UNDERACHIEVER STUDENT IN LEARNING MATHEMATICS: CAUSES AND SOLUTIONS

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Abstract
Underachiever is discrepancy between school achievement and the intelligence level of students, where school achievement is lower than the level of intelligence. This study systematically examines the results of research related to underchiver students. This study aims to identify several factors that are thought to be causes of underachiever student and solutions that can be used to provide appropriate support for students in the process of learning mathematics. The research method used is a systematic literature review with journal criteria, namely the data used is only related to the causative factors and solutions of underachiever students, and the journals used must be indexed by Scopus and Sinta. From the results of the literature study found 169 articles published in national and international journals. Of the 169 articles, 11 articles were selected that met the requirements for the analysis. The results of the analysis show that the causes of underachiever students are internal factors, namely the student's own personality and external factors that come from family and school, then the solutions offered in dealing with underachiever students include the application of fun learning with cognitive and behavioral strategies, psychoeducational interventions in the form of training and learning with approaches are accompanied by a well-prepared strategy for gifted students.

Keywords: Mathematics, mathematics learning outcome, underachiever

Abstrak
Underachiever adalah ketidak sesuaian prestasi sekolah dengan tingkat kecerdasan yang dimiliki siswa, dimana prestasi sekolah lebih rendah daripada tingkat kecerdasannya. Penelitian ini mengkaji secara sistematik hasil-hasil penelitian yang berkaitan dengan siswa underachiever. Penelitian ini bertujuan untuk mengidentifikasi beberapa faktor yang diprediksi sebagai faktor penyebab siswa underachiever dan solusi yang dapat digunakan untuk memberi dukungan yang tepat bagi siswa dalam proses pembelajaran matematika. Metode penelitian yang digunakan adalah structure literature review dengan kriteria jurnal yaitu data yang digunakan hanya berhubungan dengan faktor dan solusi siswa underachiever, dan jurnal yang digunakan harus terindex Scopus dan Sinta. Dari hasil studi literatur ditemukan 169 artikel yang terbit pada jurnal nasional dan internasional. Dari 169 artikel, terpilih 11 artikel yang memenuhi syarat untuk menjadi bahan analisis. Hasil analisis menunjukkan bahwa penyebab dari siswa underachiever adalah berasal dari faktor internal yaitu kepribadian siswa itu sendiri dan faktor eksternal yang berasal dari keluarga dan sekolah, kemudian solusi yang ditawarkan dalam menangani siswa underachiever antara lain penerapan pembelajaran yang menyenangkan dengan strategi kognitif dan behavior, intervensi psikoedukasi yaitu berupa pelatihan dan pembelajaran dengan pendekatan-pendekatan disertai dengan strategi yang penuh persiapan, untuk siswa berbakat.

Kata Kunci: Hasil belajar matematika, matematika, underachiever

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INTRODUCTION

Mathematics is one of the subjects that occupies an important role in education. It is proven that mathematics is studied at all levels of education, starting from Kindergarten to University education (Novianti et al., 2017; Rizta & Antari, 2018). However, many students think that mathematics is a very difficult subject, so that it can affect to students’ success in learning mathematics. As educators, all teachers expect the learning process to run effectively, efficiently, and achieve optimal results, especially in learning mathematics. In the process of learning mathematics, the success of a student is usually determined from the learning outcomes he gets. Good mathematics learning outcomes from a student are influenced by the quality of the mathematics learning process he undergoing, both through teaching and learning activities and his independent learning activities. The success or failure of a student in learning mathematics depends on many factors, one of which is his cognitive ability or intelligence. This is in line with the opinion of Black, et al. (Herlina & Suwatno, 2018) which states that many things affect student achievement, one of which is the intelligence factor, namely the intellectual intelligence possessed by students.

Each student has a different level of intelligence. Let alone in one lineage, twins also have different levels of intelligence. Especially those who are not related to the family. A person’s intelligence is usually measured through an Intelligence Quotient (IQ) test and his intelligence is only seen from a person’s ability to answer question which are standard test in the classroom (Hanafi, 2019). Intelligence in a general sense is a general ability that distinguishes the quality of one person from another (Benjamin et al., 2013). According to Howard Gardner (Azhari, 2014) intelligence is the ability to solve or create something of value to a particular culture. As for Daryanto (2014) argues that intelligence is a person’s ability to solve the problems faced, in this case there are problems that require the ability of mind. In line with that, Wechsler (Gondal & Husain, 2013) states that IQ is a phenomenon that involves an assessment of a person’s ability to observe, analyze, and interpret circumstances as well as an individual’s intellectual talent which is measured and represented numerically.

