasti, Teachers' lounge

Labdien!

Sveika.

Gribu tev teikt lielu paldies par to, ka atradi laiku šai intervijai *(apsēžas).* Šī intervija nepieciešama mana maģistra darba ietvaros un dati netiks publicēti. Visas atbildes, ko sniegsi, ir anonīmas un paredzētas tikai, lai atspoguļotu vispārējās tendences.

Labi, anonimitātes garants ir. Varam turpināt *(pasmaida)*

1. Sākumā vēlos, lai pastāsti, cik svarīga lasītprasme ir tavā priekšmetā?

Priekšmets, kuru mācu, ir matemātika. Matemātikā kā jebkurā citā priekšmetā, lasītprasme ir ļoti svarīga. It sevišķi teksta uzdevumu un aprēķina uzdevumos ģeometrijā. Būtībā, problēmas teksta uztverē jeb ierobežota lasītprasme automātiski nozīmē arī problēmas matemātikas teorēmu apguvē un pielietojumā.

2. Cik lielā mērā skolēni spēj patstāvīgi atrast nepieciešamo informāciju izmantojot internetu?

Nepieciešamo informāciju, protams, ka var atrast internetā, taču patstāvīgi to spēj tikai neliela daļa skolēnu. Lielākajai daļai tomēr nepieciešams paraugs, kā meklēt vai kāda atbildīgā persona, kas koriģē meklēšanas un izgūšanas procesu. Jauniešiem ir lielas problēmas atrast tieši nepieciešamo informāciju, jo internetā ir ļoti liels informācijas apjoms, kurā var apjukt ne tikai jaunieši.

3. Tu jau minēji, ka interneta vidē ir liels informācijas apjoms, kurā iespējams apjukt. Kā tu vērtētu skolēnu spējas izgūt un aprakstīt informāciju, kas atrasta patstāvīgi internetā?

Es teiktu, ka skolēniem šī spēja ir nevienlīdzīgi apgūta, jo ir skolēni, kuri labi orientējas interneta vidē un spēj ne vien atrast vajadzīgo informāciju, bet paralēli arī izgūt informāciju par to, kas meklēšanas gaitā šķitis interesants. Tajā pašā laikā, ir skolēni, kuriem šī spēja ir vidēji attīstīta, bet, teikšu smagi *(pauze)*... nav attīstīta nemaz. Tā ir tāda kā plaisa, kas sašķeļ klasi daļās. Personīgi domāju, ja skolēns ir spējis atrast vajadzīgo informāciju internetā, uzskatu, ka viņš ir daļēji apguvis mācību vielu, jo spēj orientēties interneta vidē, meklējot vajadzīgo matemātikā.

4. Kādi, tavuprāt, ir skolēnu galvenie izaicinājumi, lasot interneta vidē?

Konkrēti matemātikā, man šķiet, ka ir tik daudz informācijas un pamācības par dažādiem tematiem, ka skolēni gluži vienkārši nespēj izvēlēties un, pat ja izvēlas, nepadomā, ka varētu aplūkot vēl kādu avotu. Matemātikā ir gan avoti, kas sastāda risinājumu gaitu pa punktiem, gan tādi, kas piedāvā video pamācības, skolēni bieži paši neapzinās savas stiprās puses, tāpēc nezina, kuru avotu labāk izvēlēties. Nu... un... protams, zināšanu trūkums, ja katrs vārds, ko skolēns lasa šķiet kā svešvārds, tad ir pavisam vienalga, vai viņš lasa internetā vai uz lapas.

5. Vai esi ievērojusi kādas īpašas lasīšanas stratēģijas bērni izmanto, pārrunā, lai lasot digitāli labāk izprastu tekstu?

Manās stundās skolēni dažreiz veic zīmējumu teksta uzdevumam. Piemēram, lai aprēķinātu, cik flīžu nepieciešams konkrēta izmēra grīdai, skolēni bieži vizualizē teksta uzdevumu.

6. Kā, attālināti mācot, noteici, vai uzdevuma izpildē traucējusi lasītprasme vai nepietiekamas zināšanas par konkrēto tematu?

