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Media-based growth mindset intervention model for student thesis completion

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ABSTRACT

Background: Growth mindset is an important aspect for achieving positive psychological states and improving learning success for students. However, traditional growth mindset interventions are time-consuming, and we thus need to look to simpler and more efficient intervention designs.

Purpose: This study attempts to measure the efficacy of a media-inspired growth mindset intervention for improving students' final project completion.

Method: A between-subjects design using a randomized pretest-posttest paradigm was employed, with 30 participants in group 1 (video media) and 30 in group 2 (infographics). Five participants from group 1 were disqualified as they did not complete the intervention. The growth mindset scale and indicators of thesis completion were used as measures. Means were compared using t-tests.

Findings: There was a significant improvement of post-test over pre-test scores of all 3 variables. Both the video and the infographic created significant between-test differences of pre- and post-test scores. Thesis accomplishment 3 months after intervention also indicated a significant and stronger improvement, where students got their thesis done despite initial lag in progress.

Implication: The intervention provides a viable solution for universities seeking to assist struggling students or successfully motivate students to graduate early.

KEYWORDS
Growth mindset intervention; higher education; media; students; thesis completion

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Introduction

Completing the final project in the form of a thesis is one of the most difficult challenges that students face as they work toward their degree. This challenge is related to the academic writing process, which is the foundation for preparing the thesis. Rizwan and Naas (2022) identified several major factors that contribute to students difficulties in completing it, including difficulties determining the title, selecting the appropriate vocabulary when writing, data collection, and communication issues with the supervisor. These difficulties are consistent with the findings of Qasem and Zayid (2019), who discovered that students face challenges in selecting the appropriate topic, proposal writing methodology, and a lack of motivation, knowledge, and time during the writing process.

According to Rahmat et al. (2022), difficulties in academic writing stem from personal beliefs about its difficulty. This belief then shapes and influences students' expectations of how writing activities will affect their work. In line with this, Wakerkwa et al. (2019) claimed that the research process, which includes idea generation, literature review, identification of research gaps, and writing, is frequently viewed as intimidating and stressful. More specifically, Gezmiş (2020) identified the drafting stage as the most difficult stage in the writing process because it

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requires students to produce a complete writing and explain their ideas in the form of complete sentences.

Despite these challenges, mindset is critical to academic success. According to Dweck (2015), a growth mindset is the belief that intelligence or success is the result of effort, rather than something that is fixed and unchangeable. Biologically, a growth mindset has been shown to activate intrinsic motivation in individuals, allowing it to predict learning success (Ng, 2018). Limeri et al. (2020) discovered that students' success in their studies is positively correlated with their growth mindset. Schunk and DiBenedetto (2020) explained that growth mindset plays an important role in the early stages of the learning process, especially by encouraging students to keep trying. Students who have a growth mindset are better able to manage learning strategies and adjust their approach when faced with academic challenges, resulting in higher achievement (Paunesku et al., 2015). Growth mindset has also been linked to higher self-efficacy and motivation in students Rhew et al. (2018). This statement supported by Komarraju and Nadler (2013) findings that students with high self-efficacy are more likely to believe that intelligence can be changed and determined through effort.

Meanwhile, Wang et al. (2021) discovered that high self-esteem can enhance the positive effect of growth mindset on reasoning ability, a critical component in academic writing. Djatmika et al. (2022) discovered a positive and significant relationship between growth mindset in academic writing and self-efficacy in ideation, convention, and self-regulation. Furthermore, Prihandoko et al. (2024) discovered that a growth mindset has a direct and positive impact on self-efficacy for ideation and metacognition, resulting in improved academic writing performance. Prihandoko et al. (2024) also discovered that three types of self-efficacy in writing (ideation, convention, and self-regulation) mediate the relationship between growth mindset and academic writing performance.

