

Influence of Mind Mapping in Counseling to Increase Students' Creative Thinking

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ARTICLE INFO

Keywords;

Counselling;
mind mapping;
creative thinking

Article history:

Received 2022-03-09

Revised 2022-08-12

Accepted 2022-12-22

ABSTRACT

The main problem experienced by students today is the low level of creative thinking. One treatment that can be used to improve students' creative thinking is mind mapping in counselling. This study aims to examine the influence of mind mapping in counselling to increase students' creative thinking. This research method uses true experiments with a pretest & posttest control group design. The research population is the students of a public junior high school in Malang City. The research sample was 16 people who were taken randomly. The research instrument used a creative thinking test with a validity of 0.950, reliability of 0.943 and data analysis using an independent t-test. The results showed: (1) mind mapping is a very appropriate and interesting technique used in counselling services because the way mind mapping works is in accordance with the brain structure that makes students relax and happy, (2) there is a significant influence of mind mapping in counselling on improving students' creative thinking. This study has limitations in terms of the number of samples in the intervention is still small and tested in one school. It is recommended to be tested on a large sample in schools at various levels and cultures.

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1. INTRODUCTION

Creative thinking skills are one of the soft skills and intelligence issues of the 21st century (Gu et al., 2019), (Hidayat et al., 2018). Creative thinking is classified as high-level cognitive power (Redifer et al., 2021). This means that creative thinking has a very important role. To thrive in a rapidly changing society requires thinking skills (Gube & Lajoie, 2020), which involves the generalization of ideas (Fox & Beaty, 2019). Creative thinking, it is deemed necessary to include it in the school curriculum explicitly (Hadar & Tirosh, 2019b), (Albar & Southcott, 2021). So many countries include creative thinking material in the curriculum (Hadar & Tirosh, 2019a). This can be interpreted that creative thinking is the key to success in the world of education.

Creative thinking has great benefits for academic and non-academic students. Academically, creative thinking is closely related to academic workability (Yang & Zhao, 2021), scientific work skills (Yildiz & Guler Yildiz, 2021), able to generate spontaneous thinking (Xie et al., 2021), allows the birth of new and useful ideas (Zhuang et al., 2021) improvement of academic achievement (Akpur, 2020), (Marcos et al., 2020), (Manurung et al., 2020), (Wahyuni & Kurniawan, 2018). This means that from the academic side, there are many things that can be improved through creative thinking, including an increase in academic achievement.

As for non-academic, creative thinking is beneficial for developing creativity (Xu et al., 2022), improvement of psychomotor skills and self-efficacy (Huang et al., 2020), inter-group relationship skills (Bernard et al., 2021), reducing stereotypes (Dou et al., 2021), and improving mental health (Dou et al., 2021). (Torrance, 1965). It might be interpreted that creative thinking can promote the development of students' academic and personal skills. This suggests that the academic and non-academic accomplishments of kids are proportional to their level of creative thinking. In fact, in schools, the creative thinking level of students is still in the low category (Rahmawati, 2010), (Rajagukguk et al., 2020). The effects on students who have low levels of creative thinking have difficulty understanding problems (Puspitasari et al., 2018). The results of this study reinforce the importance of increasing students' creative thinking.

The concept of creative thinking was first developed by Guilford in 1956. The next figures who developed the concept of creative thinking were Torrance and Sternberg states that creative thinking is high-level thinking that is novelty and divergent in solving problems and has benefits (Sternberg, 2003). The meaning of novelty is the ability to produce new ideas, modify ideas and combine various ideas (Sternberg et al., 1997). While the meaning of divergent thinking is the ability to produce many ideas, have different perspectives in generating ideas, be able to think imaginatively and be able to solve difficult problems with various ideas (Sternberg, 2003). Creative thinking is original, divergent and appropriate (Dou et al., 2021) and can encourage divergent thinking (Sun et al., 2020). This means that novelty and divergent thinking are inseparable parts of creative thinking.

