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The Effect of Dart Board Media in Discovery Learning Model toward The Motivation Learning

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Abstract: *This quasy-experimental research aims to determine the effect of Dart Board media in the Discovery Learning Model toward the motivation learning. The research design used was pretest - posttest control group design. The population in this study were students of class XI SMA Negeri 1 Soppeng who studied chemistry totaling three classes. Sampling used was simple random technique so as to obtain class XI 9 as an experimental group and class XI 10 as a control group. Data collection was done by giving motivation questionnaire at the beginning and end of the meeting. The results of descriptive statistical analysis obtained the average learning motivation value of the experimental group pretest of 73,5 and posttest of 80,83, and the control group pretest of 73,90 and posttest of 77,25. The results of the inferential statistical analysis at a significant level of 0,05 obtained $Z_{count} > Z_{table}$ (2,62 > 0,65), then H_1 is accepted and H_0 is rejected. Based on the test results it can be concluded that there is effect of Dart Board media in the Discovery Learning Model toward the motivation learning.*

Keywords: *Dart Board Media; Discovery Learning Model; Learning Motivation; Chemical Bonding*

INTRODUCTION

Education is an effort to foster and develop human abilities and personality as a whole. Education is closely related to the curriculum. Currently the curriculum in effect is the independent curriculum and the 2013 curriculum (K-13). The independent curriculum emphasizes more relevant and interactive learning so that students develop because it provides more space for students to explore. One of the learning models recommended in the curriculum is Discovery Learning. The Discovery Learning model makes students actively involved in discovering various concepts and principles of the material being studied for themselves. Teachers in the Discovery Learning Model act as guides and facilitators whose job is to direct students in solving problems. So, by using this learning model students will be motivated to learn.

The results of observations made at SMA Negeri 1 Soppeng, especially in class When the learning process takes place, the teacher still dominates learning through the delivery of material, while students take a lot of notes and just act as listeners. The learning media used in the learning process does not involve the active participation of students,

such as power points, which make students only look passively so that during the learning process students are less motivated to learn.

One chemical material that is considered difficult is chemical bonding. Chemical bonding material is in the form of abstract concepts, so that sometimes cases of students experiencing conceptual errors are found, so a deep understanding is required from students (Harris & Idrus, 2011). To increase students' understanding, learning is needed that is fun and meaningful so that the material received will last a long time in memory.

The use of interesting, creative and innovative media in accordance with the characteristics of generation Z can make learning fun and increase students' learning motivation. The dominant kinesthetic characteristics of Generation Z prefer to learn something active and interactive through real activities and prefer visual media and game-shaped media rather than long texts (Permana, 2022).The use of game-based media in the learning process can help students foster creativity, independence, and increase interest and motivation. Game-based learning also provides a fun, interesting atmosphere, an active learning process, and creates learner focus during learning (Rahmawati *et al.*, 2022).

Motivation to learn is an attitude which is born within a person due to encouragement from within and outside, which moves oneself towards achieving certain goals (learning goals). One media that can increase students' learning motivation is Dart Board media. Dart Board media is a game media that uses a dart board, containing questions that students must work on and take by throwing darts at the number board containing the questions.

The advantage of the Dart Board media is that it can increase student activity, so that students are more enthusiastic about working on the questions given by the teacher (Cahyani *et al.*, 2017). Dart Board media not only trains cognitive aspects but also

psychomotor and affective aspects of students. This is because playing a game requires skills and also practicing affective values such as a sense of responsibility, sportsmanship, honesty and a sense of never giving up (Listiani and Prihatnani, 2018). This is in line with the results of Al-Manik (2021) research which shows that the Dart Board media is valid, effective and feasible for increasing student motivation.

LITERATURE REVIEW

The Discovery Learning Model is a learning model that is student-centered and has active learning experiences. In the process, this learning model will make students actively discover and express their ideas regarding the topic being studied (Arends, 2012). In the Discovery Learning Model, the teacher acts as a guide by providing opportunities for students to learn actively, according to the teacher's opinion, they must be able to guide and direct students' learning activities according to the objectives. Conditions like this will change teaching and learning activities that are teacher oriented into student oriented learning (Sinambela, 2013).