Attālinātajā mācību procesā, protams, ka lielu lomu spēlē lasītprasme. Ja skolēns nav lasījis uzdoto teoriju, tad zināšanu arī nav pie uzdevumu atrisināšanas. Tas vairāk ir attiecināms uz jaunākā pusaudžu vecuma skolēniem, jo šis laiks piespieda viņus būt ļoti pašvadītiem un pašmotivētiem, kas, manuprāt, ir spējas, kas vēl ir tikai attīstības stadijā šajā posmā. Matemātikā lasītprasme un zināšanas iet kopsolī. Ja neesi lasījis, nav zināšanu. Nav zināšanu, jo neesi lasījis.

7. Kā, tavuprāt, iespējams bērnos pilnveidot digitālo lasītprasmi?

Manuprāt, bērni 21.gs. lielākā daļa vispār nelasa. Pirmkārt, tas ir redzams jau e- klases dienasgrāmatā. Skolēns nemāk atrast vajadzīgo mācību priekšmetu un uzdoto. Digitālo lasītprasmi, domāju, ka var pilnveidot uzdodot interesantu uzdevumu vai tēmu, kura interesē mūsdienu jauniešus un lūdzot izveidot vai nu prezentāciju vai izveidot kādu citu jaunrades darbu par lasīto.

Liels paldies, ka atradi laiku šai intervijai!

Paldies, lai tev izdodas!

Appendix No. 98

Transcription of the Interview With Social Science Teacher After Implementing Digital Reading Strategies and Applications

Date: 12.10.2021. Time**:** 8:00-8:25 Location: Saulkrasti, empty classroom

Labrīt!

Sveika! *(norāda uz krēslu)* Sēdies!

(apsēžas) **Paldies, ka piekriti atkārotai intervijai. Ir gan pagājis mēnesis kopš mūsu pirmās intervijas, taču ceru, ka spēsi atsaukt atmiņā savu pieredzi ar konkrēto klasi. Pirms jautājumu uzdošanas gan atkal atkārtošu, ka sniegtās atbildes netiks publiskotas un ir anonīmas, nepieciešamas tikai maģistra darba izstrādē, lai pētītu vispārējās tendences.**

Viss kārtībā! Droši, sāc! *(smaida)*

1. No sākuma vēlos, lai pastāsti, vai skolēnu attieksme pret lasīšanu tavā priekšmetā ir mainījusies?

Nu, ir mainījusies gan. Jaunieši mazāk mulst no lielākiem tekstu krājumiem un teksta daudzuma. Jauniešiem pie rokas ir vairāki soļi, kā viņi var strādāt ar tekstu un to izprast, galvenais atstāstīt ar saviem vārdiem, ieliekot arī savu domu. Daudz mazāk ir cīņas ar copy paste tekstiem un prezentācijām. Un vairāk nav bailes darbā arī ar tekstiem, kas skaitās garlaicīgi vai galīgi nesaprotami, piemēram likumi.

2. Vai esat ievērojusi kādas īpašas lasīšanas stratēģijas bērni izmanto, lai digitāli lasot labāk izprastu tekstu?

Joprojām vislabāk patīk izvilkt galveno un taisīt vizualizācijas. Skolēni man nesen stāstīja, ka viņiem ļoti patīk taisīt ideju zirnekļus pirms eseju rakstīšanas, tas man bija jaunums, jo tāda, mērķtiecīga gatavošanās rakstiskajam darbam nelikās raksturīga šim vecumposmam.

3. Kas, tavuprāt, ir visvērtīgākā stratēģija, ko jaunieši izmanto lasot digitāli?

Pēc būtības vislabāk sanāk, kad ir uzdevumi, kas veicami teksta lasīšanas laikā un uzdevumi pēc lasīšanas – iegūtās pieredzes kritiska izvērtēšana un izmantošana jaunās situācijās. Ir svarīgi, lai viņi zina, kā informāciju meklēt un analizēt, ja tie ir ideju zirnekļi, kas palīdz viņiem organizēt savu viedokli un neapmulst tajā informācijas daudzumā, kāpēc ne.