Based on these findings, the study focused on developing appropriate interventions to promote a growth mindset in an educational setting. Initially, interventions aimed at instilling a growth mindset relied on a long-term offline education model. This is an important factor to consider because it affects the intervention's effectiveness (Yeager, Romero, et al., 2016). Yeager et al. (2019) developed an online-based growth mindset intervention and tested its effectiveness on student learning success. The findings revealed that the intervention, which was intended to last less than an hour, was effective in improving learning outcomes in students who had previously struggled. Yeager, Walton, et al. (2016) also revealed that interventions that directly teach growth mindset can improve student achievement through increased motivation over time.

In context of academic writing, Truax (2018) discovered that growth mindset-based feedback, particularly when combined with objective praise, can help students progress in their growth mindset, resulting in increased writing motivation. Chien (2025) found that combining mindset theory and academic writing instruction helped students develop a growth mindset as well as knowledge and skills in academic writing, particularly writing structure, research methods, and literature review writing. Miller (2024) continued, "Students with a growth mindset embraced the challenge of writing as a process of improvement and were not shaken by various feedback from mentors, even negative feedback.

Meanwhile, growth mindset interventions are evolving with the use of technology and digital media. Intervention program that include videos, digital articles, and animations have been shown to improve students' perceptions of growth intelligence (Burnette et al., 2023; Paunesku et al., 2015; Yeager et al., 2019). The use of media in psychological interventions must be carefully considered because it addresses the breadth of media (Reeves et al., 2016). Yeager et al. (2022) discovered that a digital mindset intervention can improve the academic outcomes of

first-year students who are uncertain about their abilities. However, Burnette et al. (2023) explained that researchers generally do not describe in detail how growth mindset interventions are carried out so that a detailed growth mindset intervention model is a current need.

In Indonesia, research on the growth mindset is still limited to specific contexts. Some researchers have studied growth mindset, but the subjects are typically lecturers (Bisono et al., 2018), elementary school students (Mutaharrikah & Wahidah, 2023), and teachers (Johnson et al., 2020). Research that specifically examines the effectiveness of several growth mindset intervention models is still difficult to come by in Indonesia, particularly interventions used in the realm of education in higher education, particularly in the final submission of student assignments or theses.

Given the complexities of the challenges students face when writing their final study (Qasem & Zayid, 2019; Rizwan & Naas, 2022; Shahsavar & Kourepaz, 2020) and the potential of growth mindset in improving academic writing performance (Djatmika et al., 2022; Prihandoko et al., 2024; Truax, 2018), this study focuses on testing a media-based growth mindset intervention to improve students' success in completing their thesis. This study is expected to help develop an effective and applicable growth mindset intervention model in the context of higher education in Indonesia.

Method

A total of 60 participants participated in this study. The study involved psychology students at the University of Education Indonesia in their 5th and 7th semesters. Participants were randomly divided into two groups; (1) 30 experimental subjects who viewed infographic image stimuli and (2) 30 subjects in the video stimulus group. 5 participants who did not complete the experimental activity were disqualified, leaving a final sample of 25 participants.

This study employed an experimental design. The preliminary study was conducted to test the stimulus, while the main study was conducted using a Two-Group Pretest-Posttest Design with Multiple Posttests. One group received an image stimulus and the other group received video stimulus. The study was conducted in the laboratory room; media laboratory room could show images and videos. This study used classic concept based on stimulus group which got by the randomization results from the participants. Participants came to the laboratory according to their groups. The design procedure in the main study used can be seen in Table 1.

Table 1.
Research Design

Group	Pretest	Treatment	Posttest	Posttest
R	O_1, O_2	X_1	O_1	O_2
R	O_1, O_2	X_2	O_1	O_2

Note. R=Randomization of Participants; O_2=Growth Mindset Measurement; O_2=Level of thesis completion; X_1=Infographic Image Stimulus; X_2=Video Stimulus

The two-intervention stimulus used in this study were video and infographics media. The narratives in all videos and infographics are similar with info according to the Carol Dweck's Growth Mindset theory. They describe how neuroplasticity can support a growth mindset and what type of qualities are possessed by a growth mindset and a fix mindset people. These narratives are being presented similarly so that differences can only be identified by way of media being employed.

