

Growth Mindset and Grit: Examining the Academic Buoyancy of College Students Implementing Online Lectures

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Abstract

One of the consequences felt by the world of education from the outbreak of the Coronavirus is that higher education institutions are required to apply online learning methods. Online learning itself has strengths, challenges, and obstacles in its implementation. Therefore, students need the ability to overcome the obstacles and challenges that are felt in the daily online learning process, namely academy buoyancy. This research seeks to find the role of the growth mindset and grit in academic buoyancy in college students who face online lectures. This research involved 140 students who were in their first year when this research was conducted (class of 2021). The results of hypothesis testing using multiple regression analysis showed an F value equal to 19.597 with a p-value equal to 0.000 (p less than 0.5). These results indicate that the hypothesis in this study is accepted, that the growth mindset and grit have a role in academic buoyancy among students who are studying online. The results of further calculations show that the role of the growth mindset and grit on academic buoyancy is 22.2 percent (R^2 equals 0.222).

Abstrak

Salah satu akibat yang dirasakan oleh dunia pendidikan dari merebaknya virus Corona adalah perguruan tinggi dituntut untuk memberlakukan metode pembelajaran dalam jaringan (daring). Pembelajaran daring ini sendiri memiliki kekuatan, tantangan, dan hambatan dalam pelaksanaannya. Oleh karena itu, diperlukan kemampuan dalam diri mahasiswa dalam mengatasi hambatan dan tantangan yang dirasakan dalam proses pembelajaran daring sehari-hari, yaitu *academy bouyancy*. Penelitian ini hendak mencari peran *growth mindset* dan *grit* terhadap *academic bouyancy* pada diri mahasiswa yang menghadapi perkuliahan daring. Penelitian ini melibatkan 140 orang mahasiswa yang berada di tingkat pertama saat penelitian ini dilakukan (angkatan 2021). Hasil uji hipotesis menggunakan analisis regresi berganda menunjukkan nilai F sama dengan 19,597 dengan *p-value* sama dengan 0,000 (p kurang dari 0,5). Hasil ini menunjukkan bahwa hipotesis pada penelitian ini diterima, yaitu *growth mindset* dan *grit* memiliki peran terhadap

academic buoyancy pada mahasiswa yang menjalani perkuliahan dalam jaringan. Hasil perhitungan lebih lanjut menunjukkan bahwa besar peran *growth mindset* dan *grit* secara bersama-sama terhadap *academic buoyancy* adalah sebesar 22,2 persen (R^2 sama dengan 0,222).



INTRODUCTION

A disease caused by the Coronavirus hit the world. This virus spread since December 2019 until finally declared by World Health Organization (WHO) as a pandemic in March 2020 after it was found to be spreading in almost all countries. Judging from data from the Indonesian Covid-19 Handling Task Force (Indonesian: *Satuan Tugas Penanganan Covid-19 Indonesia*) website, 223 countries have been infected with this virus, where the number of cases found has totaled more than 116 million cases. In Indonesia alone, as many as 1.4 million people have been found to have tested positive for Covid-19. Furthermore, the number of people known to have died from this virus is as many as 38,000 (*Data Vaksinasi COVID-19 (Update per 11 Maret 2021)*, 2021). This increasing number of cases has prompted the National Agency for Disaster Countermeasure (Indonesian: *Badan Nasional Penanggulangan Bencana* or BNPB) to issue Head Decree Number 13A of 2020, stipulating a Covid-19 emergency period in Indonesia.

The spread of the Coronavirus affects various aspects of life. The world of education is one of the areas of life that has also experienced the impact of this pandemic (Sadikin & Hamidah, 2020). One of the consequences of the emergence of Covid-19, according to Aji (2020), is the demand in the education sector to carry out online learning, both at the primary and secondary education (school) and higher education (college) levels. The decision to conduct online learning was formalized through a Circular Letter of the Ministry of Education, Culture, Research, and Technology No. 1 of 2020. The decision to carry out online learning aims to implement the obligation to maintain social distance

between individuals to prevent the spread of the Covid-19 outbreak. An online learning process is a form of a learning process that involves a wireless network in which accessibility, connectivity, and flexibility are needed to facilitate interaction during the learning process (Moore et al., 2011).