Many things can be done to improve students' creative thinking, including through cultural sensitivity training (Groyecka et al., 2020), social activities (T. Liu et al., 2021), through robotics training (Çakır et al., 2021).), by improvising music (Ramon & López, 2021), through digital educational games (Xiong et al., 2022), by learning Predict Observe Explain (Rosidah & Kurino, 2021), sharing ideas (Caldwell et al., 2020), and with mind mapping techniques (Wulandari et al., 2019) and counselling activities (Jelly, 2008). This can be interpreted that the increase in students' creative thinking can be done through classroom learning activities, social activities and counselling services. Especially for students in schools, activities related to skills are mostly handled by school counselors. The various techniques offered above counsellors can combine them through counseling activities. One of them is counseling services with mind mapping techniques.

The selection of mind-mapping techniques in counseling has a novelty compared to other techniques. The novelty of mind mapping lies in its implementation, which is in accordance with the way the brain responds to reality and makes decisions. On the other hand, mind mapping is a fun technique that can be applied in counselling services (Irman, 2019), students have a positive attitude towards mind mapping techniques (Wu & Chen, 2018). Through mind mapping can increase creative thinking ten times compared to the use of other techniques (Buzan, 2010). The use of mind mapping in education is 98% effective in improving creative thinking (Tucker et al., 2010). In other research, mind mapping can also be used to improve various student competencies, including improving writing skills (Dahlia et al., 2019), increasing TOEFL scores (Afri & Harahap, 2019), creating healthy positive interactions (Schnarch, 2018), and can support child development (Polat et al., 2017). This indicates that mind mapping has enormous benefits for the development and improvement of children's competencies.

The combination of mind mapping in counselling is an elaboration of mind mapping techniques with counseling activities. (Gibson & Michael, 2011) revealed that counseling activities focus on developing cognitive and behavioral skills. This means that mind mapping techniques in counseling

are more emphasized on the cognitive behavioral approach. The implementation of mind-mapping techniques in counseling is carried out in the form of groups. Group activities carried out in providing education are aimed at prevention and problem solving (Waack, 2006). The steps for group counseling with a cognitive behavioral approach are; (1) initial stage, at this stage the group leader builds psychological relationships, explains about the group and determines the length of time for counseling, (2) working stage, at this stage treatment planning and application of cognitive and behavioral techniques is carried out, and (3) final stage, namely evaluating and giving feedback (Corey, 2012). The implementation of mind mapping technique counseling carried out in three stages, namely the first to build relationships, the second stage of activities, and the third stage of termination. The use of mind mapping techniques in counseling is carried out at the activity stage.

The counselling process for mind mapping techniques to improve creative thinking has clear stages, namely; (1) provide an explanation of the concept of mind mapping technique counseling and the role of each group member, (2) encourage group members to write a main idea of solving the problem being faced on a paper, (3) develop various ideas for solving the main problem, namely write it down on the branches that have been drawn on paper, (4) participants convey the meaning of the ideas in the picture to group members (Buzan, 2004). Furthermore, participants take turns discussing ideas with each other, so that group dynamics are formed which are useful for giving birth to creative thinking. The theoretical explanation above shows that there is an effect of mind mapping technique counseling on increasing students' creative thinking. To examine the effect of mind mapping technique counseling on increasing creative thinking empirically, a research in the form of an experiment is needed.

2. METHODS

This study uses true experiments, especially pretest & posttest control group design. The selection of the research design was based on the consideration that this research design is the right design to test the hypothesis because it can provide adequate control so that the independent variables can be assessed correctly (Lodico et al., 2010). The population of this study were students of class VIII (eight) of SMP Negeri 5 Malang, consisting of 9 classes with a total of 291 students. The population process to be sampled is based on the students' creative thinking considerations. The population selection process was carried out using a test of creative thinking (TCT) instrument, which was compiled based on creative thinking indicators with a validity of 0.950 and a reliability of 0.943. Based on the results of the TCT, there were 112 students who had a low level of creative thinking and would then be made into the population. The research sample was 16 students who were taken randomly, then divided into two groups, namely the experimental group and the control group.