According to Mayer (2005), visual and auditory information can be effectively processed so video was selected as the medium for the intervention in this research. The video produced for this research is 2 m 31 sec in duration and was made to specifically introduce growth mindset to students. The created video is a combination of audio narration and visual images/video. No copyright was used, by selecting video clips from websites with free copyright licenses. These clips were combined and edited together with a booming background music and voice-over narration. The video was organized in a way that led the thought from the concept of neuroplasticity to the how's of growth mindset.

The infographic media produced in this study was a set of visual posters directed at communicating growth mindset in an accessible way comprised of text, photographic, and graphic-design elements. Infographics was selected as the second form as they were found to be efficient methods of communicating complex information that was quick to understand and remembered clearly (Smiciklas, 2012).

The infographics include 5 visually appealing digital poster slides. The contents of each slide include images, illustrations, and text related to growth mindset. The content illustrated in each poster is parallel to the story in the video to assure intervention equivalence. Intervention medias have identical content. Both the video and infographics include information explaining about the neuroplasticity mechanism of brain according to the Dweck's theory (2006), definition of fixed mindset and growth mindset, and how to apply these theories in the scenario of writing thesis for students.

To ensure that the intervention media generated complies with research standards and prove effective, the researchers called upon several experts for review. The review was performed by experts of psychology, educational technology, and educational psychology. The purpose of the review was to check how the intended intervention media to translate the concept of Dweck's growth mindset theory and whether the said intervention media could be used in learning modules effectively. Psychologists may be able to provide input into whether the media will be emotionally and cognitively accepted by the participants while experts on educational technology are able to provide an assessment on the design and usefulness of the said intervention media for use in educational settings. The expert result indicates for video media, the Aiken V average is .875, and for image or infographic media, the Aiken V average is .813. Then the intervention media were tested on a small subject of 6 people with criteria comparable to the research subject.

All participants were invited to participate in this experiment through a recruitment process. Recruitment was conducted online, with participants informed of the characteristics of those eligible to participate. Participants who registered were then randomly divided into two groups. The first group received a video intervention, while the second group received an infographic intervention.

All registered participants were invited to participate in the workshop. Participants were required to take a pre-test at the beginning of the workshop to measure their growth mindset. Participants in groups one and two received the same material during the workshop, namely how to improve their ability to complete studies based on Carl Dweck's growth mindset theory. However, the delivery method was different. These beliefs describe peoples' believing that a person's ability and intelligence can be improved by their work and their persistence (growth mindset), or that ability and intelligence are finite qualities that are unchangeable (fixed mindset). Through this hypothesis, researcher made the media that can change participants' point of view in order to foster a more influential growth mindset.

The first group received intervention through video-based workshop materials. The materials were presented in animated form with audio explanations (voiceovers) to explain the

concepts in a coherent and structured manner. The videos were played throughout the session, and all participants were asked to follow along and pay attention to the content until the end. Following this, a member of the research team provided information on the differences between a fixed and a growth mindset and how these differences affect one's attitudes and development in an academic context. The length of the intervention was 3 hours. After the entire process was completed, participants were asked to fill out a questionnaire for the post-test. At the end of the session, participants were directed to fill out a study progress report for the next two months.

As with the first intervention group, participants in the infographic group attended a workshop. They had to do the pre-test and record their progress in thesis writing via a link provided. After the pre-test, participants were given time to read the information printed on the infographic posters regarding development mindset. These posters were designed using graphics to portray the idea of a growth mindset. Then a researcher spoke to explain the differences between the fixed mindset and the growth mindset, and to discuss its influence on behavior and school performance. as with the video intervention group, participants were asked to complete the same post-test at the end of the session in order to measure possible change in the growth mindset perception. The final stage is carried out like the group in the video intervention.