Online learning is a form of learning process that uses technology in the learning process between participants and teachers online (Howlett et al., 2009). According to Goldschmidt (2020), almost all countries in the world have been found to have conducted online learning. The strength point of online learning is that it allows learning to occur without intermediaries between students and teachers, including regarding the delivery of learning material (Naserly, 2020). However, apart from having advantages, online learning has challenges and difficulties that must be considered by the perpetrators (Jamaluddin et al., 2020). According to Baticulon et al. (2021), poor internet connection, limited media, and the lack of adequate learning spaces at home are among the challenges of online learning. Astuti & Febrian (2019) also stated that a bad internet connection could result in students being hampered from understanding the presentation of material or instructions from the teacher.

The challenge in conducting online learning for students is that there is a demand to be more independent in preparing the study material and maintaining learning motivation (Aulia & Aina, 2016). Related to this context, Martin & Marsh (2008) argue that every student has experienced setbacks in the academic field and faces challenges that generally occur at school (such as poor grades, pressure on exams, and difficulties in completing assignments). Martin & Marsh

(2006) refer to the daily challenges these students feel as everyday hassles. Although not to a severe degree, daily challenges can still cause students to feel pressured. Research conducted by Moawad (2020) found that one factor that triggers stress in college students is the use of online platforms in the learning process. The results of this study further reinforce that the ability of students to deal with the pressures they face every day in the academic field or everyday hassles is an important thing to have at this time.

According to Martin (2013), academic buoyancy is the ability needed by individuals to overcome problems or pressure in the academic field to a mild degree. Academic buoyancy, by Martin & Marsh (2008), is defined as the ability of students to deal with setbacks and challenges that usually occur in life in the academic field, including poor grades, limited time assignments, pressure during exams, or ethics in completing challenging academic assignments.

The academic buoyancy variable needs to be distinguished from the academic resilience variable. Academic resilience is often associated with “acute” and “chronic” problems in the academic field that can affect student development. In contrast, academic buoyancy is related to setbacks, challenges, and pressures in everyday academic life (Martin, 2013). Furthermore, academic buoyancy has been shown to be related to academic and psychological outcomes, for example: academic anxiety (Martin et al., 2013); academic achievement (Miller et al., 2013); the emergence of fear (Symes et al., 2015); and the emergence of positive motivation (Collie et al., 2015).

In the academic field, feeling unsuccessful, feeling setbacks, and making mistakes can be considered normal. However, to overcome these things, a metacognitive self-regulation strategy is needed in which a growth mindset is necessary within oneself (Jacovidis et al., 2020). In general, the mindset is often used to explain individual responses in facing challenges and setbacks in academic life (Yeager & Dweck, 2012).

Furthermore, in research conducted by Dweck (Rhew et al., 2018), the mindset was found to be a factor that caused some students to remain comfortable learning even though they were given challenging assignments, while other students felt anxiety and did not like being given assignments that were considered challenging.

Researchers distinguish mindset into two: growth mindset and fixed mindset. A fixed mindset is a cognitive tendency within oneself that believes that intelligence is fixed, cannot change, and that the effort made will not lead to success (Dweck, 2015). Conversely, a growth mindset is a cognitive tendency in individuals who believe that potential and psychological attributes can be developed with effort and hard work (Dweck, 2006). Individuals with a growth mindset within themselves are predicted to be more adaptable and adaptable to failures and changes in the academic field. Furthermore, Dweck & Yeager (2019) also said that individuals with a growth mindset would be stronger in facing difficulties and trying to continue to develop themselves. Dweck (Smith, 2015) also stated that individuals who believe that intelligence within themselves can be developed or changed tend to have higher resilience and academic buoyancy.

