Perceptions of Language Learners towards the Use of Traditional vs. Digital Mind-Mapping Techniques in English Writing Classes

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Abstract

The application of various creative teaching methods including mind-mapping has attracted English teachers. Instructors have always shown interest in establishing contexts that motivate and encourage learners to be more enthusiastic in their learning process. Mind-mapping is among the teaching and learning techniques evolved in this regard. The study aimed at comparing the perceptions of language learners toward the use of traditional and digital mind-mapping techniques in English writing classes. This descriptive study was conducted on 30 language learners of Shokouh Institute, Tabas, Iran. They were 14-17 years old with an intermediate level of English proficiency. The participants had already received both traditional and digital trainings and mastered the two techniques. The data on the participants' perceptions were collected using questionnaires and interviews. The data analysis showed that the participants had positive perceptions toward mind-mapping, particularly digital technique. Based on the findings of the research, mind-mapping technique has helped the students organize their texts. Mind-mapping could also help English students to develop their writing skills in terms of organizing ideas. Consequently, mind-mapping would especially be suitable to assist students plan their English writing, since the technique stimulates them to obtain and establish a deeper understanding of the writing topics.

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Introduction

Mind-mapping has been regarded as one of the most significant techniques used in the optimization of learning capacities and understand the interconnections of the elements of complex structures. The application of mind-mapping is known as one of the creative strategies employed to enhance learning capacities. This learning method is among prewriting activities usually applied by teachers (Nasution, 2020) to assist students in brainstorming, taking notes, and choosing relevant ideas to the topic of writing visually (Hemmati and Khodabandeh, 2017). Accordingly, it should be noted that the brain works in various ways, so that different people think differently. Nevertheless, whereas individual thinking and reasoning have unique personal structures, most people apply a number of similar techniques. There are certain 'programs' loaded in consciousness and can be considered as individuals' "natural thinking software". These programs are included with the mind when the person enters this world (Ingmann, 2017).

Even though mind maps are typically provided on paper, growing attention has been paid to the application of the computerized forms of this technique, along with other digital educational technologies (Aydoğdu and Güyer, 2019; Chang et al., 2018). Thus, there are two types of mind maps, including a) Traditional mind maps provided using hands and paper and pen or the board, and b) Electronic mind maps following similar steps through application of a computer software, providing branches of ideas which originate from the central one in an automatic context. The electronic mind-mapping uses computers developed mainly for the calculation of information for different objectives such as entertainment, communication, reading, and learning (Aydoğdu and Güyer, 2019).

Apart from the functions of traditional mind maps, this system also provides students with the opportunity to complete and record related information onto the mind map and then promote the integrity of their own knowledge (Chang et al., 2018). Furthermore, it is also possible to edit or move the ideas while adding or moving images and symbols. E-mind maps are applied to represent correlations between ideas and information and need simultaneous thinking on creation of items (Abdulbaset, 2016). Digital mind maps present higher effectiveness and attraction compared to traditional ones as they rely on the use of professionally fast and specialized computer software providing photos, colors, and drawings which can be attractive for the readers. Thus, several authors proposed the use of e-mind-mapping in primary education stages to help learners organize

ideas and information (Davies, 2010). Hence, it is possible to use this method in teaching English, as an important subject, considering the challenges many EFL learners experience in various stages of teaching-learning process.

Mind-mapping can be a useful tool in teaching writing skills. The writing skill problems are among the most significant and prevalent challenges affecting both native English speakers and hundreds of students who learn English as a second or foreign language worldwide. Writing is among the skills whose mastery is necessary for communication in written form. Yet, students consider writing as the most challenging task. Mind-mapping is the primary step to change an idea into a paragraph or a text, helping the students in writing process by providing the easiest way to develop information in a human mind and taking information from out of brain (Bukhari, 2016). As students utilize mind-mapping, they start with an idea at the top or center of the blank piece of paper in the case of traditional methods or on the screen in the case of modern or digital methods. Then, they think of the relevant ideas or words and visualize relationships using boxes, circles, and arrows. Considering the problems students face in writing in English and regarding the benefits mind-mapping can bring in both teaching and learning, this study tried to find out the perceptions of Iranian EFL learners regarding application of both types of mind-mapping technique as one of the prewriting techniques to help them in generating, developing, and organizing their ideas and consequently enhance their English writing abilities.