As for the treatment given to the experimental group, namely mind mapping technique counseling in the form of groups with stages; the initial stage, at this stage the group leader builds a psychological relationship, explains how to carry out mind mapping activities and the steps, and sets the length of counseling time, which is 60 minutes per session. working stage, at this stage the planning of mind mapping activities and the application of mind mapping to solve the problems experienced by students, as for the steps of mind mapping technique counseling activities, namely; (1) each student is given a blank sheet of paper, the counselor guides students to write one word related to the problem they are facing. At this stage students are usually hesitant to write it down, for that the counselor provides encouragement and direction properly, so that it can bring up the courage of students to write down the main ideas related to the problems they face. (2) The next activity is that students are guided to make problem-solving branches according to the main idea they have written, while the counselor goes around seeing and paying attention to how students write branching words related to the main idea. If students are constrained, the counselor provides clarity and encourages students to come up with creative ideas. (3) In the next work, students are guided to make sub-branches according to the main branch, using words based on the theme, then students organize their ideas well. (4) School counselors see the results of students' work in making mind maps, the extent to which students are able to describe creative ideas that are in their minds quickly and well. (5)

Furthermore, each group member explains the results of the mind mapping that has been made, and discusses it in groups. The group leader encourages members to carry out discussions, so that creative ideas are generated in accordance with the work structure of mind mapping, these discussions are carried out alternately. (6) Next, the group leader reflects with the group members regarding the results of the activities they have participated in. and also the counselor opens suggestions from each group.

The final stage is evaluating and providing feedback on the activities that have been carried out. Next, the counsellor ends the activity with students by making a contract for the next activity. While the control group used the lecture technique in groups, with steps; (1) the opening stage, namely building psychological relationships and determining the duration of group activities, which is 60 minutes, (2) explaining creative thinking and the steps to achieve creative thinking, and (3) closing stages, namely conducting evaluations and feedback.

There are two variables in this study, namely the independent variable related to mind mapping technique counseling and the dependent variable, namely creative thinking. Data analysis used was an independent t-test through SPSS release 20.0 for the windows program.

3. FINDINGS AND DISCUSSION

The results of the study are related to several data, ranging from pretest, posttest, prerequisite tests and hypothesis testing. The creative thinking pretest data based on the analysis of the experimental group and the control group already had level equivalence. The data on the level of students' creative thinking is shown in Table 1 below.

Table 1. Pretest Data for Creative Thinking Students in Experiment Group and Control Group

Group	N	Mean	Std Deviation
Control	8	47,00	4,140
Experiment	8	44,00	6,000
Total	16	45,50	5,215

In Table 1 it is described that there are 16 research subjects divided into the control group and the experimental group. The average score of the control group's creative thinking level pretest was 47.00 points with a standard deviation of 4.140. In the experimental group, the average creative thinking score from the pretest was 44.00 points with a standard deviation of 6.000. Based on the analysis of the average score and standard deviation of the control group and the experimental group were relatively the same. The results of the creative thinking pretest consist of two dimensions, namely the novelty dimension and the divergent thinking dimension. In more detail, the average pretest score of each dimension of students' creative thinking can be seen in Figure 1 below.