According to Westy (Herlina & Suwatno, 2018), a person’s IQs related to the level of achievement. The higher the level of student intelligence, the higher the learning achievement. This is line with Rahmawati’s opinion (2013) that IQ has a significant correlation with learning outcomes. Generally, this happens where students who have high intelligence will also get high learning achievement as well including in learning mathematics. However, in reality there are still students who have high intelligence but poor in their learning outcomes or achievements at school. Such students are called underachievers. According to Reis and McCoach (Dewi & Trisnawati, 2017), underachiever is a condition in which students show a difference between expected achievement (measured through standardized academic tests or intellectual examinations) and actual achievement (measured through teacher evaluation or class level suitability). Several studies (Sutriningsih, 2017; Muthmainnah and Purnamasari, 2019; Jannah et al., 2020) also show that there are underachiever students in learning mathematics, where students with high
IQ but mathematics learning outcomes are low. These results show that having a high IQ does not guarantee that a child will always get high achievements.

Besides that, Djamarah (2015) explains that children who are classified as having a high IQ, which should potentially they should achieve high learning achievement, but in fact they get low learning achievement. This is because the children have learning difficulties, namely children who do not learn properly due to threats, obstacles, or disturbances in learning. In the Netherlands and other countries it was found that approximately 30% of primary and secondary school children are underachievers, due to social and emotional problems. The problem of fear of failure is also the cause of intellectual capacity not being able to work optimally.

Underachiever students are a confusing problem (Siegle et al., 2017). Low achievement usually occurs from elementary school and has a continuous influence when students enter middle school and higher education and influences career success (Snyder et al., 2019; Barbier et al., 2019). This is in line with the opinion of (Siegle et al., 2017) namely the phenomenon of underachiever students is important to study, understand and handle because low achievement in high school will affect students’ opportunities in the future to achieve career success. The essence of the problem of underachiever students is the failure of students to realize their potential (Lamanna et al., 2019).

Based on some of the results of the previous studies, many revealed the factors and characteristics of underachiever students in general. However, no one has explained specifically how the causal factors and alleged solutions can be applied to underachiever students in learning mathematics. This requires research because it is believed that there is a problem that occurs in underachiever students in the learning mathematics process, where the level of intelligence is inversely proportional to the learning mathematics outcomes obtained. This will allow the following questions to be answered: What are the factors that cause students to underachieve? What is the right solution for learning mathematics? Therefore, need an in-depth explanation of what problems occur to underachiever students and how to solve them, especially in learning mathematics.

**METHODS**

This study aims to examine the underachiever students about the causes of underachievers and their solutions in learning mathematics. A systematic search for academic journal articles was conducted through the search engine databases of Google, Garuda, ERIC, Google Scholar, Science Direct, and Crossref. In the ERIC search it only takes the first 10 pages and in Science Direct only the first 7 pages by displaying 50 search results per page. This is because the articles that follow are irrelevant to the focus being analyzed. The search terms are: underachiever OR underachievement, underachiever AND in OR mathematics OR mathematics, gifted OR giftedness.

To determine the articles to be analyzed, the criteria set are: 1) The data used only relates to the causative factors and solutions of the underachiever students, and 2) The journals used must be indexed by Scopus and Sinta. The database search
returned 169 items (see figure 1). Among the 169 items, 21 duplicates were removed. The titles, abstracts, and keywords of the remaining 148 items were screened for potential eligibility resulting in 41 items that were subjected to full-text review and 31 items were removed because they were not indexed by Scopus or Sinta, were not research, and cannot be applied in learning mathematics, so resulting in 10 articles that met the inclusion criteria.

![Flowchart](image)

**Figure 1. Flowchart of article search and inclusion strategy**

**RESULT AND DISCUSSION**

Details of the ten articles were extracted and entered into a summary table (Table 1) which includes the research focus and main findings relevant to the representation of underachiever students.