Literature Review

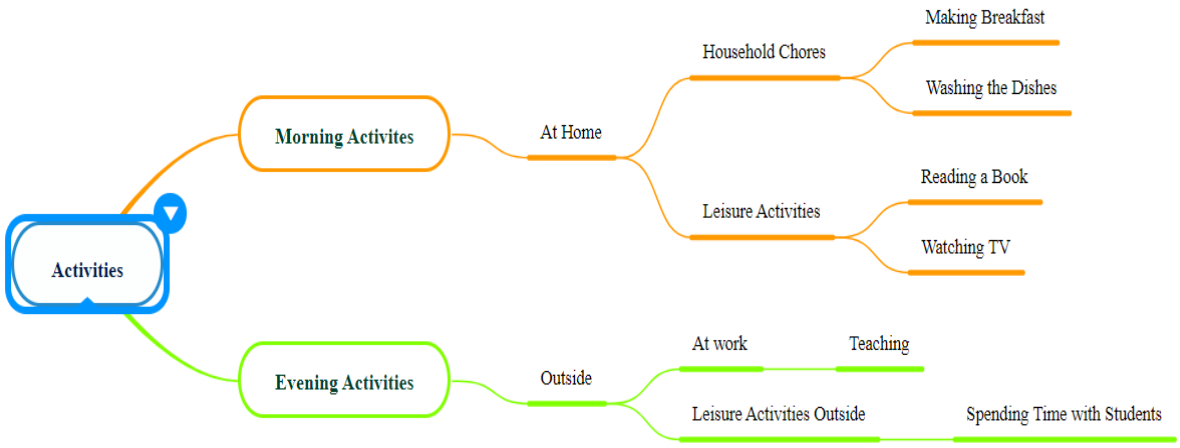
A mind map is an illustrative, networked method for storage, organization, and prioritization of information, which is often done on paper, with the use of key words and pictures, each of which will ‘snap on’ special memories and stimulate new thoughts and concepts. Each memory trigger in a mind map is a key to discovery of facts, ideas, and knowledge and, also, to realization of the real capabilities of humans’ extraordinary minds (Buzan, 2006; cited in Nouri Mohammed, 2013). All mind maps have several features in common. First of all, all of them have an idea or a central concept which is focused as a central image. The next common feature of mind maps is that their main theme radiates outwards from the central depiction as branches. Each branch consists of a key picture, key word, or special value built into the associative line. This line can be spatially organized like one point of a city land mark to another point in the city. Topics of less importance

can be represented as sub-branches. Each branch contains and connects a modal structure connected to the whole structure (Burns, 2014).

In general, a simple template of mind map with the above characteristics can be indicated as follows:

Figure 1

Overall representation of mind maps (Khodabandeh, 2021)



Recently, scholars have focused on this technique to examine its impacts and applications in teaching various areas of knowledge such as languages. Accordingly, the application of mind-mapping has been examined from a variety of dimensions such as its effectiveness in learning vocabulary, improving writing skills, and enhancing reading comprehension. Several studies have been performed in the global context regarding mind-mapping and its association with learning different skills in language learning process. This concept doesn't seem very old and most of the studies have been conducted during 21st century in some countries including UAE, Turkey, Scotland, Prague, and etc. In the following paragraphs some of the studies which have focused on mind-mapping and writing skills, particularly organization and style, are mentioned chronologically.