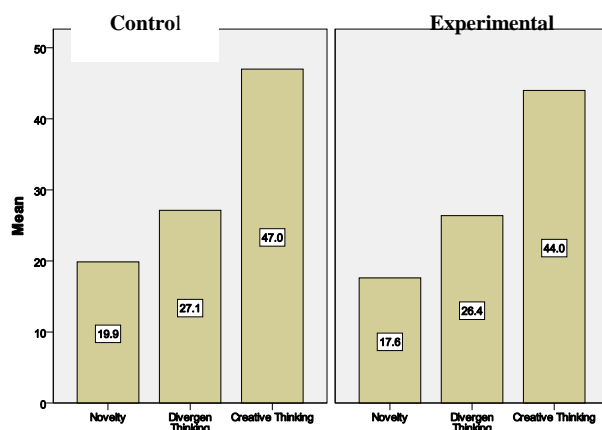


Figure 1. Average Pretest Scores for Novelty and Diergent Thinking Dimensions

Based on Figure 1 above, it can be seen that the control group has an average creative thinking score on the novelty dimension of 19.9 points and the divergent thinking dimension of 27.1 points. In the experimental group, the average creative thinking score on the novelty dimension is 17.6 points and the divergent thinking dimension is 26.4 points. Based on the analysis, the average creative thinking pretest score on the novelty dimension and the divergent thinking dimension in the control group and the experimental group was relatively the same.

Based on the data in Table 1 and Figure 1 above, it is shown that there is relatively no difference in the level of creative thinking of students, both in the control group and in the experimental group. This illustrates that the control group and the experimental group are relatively the same level of creative thinking before being given the intervention.

The posttest results of students' creative thinking levels between the control group and the experimental group were different after getting the intervention. In detail, the results of the posttest scores for creative thinking in the control group and the experimental group are shown in Table 2 below.

Table 2. Average Posttest Score of Creative Thinking Students in Experiment Group and Control Group

Group	N	Mean	Std Deviation
Control	8	71,00	12,000
Eksperiment	8	132,38	5,069
Total	16	101,68	32,920

In Table 2 above, it can be seen that the results of the control group's creative thinking posttest had an average score of 71.00 points with a standard deviation of 12.00. The posttest results of the experimental group's creative thinking have an average score of 132.38 points with a standard deviation of 5.069. Based on the results of the average posttest score of the creative thinking level of students, there was a difference in the creative thinking level of the control group students and the experimental group after receiving treatment. The experimental group had a higher average score for creative thinking than the control group.

The results of the posttest of creative thinking consist of two dimensions, namely the novelty dimension and the divergent thinking dimension. In more detail, the average posttest score for each dimension of students' creative thinking can be seen in Figure 2 below.

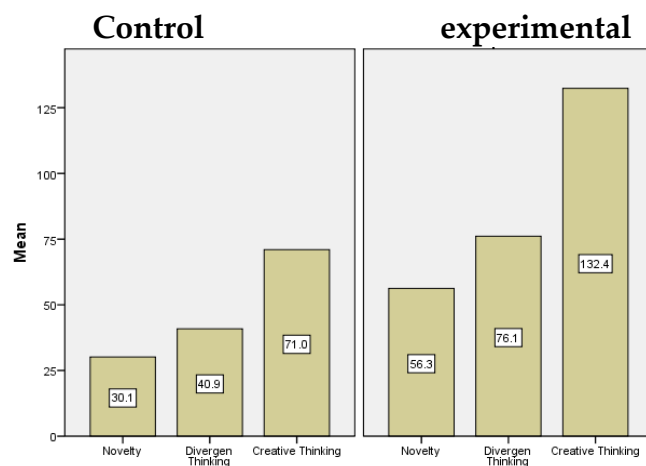


Figure 2. Average Posttest Scores for Novelty and Divergent Thinking Dimensions

Based on Figure 2 above, it can be seen that the average posttest score for the control group on the novelty dimension is 30.1 points, and the average score for the divergent thinking dimension is 40.9 points. In the experimental group, the average posttest score for creative thinking in the novelty dimension is 56.3 points and the divergent thinking dimension is 76.1 points. Based on the posttest average score of the creative thinking level on the students' novelty and divergent thinking dimensions, there was a difference between the control group and the experimental group. The control group had a higher average creative thinking score on the novelty and divergent thinking dimensions than the control group.

