Revising False Belief in Learning:
The Impact of Students' Belief on a Better Learning Experience

Rizky A. Artiningsih[1] Chabibatul 'Alimah[1] Siti I. Savira [1,*]

[1] *Department of Psychology, Faculty of Education, Universitas Negeri Surabaya*
[*] *Corresponding author. Email: sitisavira@unesa.ac.id*

ABSTRACT
This study aims to analyze the changes in students' attitudes and beliefs about their learning abilities. The method used to achieve this goal is to train learning strategies based on student learning styles. The training was given to 50 students by providing material about strategies and learning styles. Students were given a learning style questionnaire to identify their learning styles. The training results showed an increase of 64% in terms of students' belief that mastery of learning strategies can help them improve their learning abilities. This belief is expected to increase students' efforts and motivation in learning because they no longer assume that learning abilities are more influenced by intrinsic factors that cannot be changed.

Keywords: *Learning Strategies, Learning Style.*

1. INTRODUCTION

One of the problems in education is the low cognitive ability of students in understanding lessons. One of the factors that affect the ability but is rarely considered is the lack of optimizing the learning style that is owned [1][2]. Learning styles are generally associated with cognitive profiles, namely, understanding and managing information [1][3][4]. The learning styles that are often known are auditory, which is more optimal when learning by listening or discussing; visual, which is more optimal when reading or seeing the object being studied; and kinesthetic, which is optimal when making movements or touching the object being studied directly [1].

Scientific studies on learning discuss the importance of accommodating students' learning styles to improve academic achievement [1][2][4][5]. Understanding individual learning styles can help individuals choose and adapt the learning strategies used to accommodate their cognitive preferences [1][6].

A learning strategy is defined as a plan, method, or series of activities designed to achieve specific educational objectives [7]. Their right learning strategies will enable the achievement of learning goals effectively and efficiently, so it needs to be considered and understood in the learning process [7][8]. One of the learning strategies considered is how to regulate the

learning environment [8]. Learning strategies will run effectively and efficiently if their implementation is adjusted to students' learning styles [7], [9].

Based on this description, learning strategy training based on learning styles is considered the right activity to be given. Understanding learning styles can increase students' awareness in choosing appropriate learning strategies. Effective learning strategies make cognitive performance more efficient and thus facilitate students' information processing and building their knowledge. The expected long-term impact is that students have a more positive attitude towards learning and give greater effort in learning. It will also affect their behavior in the future.

Since students who think that their success in learning is caused by ability or luck or merely chance, they may not believe that using proper learning strategies will make any difference. It is called negative attribution[10]. Attribution can be defined as the causal inferences people make to predict and explain the behaviors of self and others[11]. There are three causal dimensions in the process: dimension, stability, and controllability[10]. The first dimension is the locus where individual attributes their performance into internal or external causes. The stability dimension separates attribution of performance to permanent versus variable causes. The last dimension, controllability, separates performance attribution under one's control from those not[11]. The dynamic of

personal causal attribution one's held will affect expectation and effort. For example, if one thinks that failure is caused by stable, uncontrollable, and permanent factors, one may be reluctant to put much effort into performing a task[12]. In learning, students may attribute their failure to 'personal limitations' such as intelligence, which may cause them to perform less and lower motivation[13]. Therefore, the suggested strategy to change students' belief in learning is by altering their causal attribution of failure into something alterable and controllable.

Research shows that using appropriate strategies may solve most learning problems. Teaching students with appropriate learning strategies is suggested to correlate with the development of metacognition and self-regulation [14], [15]. It also teaches that success and failure in learning can be attributed to alterable and controllable factors. One effective way to teach students the learning strategies is by teaching students with the learning strategies that are suitable to their learning style.

Based on the elaboration above, many suggest that altering students' beliefs about their level of control to the factors affecting learning may change their motivation and performance.

2. METHODS

This research was started by conducting a preliminary study with the school regarding the problems experienced by students at school. The observations and interviews indicate that early intervention is needed to increase a more positive attitude towards learning.

The research population is the students of the Agung Mulia Vocational High School in Bangkalan. The subjects in this study were 50 students in grade 2 of a vocational high school majoring in mechanical engineering. The subject selection follows the school's suggestion derived from the daily experience of the learning problems in the classroom.

The intervention given is to provide training on learning strategies based on the learning styles. The training is carried out by giving students knowledge about learning styles and learning strategies. An analysis of the pre-test and post-test scores was conducted to know the effectiveness of the training on changing students' attitudes and beliefs about their learning abilities.