Hariri and Tahriri (2013) investigated the perceptions of EFL learners regarding the use of mind maps in reading comprehension and revealed the positive perceptions of the participants in

this regard. Nemati, Jahandar, and Khodabandehlou (2014) examined the influence of using mind maps in the role of a prewriting aid on the improvement of and the total quality of Iranian EFL learners' essay writing efficiency at the advanced level. Their results indicated enhancement of the essay writing abilities in the experimental group. Jafari Nodoushan and Haji Maibodi (2014) studied the effects of mind maps on vocabulary usage in the writing of Iranian EFL learners and found that the long-term effect of mind maps was significantly evident in the improvement of vocabulary used in writing tasks of EFL learners participating in the experimental group. Jafari and Zarei (2015) studied the impact of concept mapping on Iranian intermediate EFL learners' argumentative essay writing skill in Isfahan, Iran, and indicated that instruction affected the students' essay writing skill significantly in the experimental group. Erdiana (2016) investigated improvement of students' writing skill with the use of mind-mapping and proved it effectiveness in writing business letters. Ravindranath et al. (2016) carried out a study to find out the student's perception of mind-mapping in problem-based learning (PBL) and found that students' perception was positive after the intervention. Students' comments showed the usefulness of mind maps, even though it was time consuming. Muttaqin (2017) wrote about students' perceptions on the application of mind maps in the classroom at English department and indicated positive feedback from the participants in this regard. Mingili (2019) examined the use of mind maps to develop English majors' essay writing in China and supported its application in stimulating the students' creativity in English essay writing. Everett (2019) investigated students' perceptions of the effectiveness of collaborative maps as a teaching method aimed at facilitating interdisciplinary learning. According to this study, the majority of students believed that the strategy helped them in constructing an interdisciplinary understanding of the problem, and only a few students did not find it useful or were not sure whether the technique facilitated an understanding of the integration process or not.

Concerning the application of modern mind-mapping, Karamifard and Minaeifar (2016) studied the effect of using digital vs. traditional mind-mapping strategy on Iranian young students' perception and revealed that the mind-mapping group showed higher levels of achievement than students in the traditional group in perception. Mohaidat (2018) examined the effects of the e-mind maps on English reading comprehension of 9th grade students in Jordan and found that the e-mind-mapping strategy had significant and positive impacts on the students' English reading

comprehension. Abd Karim and Mustapha (2020) examined the application of digital mind maps to encourage creativity and critical thinking in ESL writing course and found evident stimulation of the students' creativity and critical thinking in completing their writing tasks based on the respondents' perception.

In total, according to the studies some of which were reviewed above, it was clear that in the global context most of the research has been carried out with emphasis on the impact of mind maps on writing skills of students in schools and universities. It should be noted that all these studies have emphasized on the meaningful impacts of mind maps on the writing skills. The interesting common conclusion in all the mentioned studies is that mastery on mind-mapping has helped the participants to develop writing skills and achieve higher gains in writing. Accordingly, as the studies indicate, understanding and communication of ideas take place easier and in a more natural as well as meaningful way using mind-mapping. Moreover, all the studies performed have indicated the positive attitudes toward this technique.

As it was mentioned before, since these studies are new in Iran, there is a lot of space to perform new studies and continue the previous research in order to generalize the existing findings. It is noteworthy that no research has been conducted on the comparison of digital and traditional mind-mapping techniques in Iran, although they have been examined separately. Thus, the present study can fill this gap by focusing on both methods. Considering the objective of the study mentioned above, the following questions were raised:

RQ1.What are the language learners' perceptions towards the application of traditional mind-mapping technique?

RQ2. What are the language learners' perceptions towards the application of digital mind-mapping technique?

RQ3.Which mind-mapping technique is perceived more appealing for the language learners?

Methodology

This section presents a description of the methodology used in the present study. It starts with a description of the theoretical phase of the research, in which the method of searching related articles has been illustrated. Then, in the practical phase, a description of the participants and instruments has been presented along with an elaboration of the procedure employed.

Design and Context of the Study

The study was a non-experimental descriptive research which was carried out online due to the outbreak of COVID-19. The study was performed in a theoretical and a practical phase. The following methodological steps were taken in the first phase in order to provide useful information on the topic: Carrying out an exhaustive literature search with focus on the study variables including mind-mapping, digital mind-mapping, traditional mind-mapping, and related concepts through different search engines such as google scholar, google search, and etc.; Taking previous theoretical attempts into account and extracting the relevant literature; Providing a summary of the relevant papers and grouping them; Organizing the literature value; and Finding a useful framework.