Two months post-workshop, both participant groups will be requested to complete an evaluation form utilizing the development mindset as a metric. This seeks to evaluate the sustainability of the mental changes that have transpired following participation in the intervention. Simultaneously, researchers evaluated thesis progress by analyzing thesis work effectiveness through success indicators they designed. Table 2 displays thesis progress metrics and parameters that allow researchers to compare the results of their thesis work progress levels during the pre-test and three months after the post-test.

In measuring growth mindset, we used a questionnaire from Dweck, adapted into Indonesian by Munika et al. (2022) in this study to measure growth mindset. Reliability 0,99 and Cronbach's alpha .88. Meanwhile, in measuring the progress of the thesis work, we use developed following the standards of thesis writing as in look table 2. The scale had been developed, validated, and built into a behavior checklist instrument by the researchers, based on expert evaluation (Aiken v=0,781). Experts were two psychology and curriculum lecturers.

Table 2.
Measurement Indicators of Thesis Completion

Dimensions	Example of Indicators
Topic Selection	Determine topics that are relevant to the field of study.
Preliminary Research	Conduct an initial literature review.
Proposal Writing	Determine the title of the thesis.
Thesis Preparation	Chapter I: Introduction - Explain the context and importance of the research topic.
Chapter II: Literature Review	Identify and collect relevant references (books, articles, journals).
Chapter III: Research Methodology	Describe the type of research used (qualitative, quantitative, or mixed).
Chapter IV: Results and Discussion	Organise data in clear tables, graphs or diagrams.
Chapter V: Conclusions and Suggestions	Formulate conclusions based on the research results.
References and Appendix	Compile a bibliography according to the required format.

Table 2.
Measurement Indicators of Thesis Completion

Dimensions	Example of Indicators
Editing and Revision	Ensure the use of a formal and academic language style.
Thesis Exam Preparation	Putting together a thesis presentation.
Post-Exam Remediation	Make revisions according to the examiner's suggestions.
Publications	Submitting theses to scientific journals.

All collected data was first examined through a data cleaning process, then analyzed using a paired sample t-test using the JASP application version 0.18.2.0. This analysis was conducted to determine whether there was a significant difference between the scores before and after treatment in the same group, with a significance level α = .05. The data were presented and explained according to each group, so that the changes that occurred could be understood more clearly and comprehensively.

Result

According to the results of the normality test using Shapiro-Wilk, data on experimental group 1 participants who received growth mindset interventions in the form of videos were found to be normally distributed. This is based on the normality test result with p>.05, which is .728. Similar results were obtained in the normality test for experimental group 2, which received a growth mindset intervention in the form of infographics. The p-value obtained was .622, which is greater than .05. As a result, paired sample t-tests can be performed.

Table 3.
Paired Samples T-Test on Experimental Group

Measure 1		**Measure 2**	***T***	***df***	***p***	**Cohen's d**
Pretest_E1	-	Posttest_E1	-6.729	24	< .001	-1.346
Pretest_E2	-	Posttest_E2	-8.787	29	< .001	-1.604

Note. E1=Video Intervention; E2= Infographic Intervention

Experimental group 1 and 2 data were analyzed using the paired samples t-test. The graphs indicated an effect in the growth mindset condition in each experimental group between the pretest and posttest (Experimental group 1: t=-6.728, p<.001, Experimental group 2: t=-8.787, p<.001). Researchers explore the implications for media intervention (Lakens, 2013). Cohen'sd was used as a measure of the effect size of the difference between 2 experimental conditions in standard deviation units. When effect sizes of the intervention are compared, it can be observed that the growth mindset intervention had a larger effect size when delivered through infographics (d= 1.604) than video (d= 1.346). The calculations of statistical analysis can be seen in Table 3. Cohen's was used as a measure of the effect size of the difference between 2 experimental conditions.