<table>
<thead>
<tr>
<th>No.</th>
<th>Researcher(s)</th>
<th>Causative Factors</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Amir (2016)</td>
<td>The low achievement motivation of students is a factor that causes learning process to have low achievement. Increase achievement motivation. This is indicated by the condition that it cannot display its potential optimally.</td>
<td>Role playing technique in the learning process is effective to increase achievement motivation of underachiever students. This is supported by the change in attitude shown by the underachiever students before and after the treatment.</td>
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<td>No.</td>
<td>Researcher(s) (Year)</td>
<td>Causative Factors</td>
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<td>2.</td>
<td>Dahlia &amp; Roza (2017)</td>
<td>The reason is that there are personal problems experienced by underachiever students. In addition, problems faced in gifted children services include: not focusing on children's needs, teachers' understanding of gifted children is not comprehensive, and the identification process is not right.</td>
<td></td>
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<tr>
<td>3.</td>
<td>Sutriningsih (2017)</td>
<td>The factors that cause students to be underachievers are family, living environment, personality, and loading.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Dewi &amp; Trisnawati (2017)</td>
<td>The author quotes the words McClelland, 'Yewchuk and Mulcahy (2006) which states that there are two main sets that affect underachievement performance, namely (a) emotional and motivational factors, and (b) factors related to learning strategies.</td>
<td></td>
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<td>5.</td>
<td>Putra &amp; Soetikno (2018)</td>
<td>The group of underachievers lacks achievement goals, which is reflected in the lack of goal setting, planning, study time management and self-evaluation.</td>
<td>Psychoeducational interventions are in the form of training consisting of guided group discussions, games and several work task activities that are carried out independently or together in groups. Improving students' self-regulation consisting of metacognitive, motivational and behavioral aspects of students. Students who are self-regulated are believed to be able to direct themselves to achieve learning goals.</td>
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<td>7.</td>
<td>Pramudiani (2019)</td>
<td>Students are less motivated in learning which makes them feel that school and learning is boring, not yet maximally actualizing their intellectual potential, immaturity of the infantile nature in students which makes them emotionally dependent, and feeling uncomfortable due to the lack of family roles.</td>
<td>Implementing interventions by providing motivation to learn from the outside such as giving rewards, either praise, food, or objects he wants to grow his daily habits.</td>
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<tr>
<td>No.</td>
<td>Researcher(s) (Year)</td>
<td>Causative Factors</td>
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<td>8.</td>
<td>Muthmainnah &amp; Purnamasari (2019)</td>
<td>The main factor causing in this study was caused by internal factors, namely individual personality.</td>
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<tr>
<td>9.</td>
<td>Rezeki (2019)</td>
<td>Factors that cause students to be underachievers are strategic factors in learning, psychological conditions, emotions, low motivation, family conditions (parents pay less attention, give punishment and often criticize)</td>
<td></td>
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<tr>
<td>10.</td>
<td>Sulaeman &amp; Choiriyah (2020)</td>
<td>The results showed that the factors causing the underachiever were: burdening with the characteristics of not caring about learning and the inability to do learning assignments and a family environment with caring but possessive parents' attitudes and parents who were more concerned with learning than facilitating students' potential</td>
<td></td>
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In total there are 169 articles through the search process. After the data is selected based on inclusion criteria with the keyword "underachiever". These results indicate that there are 2 main factors that cause students with high IQ but have low achievement or underachiever, namely internal and external factors. Internal factors are factors that come from the students themselves. This is line with Bracy’s opinion (Herlina & Suwatno, 2018) that in the perspective of learning theory there are two factors that affect learning achievement, namely internal and external factors of students.

From the first internal factor, it is known that underachiever students view themselves and their surroundings with negative emotions such as: (a) Repeatedly finding negative self-concepts, (b) Immaturity of the infantile nature in students which makes them emotionally dependent, (c) Feeling not accepted by their families, (d) Not being responsible for their behavior and not can get out of conflict, (e) Feel like a victim, (f) Dislike schools and teachers and have a negative attitude towards school, and (g) Inability to think and plan for the future. According to Yanti et al. (2013), negative emotions that occur like that are called anxiety where students feel pressured in facing difficulties occur which are characterized by a sense of worry, concern, and fear of certain situations. ’Aturrahmi & Zikra (2019) states that negative emotions can be in the form of feelings of irritability, challenging and blaming others that are owned by underachiever students so that they can have an impact on disrupting the student’s social environment. In line with that, according to Alizamar et al., (2019), found a negative relationship...
between negative emotions and achievement, namely the higher the negative emotions evoked by students, the lower their academic achievement and vice versa.

Second, lack of motivation, interest, and not having hobbies and creativity that can be used in filling spare time. Motivation is very important in doing any activity. Motivation will encourage and direct students to a will they want. According to Kaufman (Sulistiana & Muqodas, 2015) underachiever students often say that lessons at school are irrelevant or unimportant because they are usually more interested in activities other than school activities. In line with that, Ariyanto et al. (2019) argues that students who feel bored or uninterested in the lesson can cause the behavior of delaying or completing something so that students do not understand the lesson and complete the assignments given by the teacher. The same thing was also stated by Rimm (Sulistiana & Muqodas, 2015) that underachiever students had low or no motivation and learning skills. Therefore, low motivation and interest become one of the factors for underachiever students.

Third, weak or lacking academic skills. According to McCall (Priyambodo, 2019), a student who experiences underachiever because his academic performance is below the average potential. Fourth, lack of time management and self-evaluation. Lee, et al. (N. Jannah et al., 2015) stated that children who are addicted to games spend a lot of time in front of a computer or handphone monitor screen to play. This shows that students are lacking in time management so that they spend a lot of time in vain. Lastly, unable to think and plan for the future.