The second phase of the project allocated to the field studies, in which the training was provided and questionnaires were sent to the study participants through online media. For the use of traditional mind-mapping the instructor prepared was videos containing details of the work. For the use of digital mind-mapping the instructor used screen recorder to record the teaching process and then provided the students with the teaching materials to refer to whenever required. Topics were also provided for the students to practice and do the assignments. They were also ensured about confidentiality of the results.

Participants

The study population included 30 language learners of Shokouh Institute in Tabas, Iran, with an intermediate level of English proficiency determined by the institute placement tests. The students were only females at the age range of 14-17 years. Before performing the study, the researcher held a meeting with the learners at the institute site to explain the objectives and the procedures of the research. When the required information was provided, the learners were asked to take part in the research project voluntarily, while ensuring them about the confidentiality of their answers. They were provided with both traditional and digital mind-mapping to apply in their writings and compare them. Table 1 indicates the demographic information of the study population.

Table 1

Demographic Background of the Participants

No. of Students	30
Gender	Female
Native Language	Persian
Age	14-17 years
Education	High school
Academic Year	2019

Instrumentation

Given the fact that the study aimed at comparing the language learners' perceptions regarding the use of mind-mapping technique, interviews were used as the research instruments. Because of the outbreak of COVID-19, face-to-face interviews were not possible; therefore, a written questionnaire was sent to the participants requiring them to give their perceptions on the methods of mind-mapping. The questionnaire has two sections, the first of which explained on the objective of the study and ensured the students on the confidentiality of the information provided by them. Given the culture of the city, some students were still worried about this issue and hesitated to write their opinions freely. In these cases, the researcher talked to them on the phone and explained the process of the study, the objectives, and how they can contribute to the future success of other students. They were again ensured about the confidentiality of their answers, while their valuable role was highlighted. The second section of the questionnaire consisted of 8 questions asking the participants' opinions about the use of both methods, the advantages and disadvantages of each, what they liked or disliked about each method, a comparison of the two methods and their preferred one, and their suggestions on improving the application of each in English classes. The students were given the required time to answer the questions. In the case of unclear or vague answers, they were contacted to obtain more accurate data. The questionnaire is presented in Appendix A.

The learners received identical teaching materials through two different traditional and digital methods. In traditional mind maps, the learners were asked to draw maps with hands using paper and different colors, whereas in the digital mind-mapping, the learners were encouraged to use Mindomo application to draw their maps. Mindomo is very easy to download, install and work.

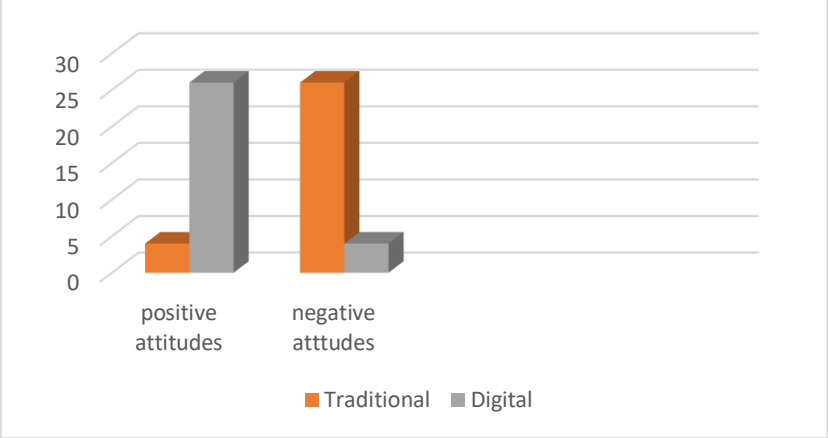
The students were taught how to download and use the software. It should be noted that Mindomo is also interesting because it uses different colors and styles in drawing the maps. During intervention, the learners received writing tasks which asked them to write a paragraph. The essay length and relevant components to the tasks and skills were stated in the test instructions. The researcher was always available to answer the students' questions through phone calls or social media. At the end of intervention, all of the learners were interviewed in order to collect their perceptions and then compare them. Examples of both traditional and digital mind maps are provided along with the topics of writings in Appendices B and C. Quantitative analysis was used to examine the students' perception regarding the application of two types of mind maps in learning writing.