The researcher adapted 54 items of pre-existing learning style inventory by Middlesex Community College [16]. The adaptation process followed the following steps. The first step is to translate the instrument by a linguist. A selected educational psychology expert has then reviewed the translated instruments as an expert judgment to see the suitability of the translation with the construct to be measured. Then, the review results from the expert judgment were translated back into English to assess whether the changes that occurred due to the translation process and the review did not change the actual meaning of the original instrument. After that, we conduct a try-out by spreading the instrument to several respondents who have similar characteristics as the research subjects.

The validity of the instrument was tested using the content validity test. Content validity refers to the extent to which a measuring instrument can measure what it wants to measure, and the statement items represent the aspects of being measured [17]. Content validity is obtained through professional judgment, namely lecturers with expertise in the field of Educational Psychology. This research was also given seminars in front of research reviewers to input the instruments and methodologies used.

It was found that the instrument met the reliability requirements, with a value of 0.795 included in the reliable criteria. Reliability is the extent to which the results of a measurement can be trusted [18]. An instrument can be said to be reliable if, in several times, the measurement of the same object will produce relatively the same data [19]. The results of the reliability test on the instruments used in learning strategy training based on learning styles were calculated using the alpha cronbach formula with the help of spss version 24.0 for windows.

3. RESULTS AND DISCUSSION

Studies show that individuals' belief is crucial for their thinking, motivation, and action [20], [21]. Belief itself is a complex concept that has been widely debated and discussed, especially compared to other terms such as attitude, knowledge, and values [21], [22]. As used in this article, the term belief is a psychological concept that 'describes a proposition that is accepted as true by the individual holding the belief' [21]. In education, students' beliefs may appear in many different concepts such as self-efficacy [23], [24], attributional belief [10], and students' epistemological belief [25]. Those concepts generally underline the importance of students' beliefs to students' motivation and self-regulation, which may impact their performance and achievement. Students' belief is also important for

student retention [20] and adopts self-regulation [14] because these factors are important for maintaining independent learning. This article will discuss the change in students' reports on whether learning strategies are important to improve their learning abilities. It is under the assumption that the response gap illustrates the students' change of belief regarding learning.

Table 1. Pre-test result

Question	Result	
	Yes	No
1. Do you often find it difficult to understand the lesson?	19%	81%
2. Do you know what learning style is?	19%	81%
3. Do you know what is learning strategy is?	15%	85%
4. Do you feel you have or master many learning strategies?	27%	73%
5. Do you think mastering the right learning strategies can help improve learning abilities?	21%	79%

Table 2. Post-test result

Question	Result	
	Yes	No
1. Have you understood what learning style is?	96%	4%
2. Do you think understanding learning styles is important?	92%	8%
3. Do you think that mastering the right learning strategies can help improve learning ability?	85%	15%
4. After participating in this activity, will you start trying various learning strategies that you have never used before?	90%	10%
5. In your opinion, did this activity benefit you?	87%	13%

Before the intervention, students were given a pre-test. The pre-test results showed that 19% of students stated that they had difficulty understanding the lesson, while the other 81% stated that they had no difficulty understanding the lesson. Related to the learning style, only 19% of students stated that they are aware of learning styles, while 81% stated they do not. Only 15% of students stated that they knew what was meant by a learning strategy, another 85% stated that they did not know what a learning strategy was. Regarding mastery of learning strategies, only 27% of students stated that they mastered learning strategies. In addition, the results also show that only 21% of students stated that they agreed that mastering learning strategies could help improve their learning abilities.

After training learning strategies based on learning styles were given, the results of the post-test showed the

following: (1) Some 96% of students stated that he understands what it's learning style, 4% stated not understand about learning styles; (2) A total of 92% of students stated that it was important to understand learning styles, another 8% stated that they were not; (3) A total of 85% of students stated that they agreed that mastering learning strategies could improve learning abilities, the other 15% stated no; (4) After being given knowledge and training on learning strategies based on learning styles, 90% of students stated that they would try learning strategies that had never been used before, another 10% said no; (5) After being given the knowledge and training on learning strategies based on learning styles, 87% students stated that the training activities of learning strategies based on learning styles provide benefits, 13% said no.

Based on the research results, there are some changes to students based on pre-test and post-test results. One of the changes shown is related to knowledge about learning styles. Before the given materials regarding learning styles, 19% of students understood about learning styles after being given the material. At the same time, 96% of students have understood learning styles, so it can be inferred that there is an increase in understanding students' learning styles.