4. Pēc mūsu pirmās intervijas nosūtīju tev lietojumprogrammas ar kurām strādāsim un darbības aprakstu. Kā tu novērtētu lasītprasmes veicināšanas lietojumprogrammas Speechify, Quizlet un Adobe Acrobat izmantošanas lietderīgumu lasītprasmes pilnveidei?

Par Adobe Acrobat man gruti spriest, man dators tādu neņem pretī. Bet, pēc tā, ko lasīju, izskatījās ļoti interesanti un vizuāli pievilcīgi. Ja skolēniem šādu lietojumprogrammu dators var pavilkt, tad, domāju, tas varētu veicināt arī pozitīvu attieksmi pret lasīšanu vispār. Bet par Quizlet varu teikt tikai to labāko, jo kartes dod iespēju arī iekļaut spēļu elementus un esošie skolēni bieži vieglāk apgūst informāciju spēlējot, debatējot, vizualizējot. Līdz ar to Quizlet ir ļoti labs palīgs īpaši priekšmetos, kur jāatceras daudz formulas, teorēmas un jēdzieni.
Par Speechify, es teiktu tā… man pašai grūtāk uztvert, jo man nav tik attīstīta audiālā uztvere, bet novēroju, ka skolēniem tekstus patīk vairāk klausīties, nekā lasīt: podkāsti, grāmatas, līdz ar to no digitālās lasītprasmju stratēģijas šī lietojumprogramma noteikti ir lielāks palīgs esošai jaunai paaudzei apgūt un iemācīties tēmu, klausoties tekstu.

5. Pēc mūsu pirmās intervijas nosūtīju tev arī prāta kartēšanas lietojumprogrammas ar kurām strādāsim un darbības aprakstu. Kā tu novērtētu LucidChart un Freemind lietderīgumu digitālās lasītprasmes pilnveidē?

Ļoti pozitīvi, līdzīga programma, kuru minēju ir arī miro.com. Šīs digitālo prāta kartēšanas stratēģijas ļoti palīdz gan strukturēt tekstu, gan izvilkt svarīgāko, bieži pat uzrakstot ar saviem vārdiem un savu domu, jo copy paste šeit nav iespējams, nepietiks vietas teksta blāķim, un jaunieši spiesti izvilkt galveno domu un spēt to paskaidrot.

6. Kā šobrīd novērtētu konkrētās klases vidējo digitālās lasītprasmes līmeni?

Ja līdz tam bija švaki, tad šobrīd vidējais līmenis, vai pat drusku virs vidējā.

Liels tev paldies par interviju un veltīto laiku!

Appendix No. 99

Transcription of the Interview With History Teacher After Implementing Digital Reading Strategies and Applications

Date: 13.10.2021 Time**:** 8:00 – 8:25 Location: Saulkrasti, Teachers' lounge

Sveiki!

Sveika! Droši nāc iekšā un sēdies *(norāda uz krēslu pretī)*

Paldies! Tāpat jau sākumā teikšu lielu paldies, ka piekriti atkārotai intervijai. Pirms jautājumu uzdošanas gan atkal atkārtošu, ka sniegtās atbildes netiks publiskotas un ir anonīmas, nepieciešamas tikai maģistra darba izstrādē, lai pētītu vispārējās tendences.

Protams, ka piekritu, atceros savus studiju laikus…studentiem jāpalīdz! *(smaida)*

1. Ir pagājis mēnesis kopš mūsu pēdējās intervijas, pastāsti, vai skolēnu attieksme pret lasīšanu tavā priekšmetā ir mainījusies?

Nu, kā to ņem *(iesmejas)*... nepatīk viņiem lasīt, tas nav tik interesanti, kā spēlēt spēlītes vai videoklipus skatīties visādos *instagramos* un *tiktokos*, bet, tagad mazāk atklāti žēlojas par teksta apjomu, kas jālasa.

