



The Presence of Growth Mindset Online Intervention in Education: Bibliometric Analysis

Selfiyani Lestari^{1*}, Farhan Zakariyya¹, Abu Ammar Tajuddin Al Azizy², Ghinaya Ummul
Mukminin Hidayat¹, Muhammad Ariez Musthofa¹, Engkos Kosasih¹

¹Department of Psychology, Faculty of Education, Universitas Pendidikan Indonesia, Indonesia

²Department of Islamic Law, Faculty of Sharia and Law, Al-Azhar University, Egypt

*Correspondence to: selfiyanilestari@upi.edu

Abstract: The use of online media in the realm of education is a trend nowadays. Not only is it used to support the learning process, it also supports students' psychological conditions. One of them is creating a growth mindset. The aim of the research is to describe the development of online interventions for growth mindsets used in the educational domain. Bibliometric analysis was used in this study. Data pertaining to articles published on Google Scholar relevant to this research topic were gathered utilizing the Publish or Perish application. Furthermore, the data was analysed using the VOSviewer application. The results of the analysis revealed that the use of online-based interventions was developed and used to improve students' growth mindset in the current educational domain. Various online-based intervention designs have been developed and scientifically researched for their impact on growth mindset in the education domain. This research can serve as a basis for creating growth mindset-based media interventions for students in the context of education.

Keywords: education; growth mindset; online intervention

Recommended citation: Lestari, S., Zakariyya, F., Azizy, A. A. T. A., Hidayat, G. U. M., Musthofa, A. M., & Kosasih, A. (2025). The Presence of Growth Mindset Online Intervention in Education: Bibliometric Analysis. *Journal of Innovation in Educational and Cultural Research*, 6(1), 94-103.

INTRODUCTION

The philosophy of a growth mindset has received a lot of focus in educational circles because of its demonstrated effectiveness in promoting individual learning success. A growth mindset, which holds that abilities and intelligence can be developed through effort and learning, has been proven to have an important role in developing students' academic performance (Yeager et al., 2019). Numerous studies show that instilling this mindset in students increases motivation, resilience, and a willingness to face difficulties. This emphasis on growth mindset becomes particularly crucial when considering the detrimental effects of its opposite, the fixed mindset. Students with fixed mindsets often experience anxiety about academic performance and lower long-term academic achievement (Gonzalez-DeHass et al., 2024). As a result, educators have increasingly focused on incorporating growth mindset principles into teaching strategies, recognizing its potential to shape more engaged, adaptable, and persistent learners.

In recent years, the development of various forms of media has expanded the ways in which a growth mindset can be nurtured. Digital tools, online platforms, and interactive technologies are now being utilized to foster this psychological framework in students. These online interventions provide distinct benefits over conventional offline techniques, such as the cost-effectiveness temporal and spatial flexibility, and the ability to scale to reach larger student populations. Furthermore, digital platforms enable personalized learning experiences, allowing content to be tailored to student needs and progress to be tracked more effectively. These new media formats allow for more creative and engaging methods of instilling a growth mindset, reaching wider audiences and making interventions more accessible to diverse learners. For instance, online courses, games, and apps specifically designed to teach growth mindset concepts are being integrated into educational settings. This shift toward using modern media as a means to promote a growth mindset marks a significant evolution in how educators approach student success, making it easier to implement strategies that empower students to develop a belief in their ability to grow and improve. Through these efforts, the growth mindset continues to be a central focus in education, helping students overcome obstacles and thrive in their learning journeys.

Growth mindset is the belief that individuals have that their intelligence can develop through effort and is not fixed due to genetic factors (Yeager et al., 2019). The existence of this belief has been proven by many researchers to make students more motivated and ultimately make them strive to achieve maximum learning outcomes (Barbouta et al., 2020; Cheng et al., 2021; Hacisalihoglu et al., 2020; Yeager & Dweck, 2020). In contrast to a growth mindset, a fixed mindset believes that an individual's abilities and intelligence remain

unchanged and cannot be modified or developed over time. Individuals with a fixed mindset avoid challenges, provide easily when faced with adversity, and see effort as futile. They frequently fear failure, believing it reflects a lack of inherent ability, and may be threatened by other people's successes. Unlike a growth mindset, which values learning and improvement, a fixed mindset restricts personal growth and prevents people from accomplishing their highest potential in both academic and personal pursuits (Yeager et al., 2019). Approaches to foster a growth mindset have evolved significantly over time, moving from traditional offline methods to innovative digital ones (Granic et al., 2020; Macnamara & Burgoyne, 2023). Initially, these interventions were predominantly conducted through in-person workshops and training sessions, necessitating substantial time and direct interaction (Bui et al., 2023; Hempel et al., 2020). While effective, such methods posed challenges for widespread implementation due to their resource-intensive nature. A pivotal shift occurred in 2014 when O'Rourke et al. introduced a game-based intervention designed to instill a growth mindset in individuals. This approach used educational games to encourage growth mindset behaviors through directly encouraging efforts, strategic thinking, and persistence (Chao, 2017). The integration of game mechanics provided immediate feedback and rewards, enhancing engagement and motivation among participants.