Based on the data in Table 2 and Figure 2 above, it can be seen that the experimental group has a higher average creative thinking score than the control group. The increase in the average score occurred in the dimensions of novelty and divergent thinking in the experimental group compared to the control group. This means that in the experimental group there is an increase in creative thinking scores after getting a mind mapping intervention, compared to the control group after getting usual counseling through a group counseling approach with lecture techniques.

Furthermore, empirical data analysis of students' creative thinking level was carried out, which is described in Table 3 below.

Table 3. Posttest Data Analysis of Students' Creative Thinking Level After being given Treatment

Group	N	Average	Difference	T	P
Control	8	71,00	61,375	14,467	0,000
Eksperiment	8	132,38			

Based on Table 3 above, it can be seen that students in the experimental group obtained an average creative thinking score of 132.00 points, meaning that they were in the high category. The creative thinking level of students in the control group obtained an average creative thinking score of 71.00 points, which is in the low category. Based on these empirical data, it can be concluded that there was an increase in students' creative thinking who had been given mind mapping treatment in counseling as much as 61,375 points.

When viewed from the results of the different test results between the control group and the experimental group, the value of $t = 14,467$ and p value = 0.000. This data illustrates that the p -value < 0.05 , this provides evidence that there is a significant influence between mind mapping in counseling and increasing students' creative thinking. Furthermore, to see the effect of mind mapping

in counseling on the level of creative thinking on the dimensions of novelty and divergent thinking, the data is in Table 4 below.

Table 4. Differences in the Posttest Scores of Students' Creative Thinking Level on the Novelty Dimension

Group	N	Average	Difference	T	P
Control	8	30,13	26,125	12,558	0,000
Eksperiment	8	56,25			

Based on Table 4 above, it can be seen that the level of creative thinking of students on the novelty dimension after receiving mind mapping intervention in counseling is different from students who do not receive mind mapping technique intervention in counseling. Students with mind mapping technique intervention in counseling, get an increase in creative thinking on the novelty dimension as much as 26,375 points. While the results of the t-test of the control group and the experimental group obtained the value of $t = 12,558$ and the value of $p = 0.000$. This data illustrates that the p value < 0.05 , this provides evidence that mind mapping in counseling can improve students' creative thinking on the novelty dimension.

The results of the data analysis on the level of creative thinking on the divergent thinking dimensions are as shown in Table 5 below.

Table 5. Different Tests of Posttest Scores on Creative Thinking Levels on Divergent Thinking Dimensions

Group	N	Average	Difference	T	P
Control	8	40,88	35,250	15,771	0,000
Eksperiment	8	76,13			

In Table 5 above, it can be seen that there has been an increase in students' creative thinking in the experimental group, especially in the dimension of divergent thinking by 35,250 points compared to the control group. The results of the test are different between the control group and the experimental group, with a value of $t = 15,771$ and a value of $p = 0.000$. This data illustrates that the p value < 0.05 , meaning that there is a significant influence between mind mapping in counseling on increasing students' creative thinking on the divergent thinking dimension.

Discussion

The results of the data analysis above show that there is a significant influence between mind mapping in counseling on increasing students' creative thinking. To further strengthen the results of the study, further discussion is carried out. First, it is related to the effect of mind mapping techniques in counseling on increasing creative thinking. Empirical data shows that mind mapping techniques can improve students' creative thinking. The findings of this study are in line with previous research and theories, namely mind mapping can improve creative thinking (Hidayah et al., 2019), (Vidal, 2010), (Buzan, 1989). This is also in line with (Wang et al., 2014) revealing that mind mapping is a form of presentation of bright thinking, utilizing lines, colors, characters, numbers, symbols, images and keywords to associate, integrate and visualize the concepts learned and can awaken the potential of the brain. This shows that mind mapping technique counseling is a very appropriate technique given to students to improve creative thinking.