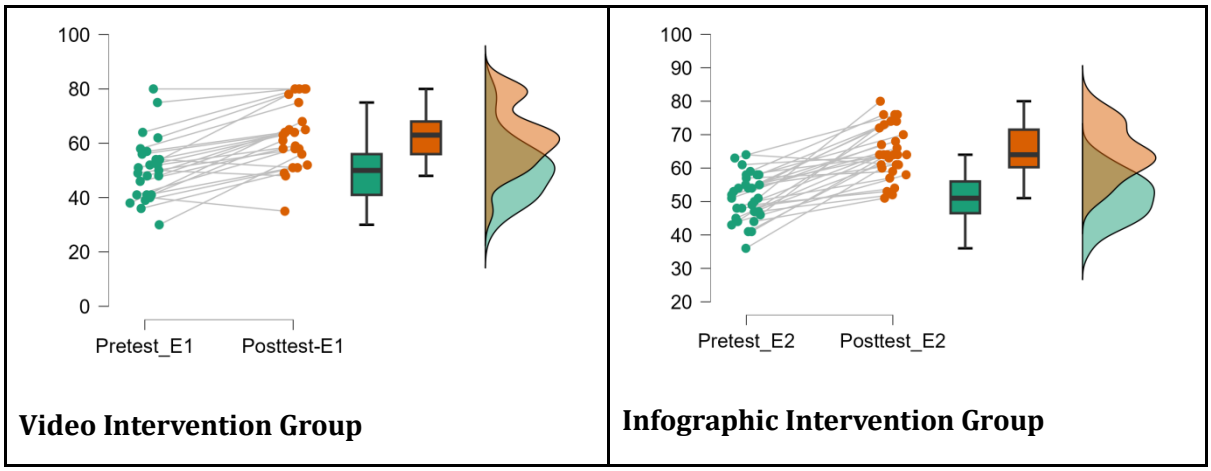

Figure 1. Raincloud Plots of Changes in Growth Mindset Condition of Experimental Group Participants

Based on the raincloud results in Figure 1, it is possible to conclude that almost all participants had an increase in growth mindset conditions at posttest compared to pretest. Although the pattern of increase in growth mindset conditions is more consistent in participants who receive interventions via infographics rather than videos. Overall, both interventions were equally effective in improving the participants' growth mindset.

Figure 2 depicts the changes in growth mindset conditions. The findings of this study show a significant change in the participants' mindsets following the intervention, both in experimental group 1 and group 2. At the time of the pretest, some participants had a fixed mindset and some had a growth mindset, while others had both. This suggests that they did not fully embrace a growth mindset but did show signs of openness to challenges and the ability to learn from mistakes.