Since Carol S. Dweck first introduced the theory of growth mindset, numerous interventions in the realm of education have been implemented (Yeager & Dweck, 2020). Carol Dweck's study emphasizes the importance of a growth mindset for how learners learn and academic achievement (Prodyantatasari et al., 2023). Her findings show that students with a growth mindset tend to be more resilient, motivated, and open to new experiences (Dweck & Yeager, 2019). This positive mindset fosters an environment where students feel capable of learning and improvement. Given its potential to enhance student success, educators and researchers have increasingly focused on growth mindset interventions. As a result, schools and other educational settings have made cultivating a growth mindset a top priority to better support student development (Burnette et al., 2022; Macnamara & Burgoyne, 2023). The integration of technology into education has significantly changed the growth mindset intervention, increasing its scalability and accessibility. This digital evolution is critical in advancing quality education, in line with the Sustainable Development Goals (SDGs) (Popkova et al., 2022). Digital platforms have enabled widespread dissemination of growth mindset principles, allowing educators to reach diverse student populations more efficiently (Aithal et al., 2024). As an illustration, one study examined the efficacy of a brief digital intervention designed to promote a growth mindset toward negative emotions among university students (Zhu et al., 2023). Furthermore, online programs have been effective in helping to promote growth mindset in specific demographics, such as rural adolescent girls, demonstrating the adaptability and reach of digital methods.

Despite the potential benefits, the efficacy of treatments for growth mindsets changes. Some research suggests that these strategies may not always lead to significant improvements in academic performance, indicating the need for careful implementation and consideration of contextual factors (Dweck et al., 2014; Macnamara & Burgoyne, 2023). The ongoing digital transformation in education presents opportunities to refine and expand growth mindset interventions (Yeager et al., 2016). By leveraging educational technology, educators can create personalized and adaptive learning experiences that promote a growth mindset (Lou & Noels, 2019). For example, incorporating features that provide real-time feedback, visual progress tracking, and challenges tailored to individual skill levels can enhance student engagement and foster a growth mindset (Qushem et al., 2021). Moreover, as the educational landscape continues to evolve, it is essential to prepare students for a digital-first world by embedding future skills into curricula, focusing on adaptability, creativity, and resilience. This perspective is in contrast to a fixed mindset, where individuals perceive their talents as innate and unchangeable. In educational settings, developing a growth mindset has been associated with increased student motivation, resilience, and academic achievement. Burnette et al. (2022) also conducted a systematic review and meta-analysis that specifically analysed who, how, and why growth mindset interventions can be successful. systematic review and meta-analysis to determine the effectiveness of growth mindset interventions. Their study examined the conditions under which these interventions work, identifying key factors such as the target population, implementation method, and underlying psychological mechanisms. The findings point out that programs that promote growth mindsets are effective, particularly when tailored to specific groups and delivered using appropriate methodologies. In contrast to previous studies, this study used a bibliometric analysis to track the evolution of online growth mindset interventions in education (Burnette et al., 2022; Han & Stieha, 2020).

The review has been carried out to analyze the network of researchers in online growth mindset programs in the educational realm, including examining current trends in online-based growth mindset interventions in the educational realm. Until now, research with systematic analysis of literature reviews regarding growth mindset intervention by Zintz (2018), Savvides and Bond (2021), and Macnamara & Burgoyne (2023). However, the research did not specifically focus on online interventions, nor did they use bibliometric analysis. Different from previous research, this study tries to answer the question about the development of growth mindset online interventions in education by mapping publication patterns and emerging trends in this field. This comprehensive mapping will provide valuable insights for researchers and educators to understand

the current state and future directions of online growth mindset intervention research.