Syntax Discovery Learning Model (Kemendikbud, 2013) namely as follows: stimulation (providing stimulation/stimulus), problem statement (problem identification), data collection (data collection), data processing (data processing), verification (proof), and generalization (drawing conclusions).

The Discovery Learning model is one of the recommended learning models because it has several advantages in the learning process, including the following (Hosnan, 2014) Helps students to improve and improve skills and cognitive processes, 2) knowledge obtained through the model This is very personal and powerful because it strengthens understanding, memory and transfer, 3) can increase students' ability to solve problems, 4) helps students strengthen their self-concept, because they gain confidence in working with others, 5) encourages students' active

involvement , 6) encourage students to think intuitively and formulate their own hypotheses independently, 7) form students' independent learning character, and 8) students are active in teaching and learning activities, because they think and use their abilities to find the final result.

Weaknesses of the Discovery Learning Model, including the following (Hosnan, 2014) students must have mental readiness and maturity to learn using other Discovery Learning models because students usually only want to know the situation around them without having the courage to think further, 2) this model is less effective in teaching a large number of students, because it takes a long time to help them find theories or other problem solutions. 3) teachers and students who are used to using the traditional learning model will have difficulty if it is replaced with the Discovery Learning Model, and 4) sometimes there is confusion in learning when it is not provided frameworks and such.

The weakness in the Discovery Learning Model is that there are still students who are less active in the learning process and not all students can make discoveries. Therefore, a different treatment is needed to overcome this problem. One thing that can be done to overcome this deficiency is to use game media. Where one way to achieve learning competencies is to provide learning media to students so that students' interest and motivation to learn increase (Arief *et al.*, 2021). In addition, interactive media that is designed to be more interesting helps students understand learning and enthusiasm in learning (Donasari & Silaban, 2021). Meanwhile, the purpose of playing games is to avoid or eliminate students' boredom, boredom and feelings of sleepiness during learning. Apart from that, the use of game media can also train affective values such as a sense of responsibility, sportsmanship, honesty and a sense of never giving up. One form of game media is Dart Board media (Listiani & Prihatnani, 2018).

Dart Board media is a game media that uses a dart board containing questions according to numbers which students must work on and take by throwing arrows towards the numbers containing the questions (Wulandari *et al.*, 2018). Dart Board media as a learning media is more interesting because it contains elements of games, entertainment, and can be done casually, so that the learning carried out is more meaningful, memorable, and not easily forgotten as a learning experience. In this way, students will be more enthusiastic, increase their thinking power to understand the material, and be motivated to learn.

Another advantage of the Dart Board media is that this game not only provides fun, but can train students' concentration, namely by throwing darts at the Dart Board according to the targets the students want. This game can also be used indoors or outdoors, depending on your needs. And with elements of probability and popularity, this game is able to attract the attention of students to play it and make the atmosphere more enjoyable (Husniyah & Pratiwi, 2016).

Dart Board media has several weaknesses, including the following: it requires persistence in making it because you have to prepare several questions, not all subjects can be entered in this media, and when used in lower grades or small classes, supervision must be carried out (Siskawati *et al.*, 2016). Learning motivation is internal and external encouragement for students who are learning to make changes in behavior, generally with several indicators or supporting elements (Uno, 2017). Indicators of learning motivation can be classified as follows (Purnomo, 2019) namely a) the desire and desire to succeed; b) there is encouragement and need for learning; c) there are hopes and aspirations for the future; d) there is appreciation in learning; and e) there are interesting activities in learning.

METHODS

This type of research is quasi-experimental research (Quasi Experimental). The research design used is Pretest-Posttest Control Group Design. This research was carried out in the odd semester of the 2023/2024 academic year. The research location was in class XI of SMA Negeri 1 Soppeng, Lalabata District, Soppeng Regency, South Sulawesi Province. The population in this study were all students in class XI of SMA Negeri 1 Soppeng who were registered to study chemistry in the 2023/2024 academic year. The sample in this study was class XI.9 as the experimental group and class XI.10 as the control group. Samples were taken using a simple random technique with a lottery technique. Data collection was carried out using a learning motivation questionnaire with a 1- 4 Likert scale.