The mind-mapping process in counseling provides a wide space for students, so that students can imagine building innovative minds and higher-order thinking (Y. Liu et al., 2018) (Norton, 2012). The mind-mapping process in counseling is an interesting activity. The mind mapping activity begins

with forming and building psychological relationships in the group. Next, mind mapping activities are planned that can look for problem solving according to the problems experienced by students. Next, students are given a blank paper, then students are asked to make a central idea on the blank paper. The central idea is in the form of a problem to be solved in the form of one/two words or one picture. The next activity, students start looking for problem-solving by expressing various ideas and connecting them with several visual lines. Mind mapping activities in this counseling provide an opportunity for students to develop ideas in the form of keywords or pictures in the middle of the blank paper, and then the ideas spread out from those keywords. Through the mind-mapping process students are given the opportunity to develop creative ideas freely without being judged. This condition makes students find various creative ideas.

The mind mapping process mentioned above was adopted based on the concept (Buzan, 1988), which states that the mind mapping process starts from the middle of the page, this reflects the brain's thinking process which allows more space for freedom to develop ideas, use keywords, this has a million reach to do association. The use of images aims to improve the memory performance of the brain. The increase is up to ten points. The same thing was also explained by Ornstein (Tucker et al., 2010) who revealed that the human brain responds well to keywords, images, colours, and visual lines. Keywords, pictures, colors and lines are also used in mind-mapping activities in counseling.

Students who have participated in mind mapping activities in counseling can produce new ideas that are different in problem solving, can also produce new ideas with different perspectives in problem solving. This finding is in accordance with the opinion (Buran & Filyukov, 2015) which states that mind mapping can help students in solving problems, exchanging ideas with creative ideas. (Rosciano, 2015) explains that mind mapping is an innovative strategy for problem solving. This means that mind mapping in counseling is very appropriate for students to use in solving problems.

Mind mapping activities require students to be able to develop ideas through key words, so that they can activate the mind to develop many ideas. The ideas obtained by students are connected with visual lines, thus giving birth to new and different ideas to find problem solving. This is in line with the concept (Buzan, 1988) which states that the mind mapping process uses curved lines that reflect the associative nature of the brain that encourages creative thinking processes.

The mind mapping process uses various colors which aim to relax the brain and produce creative ideas. The use of various colors in mind mapping activities makes students more imaginative, and this is one of the characteristics of creative thinking. The use of color also encourages concentration and builds memory in students' brains. This is in line with the results of research put forward (Buzan, 2010) which states that mind mapping activities should use color, because color can increase information absorption and increase attention as much as 92%, color can improve understanding, 73%, increase the introduction of new information up to 80 percent. %, and color can improve memory 90%.

Mind mapping activities in counseling ended with discussion and reflection. In this session, students are given the freedom to convey creative ideas in solving problems in the form of mapping. Based on the mapping made by students, they argue with each other and provide input on solving their respective problems. Group dynamics make mind mapping an interesting activity. (Q. K. Fu et al., 2019) stated that mind mapping is an interesting activity. This opinion is almost the same as that stated by (Buzan, 2010) which reveals that mind mapping is an excellent tool for collaborative activities with others and allows all group members to be dynamically and creatively involved. In particular, mind mapping can improve two dimensions of creative thinking, namely novelty and divergent thinking. Students' novelty can increase because in the process of mind mapping, students are required to be able to solve the problems they experience and the problems of friends in the group in new ways. The problem-solving is described in each branch and branch in the mind mapping product made by students. This mind-mapping work process leads students to be able to improve their ability to produce new ideas, combine ideas, and modify ideas. This is in line with the opinion (Polson, 2004) states that mind mapping can increase the ability to produce new ideas.