METHODS

Bibliometric analysis is a technique that allows to provide a big picture of academic literature. The article literature data used in this study used the data base from Google Scholar. Google Scholar was chosen because it is the most frequently used search engine in Indonesia. Google scholar is also a search engine that can access more information than other search engines (Falagas et al., 2008). Furthermore, Google Scholar's user-friendly interface and free accessibility contribute to its widespread adoption among researchers in Indonesia. Its ability to retrieve a vast array of academic materials, including articles, theses, books, and conference papers, enhances its appeal as a research tool. At this stage only journals were used as academic literature sources. This bibliometric analysis was conducted by referring to the procedure described by (Donthu et al., 2021). The data collection in this study was conducted in two stages. In the first stage, data was searched through Google Scholar using the keywords 'Growt Mindset', 'Online Intervention', and 'Education'. The search was conducted using publish or perish software. We did not limit the number of literature searches through this software. Literature in the form of articles and proceedings were recorded in this study. According to the capacity of publish or perish software in collecting articles on the Google Scholar search engine, a maximum of 1000 articles could be collected. We did not limit the year of the article search as long as the article was relevant to the keywords used. The second stage, based on the search conducted, finally collected 120 articles that match the keywords. Articles that could not be found online were excluded from the analysis in this study. The articles gathered for study analysis were converted into two formats: Research Information System (*.ris) and Comma-Separated Values (*.csv). The *.ris format was used for data mapping in VOSviewer, while the *.csv format was employed for data analysis in Microsoft Excel.

Microsoft Excel was used to analyse annual progression data and rank articles by citation count. The data obtained were analyzed and plotted using VOSviewer software version 1.6.20. VOSviewer software gives particular emphasis to the graphical display of bibliometric maps, in contrast to the majority of computer programs used for bibliometric mapping (Van Eck & Waltman, 2010). VOSviewer is particularly effective in visualizing large bibliometric maps. It presents the data in a clear and easily interpretable manner. In the analysis and plotting process carried out using VOSviewer software, we analyzed the distribution of researchers, year of publication, and topics related to growth mindset online intervention and identified in Google Scholar. VOSviewer facilitates visualisation and trend assessment through bibliometric maps, which produce three types of publication mapping (Al Husaeni & Nandiyanto, 2022): 1) Network Visualization: Displays items (e.g., articles, authors) as nodes connected by lines representing relationships, illustrating the structure of research fields. 2) Density Visualization: Shows the concentration of items in a specific area, indicating the intensity of research activity or focus within a domain. 3) Overlay Visualization: Highlights temporal trends by overlaying different time periods, revealing how research topics evolve over time.

RESULT AND DISCUSSION

The term map is generated by identifying clusters of closely related terms within the network visualization. Figure 1 presents the visual representation of this map. The size of the circle represents the frequency of a term (Al Husaeni & Nandiyanto, 2022). Additionally, the closer two words or circles are, the stronger their relationship (Pertz et al., 2021). The terms found in the abstract and title may have a positive correlation with the size of the label circle. As the frequency increases, the label size also grows. Groups of closely related words are indicated by color (Pertz et al., 2021).

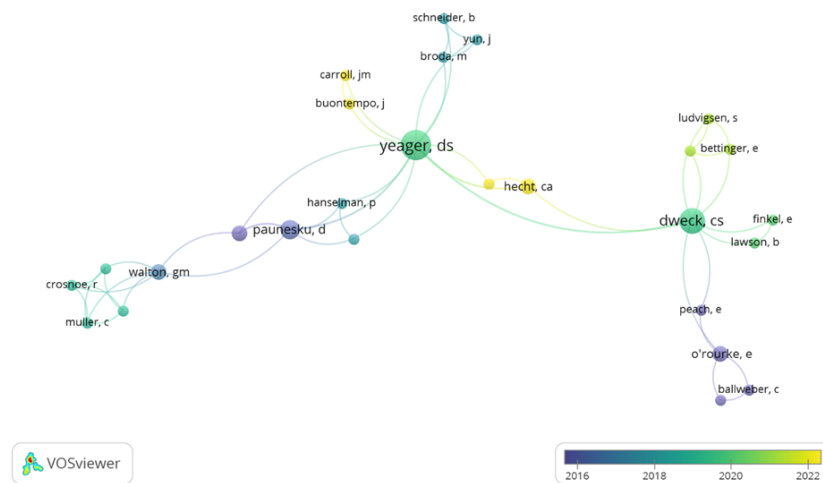


Figure 1. Overlay Visualization of Authorship

Yeager is the researcher with the largest number of articles explaining growth mindset online intervention in the world of education. On the one hand, Carol S. Dweck, who is also the main researcher who coined the concept and theory of growth mindset, is the second author with the largest number of articles explaining growth mindset online intervention (Yeager & Dweck, 2020). Secondly, there is also research and publications carried out simultaneously in explaining online intervention-based growth mindset in the realm of education. The publication of scientific articles explaining growth mindset online intervention in the realm of education has appeared since 2016 and has developed a lot towards 2020. Several other researchers have simultaneously started researching and explaining how growth mindset through online intervention can be carried out in the realm of education. The results of the analysis show that the connections between researchers are inseparable from each other with the main research authors on this topic, namely Yeager and Dweck. In general, there are two groups of researcher connections. First, the connection of researchers who collaborated with Yeager. Second, the connection of researchers who collaborate with Dweck.