RESULTS AND DISCUSSION

This research was conducted to determine the effect of the Dart Board media in the Discovery Learning Model on students' learning motivation. Students' learning motivation can be seen through five indicators, namely the desire and desire to succeed, the encouragement and need for learning, the hope and aspirations for the future, the appreciation for learning, and the existence of interesting activities in learning so that students can learn. well. The results of descriptive statistical analysis based on the learning motivation questionnaire of experimental group and control group students obtained statistical data as in Table 1.

Table 1. Descriptive statistical value of students' learning motivation

No	Statistics	Experimental Group		Control Group	
		Pretest	*Posttest*	*Pretest*	*Posttest*
1.	Number of students	30	30	32	32
2.	The highest score	89	95	90	89
3.	Lowest value	56	66	63	64
4.	Mean	73.5	80.83	73.90	77.25
5.	Median	74.1	82.72	71.83	81.5
6.	Mode	73.5	78.68	70.5	76.83
7.	Standard Deviation	6.64	7.39	6.80	6.22

Table 1 shows that students in the experimental group who learned using Dart Board media in the Discovery Learning Model had higher learning motivation compared to students in the control group who only learned using the Discovery Learning Model. Where the use of media has a significant influence in increasing student learning motivation (Waruwu & Susanti, 2019). This is in line with the results of research by (Cahyani *et al*., 2017), which states that the Dart Board media creates students' interest in the learning process or the packaging of unusual and different material, so that it will indirectly attract students' attention or arouse students' curiosity to pay attention. By focusing attention on learning, students can feel comfortable and motivated to participate in ongoing learning.

The scores obtained by students in the experimental group and control group based on the learning motivation criteria of class XI students at SMA Negeri 1 Soppeng can be seen in Table 2.

Table 2. Learning motivation results

Mark	Category	*Pretest* Experiment	*Posttest* Experiment	*Pretest* Control	*Posttest* Control
82-100	Very high	6.67%	40%	15.62%	21.87%
63 - 81	Tall	90.00%	60%	84.37%	78.12%
44 - 62	Currently	3.33%	0%	0%	0%
25 - 43	Low	0%	0%	0%	0%

Based on Table 2, it shows that the learning motivation of students in the control group is lower than in the experimental group. This is because the experimental group used Dart Board media, by using Dart Board media the learning process becomes more interesting, fun and students will feel challenged and compete. competition to solve questions contained in the media, so that students can be more active in the learning process. This is in line with research (Susanti & Sukanti, 2016) which states that Dart Board media can increase students' learning motivation. Students' learning motivation can be seen where students read and study learning material during presentation activities, students work on questions independently without relying on answers or help from other students, and students are confident and confident in expressing their opinions.

The learning motivation of students in the experimental group and control group can be seen from the percentage of criteria for each indicator. There are five indicators of learning motivation used and can be seen in Table 3 and Table 4.

Table 3. Criteria for each indicator in the experimental group

No.	Indikator	*Pretest* Experimental Group		*Posttest* Experimental Group	
		Percentage	Criteria	Percentage	Criteria
1	There is passion and desire to succeed	77.29%	Tall	82.70%	Very high
2	There is encouragement and need for learning	70.41%	Tall	82.29%	Very high
3	There are hopes and aspirations for the future	74.58%	Tall	79.79%	Tall
4	There is appreciation in learning	74.58%	Tall	80.62%	Tall
5	There are interesting activities in learning	71.87%	Tall	80.41%	Tall
	Average	73.74%	Tall	81.16%	Tall

Table 4. Criteria for each indicator in the control group

No.	Indicator	*Pretest* Control Group		*Posttest* Control Group	
		Percentage	Criteria	Percentage	Criteria
1	There is passion and desire to succeed	77.53%	Tall	79.29%	Tall
2	There is encouragement and need for learning	72.85%	Tall	73.36%	Tall
3	There are hopes and aspirations for the future	68.55%	Currently	76.75%	Tall
4	There is appreciation in learning	71.48%	Tall	75.38%	Tall
5	There are interesting activities in learning	71.36%	Tall	76.56%	Tall
	Average	72.35%	Tall	76.26%	Tall

Based on Table 3 and Table 4, it shows that the use of Dart Board media in the Discovery Learning Model has a positive influence on students' learning motivation because the percentage of students' learning motivation in the posttest is higher than the percentage of students' learning motivation in the pretest. Apart from that, the posttest score on the indicator of interesting activities in learning shows that the experimental group has a percentage of 80.41% which is higher than the control group with a percentage of 76.26%. This shows that students who are taught using Dart Board Media are more motivated to learn because the learning process is interesting.