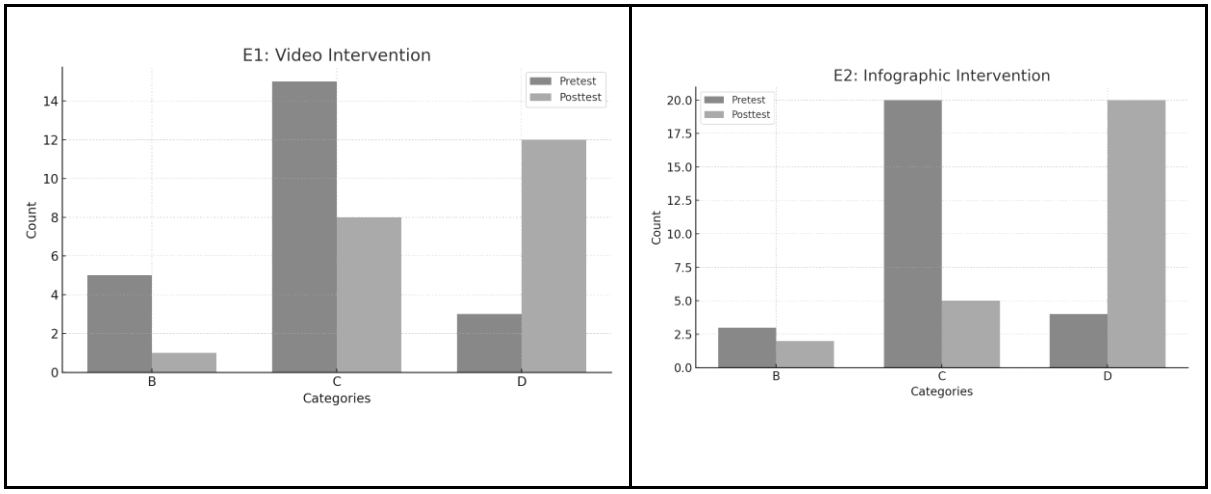

Figure 2. Change in Growth Mindset Condition Based on Categorization.
Note. A=Strong Fixed Mindset, B=Fixed Mindset with Some Growth Mindset, C=Growth Mindset with Some Fixed Mindset, D=Strong Growth Mindset

Table 4 shows the results of a paired samples t-test of pairs of thesis measurements (n = 55) used as an additional outcome indicator, with the pre-test conducted concurrently with other pre-tests and the post-test administered three months after the intervention. The score increased

significantly from 32.98 to 69.22 (t (54) = -10.410; p <.001), indicating a potential long-term impact of the growth mindset intervention.

Tabel 4.
Hypothesis Test
Paired Samples T-Test of thesis results

Condition	N	Mean (Pre)	Mean (Post)	Mean Difference	*t*	*df*	*p*-value	95% CI of Difference
Thesis	55	32.98	69.22	-36.24	-10.410	54	.000	[-43.22, -29.26]

Discussion

Both interventions had large effect sizes based on traditional standards (Cohen, 1988). This suggests that the changes seen are practically, as well as statistically, significant. Large effect sizes greater than 1.0 are indicative of large changes (in this case, in participants' learning and ability beliefs) taking place in such a short amount of time. This is because a growth mindset can effectively improve students' ability to complete a thesis because it instills the belief that academic ability, including writing and research, can be developed through effort, the right strategy, and learning from failure (Djatmika et al., 2022; Rohim et al., 2024). Students with a growth mindset are more likely to see challenges in the thesis preparation process, such as difficulty finding references, methodological confusion, or revisions from supervisors, as opportunities to learn and grow, rather than obstacles that force them to give up (Nurani, 2022). Furthermore, students with a growth mindset are more likely to exhibit high intrinsic motivation and perseverance (Yeh et al., 2023). Two things that are critical in a long and difficult process like thesis writing. They will be more resilient in the face of adversity and less likely to become discouraged by failure or criticism. Thus, a growth mindset can help students gain confidence when they believe they are unable to complete their thesis or face obstacles along the way.

The pattern of improvement seems more consistent within the infographic intervention group since posttest scores seem to cluster tighter and the spread is less than the control condition. This reveals that the infographic-based intervention may have yielded a more streamlined learning experience for participants. From the cognitive theory perspective, this pattern may be explained in terms of different information-processing strategies adopted by participants in each condition. As reading and operating on infographics usually involves self-pace repeated processing, extraneous load of cognitive resources might be reduced, and visual-text integration would theoretically become more efficient and steadier (Sweller et al., 2019). Regardless of these discrepancies, both formats were able to help participants increase their growth mindset scores.

Following the intervention, a positive shift was noticed. In experimental group 1, the proportion of participants in the growth mindset increased, along with some fixed mindset and strong growth mindset categories. This demonstrates that the intervention was successful in encouraging participants to believe that skills can be developed with the right effort and strategies. Although there were a few participants with a fixed mindset and some with a growth mindset, this condition demonstrates that mindset change is a gradual process influenced by social context, learning strategies, and personal experiences (Dweck & Yeager, 2019; Yeager & Dweck, 2012).