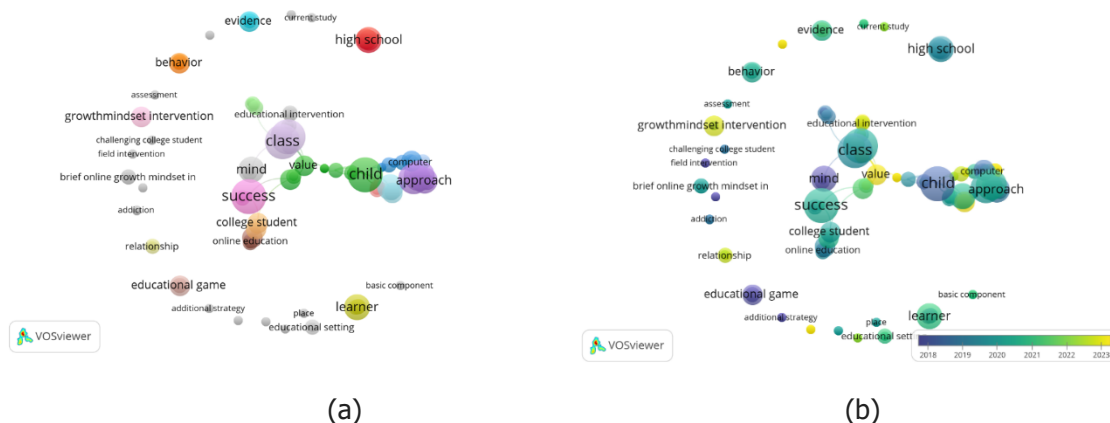


Figure 2. Network Visualization Based on (a) High-Frequency Terms in Title and Abstract (b) Years

Based on the network visualization of the terms that appear most frequently in the title and abstract (Figure 2), several terms that also appear frequently are success. The literature obtained in this research explains a lot about the influence of growth mindset online intervention in the educational realm aimed at achieving individual success. Meanwhile, from the participant's perspective, there are two terms that often appear, namely college student and child. This means that growth mindset online intervention in the realm of education has been widely discussed for individuals at child and university level. Apart from that, several terms indicating online intervention methods for growth mindset also appeared, such as educational games, computer, brief online growth mindset, and field intervention. This shows that in published literature, there are several methods designed to implement growth mindset online intervention in the realm of education. There are several terms that often appear in titles and abstracts in the literature regarding growth mindset online intervention. If the visualization is carried out based on year, the term growth mindset intervention has appeared a lot since 2023. Likewise, educational intervention has started to appear since 2023. However, interventions in the form of games and field interventions in the context of growth mindset online intervention in the educational realm

have been widely explained since 2018. Meanwhile, the term online growth mindset brief appeared in 2020.

Table 1. Fifteen Highest Literature Related to Growth Mindset Online Intervention in Education

Rank	Title	Authors	Source Title	Year	Total Citation	Average Citation per Year
1	Mind-set interventions are a scalable treatment for academic underachievement	Paunesku, D., Walton, G. M., Romero, C., Smith, E. N., Yeager, D. S., & Dweck, C. S.	Psychological Science	2015	1421	157.89
2	Using design thinking to improve psychological interventions: The case of the growth mindset during the transition to high school.	Yeager, D. S., Romero, C., Paunesku, D., Hulleman, C. S., Schneider, B., Hinojosa, C., ... & Dweck, C. S.	Journal of Educational Psychology	2016	976	122
3	Fixed and growth mindset in education and how grit helps students persist in the face of adversity.	Hochanadel, A., & Finamore, D.	Journal of International Education Research	2015	770	85.56
4	What can be learned from growth mindset controversies?	Yeager, D. S., & Dweck, C. S.	American psychologist	2020	607	151.75
5	A single-session growth mindset intervention for adolescent anxiety and depression: 9-month outcomes of a randomized trial	Schleider, J., & Weisz, J.	Journal of Child Psychology and Psychiatry	2018	319	53.17
6	Brain points: A growth mindset incentive structure boosts persistence in an educational game	O'Rourke, E., Haimovitz, K., Ballweber, C., Dweck, C., & Popović, Z.	Proceedings of the SIGCHI Conference on Human Factors in Computing Systems	2014	290	29
7	Reducing inequality in academic success for incoming college students: A randomized trial of growth mindset and belonging interventions	Broda, M., Yun, J., Schneider, B., Yeager, D. S., Walton, G. M., & Diemer, M.	Journal of Research on Educational Effectiveness	2018	261	43.5
8	Empowering teachers to implement a growth mindset	Seaton, F. S.	Educational Psychology in Practice	2018	248	41.33