One of the student conditions that affect the ability to receive information is learning style [1], [6], [26]. Understanding learning styles is the first step for students to The learning style is also linked with problem-solving skills in students [27]. Thus, students' understanding of their learning styles can increase their understanding of the causes of their learning problems. After learning the learning style that is owned, students can reflect whether the learning habits have been following the learning styles that are owned and applying appropriate learning strategies [28].

Changes also appear in the differences in the results of pre-test and post-test related to the belief that learning strategies can help improve learning abilities. Pre-test states that only 21% of students agree that mastering learning strategies can help him improve his learning ability. After being given intervention, the post-test results showed an increase in the number of 85% of students stated that mastering learning strategies could improve the ability.

Based on the pre-test and post-test results, it can be seen that there is an increase of 64% of students who understand that mastering learning strategies can improve their learning abilities. This shows that students begin to attribute mastery of learning strategies

as one factor affecting their learning abilities. Students' belief in the strategies of learning used can affect the effectiveness of the strategies used[29].

The belief in mastery strategies in influencing learning abilities is expected to change the perspective that intrinsic factors cause learning abilities. Attribution on internal factors that can be controlled than can not be controlled can improve the motivation and effort given the student in learning [30]–[32]. On the contrary, students who think that learning abilities are more influenced by innate factors that are difficult to change or cannot be controlled will tend to have lower learning motivation and give less effort in learning [8], [13]

Training activities to determine learning strategies based on learning styles are considered beneficial by most students. As many as 87% of students stated that learning strategies based on learning styles provided benefits, and another 13% stated that it was not.

Based on these results, it can be seen that most of the students who participated in the training could benefit from these activities. However, there were 13% stated that they did not benefit. One of the efforts achieved in this activity is to change students' understanding of the factors that affect their learning abilities. The underlying assumption is that if students believe that the factors that affect their learning ability are controllable, they will also give more effort and motivation in learning. Students will try to master learning strategies that are more by their learning style. However, changing this perspective or belief is certainly not easy. Some students have a strong belief that they do not have any learning strategies and cannot see the benefits of using certain learning strategies. These students tend to think that the minimal effort they put into learning or mastering the lesson is sufficient to make them receive 'good' learning outcomes, so they do not see the need to optimize their learning effort.

The existence of negative attitudes from students who tend to be unwilling or difficult to change can be caused by several factors. One factor potentially affecting it includes perceptions of control students have low[8]. The tendency to view oneself negatively can predict poor academic performance in students [33]. Students who have confidence in their abilities have good motivation and have appropriate learning strategies [8]. In addition to low self-control, tendency motivational processes emphasize performance goals rather than mastery goals can also affect students' motivation in a change [29]. Students who emphasize performance goals tend to top others, while students

whose motivation is based on the objective of the control (mastery goals) showed a more positive attitude towards learning, more like a challenging task, and has a strong belief that exerted effort has a strong positive correlation with the results achieved [29]. Another factors that also influence the attitudes and student achievement include students' feel toward what they are learning, personality of the teacher, and the quality of the competence of professionals, namely the delivery of the material provided by the teacher [34]–[36]. Also, teachers' attitude correlates to student achievement in certain subjects, such as mathematics [36].

The post-test results showed that 85%Otherdents who took part in this PKM activity thought that understanding learning styles and learning strategies was beneficial for them. Besides, they also wanted to try various learning strategies that they had never done before. Another important finding from this activity is that most students believe that using appropriate learning strategies can improve learning abilities. This belief is expected to increase students' efforts and motivation in learning because they no longer assume that learning abilities are more influenced by intrinsic factors that cannot be changed.

Thus, students' views on their learning abilities can be influenced by factors such as perceptions of control. Understanding learning styles and appropriate learning strategies will increase students' confidence in the control they have. However, factors from the environment, including the teacher's attitude towards students and the teacher's instructional abilities, can also influence how students view learning. Teachers can be an important factor for students to change their perspective, self-efficacy, and academic self-concept. Therefore, teachers should be able to provide innovative learning and demonstrate their professionalism in teaching to optimize students' learning abilities.

4. CONCLUSION

The research was conducted by providing training on learning strategies based on students' learning styles. In this training, students are given knowledge about various learning styles and appropriate learning strategies according to their learning styles. Students can find out that they belong to a visual, auditory, or kinesthetic learning style, even a combination of the three, using the questionnaire given. After that, students are given effective strategies in learning according to their learning style. The results showed an increase of 64% in students' beliefs that mastery of learning strategies could help them improve their learning abilities.

Based on the research that has been done, suggestions from researchers that can be considered to optimize learning include recognizing student learning styles and applying appropriate learning strategies based on their learning style. The role of the teacher to apply learning according to student learning styles is also very important. Therefore, it is expected that teachers can implement innovative learning that can meet the needs of students in maximizing their learning.