Given the transitions seen across mindset categories, the results point toward a framework of scale of mindsets, where change occurs in small, gradual, incremental steps—rather than a binary switch from a fixed to growth mindsets. Transition from fixed to mixed or growth mindsets

signals a re-categorizing process, in which the individual reframes effort, failure, and success as learning opportunities they can control (Dweck & Yeager, 2019).

Experimental group 2 had a stronger preference for growth mindset. Two participants fit into the category of growth mindset, 3 into some fixed mindset, and 4 into strong growth mindset. This may mean that this experiment's design, duration, or delivery method was more influential, as article- or role-play-based education interventions can substantially increase students' perception that intelligence is malleable (Aronson et al., 2002; Blackwell et al., 2007). May also be a sign that the structure and layout of the infographic intervention were especially successful at emphasizing the value of growth mindset, as organized visual messaging tools can help solidify belief finalization and recall (Harackiewicz &Priniski, 2018; Jiang et al., 2023; Vermote et al., 2020).

This change is also supported by the findings of Paunesku et al. (2015), who discovered that a brief growth mindset intervention resulted in increased academic motivation and achievement, particularly in a group of students who were previously at low motivational risk. These findings provide evidence that well-designed psychological interventions can have a significant impact on people's beliefs about their abilities.

Thus, the findings of this study support Dweck & Yeager (2019) mindset theory, which states that a person's attitude toward their abilities can be shaped and changed with the right approach. The intervention used in this study was effective in shifting participants' mindsets from static to more developed, which is a significant finding in the context of self-development, education, and psychological training.

Based on the findings of the experimental trials, it was discovered that the intervention media used, namely infographics and videos, have distinct effects on participants' information processing and emotional engagement. Most participants said that infographics helped them remember information in a more detailed and systematic manner. Infographics, with their concise and structured visual design, allowed participants to process and record each piece of information visually and spatially. This is consistent with Mayer (2005) findings on the cognitive theory of multimedia learning, which state that structured visual representations can aid in long-term memory processing, particularly when information is displayed statically and freely reviewed.

Nevertheless, with video-based intervention, participants could only make inferences based on the overall message or key message. Emotionally, participants felt more moved and motivated after being given the growth mindset intervention in the form of video. As a form of media combining visual, audio and emotional narration, video could psychologically strengthen affective association between the image contents and the personal life of individual participants. These results indicated that infographics mainly elicited cognitive elaboration and memory consolidation, while videos seemed to be affective and motivational cue. Motivational impact of video-based interventions, which deliver narrative, voice, and image cues altogether, could lead to affective resonance and personal relevance, and thus to more motivational readiness (Richardson et al., 2020; Dahlan et al., 2023).

Thus, it can be concluded that each medium has distinct advantages. Infographics are better at conveying detailed information and aiding in recall, whereas videos are better at eliciting emotional resonance and encouraging internal motivation. These differences highlight the importance of selecting intervention media that are specific to the learning objectives or behavioral changes to be achieved. In the context of developing a growth mindset, a combination of both media can be a useful strategy: infographics as a cognitive reinforcement tool and videos as an emotional trigger. The findings provide practical implications in the design of psychological

intervention programs, particularly in the realm of education and personal development. The use of visual and audiovisual media not only needs to consider the content of the message, but also how the message can touch the cognitive and emotional aspects of the audience in a balanced manner.

This long-time gap (3 months) between intervention and follow-up test increases the validity of the parent argument that the observed effect was due to durable behavioral change, not incidental motivation. The findings of this research suggest that it was not just the changes in the participant's belief system post-intervention that mattered, but that those changes also affected everyone's approach to academic work. On average, the growth mindset group made greater progress on academic tasks, especially on their theses. This is because these students are more likely to persist despite thesis hurdles such as revision, authoritarian supervisors and time-consuming writing.