Rank	Title	Authors	Source Title	Year	Total	Average
------	-------	---------	--------------	------	-------	---------

					Citation	Citation per Year
9	The effects of a growth mindset on self-efficacy and motivation	Rhew, E., Piro, J. S., Goolkasian, P., & Cosentino, P.	Cogent Education	2018	240	40
10	A growth mindset intervention: Enhancing students' entrepreneurial self-efficacy and career development	Burnette, J. L., Pollack, J. M., Forsyth, R. B., Hoyt, C. L., Babij, A. D., Thomas, F. N., & Coy, A. E.	Entrepreneurship Theory and Practice	2020	229	57.25
11	Teacher mindsets help explain where a growth-mindset intervention does and doesn't work	Yeager, D. S., Carroll, J. M., Buontempo, J., Cimpian, A., Woody, S., Crosnoe, R., ... & Dweck, C. S.	Psychological Science	2022	211	105.5
12	The impact of an online intervention (Brainology) on the mindset and resiliency of secondary school pupils: a preliminary mixed methods study	Donohoe, C., Topping, K., & Hannah, E.	Educational Psychology	2012	210	17.5
13	An online growth mindset intervention in a sample of rural adolescent girls	Burnette, J. L., Russell, M. V., Hoyt, C. L., Orvidas, K., & Widman, L.	British Journal of Educational Psychology	2018	199	33.17
14	Reading intervention with a growth mindset approach improves children's skills	Andersen, S. C., & Nielsen, H. S.	Proceedings of the National Academy of Sciences	2016	190	23.75
15	Effects of teaching the concept of neuroplasticity to induce a growth mindset on motivation, achievement, and brain activity: A meta-analysis	Sarrasin, J. B., Nenciovici, L., Foisy, L. M. B., Allaire-Duquette, G., Riopel, M., & Masson, S.	Trend in Neuroscience and Education	2018	178	29.67

The literature with the highest number of citations is literature written by [Paunesku et al. \(2015\)](#) who explains testing the effectiveness of growth mindset online intervention in the educational realm by utilizing university websites. In this research, growth mindset intervention and sense-of-purpose intervention were used. Growth mindset intervention is delivered in one session for 45 minutes. Students are instructed to read articles about the brain's ability to develop and reorganize as a consequence of hard work or completing challenging tasks. The results of the research show that both interventions are very beneficial, especially for students with low performance. Both can increase GPA scores and student satisfaction with the learning they receive. Overall, other articles that are also in the top 15 with the highest citations include [Yeager et al. \(2016\)](#), [Yeager & Dweck \(2020\)](#), [Schleider and Weisz \(2018\)](#), [O'Rourke et al. \(2016\)](#), [Broda et al. \(2018\)](#), [Seaton \(2018\)](#), [Rhew et al. \(2018\)](#), [Burnette et al. \(2020\)](#), [Yeager et al. \(2022\)](#), [Donohoe et al. \(2012\)](#), [Burnette et al. \(2018\)](#), [Andersen & Nielsen \(2016\)](#), and [Sarrasin et al. \(2018\)](#). In this case, there are three researchers whose names are often