The mind mapping process also encourages students to think divergently because the problems raised in each session are different. Different problems require different solutions too. This process encourages the emergence of the ability to produce many ideas, have different perspectives, the ability to think imaginatively, and the ability to develop difficult ideas. This is also in line with research (Davis, 2011) which explains that mind mapping can increase imagination, explore, and understand the relationship between concepts. This means that the divergent thinking process is in line with the way mind mapping works.

Another advantage of mind mapping is in improving students' divergent thinking, because the way mind mapping works is in line with how divergent thinking works. As for how divergent thinking works, namely open thinking spreads out freely so that students are able to produce many ideas, have different perspectives, think imaginatively, and are able to develop difficult ideas. The thing that really supports the improvement of students' divergent thinking through mind mapping is how mind mapping works in line with how the structure of neurons in the brain works, as shown in Figure 3 below.

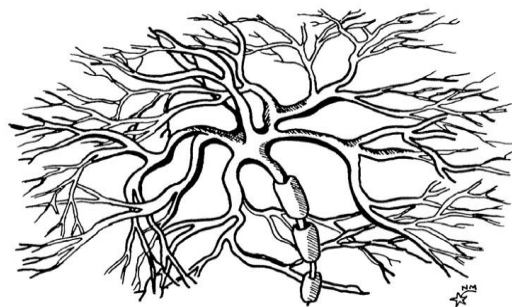


Figure 3. Structural Similarities of Neurons and Mind Mapping (Buzan, 1988)

Figure 3 above shows that the structure of neurons has similarities with how mind mapping works. Mind mapping in compiling information reflects exactly the same as the work of brain function, ideas come out using associations trigger extracts and connect information into something structured (Buzan, 2010). This gives an indication that when students do mind mapping activities, they will be able to encourage divergent thinking because the neuronal structure process also has similarities with divergent thinking processes. This concept is in line with the opinion of Buzan (2010) which states that mind mapping is a visual diagram that is used to record, organize information by means of the brain finding ideas that are placed around a central theme so that it can clearly see the flow of different ideas.

The workings of divergent thinking are thinking openly, spreading out freely so that students are able to produce many ideas, have different perspectives, think imaginatively, and are able to develop difficult ideas. In general, the way mind mapping works is in line with how the structure of neurons in the brain works. The concept is stated by (Buzan, 2010) who reveals that the way mind mapping works in compiling information reflects the work of brain functions, namely ideas that come out using associations. Associations link information into something structured. This process concludes that mind mapping activities will be able to encourage the divergent thinking process. Mind mapping activities can organize information by means of the brain finding ideas that are placed around a central theme so that it can clearly see the flow of different ideas.

Another factor that causes mind mapping to develop students' novelty and divergent thinking is that mind mapping activities give students the freedom to learn and find their own problem solving. This is in line with the opinion (Fobes, 1993) which states that mind mapping is a technique that can format situations and can foster creative thinking. This means that mind mapping can format situations that develop creative thinking skills both in the novelty dimension and in the divergent thinking dimension. This Fobes opinion is in accordance with the mind mapping process carried out by students. In the mind mapping process students are given the freedom to develop new and

different ideas from other students, so that students are trained and skilled in developing creative ideas. (Gardner, 2007) which states that the ability to think creatively will show a direct relationship with problem solving skills and understanding. (Sternberg & Swerling, 1996) revealed that creative thinking can help students to be skilled in solving problems.

Based on theoretical studies and empirical data analysis, it can be concluded that mind mapping has an effect on increasing creative thinking, both on the novelty dimension and on the divergent thinking dimension. This means that mind mapping is an optimal intervention in improving creative thinking, for that mind mapping can be applied as a technique in counseling to improve students' creative thinking. In this regard, school counselors are expected to take advantage of mind mapping activities to improve students' creative thinking. Increasing students' creative thinking is expected to have an impact on increasing students' academic and non-academic achievements.