Individuals with a growth mindset believe that skills can be developed through hard work, the right strategy, and learning from mistakes. In the context of thesis work, this belief encourages students to persevere in the face of challenges such as repeated revisions or difficult guidance. In contrast, students with a fixed mindset avoid challenges, give up easily when faced with obstacles, and believe that inability is a reflection of their capacity that cannot be changed, so they avoid doing their thesis by not revising or receiving guidance (Dweck et al., 2014; Yeager & Dweck, 2012). Improvements in scores after a three-month follow-up indicated significant progress across various aspects of achievement. Believing that the process is dependent on the outcome enabled participants to persist and face challenges, leading to significant outcomes.

Students with a growth mindset are more likely to exhibit higher intrinsic motivation and perseverance when completing long-term academic tasks like theses (Macnamara & Burgoyne, 2023). In line with this, Komarraju & Nadler (2013) found that a growth mindset is positively correlated with self-efficacy, active learning strategies, and time management, all of which contribute to thesis progress.

What this study also found was a change of mindset for the categories after intervention, which proved that a psychological intervention or training of mindset can be a useful technique to improve students' thesis completions. This intervention changed the participants' view of themselves and simultaneously led to more explicit behavior such as greater motivation, planning and consistent task performance. With this change of mindset, students were more ready and more regimented to face the difficulties of thesis writing.

Therefore, all these results point to the conclusion that there is an effect of a shift in mindsets, in this case to a growth-mindset, on students' cognition and behavior regarding their final project completion. Growth-mindset interventions can be integrated into existing academic support programs aimed at raising the rate of graduation on time and reducing final-year students' academic burnout. The mindset shifts that these interventions elicit can therefore aid in more expedient and successful final project completion.

Implications

The results have valuable theoretical and practical implications. They lend support to growth mindset theory (Dweck & Yeager, 2019), showing that beliefs about academic ability can be altered using short-term psychological interventions. As the effect sizes were large across both intervention groups, this suggests the effects on these beliefs were not only statistically significant but also practically significant.

Pragmatically, this study illuminates the impact that different media can have during intervention on learning. While it was shown that both video- and infographic-based interventions could facilitate learning, it was noted that the infographic intervention elicited a more consistent trend in increased scores throughout the session, indicating a higher degree of cognitive reinforcement. Conversely, video-based interventions may promote a more emotionally driven response, stemmed from motivation. Growth mindset interventions delivered through a visually compelling medium in conjunction with an engaging audio medium could be an ideal duo when creating a program for underperforming final-year students.

Limitations

Several limitations need to be acknowledged in the interpretation of the results. 1) The pretest–posttest design, without a control group that did not receive the intervention, limits causal interpretation. 2) Effect sizes were reported to compare the effect of the two types of intervention, but there were no statistical tests performed to examine whether there was a significant difference between effect sizes, thus we advise that effect size comparisons be interpreted in a descriptive manner. 3) Growth mindset measures were limited to self-report measures, which are more prone to response bias. 4) Although thesis progress was examined at the 3-month follow-up, some use of a longer-term follow-up measure is necessary in order to determine if effects are lasting. Subsequent research should utilize a control condition, behavioral measures, and longitudinal testing.

Conclusion

It can be concluded that providing growth mindset interventions through media such as videos and infographics can improve the growth mindset of final year students working on their thesis. This means that final-year students understand the completion of the thesis is dependent on their efforts, and their abilities will improve so that they can overcome any challenges that arise along the way. The results of further analysis in testing the effect on thesis progress are still being evaluated because the research is longitudinal, lasting three months after the experiment was conducted.

In this study, it was found that the use of infographics in the growth mindset intervention had a greater effect than the use of videos as media. According to the results of the experimental trial, participants reported that infographics helped them remember every detail. However, when the information was delivered via video, participants could only infer the main points shown in the video. However, in terms of emotional engagement, participants in the experimental process reported that the growth mindset intervention delivered via video was more effective in making them feel emotionally touched and motivated than the infographics-based intervention. This demonstrates that each media has benefits and drawbacks in each application. As a result, both media can be used to facilitate the dissemination of information to final-year students in order to foster a growth mindset, particularly when completing the final thesis.

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