included in the top 15 literature, namely Yeager D. S., Dweck, C. S., and Burnette, J. L. The article written by Paunesku et al. (2015) is also the article with the highest average citations per year. That semester, the article written by Yeager & Dweck (2020) became the second article with the highest number of citations per year. This is possible because these two researchers are the researchers with the largest number of publications in the realm of growth mindset online intervention. This is found in Figure 1. Likewise, in third place, namely the article written by Yeager et al. (2016) which specifically explains the design of a media-based growth mindset intervention. Yeager and Dweck (2020) explained that research on growth mindset still has many controversies. The controversies surrounding growth mindset in the field of education encompass a variety of debates, particularly those focused on whether or not there is a measurable and meaningful effect of adopting a growth mindset in learning environments. Among these debates is a discussion about the effectiveness of interventions designed to promote growth mindset, with researchers examining how well such interventions work in practice and under different conditions. Another key area of focus is the importance of growth mindset interventions, as well as the magnitude of their effect sizes, with scholars often questioning the extent to which these interventions can drive significant educational outcomes. Despite these ongoing debates, a substantial body of research has yielded findings that are generally considered to be replicable and applicable across diverse contexts. Nevertheless, it remains essential to consider the potential moderating factors that could influence the impact of growth mindset, as these variables may play a crucial role in shaping its effectiveness in different situations. Growth mindset interventions may also not have direct effects in all areas and all people. For example, Burnette et al. (2018) found no direct effect of a growth mindset intervention on academic achievement either immediately after the intervention or after a 4-month follow-up. In this study, the growth mindset variable mediated the intervention on academic achievement.

When examining the duration required to test the effects of growth mindset online interventions, it becomes evident that employing a longitudinal research design is essential for thoroughly assessing their effectiveness over time. Such a design allows researchers to observe the persistence and potential evolution of the intervention's effects over extended periods. The time intervals between delivering the intervention and conducting follow-up assessments can vary significantly depending on the specific research study being analyzed. For instance, Schleider and Weisz (2018) adopted a comprehensive approach by conducting follow-up tests in three distinct stages, which were spaced out over a period of nine months. These stages included assessments at three months, six months, and nine months post-intervention, enabling a nuanced understanding of how the intervention's effects unfold over time. Similarly, Burnette et al. (2018) incorporated a follow-up assessment conducted four months after the initial intervention was administered, providing additional insights into its longer-term outcomes. These follow-up evaluations serve a critical purpose, as they aim to determine the sustainability and long-term effectiveness of growth mindset interventions. Overall, the inclusion of a longitudinal design, coupled with strategically timed follow-up tests, is crucial for generating a robust and comprehensive understanding of the enduring impacts of such interventions on individuals. Academic achievement is a widely chosen dependent variable in the area of education. However, in these top 15 articles, we did not exclude Schleider and Weisz (2018) even though the article focuses on clinical discussion rather than academic achievement. This is because we found that many education studies cited the article. For example Hsu and Goldsmith (2021) introduced strategies in dealing with student stress and anxiety, one of which is by developing a growth mindset. Cooper et al. (2020) in their exploration found that the existence of a fixed mindset is a potential cause in causing depression in students while studying at university. Therefore, it is possible that the discussion of clinical areas is also the main focus of growth mindset interventions in the education area.

CONCLUSION

The bibliometric analysis results indicate that online interventions focused on growth mindset in education have been extensively conducted. Among the most influential researchers in this field are David Yeager and Carol S. Dweck. These two figures are also researchers who are included in the most cited literature, apart from Jeni L. Burnette. The results of the analysis also show that various methods have been developed and variations have developed to date. Researchers conducted online growth mindset interventions with different methods, some using cross-sectional and even longitudinal. Research related to academic achievement is the trend of online growth mindset intervention research in education. However, the effectiveness of online growth mindset interventions has been found to vary among researchers.

ACKNOWLEDGEMENT

The authors would like to express their gratitude to Universitas Pendidikan Indonesia for providing the research funding that made this bibliometric study on growth mindset online intervention possible. We would also like to acknowledge the support and assistance from the students and various parties who contributed to the successful completion of this research project.