2. Vai esi ievērojis kādas īpašas lasīšanas stratēģijas bērni izmanto, lai digitāli lasot labāk izprastu tekstu?

Ievērojis esmu tikai to, ka lasot grāmatā daudzi skolēni seko tekstam līdzi ar pirkstu vai pat pasvītro tekstu... *(pauze)*...Protams, tā kā vēsturē materiāli ir jālasa arī digitāli, mājās, pie datora vai telefona, esmu dzirdējis, kā jaunieši savā starpā pārmij savu pieredzi. Nesen dzirdēju, ka kāda meitene stāstīja, ka, gatavojoties pārbaudes darbam, veido konspektus, ko papildina ar atslēgas vārdiem un tos pasvītrojot, kāds zēns par to gan smējās un ietieca viņai labāk internetā taisīt asociācijas caur ideju zirnekļiem *(parausta plecus)*... Man stundā bija tāds atgadījums, ka skolēns jautāja, vai drīkst izmantot telefonu, lai noskaidrotu, nozīmi kādam vārdam, kas minēts tekstā, es atļāvu... *(pauze),* nākamajā stundā jau pārītis skolēnu šādi izmantoja telefonu, pirms kontroldarba gan es telefonus noteikti konfiscēšu (pasmaida).

3. Kas, tavuprāt, ir visvērtīgākā stratēģija, ko jaunieši izmanto lasot digitāli?

Nu man jau vispār šķiet, ka vērtīga stratēģija ir tā, kas palīdz jauniešiem kritiski analizēt tekstu un izvilkt galveno domu no lasītā, tāpēc, teikšu, ka jebkura prāta kartēšana vai to pašu konspektu veidošana ir laba stratēģija, lai pilnveidotu šīs prasmes. Tajā pat laikā, svarīgi ir arī mācēt meklēt informāciju, tāpēc būtiski, ka jaunieši apzinās, kā notiek meklēšana internetā, kā iespējams sekot informācijas pavedieniem un, ka nav jāgrābj pirmais, kas izlec ārā no *gūgles*!

4. Pēc mūsu pirmās intervijas nosūtīju tev lietojumprogrammas ar kurām strādāsim un darbības aprakstu. Pastāsti, kā tu novērtētu lasītprasmes veicināšanas lietojumprogrammas Speechify, Quizlet un Adobe Acrobat izmantošanas lietderīgumu lasītprasmes pilnveidei?

Jā, par to tev vēlējos pateikt lielu paldies, jo man pašam nākas bieži lasīt lielu teksa apjomu datorā, bet ātri nogurst acis, nav vairs tas vecums (iesmejas)… Pēc tava izveidotā apraksta un pamācības es lejupielādēju Speechify un pats sāku klausīties tekstus, jo angļu valodā lasīt varu, bet… nu lēni man iet. Ar to lietojumprogrammu ļoti raiti uz priekšu iet lasīšana, un valoda tik gluda un patīkama ausij, pievērš uzmanību. Domāju, ka jauniešiem arī Speechify likās lietderīgs, jo tas būtībā ir tā pati audio grāmata, ko jaunieši tik ļoti atzinīgi novērtē, tikai šajā gadījumā, par audio grāmatu var kļūt jebkurš fails. Quizlet zināju un pielietoju jau iepriekš, tikai nezināju, ka tur ir tik plašas iespējas no viena atmiņu karšu uzdevuma izveidot vēl citus, kur skolēniem būtu jāraksta definīcijas testa veidā. Pielietoju to savās stundās ikdienas darbā un varu teikt, ka skolēni to uztver kā spēli, bet patiesībā, tajā momentā iemācās ļoti daudz, jo tas balstīts tomēr sacensībā un skolēniem patīk pierādīt savu spējīgumu. Adobe Acrobat man dators diemžēl neatļāva lejupielādēt, bet pati lietojumprogramma izskatījās ļoti vizuāli pievilcīga. Vienīgi, domāju, ka šī programma noteikti būtu jāpiedāvā sadarbībā ar informātikas

skolotāju, jo priekšmeta skolotājam aizņemtu ļoti daudz laika no kontaktstundām, lai iemācītu bērnus tajā darboties, nemaz nerunājot par to, cik ļoti tikmēr tiktu iekavēta mācību viela. Tā ir diezgan sarežģīta, noteikti jābūt kādam vecumposmam, kuram to var piedāvāt…mmm…nedomāju, ka tas būtu jaunākais pusaudžu vecumposms.