Results

A comparison of the perceptions of the students regarding the two types of mind-mapping indicated that out of the total number of 30 participants, 20 learners held positive perceptions regarding mind-mapping in general. However, as the Figure 2 shows, a greater number of participants favored digital mind-mapping compared to traditional method. Accordingly, out of the total number of participants, 16 preferred digital method to the traditional one. The remaining 4 participants liked to use the traditional type of mind-mapping.

Figure 2

Comparison of the perceptions of the study participants



According to statistics and as shown in Table 1, the number of students who had positive perceptions toward the mind-mapping technique was higher; therefore, hypotheses 1 and 2 are confirmed. However, since the number of students who preferred digital mind-mapping was more than those who preferred traditional mind-mapping, the third hypothesis is rejected.

Regarding the first and second research hypotheses, students mentioned different reasons for their positive views regrading traditional and digital mind-mapping. The easy use of the technique, making the students' writings more well-structured, facilitating the development of ideas, serving as a learning guide, fostering thinking and creativity, and better remembering of the ideas were among some of the advantages named by the students. The following table shows the answers provided by one of the students.

Table 2

An example of interview answers regarding positive answers about mind-mapping

1	***Yes, actually I think it has had good impacts on my learning.***
2	*Both of them are good. Digital mind-mapping helps me save my files in computer and I don't need to carry a lot of things such as papers and color pencils or pens everywhere. Mindomo has also an interesting page and options. Traditional mind-mapping is also good because I don't need to have laptop of computer. I don't need internet or other things. I can do all my work with hand and paper. So, both of them have advantages. The technique was totally interesting for me. I could organize my thinking and it helped me much. When I have this kind of notes I can learn better and write better*
3	*I didn't find any negative points about the techniques. They gave me enough energy and enthusiasm. They were also useful in my writing to organize my ideas.*
4	*Using the branches and colors is the most interesting point. When you draw maps and organize your ideas in different colors and levels, you don't mix or confuse them.*
5	*I think it can be useful in other lessons too. For example, students can use them even in practical lessons such as biology or chemistry, because it gives them a kind of organized notes.*
6	*I liked digital mind-mapping. It is fun to use Mindomo because it gives you different options. Besides, I don't need to have many papers and take with me. I can just take my laptop or even cellphone to have them. Totally, I like technology and I think I am a lazy person. So, I like digital mind-mapping because I can do my work with computer. Also, it was not very difficult and I could learn very soon. I liked it because it was very useful in my learning.*
7	*For me, it was quite good and satisfying.*

8	*None of them were difficult. I learned how to work with the software in one session. Both of them were easy, but traditional work was easier because it just needed a paper and some color pens.*

However, a limited number of students found the technique useless or at least not so much useful for themselves. They stated their doubts about the future use of these methods in traditional or digital forms. The following table is an example of answers a student provided in this regard, indicating uncertainties on the impacts of the method.

Table 3

An example of interview answers regarding negative answers about mind-mapping

1	***I'm not really sure about their effects. They were good for short-time, but I'm not certain for the long-run.***
2	*They were fun and I had good time with my classmates doing them.*
3	*I think they are time consuming. You know we can use them in class or maybe for a period of time. But using different colors makes particularly the traditional method time consuming. I think these works take a lot of time and waste the time I can put on study. I can't spend time drawing the lines to write some words or to learn things. I think without doing it, I have more time. No matter it is traditional mind-mapping or digital mind-mapping. It is fun but I think not for learning. Maybe for fun.*
4	*If I have to choose one, I prefer the digital form.*
5	*Not really.*
6	*Both of them were easy.*
7	*The method was not bad. The only problem was that it needed time to draw maps. Maybe it can be improved by addressing this problem.*
8	*Of course, traditional was easier because I just needed to use my perns and organize my thoughts through the lines and levels.*