REFERENCES

- Aithal, P. S., Prabhu, S., & Aithal, S. (2024). Future of higher education through technology prediction and forecasting. *SSRN Electronic Journal*.
- Al Husaeni, D. F., & Nandiyanto, A. B. D. (2022). Bibliometric using Vosviewer with Publish or Perish (using Google Scholar data): From step-by-step processing for users to the practical examples in the analysis of digital learning articles in pre and post Covid-19 pandemic. *ASEAN Journal of Science and Engineering*, 2(1), 19–46.
- Andersen, S. C., & Nielsen, H. S. (2016). Reading intervention with a growth mindset approach improves children's skills. *Proceedings of the National Academy of Sciences of the United States of America*, 113(43), 12111–12113.
- Barbouda, A., Barbouda, C., & Kotrotsiou, S. (2020). Growth mindset and grit: How do university students' mindsets and grit affect their academic achievement? *International Journal of Caring Sciences*, 13(1), 654–665.
- Broda, M., Yun, J., Schneider, B., Yeager, D. S., Walton, G. M., & Diemer, M. (2018). Reducing inequality in academic success for incoming college students: A randomized trial of growth mindset and belonging interventions. *Journal of Research on Educational Effectiveness*, 11(3), 317–338.
- Bui, P., Pongsakdi, N., McMullen, J., Lehtinen, E., & Hannula-Sormunen, M. M. (2023). A systematic review of mindset interventions in mathematics classrooms: What works and what does not? *Educational Research Review*, 40(January), 100554.
- Burnette, J. L., Billingsley, J., Banks, G. C., Knouse, L. E., Hoyt, C. L., Pollack, J. M., & Simon, S. (2022). A systematic review and meta-analysis of growth mindset interventions: For whom, how, and why might such interventions work? *Psychological Bulletin*, 149(3–4).
- Burnette, J. L., Pollack, J. M., Forsyth, R. B., Hoyt, C. L., Babij, A. D., Thomas, F. N., & Coy, A. E. (2020). A growth mindset intervention: Enhancing students' entrepreneurial self-efficacy and career development. *Entrepreneurship: Theory and Practice*, 44(5), 878–908.
- Burnette, J. L., Russell, M. V., Hoyt, C. L., Orvidas, K., & Widman, L. (2018). An online growth mindset intervention in a sample of rural adolescent girls. *British Journal of Educational Psychology*, 88(3), 428–445.
- Chao, M. M., Visaria, S., Mukhopadhyay, A., & Dehejia, R. (2017). Do rewards reinforce the growth mindset?: Joint effects of the growth mindset and incentive schemes in a field intervention. *Journal of Experimental Psychology: General*, 146(10), 1402–1419.
- Cheng, M. W. T., Leung, M. L., & Lau, J. C. H. (2021). A review of growth mindset intervention in higher education: The case for infographics in cultivating mindset behaviors. *Social Psychology of Education*, 24(5), 1335–1362.
- Cooper, K. M., Gin, L. E., Barnes, M. E., & Brownell, S. E. (2020). An exploratory study of students with depression in undergraduate research experiences. *CBE Life Sciences Education*, 19(2).
- Donohoe, C., Topping, K., & Hannah, E. (2012). The impact of an online intervention (Brainology) on the mindset and resiliency of secondary school pupils: A preliminary mixed methods study. *Educational Psychology*, 32(5), 641–655.
- Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. *Journal of Business Research*, 133(April), 285–296.
- Dweck, C. S., & Yeager, D. S. (2019). Mindsets: A view from two eras. *Perspectives on Psychological Science*, 14(3), 481–496.