ACKNOWLEDGMENTS

REFERENCES

[1] F. D. Widayanti, "Pentingnya Mengetahui Gaya Belajar Siswa Dalam Kegiatan Pembelajaran Di Kelas," *Erud. J. Educ. Innov.*, vol. 2, no. 1, hal. 7–21, 2013, doi: 10.18551/erudio.2-1.2.

[2] A. Diniaty, L. Fauzi'Ah, B. W. Febriana, dan W. N. Arlianty, "Analysis of students learning style preference as initial steps in determining the strategy of learning," *AIP Conf. Proc.*, vol. 2026, no. 1, pp. 2–7, 2018, DOI: 10.1063/1.5065017.

[3] S. J. Armstrong, E. R. Peterson, dan S. G. Rayner, "Understanding and defining cognitive style and learning style: A Delphi study in the context of educational psychology," *Educ. Stud.*, vol. 38, no. 4, pp. 449–455, 2012, DOI: 10.1080/03055698.2011.643110.

[4] I. Purnamasari, Siswandari, dan N. Hamidi, "Upaya Meningkatkan Prestasi Belajar Siswa Dengan Model Active Learning Tipe Think-Pair-Share (TPS) Ditinjau Dari Gaya Belajar Siswa Smk Negeri 1 Karanganyar," *JupeJurnal Pendidik. Ekon.*, vol. 1, no. 1, hal. 1–12, 2013.

[5] T. F. Hawk dan A. J. Shah, "Using Learning Style Instruments to Enhance Student Learning," *Decis. Sci. J. Innov. Educ.*, vol. 5, no. 1, pp. 1–20, 2007.

[6] A. Natsis, P. Papadopoulos, dan N. Obwegeser, "Research Integration in Information Systems Education: Students' Perceptions on Learning Strategies, Skill Development, and Performance,"

J. Inf. Technol. Educ. Res., vol. 17, no. 1, 2018.

[7] Liyusri dan J. Situmorang, "Strategi pembelajaran dan gaya belajar terhadap hasil belajar geografi," *J. Teknol. Pendidik.*, vol. 6, no. 1, pp. 64–78, 2013.

[8] C. Gbollie dan H. P. Keamu, "Student Academic Performance: The Role of Motivation, Strategies, and Perceived Factors Hindering Liberian Junior and Senior High School Students Learning," *Educ. Res. Int.*, vol. 2017, pp. 1–11, 2017, DOI: 10.1155/2017/1789084.

[9] R. N. Atika, "Interactions Among Learning Styles, Language Learning Strategies and Gender of Efl Learners," *SALEE Study Appl. Linguist. English Educ.*, vol. 1, no. 1, pp. 67–82, 2020, DOI: 10.35961/salee.v1i01.79.

[10] S. Graham, "Attribution theory and motivation in school," in *Handbook of motivation at school*, Routledge, 2016, pp. 23–45.

[11] D. M. Houston, "Revisiting the relationship between attributional style and academic performance," *J. Appl. Soc. Psychol.*, vol. 46, no. 3, pp. 192–200, 2016, DOI: 10.1111/jasp.12356.

[12] R. Patel, C. Tarrant, S. Bonas, J. Yates, dan J. Sandars, "The struggling student: A thematic analysis from the self-regulated learning perspective," *Med. Educ.*, vol. 49, no. 4, pp. 417–426, 2015, DOI: 10.1111/medu.12651.

[13] C. Demetriou, "The Attribution Theory of Learning and Advising Students on Academic Probation," *NACADA J.*, vol. 31, no. 2, pp. 16–21, 2011, DOI: 10.12930/0271-9517-31.2.16.

[14] M. J. Lawson, S. Vosniadou, P. Van Deur, M. Wyra, dan D. Jeffries, "Teachers' and Students' Belief Systems About the Self-Regulation of Learning," *Educ. Psychol. Rev.*, vol. 31, no. 1, pp. 223–251, 2019, DOI: 10.1007/s10648-018-9453-7.

[15] S. Y. McGuire, *Teach students how to learn: Strategies you can incorporate into any course to improve student metacognition, study skills, and motivation*. Sterling, Virginia: Stylus Publishing, 2015.

[16] Academic Centers for Enrichment, *Learning Styles Inventory (LSI)*. Massachusetts: Middlesex Community College, 2010.

[17] N. S. Sukmadinata, *Metode Penelitian Pendidikan*. Bandung: PT. Remaja Rosdakarya, 2008.