Discussion

Concerning the first and second research questions which asked on the students' attitudes towards traditional and digital mind-mapping, it was found that the learners had positive perceptions about both methods and only a small number of them had negative views or were unsure regarding the impacts of mind maps. This finding is in line with the results obtained by Everett (2019) who showed that the majority of students stated that the integration mind maps facilitated their construction of an interdisciplinary understanding of the problem and only a few students were uncertain whether facilitated their understanding of the integration process. According to

Ravindranath et al. (2016), students' perception of the PBL learning process was positive following the intervention of summary writing with mind maps. Ravindranath et al. (2016) also referred to the problem of being time consuming, which was again in agreement with the comments of some students who were not certain about using this new technique in the present study. Muttaqin (2017) also emphasized the positive feedback from the participants regarding the applicaiton of mind maps. According to the results, majority of students referred to the positive effects of mind-mapping on their learning. Consistent with this result, Nemati, Jahandar, and Khodabandehlou (2014) also indicated enhancement of the essay writing abilities in the experimental group. Jafari Nodoushan and Haji Maibodi (2014) also found that the long-term effect of the mind-mapping strategy was significantly effective in the improvement of vocabulary used in writing tasks of EFL learners participating in the experimental group. Finally, Hariri and Tahriri (2013) revealed the positive attitudes of the participants concerning the applicaiton of mind maps in reading classes. Some students mentioned the positive impacts of mind-mapping on their creativity and critical thinking. In the same line, Mingili (2019) supported the application of mind-mapping in essay writing from word level to whole essay structure by visual mind maps to stimulate the students' creativity in English essay writing effectively.

Regarding the third research question, most students preferred digital mind-mapping. In line with this finding, Karamifard and Minaeifar (2016) also showed greater achievement when using digital version of mind-mapping compared to the traditional method. Mohaidat (2018) also stated that e-mind-mapping had significant and positive impacts on the students' English reading comprehension in Jordan. Many students referred to the impacts of mind-mapping software on their creativity and critical thinking, leading them to prefer the digital version of the technique. In line with this finding, Abd Karim and Mustapha (2020) found that the application of digital mind maps could stimulate the students' creativity and critical thinking to complete their writing tasks based on the respondents' perceptions.

Conclusion

Many teachers strive to find ways to make the task of writing more interesting and meaningful for students. Like other visual tools, mapping has the potential to stimulate learning, helping both teachers and students to go through the structure and meaning of the knowledge they want to

understand. This research attempted to investigate the perceptions of language learners toward the use of traditional versus digital mind-mapping techniques in writing classes. Considering the findings of the research and also the discussion, the mind-mapping technique helped the students organize their texts. Mind-mapping could also facilitate students' writing skills development in terms of organizing ideas. Consequently, mind-mapping would be especially suitable to assist students plan their writing, since the technique stimulates them to obtain and establish a deeper understanding of the writing topics.

From the researcher's observations, it becomes clear that this procedure can be employed for a variety of tasks associated with learning how to write. According to the observations, students keep a variety of expectations as well as priorities, so that different students may be satisfied with various aspects of mind-mapping. According to what has been shown, this strategy supports organization in learning and practicing writing skill. Nevertheless, it depends exclusively on teachers and their students to what extent they would handle the benefits of this technique. It can be particularly applied as the critical strategy of language teaching, or it can play the role of an occasional option to make a special lesson more specific.

Given the positive perceptions of students on the application of mind-mapping, English teachers should apply the method in teaching and learning English, because mind maps are perceived as an effective tool by the learners. Teachers should employ mind-mapping to encourage students regarding exploring and extending their ideas. Besides, since application of traditional mind-mapping does not need any special facilities or equipment, schools and institutes can make use of the technique with low costs. Moreover, ss it is the era of technology, teachers and institutes need to be equipped with the required knowledge and capabilities to be able to meet the needs of those students who are willing to use digital devices such as Mindomo in their learning process. If possible, for the educational institutes, they can provide different mind-mapping software such as Mindomo for students and teach them how to use it during their learning process. Finally, researches are recommended to use the findings of the study as additional reference for further research in different contexts that will contribute in teaching English (Faramarzi, Heidari Tabrizi, and Chalak, 2019; Hosseini, Chalak, and Biria, 2019; Masaeli and Chalak, 2016).