- Dweck, C., Walton, G. M., & Cohen, G. L. (2014). Academic tenacity: Mindset and skills that promote long-term learning. *Gates Foundation*.
- Falagas, M. E., Pitsouni, E. I., Malietzis, G. A., & Pappas, G. (2008). Comparison of PubMed, Scopus, Web of Science, and Google Scholar: Strengths and weaknesses. *The FASEB Journal*, 22(2), 338–342.
- Gonzalez-DeHass, A. R., Furner, J. M., Vásquez-Colina, M. D., & Morris, J. D. (2024). Undergraduate students' math anxiety: The role of mindset, achievement goals, and parents. *International Journal of Science and Mathematics Education*, 22(5), 1037–1056.
- Granic, I., Morita, H., & Scholten, H. (2020). Beyond screen time: Identity development in the digital age. *Psychological Inquiry*, 31(3), 195–223.
- Hacisalihoglu, G., Stephens, D., Stephens, S., Johnson, L., & Edington, M. (2020). Enhancing undergraduate student success in STEM fields through growth-mindset and grit. *Education Sciences*, 10(10), 1–11.
- Han, S. J., & Stieha, V. (2020). Growth mindset for human resource development: A scoping review of the literature with recommended interventions. *Human Resource Development Review*, 19(3), 309–331.
- Hempel, B., Kiehlbaugh, K., & Blowers, P. (2020). Scalable and practical teaching practices faculty can deploy to increase retention: A faculty cookbook for increasing student success. *Education for Chemical Engineers*, 33, 45–65.
- Hsu, J. L., & Goldsmith, G. R. (2021). Instructor strategies to alleviate stress and anxiety among college and university STEM students. *CBE Life Sciences Education*, 20(1), 1–13.
- Macnamara, B. N., & Burgoyne, A. P. (2023). Do growth mindset interventions impact students' academic achievement? A systematic review and meta-analysis with recommendations for best practices. *Psychological bulletin*, 149(3-4), 133.
- Lou, N. M., & Noels, K. A. (2019). Promoting growth in foreign and second language education: A research agenda for mindsets in language learning and teaching. *System*, 86(September).
- O'Rourke, E., Peach, E., Dweck, C. S., & Popovic, Z. (2016). Brain points: A deeper look at a growth mindset incentive structure for an educational game. 41–50.
- Paunesku, D., Walton, G. M., Romero, C., Smith, E. N., Yeager, D. S., & Dweck, C. S. (2015). Mind-set interventions are a scalable treatment for academic underachievement. *Psychological Science*, 26(6), 784–793.
- Pertz, M., Popkirov, S., Schlegel, U., & Thoma, P. (2021). Correction to: Research on cognitive and sociocognitive functions in patients with brain tumours: A bibliometric analysis and visualization of the scientific landscape. *Neurological Sciences*, 42(8), 3519.
- Popkova, E. G., De Bernardi, P., Tyurina, Y. G., & Sergi, B. S. (2022). A theory of digital technology advancement to address the grand challenges of sustainable development. *Technology in Society*, 68(November 2021), 101831.
- Prodyantasar, A., Prayitno, M. A., Leuwol, F. S., Aminah, S., & Maskur, M. (2023). Comparison of educational theories: Perspectives of Carol Dweck and Howard Gardner in developing individual potential. *ANTHOR: Education and Learning Journal*, 2(6), 725–732.
- Qushem, U. Bin, Christopoulos, A., Oyelere, S. S., Ogata, H., & Laakso, M. J. (2021). Multimodal technologies in precision education: Providing new opportunities or adding more challenges? *Education Sciences*, 11(7).
- Rhew, E., Piro, J. S., Goolkasian, P., & Cosentino, P. (2018). The effects of a growth mindset on self-efficacy and motivation. *Cogent Education*, 5(1), 1–16.
- Sarrasin, J. B., Nenciovici, L., Foisy, L. M. B., Allaire-Duquette, G., Riopel, M., & Masson, S. (2018). Effects of teaching the concept of neuroplasticity to induce a growth mindset on motivation, achievement, and brain activity: A meta-analysis. *Trends in Neuroscience and Education*, 12, 22–31.
- Savvides, H., & Bond, C. (2021). How does growth mindset inform interventions in primary schools? A systematic literature review. *Educational Psychology in Practice*, 37(2), 134–149.
- Schleider, J., & Weisz, J. (2018). A single-session growth mindset intervention for adolescent anxiety and depression: 9-month outcomes of a randomized trial. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 59(2), 160–170.

- Seaton, F. S. (2018). Empowering teachers to implement a growth mindset. *Educational Psychology in Practice*, 34(1), 41–57.
- Van Eck, N. J., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics*, 84(2), 523–538.
- Yeager, D. S., Carroll, J. M., Buontempo, J., Cimpian, A., Woody, S., Crosnoe, R., ... & Dweck, C. S. (2022). Teacher mindsets help explain where a growth-mindset intervention does and doesn't work. *Psychological Science*, 33(1), 18–32.
- Yeager, D. S., & Dweck, C. S. (2020). What can be learned from growth mindset controversies? *American Psychologist*, 75(9), 1269–1284.
- Yeager, D. S., Hanselman, P., Walton, G. M., Murray, J. S., Crosnoe, R., Muller, C., ... & Dweck, C. S. (2019). A national experiment reveals where a growth mindset improves achievement. *Nature*, 573(7774), 364–369.
- Yeager, D. S., Romero, C., Paunesku, D., Hulleman, C. S., Schneider, B., Hinojosa, C., Lee, H. Y., Brien, J. O., Flint, K., Roberts, A., Trott, J., International, I. C. F., Greene, D., Walton, G. M., & Dweck, C. S. (2016). Using design thinking to improve psychological interventions: The case of the growth mindset during the transition to high school. *Journal of Educational Psychology*, 108(3), 374–391.
- Zhu, S., Hu, Y., Qi, D., Qin, N., Chi, X., Luo, J., Wu, J., Huang, H., Wu, Q., Yu, L., Ni, S., Hamilton, K., & Tse, S. (2023). Single-session intervention on growth mindset on negative emotions for university student mental health (U-SIGMA): A protocol of two-armed randomized controlled trial. *Trials*, 24(1), 1–10.
- Zintz, S. (2018). Effectiveness of a growth mindset in education. *NWCommons*, 1–19.