[18] S. Azwar, *Reliabilitas dan Validitas*. Yogyakarta: Pustaka Pelajar, 2011.

[19] Sugiyono, *Metode penelitian buantitatif, kualitatif, dan R&D*. Bandung: Alfabeta, 2013.

[20] M. M. Buehl dan P. A. Alexander, "Motivation and performance differences in students' domain-specific epistemological belief profiles," *Am. Educ. Res. J.*, vol. 42, no. 4, pp. 697–726, 2005, DOI: 10.3102/00028312042004697.

[21] V. Ricardson, "The role of attitudes and beliefs in learning to teach," *Handb. Res. Teach. Educ.*, vol. 2, no. 102–119, 1996.

[22] N. Meschede, A. Fiebranz, K. Möller, dan M. Steffensky, "Teachers' professional vision, pedagogical content knowledge and beliefs: On its relation and differences between pre-service and in-service teachers," *Teach. Teach. Educ.*, vol. 66, pp. 158–170, 2017, DOI: 10.1016/j.tate.2017.04.010.

[23] A. Bandura, "Self-Efficacy," *The Corsini Encyclopedia of Psychology*. John Wiley & Sons, Inc, 2010.

[24] D. H. Schunk, "Self-efficacy and academic motivation," *Educ. Psychol.*, vol. 26, no. 3–4, pp. 207–231, 1991.

[25] B. K. Hofer dan P. R. Pintrich, "The development of epistemological theories: Beliefs about knowledge and knowing and their relation to learning," *Rev. Educ. Res.*, vol. 67, no. 1, pp. 88–140, 1997, DOI: 10.3102/00346543067001088.

[26] W. Sanjaya, *Perencanaan dan desain sistem pembelajaran*. Kencana, 2015.

[27] R. Sundayana, "Kaitan antara Gaya Belajar, Kemandirian Belajar, dan Kemampuan Pemecahan Masalah Siswa SMP dalam Pelajaran Matematika," *Mosharafa J. Pendidik. Mat.*, vol. 5, no. 2, hal. 75–84, 2018, doi: 10.31980/mosharafa.v5i2.262.

[28] Y. Feng, F. Iriarte, dan J. Valencia, "Relationship Between Learning Styles, Learning Strategies and Academic Performance of Chinese Students Who Learn Spanish as a Foreign Language," *Asia-Pacific Educ. Res.*, vol. 29, no. 5, pp. 431–440, 2020, DOI: 10.1007/s40299-019-00496-8.

[29] J. A. C. Hattie dan G. M. Donoghue, "Learning strategies: a synthesis and conceptual model," *npj Sci. Learn.*, vol. 1, no. 1, pp. 1–13, 2016, DOI: 10.1038/npjscilearn.2016.13.

[30] M. Iksan, "Dukungan sosial pada prestasi dan faktor penyebab kegagalan siswa SMP dan SMA," *J. psikoislamika*, vol. 10, no. 1, 2013.

[31] Trisnawati, S. B. Thalib, dan Rachmawaty, "The Influence of Internal Locus of Control to The Motivation and Biology Learning Outcomes of Students of Senior High School in Sinjai Barat," in *Prosiding Seminar Nasional Biologi dan Pembelajarannya*, 2018, pp. 485–490.

[32] R. Bruning, G. Schraw, dan M. Norby, *Cognitive psychology and instruction*. Pearson, 2010.

[33] S. Lee, T. Wang, dan X. Ren, "Inner speech in the learning context and the prediction of students' learning strategy and academic performance," *Educ. Psychol.*, vol. 40, no. 5, pp. 535–549, 2020, DOI: 10.1080/01443410.2019.1612035.

[34] R. Nurutami dan A. Adman, "Kompetensi Profesional Guru Sebagai Determinan Terhadap Minat Belajar Siswa," *J. Pendidik. Manaj. Perkantoran*, vol. 1, no. 1, hal. 119–127, 2016, doi: 10.17509/jpm.v1i1.3345.

[35] N. W. Sayuwaktini, H. Yanzi, dan B. Pitoewas, "Pengaruh Kompetensi Kepribadian Guru Terhadap Minat Belajar Siswa Pada Mata Pelajaran PPKn," *J. Kult. Demokr.*, vol. 3, no. 3, 2015.

[36] R. Azka, "Hubungan Motivasi Belajar dan Persepsi Siswa terhadap Gaya Mengajar Guru dengan Prestasi Belajar Matematika," *J. Pengemb. Pembelajaran Mat.*, vol. 1, no. 1, hal. 23–31, 2019.