In line with the research results of (Andrianto & Yermiandhoko, 2017), it was stated that studentsss were happy and interested in learning because the appearance of the dartboard was very attractive and they had never learned to use dartboard media. Therefore, students will be more motivated to learn and try to answer questions. When students answer questions correctly, they subconsciously understand the material. Apart from that, dartboard media can train students to express their opinions so that it can stimulate students to be active and learn independently.

Referring to the calculation of students' learning motivation using the Mann-Whitney test, the $Z_{count} = 2.621$ and the $Z_{table} = 1.65$ at a significance level of 0.05. Because $Z_{count} > Z_{table}$ (2.621 > 1.65), then H_1 is accepted and H_0 is rejected. Based on the results obtained, it can be concluded that there is an influence of the use of Dart Board media in the Discovery Learning Model on the learning motivation of class XI students at SMA Negeri 1 Soppeng. This is supported by research conducted by (Azhari *et al.*, 2017), stating that students become enthusiastic and motivated in participating in learning using dartboard media. Apart from that, students become more aware of learning. With the dartboard media, learning becomes fun and not boring.

The results of the research show that the combination of the Discovery Learning Model using Dart Board media in learning makes students' learning motivation increase, where students can be motivated to take part in learning at every meeting because students can play Dart Board media first before answering questions so that students are more interested so that raises students' learning motivation. This is in line with research (Pambudi & Isroah, 2017), stating that Dart Game can increase students' learning motivation. The use of varied, innovative and creative learning media, such as learning media that applies the concept of learning by playing, can attract students' attention so that it can increase learning motivation. This is

also supported by research conducted by (Sunarto & Amalia, 2022), stating that the Discovery Learning Model can enable students to think critically in solving problems, play an active role in learning acivities, be independent in finding out or finding learning material, and can develop their creativity, as well as make learning situations more stimulating and interesting so that students are more motivated to learn.

CONCLUSION

This research concluded that the use of Dart Board media in the Discovery Learning Model has an influence on students' learning motivation on chemical bonding material. The research findings show that the experimental group that followed the learning with this approach showed higher learning motivation than the control group. The implication of this finding is the importance of using innovative and creative learning media in increasing students' learning motivation. Thus, it is expected that this research can be used as a reference for further development related to the application of media and learning models that focus on the utilization of technology, innovative, and creative to increase student learning motivation and the quality of education.

REFERENCE

Al-Manik, S. K. Y. (2021). Pengembangan Media *Dart Board* Untuk Meningkatkan Motivasil Belajar Ipa Kelas II Di Sdit Al Akbar Karanggayam Srengat Blitar. *INOVATIF: Jurnal Penelitian Pendidikan, Agama, dan Kebudayaan, 7*(1).

Andrianto, K., & Yermandhoko, Y. (2017). Pengembangan Papan *Dart* Sebagai Media Pembelajaran pada Mata Pelajaran IPA materi Ekosistem pada Kelas V di SDN Kebraon 1. *Jurnal JPGSD, 5*(3).

Arends, R. I. (2012). *Learning to Teach (10th ed).* New York: McGraw-Hill International Edition.

Arief, M. D., Auliah, A., & Hardin, H. (2021). Pengembangan *E-Magazine* Reaksi Reduksi dan Oksidasi Sebagai Media Pembelajaran Kimia Kelas X SMA / MA. *Jurnal Inovasi Pembelajaran Kimia (Journal Of Innovation in Chemistry Education), 3*(2), 148-163.

Azhari, B. R., Hanifah, N., & Gusrayani, D. (2017). Penggunaan Media Papan *Dart* Untuk Meningkatkan Motivasi Dan Hasil Belajar Siswa. *Jurnal Pena Ilmiah, 2*(1).

Cahyani, N. A. P., Bariyyah, K., & Latifah, L. (2017). Efektivitas Teknik Permainan Simulasi dengan Menggunakan Media Dart Board untuk Meningkatkan Motivasi Belajar Siswa Kelas VII C SMP Negeri 2 Tegal Siwalan Probolinggo. *JKI (Jurnal Konseling Indonesia), 3*(1).