5. Pēc mūsu pirmās intervijas nosūtīju arī dažas no digitālajām prāta kartēšanas lietojumprogrammām, kuras izmantosim mācību procesā. Kā tu novērtētu digitālo prāta kartēšanas stratēģijas LucidChart un Freemind lietderīgumu digitālās lasītprasmes pilnveidē?

Prāta kartēšana man vispār šķiet ļoti noderīga un vērtīga stratēģija, pat ja tiek darīta uz papīra, jo palīdz izprast tekstu un, tādējādi, arī cēloņsakarības, kas ir stūrakmens vēstures procesiem. Iepazīstoties ar abām kartēšanas lietojumprogrammām, man vislabāk patika Freemind, jo tur bija ērti gan rakstīt, gan ievietot attēlus, kā arī, ir jau kaut kādas sagataves, paraugi, kurus var paņemt kā skeletu. Tas skolēniem noteikti ir ļoti noderīgi. LucidChart šķiet nedaudz sarežģītāks, man arī tur kaut kas ik pa laikam kā saka … emm… nesavienojās, iespējams, interneta pārklājuma dēļ.

6. Nobeigumā vēlos jautāt, kā šobrīd novērtētu konkrētās klases vidējo digitālās lasītprasmes līmeni?

Es domāju, ka viņi ir ceļā uz adekvātu lasītprasmes līmeni. *(pauze)* Ar to es domāju, ka viņiem ir potenciāls un stratēģijas, lai kļūtu par analītiskiem lasītājiem, kas spēj internetu izmantot, lai maksimālizētu teksta galvenās domas uztveršanu un interpretēšanu. Vēl, protams, nepieciešama prakse un situācijas, kur šīs jaunās prasmes nostiprināt.

Liels paldies, ka atradi laiku šai intervijai!

Visu labu, Līga.

Appendix No. 100

Transcription of the Interview With Mathematics Teacher After Implementing Digital Reading Strategies and Applications

Date: 14.10.2021 Time**:** 8:00 – 8:25 Location: Saulkrasti, Teachers' lounge

Sveiki!

Sveika! Lūdzu *(norāda uz krēslu).*

Paldies! Izsaku lielu pateicību, ka piekriti atkārotai intervijai. Pirms jautājumu uzdošanas gan atkal atkārtošu, ka sniegtās atbildes netiks publiskotas un ir anonīmas, nepieciešamas tikai maģistra darba izstrādē, lai pētītu vispārējās tendences.

Protams. Turpini droši *(pasmaida).*

1. Ir pagājis mēnesis kopš mūsu intervijas, pastāsti, vai skolēnu attieksme pret lasīšanu tavā priekšmetā ir mainījusies?

Es teiktu, ka jā, taču ne tradicionālajā izpratnē. Redzi, es pasniedzu matemātiku, tas nav īsti priekšmets, kurā skolēns tiktu iepazīstināts ar sarežģītiem un gariem tekstiem, taču, šī priekšmeta apguvei lasītprasme ir fundamentāla. Cik novēroju, skolēni daudz uzmanīgāk izturas pret teksta uzdevumiem, pārlasa, ja kaut kas nav skaidrs un nesteidzas teikt, ka neko nesaprot.