While external factors can come from the following factors, namely the first, family factors in the form of pressure from parents (parents pay less attention, give punishment and often criticize) and do not focus on student needs such as facilitating student academic potential. According to Gustian (Pratama & Suharni, 2017) the treatment of the closest people such as those in the family and home environment will affect children's achievement in achievement. In another study (Servitri, 2017) it was also explained that peers have an influence on the cognitive abilities of students with learning difficulties. Second, students’ daily environmental factors, such as in schools where the teacher's understanding of gifted children is not comprehensive, and the identification process is not appropriate and factors related to learning strategies, such as unpleasant learning experiences of students in the classroom, teacher's understanding is not comprehensive, and students' learning styles that are different from the teaching styles of teachers (Purwaningrum, 2016). Liu, et al. (Sulaeman & Choiriyah, 2020) argue that the effect of cognitive load on underachiever students will penetrate the early stages of the student’s visual perception process, due to the effect of the tasks given.

Seeing so many factors that can cause students with high IQs but get poor performance, it’s really unfortunate. Therefore, the solutions that can be given that are suitable for use in the mathematics learning process are as follows, namely first, apply learning role playing techniques. This technique is quite effective to increase achievement motivation of underachiever students. This is in line with the opinion of Khasanah et al.
(2013) which states that the implementation of appropriate group guidance can increase the learning motivation of underachiever students. This is supported by the change in attitude shown by the underachiever students before and after the treatment. Fun learning is expected to increase the motivation and interest of outstanding students so that in the end it can improve overall learning outcomes. A pleasant learning environment can also lead to motivation in outstanding students which directly affects their learning process. The stages in learning role playing techniques are expected to facilitate students with low achievement abilities and increase the quantity and quality of teaching and learning activities in the classroom so that their achievements and motivation to learn more math optimal.

Second, psychoeducational intervention is in the form of training consisting of guided group discussions, games and several work task activities that are carried out independently or together in groups. This is supported by the results of Wang's research (Rismayadi et al., 2017) which shows that cooperative teaching can increase student achievement motivation. Zadrian, et al. (Mutia & Sukmawati, 2019) also states that peer groups are very useful in developing adolescent independence.

Third, with approaches accompanied by a well-prepared strategy. The basic approach needed for them is how we can slowly transfer control to them, so that they are able to function independently. The approach that is not recommended is an approach that uses power or power or strength, logic, and approaches to improve their skills (tutoring). Ways that only provide instructions, teach, provide consultation are not enough. This is because when an underachiever is faced with an external control approach, they can misinterpret the intent and content of the conversation. They will get frustrated, complain, do nothing.

Fourth, increasing students' self-regulation consisting of metacognitive, motivational and behavioral aspects of students. Students who are self-regulated are believed to be able to direct themselves to achieve learning goals. Gredler (Gutji et al., 2021) states that the purpose of self-regulation is to regulate student resources, behavior, and social environment. In other words, self-regulated students set their own goals, pay attention to their own habits, and compare their performance with the goals they have set (self-assessment) so as to obtain optimal learning outcomes.

Lastly, implementing interventions by providing motivation to learn from the outside such as giving rewards such as praise, food, and objects that he wants to grow his daily habits. This can be done by teachers or parents of students. Attention to all things that support the increase in student learning motivation should be done by people who are around students. In line with that, Febriany and Yusri (2013) stated that supervision and direction from parents will affect children’s motivation in participating in learning activities both at home and at school.

CONCLUSION

There is a problem that occurs in underachiever students, where the level of intelligence is inversely proportional to the learning outcomes obtained. Because, this underachiever does not necessarily come by itself. There must be a problem or the causative factor which includes internal and external
factors. Internal factors include viewing themselves and their surroundings with negative emotions, lack of motivation and interest in learning, lack of time management and self-evaluation, and lastly, unable to think and plan for the future. As for external factors can come from family factors and students’ daily environmental factors, such as the school environment.

These causative factors must be minimized so that underachiever students can obtain achievements in accordance with their intellectual abilities, so that the solution that is considered appropriate to minimize situations like this includes the application of fun learning with cognitive and behavioral strategies, psychoeducational intervention is in the form of training consisting of guided group discussions, games and several work task activities that are carried out independently or together in groups, and learning with approaches are accompanied by a well-prepared strategy for gifted students.

This research still has many shortcomings and limitations. Other research can use it as a source of information and reference to conduct other research in analyzing underachiever students so that they can follow the learning process well and get achievements that are in accordance with their intellectual abilities.

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