Donasari, A., & Silaban, R. (2021). Pengembangan Media Pembelajaran Kimia Berbasis Android Pada Materi Termokimia Kelas XI SMA. *Jurnal Inovasi Pembelajaran Kimia (Journal Of Innovation in Chemistry Education), 3*(1), 86-95.

Haris, M., & Idrus, S. W. Al. (2011). Analisis Kesulitan Belajar Kimia Ditinjau dari Kesalahan Konsep Siswa Kelas X SMA N 3 Mataram. *Jurnal Pijar MIPA, 6*(2).

Hosnan, M. (2014). *Pendekatan Saintifik dan Kontekstual dalam Pembelajaran Abad 21.* Bogor: Ghalia Indonesia.

Husniyah, L., & Pratiwi, T. I. (2016). Pengembangan Media Permainan *Dart Board* Interaksi Sosial dalam Bimbingan Kelompok Kelas X IPA SMA Negeri 12. *Jurnal BK UNESA, 10*(1).

Kemendikbud. (2013). *Model Pembelajaran Penemuan (Discovery Learning).* Jakarta: Kemendikbud.

Listiani, D., & Prihatnani, E. (2018). Pengembangan Media Pembelajaran

Dart Board Math Bagi Siswa Kelas VII SMP. *Math Didactic: Jurnal Pendidikan Matematika, 4*(1).

Pambudi, A. S. S., & Isroah, I. (2017). Pengembangan Media Pembelajaran *Dart Game Accounting* Untuk Meningkatkan Motivasi Belajar Kompetensi Mengelola Kas Kecil. *Kajian Pendidikan Akuntansi Indonesia, 6*(8).

Permana, N. S. (2022). *Game Based Learning* sebagai Salah Satu Solusi dan Inovasi Pembelajaran Bagi Generasi *Digital Native*. *Jurnal Pendidikan Agama Katolik, 22*(2).

Purnomo, H. (2019). *Psikologi Pendidikan*. Yogyakarta: LP3M UMY.

Rahmawati, V., Umamah, N., Sumardi, S., & Murtinah, M. (2022). *Game-Based Learning Models And Improving Student Learning Outcomes In History Subjects*. *Jurnal Historica, 6*(2).

Sinambela., P. N. J. M. 2013. Kurikulum 2013 Dan Implementasinya Dalam Pembelajaran. *Jurnal Generasi Kampus, 6*(2).

Siskawati, M., Pargito, P., & Pujiati, P. (2016). Pengembangan Media *Dart Board* Untuk Meningkatkan Minat Belajar Geografi Siswa. *Jurnal Studi Sosial, 4*(1).

Sunarto, M. F., & Amalia, N. (2022). Penggunaan Model *Discovery Learning* Guna Menciptakan Kemandirian Dan Kreativitas Peserta Didik. *BAHTERA : Jurnal Pendidikan Bahasa Dan Sastra, 21*(1).

Susanti, P. M., & Sukanti, S. (2016). Implementasi Model Pembelajaran Kooperatif Tipe *Teams Games Tournament* (TGT) dengan Media *Dart Board* Untuk Meningkatkan Motivasi Belajar Akuntansi. *Kajian Pendidikan Akuntansi Indonesia, 5*(8).

Uno, H. B. (2017). *Teori Motivasi dan Pengukurannya: Analis di Bidang Pendidikan*. Jakarta:Pt Bumi Aksara.

Waruwu, A. M., & Susanti, N. (2019). Pengaruh Model Pembelajaran Kooperatif Team Games Tournament (TGT) Berbantuan Media Teka–Teki Silang (TTS) Terhadap Hasil Belajar Dan Motivasi Siswa Pada Materi Tata Nama Senyawa Di Kelas X SMA Swasta Parulian 1 Medan. *Jurnal Inovasi Pembelajaran Kimia (Journal Of Innovation in Chemsitry Education), 1*(2), 81-86.

Wulandari, D. S. E., Bahar, A., & Elvinawati, E. (2018). Penerapan Model Pembelajaran Inkuiri dengan Media *Dart Board* untuk Meningkatkan Hasil Belajar Kimia di Kelas XI IPA 1 SMA Negeri 9 Kota Bengkulu Tahun Ajaran 2016/2017. *Jurnal Pendidikan dan Ilmu Kimia, 2*(1), 20-24.