2. Vai esi ievērojis kādas īpašas lasīšanas stratēģijas bērni izmanto, lai digitāli lasot labāk izprastu tekstu?

Kā viņi lasa mājās pie datora vai telefona es nezinu, taču, kad piedāvāju mājasdarbus, kas jāveic e-klasē, virtuāli, man atpakaļ nāk dokumenti, kuros tekstā ir veikti pasvītrojumi vai vārdi iezīmēti treknrakstā. Kad biju karantīnā, mācību darbs notika attālināti, kas gan nav nekāds jaunums, salīdzinot ar iepriekšējo gadu, bet mani pārsteidza, ka ievietojot materiālus Google Docs, daži jaunieši reāllaikā rakstīja komentārus maniem labojumiem, radās sajūta, ka notiek dialogs. Šādi ļoti ātri bija iespējams identificēt, kur tieši skolēns bija kļūdījies, vai kāpēc šāda kļūda notikusi.

3. Kas, tavuprāt, ir visvērtīgākā stratēģija, ko jaunieši izmanto lasot digitāli?

Es teiktu, ka jebkura stratēģija, kas māca, kā meklēt informāciju internetā ir vērtīga. Es domāju, ka skolēniem ir svarīgi apzināties, ka vienlaicīgi meklētājā var atvērt vairākus logus un tajos meklēt informāciju, pārbaudīt atrasto un, ja nepieciešams, izmantot vārdnīcu internetā.

4. Pēc mūsu pirmās intervijas nosūtīju tev lietojumprogrammas ar kurām strādāsim un darbības aprakstu. Pastāsti, kā tu novērtētu lasītprasmes veicināšanas lietojumprogrammas Speechify, Quizlet un Adobe Acrobat izmantošanas lietderīgumu lasītprasmes pilnveidei?

Speechify pats par sevi ir kā audio grāmata, es aplūkoju un man patīk koncepts, domāju, skolēniem ar spēcīgi attīstītu audiālo uztveri šis rīks būs un ir ļoti noderīgs. Ar Quizlet strādāju

arī pati, tas ļauj skolēniem iegaumēt likumus, teorēmas un tā var pārbaudīt arī, piemēram, reizrēķina zināšanas. Pēdējā lietojumprogramma man šķita ļoti interesanta un, to var tieši izmantot arī matemātikas stundām, jo uzdevumu faili bieži ir pdf formātā, ja es, kā skolotājs, pie katra uzdevuma varu vēl pielikt līmlapiņu, lai atgādinātu par konkrētas formulas vai toerēmas pielietojumu, domāju, tas palīdzētu skolēniem sasniegt labākus rezultātus un neapmaldīties teorēmu un formulu pasaulē, jo tā tiktu sakārtota loģiskā sistēmā.

5. Pēc mūsu pirmās intervijas nosūtīju arī dažas no digitālajām prāta kartēšanas lietojumprogrammām, kuras izmantosim mācību procesā. Kā tu novērtētu digitālo prāta kartēšanas stratēģijas LucidChart un Freemind lietderīgumu digitālās lasītprasmes pilnveidē?

Prāta kartēšana man šķiet vērtīga, jo piedāvā sistēmisku skatījumu uz jebkuru elementu. Savās stundās iekļāvu prāta kartēšanu, lai palīdzētu skolēniem sakārtot zināšanas par pitogora teorēmu vai vienlīdzīgiem trijstūriem. Liela daļa skolēnu ir ar labi attīstītu vizuālo uztveri, līdz ar to, izveidojot šāda veida prāta karti, pimēram, ideju zirnekli, skolēni daudz labāk izprot, kādi elementi viedo lielo terminu. Man pašai patika Freemind, jo tajā jau bija izveidotas sagataves, līdz ar to, tas palīdz ekonomēt laiku.

6. Nobeigumā vēlos jautāt, kā šobrīd novērtētu konkrētās klases vidējo digitālās lasītprasmes līmeni?

Tā kā šie skolēni šobrīd apzinās interneta pasaules iespējas un informācijas apjomu tajā, kā arī, parāda, ka cenšas pielietot kāda veida informācijas strukturēšanu, teikšu, ka klases digitālās lasītprasmes līmenis ir uzlabojies, taču, lai pilnībā skolēnus sagatavotu gan vidusskolai, gan dzīvei kopumā, ir nepieciešams ieguldīt vēl daudz darba tieši šajā jautājumā.

Liels paldies, ka atradi laiku šai intervijai!

Lai tev veicas!