This study had several limitations. First of all, given the outbreak of COVID-19 all classes had to be online and it was not possible to examine the application of this technique in traditional

classes. Moreover, the teacher did not have any control on the students or the process of their practice and learning. Second, the study was performed on a special age group and gender, which can affect the results. Future studies can be carried out considering different variables. Finally, the study has some beneficial implications for language teaching and learning. Results obtained from this study can help provide both teachers and students with valuable insights about the teaching of writing using mind-mapping.

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Appendix A

The Questioner

Dear students, This project is going to find out your perceptions concerning the application of mind maps in the process of your learning. The answers you provide will be helpful as a valuable source of information for future decisions and planning. Please answer the following questions as the best fits your opinions and personality. You do not need to write your names or other personal information, and the answers will be anonymous and confidential. I would appreciate your honest cooperation.	
1. Has mind-mapping affected your learning?	
2. Name positive points of Digital/traditional mind-mapping.	
3. Name negative points of Digital/traditional mind-mapping.	
4. Which part of Mind-mapping did you like more?	
5. Do you like to use this technique in other lessons too?	
6. Which one did you feel more comfortable with? Traditional or digital mind-mapping? Please mention some reasons if possible	
7. Do you think the method of mind-mapping implementation was good or could be improved?	
8. Which one was easier to implement for you? Traditional or Digital? Please mention some reasons if possible	

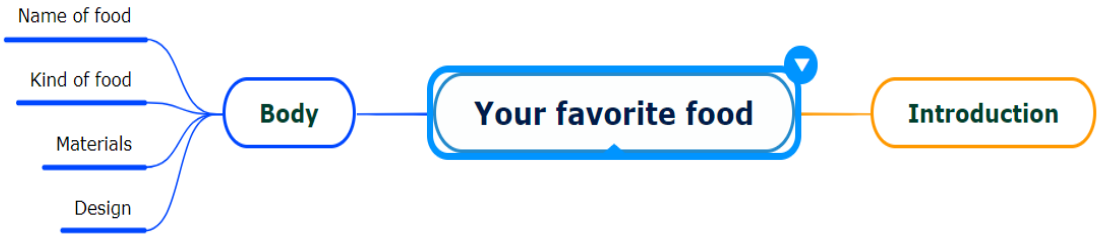
Appendix B

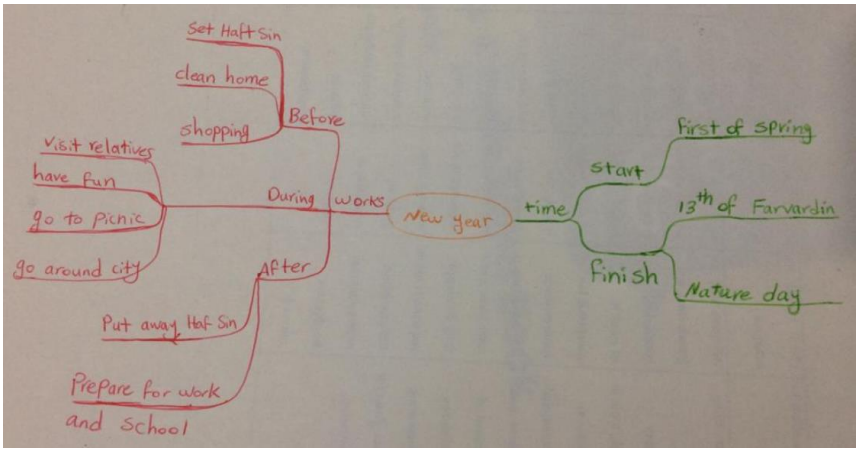
Examples of Writing Topics

1. What are your family members and friends doing now?
2. What does your mother/father do every day?
3. Describe one of your friends (personality and appearance).
4. What are benefits of a big family?
5. Write about your favorite sport.
6. Write about your favorite food.
7. Write about your favorite color.
8. Write about your favorite music. Why do you like it?
9. Write about your life style.
10. Write about New Year in your country.

Appendix C

Examples of Digital and Traditional Mind-mapping





Appendix D.

The Homepage of Mindomo Software