Regarding the influence of mind mapping techniques in counseling on increasing creative thinking on the novelty dimension, there are three indicators that can be improved, namely: the ability to produce new ideas, the ability to combine ideas, and the ability to modify ideas. Creative students are characterized by the ability to produce, combine and modify ideas. (Buzan, 2004) states that mind mapping teaches people to think away from the average center, namely being eccentric so that they can generate new ideas. The results of the research were further exposed by (Polson, 2004) who stated that mind mapping can make students creative, so that they are able to give birth to new concepts and ideas. Furthermore (Krasnic, 2011) states that mind mapping can encourage the birth of new ways of thinking with new methods related to generating concepts and ideas. The opinion of Buzan, Polson and Krasnic is in accordance with what was experienced by students who took part in mind mapping activities. They can generate new ideas.

Mind mapping is a tool for creative thinking (Anderson, 1993), can improve mapping in thinking (L. Zhao et al., 2022), making it much easier to learn, understand, and remember (Knight, 2014), increase practical knowledge and theoretical (Gao et al., 2022), supports individual skills in interpretation, analysis, and evaluation (Ö. Polat & Aydın, 2020), organizes information (Guerrero, 2018), as the best solution for problem solving and productivity of the mind (Guerrero, 2018), helps generate positive thoughts and feelings, as well as diverse ideas (Q.-K. Fu et al., 2019).

It is hoped that through increasing novelty it will also have an impact on increasing student academic achievement. Because creative thinking can generate innovative ideas, mind maps help students retain ideas for elaboration and evaluation, stimulate new discussions, and manage task development (Sun et al., 2020). Students who have high novelty will be accustomed to making updates in the learning process and problem solving. Creative thinking can essentially improve problem-solving abilities and mind productivity (Guerrero, 2018). So that the academic value of students can be increased. Outside of school, students who have high novelty will become creators in various products that are useful for many people. So that students can contribute their thoughts to the interests of many people.

As for the influence of mind mapping techniques in counseling on increasing creative thinking in the divergent thinking dimension, there are four indicators that can be improved, namely: the ability to produce many ideas, have different perspectives, the ability to think imaginatively, and the ability to develop difficult ideas. Based on the research findings, it is proven that divergent thinking can be improved through mind mapping techniques. Increasing divergent thinking is more focused on imaginative abilities and ideas from different perspectives. These two things are important parts that students must have for the learning process. This finding is in line with the opinion (Buzan, 1988) which says that mind mapping can be used to develop creative imagination, which is related to right brain function. Regarding the ability to generate ideas in different perspectives, this is in line with the opinion (Hillar, 2012) which explains that mind mapping activities can encourage problem solving in different ways and ideas. Given the importance of divergent thinking for students, it is hoped that school counselors can improve it through mind mapping techniques in this counseling.

Increasing the dimensions of divergent thinking and novelty in creative thinking is important for students, because it can encourage academic and non-academic achievements. Mind mapping

activities are able to activate students to be able to solve the problems they face in the right way, with different perspectives and with new solutions. Creative thinking can be trained to children (Lucchiari et al., 2019). This requires a creative learning environment and teacher support (Ayyildiz & Yilmaz, 2021), (Zhang et al., 2020). Teachers who can encourage children's creative thinking are teachers who have good competence (Sayi & Akgul, 2021). Next to the teacher, parents have a role in developing creative thinking (Jankowska & Karwowski, 2019), as well as emotional warmth towards children (X. Zhao & Yang, 2021). This means that to improve students' creative thinking is largely determined by the techniques used, one of which is through mind mapping technique counseling, collective support of teachers and parents.

4. CONCLUSION

Based on data analysis and discussion, it can be concluded several things, namely; First, mind mapping is a very precise and interesting technique used in counselling services, because the way mind mapping works is in accordance with the structure of the brain. Second, mind mapping in counseling makes students relax and happy. Third, there is the effect of mind mapping in counseling on increasing students' creative thinking. It is recommended that BK teachers and counsellors in schools can use mind mapping in counseling to improve students' creative thinking.

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