Mindset is also related to how to deal with failure. MacIntyre (2016) states that those who had faced failure developed more fear when facing new challenges and kept doubts when they had to get back up. Individuals can rise after facing failure if they develop a growth mindset within themselves to manage the fear and anxiety that arise from previous failures (Anderson et al., 2020). The owned mindset also influences various non-cognitive factors within students, one of which is related to how students deal with the challenges they face every day (Heine et al., 2001). Students with a growth mindset are shown to display higher academic buoyancy when facing challenges and setbacks in the academic field (Waite, 2016).

Farrington et al. (2012) found that a combination of a growth mindset and self-grit is related to one's academic buoyancy. The relationship between grit and academic buoyancy can also be studied independently. Research by Duckworth et al. (2007) revealed that students with more grit in themselves would be more resistant to unpleasant activities even when faced with challenges. Duckworth et al. (2007) also stated that grit is self-preference to maintain perseverance and motivation to achieve challenging long-term targets. Grit involves working hard to meet challenges, also maintaining effort and interest.

Based on the explanation that has been previously explained, this study aims to determine the effect of a growth mindset and grit together on the academic buoyancy of college students who carry out online lectures. Furthermore, this research also wants to reveal which variables between growth mindset and grit have a more significant role in academic buoyancy.

METHODS

This research uses a quantitative approach. A total of 140 college students involved as respondents in this study. The respondent selection technique used in this study is purposive sampling. Included respondents were those who met the established criteria, which were undergoing the first year of lectures (class 2021). This criterion is based on the results of several previous studies: Adiwaty & Fitriyah (2015); White & Watt (Estiane, 2015); Maulana et al. (2014); Oktovia et al. (2013); Sari et al. (2020). These studies found similar results: first-year students faced more lecture challenges than students in other years.

There are three variables studied and data collected in this study. The first variable is academic buoyancy. According to Martin & Marsh (2008), academic buoyancy is students' ability to deal with setbacks and challenges that usually occur in life in the academic field, including poor grades, limited time assignments, pressure during exams, or ethics in completing challenging academic assignments.

In this study, academic buoyancy in first-year college students will be seen by filling in the academic buoyancy scale, which was developed by the researchers themselves based on the dimensions of academic buoyancy proposed by Martin et al. (2010), that is, self-efficacy, planning, persistence, composure/low anxiety, and control.

The following variable studied is the growth mindset. In this study, the growth mindset of first-year college students was seen by filling out the growth mindset scale developed by the researchers based on the growth mindset dimension, that is, the belief that intelligence and individual abilities can be developed by studying and working hard. If the growth mindset scale score is high, then first-year college students have a high growth mindset within themselves.

The third variable studied is grit. The grit scale was self-developed by researchers based on the grit aspects of Duckworth et al. (2007), that is, consistency of interest and perseverance of effort. If the score obtained on the grit scale is high, then the grit of the first-year students is high, and vice versa.

Before being used in this study, the three scales were tried on 50 respondents who had met predetermined criteria. Due to the pandemic when this research was conducted, data collection for scale trials was done by distributing questionnaires online.

Research measuring instruments are tried first to ensure that the items used are valid and reliable. For the validity test, the researchers looked at the score of the item discrimination index, that is, the value of corrected item-total correlation (rit) ≥ 0.3 . As for the reliability test, the researchers looked at Cronbach's alpha value of each scale.

Before testing the main hypothesis of this study, several assumption tests were carried out first, to be specific, the normality test, linearity test, multicollinearity, and heteroscedasticity. If the assumption test results are proven, the main hypothesis testing of this study can be continued.

Hypothesis testing was carried out using multiple regression techniques. The magnitude of the influence of each independent variable on the dependent variable involved in this study is also calculated.

RESULTS

From the analysis results to determine validity and reliability, 20 items were obtained for the academic buoyancy scale, ten for the growth mindset scale, and 11 for the grit scale. For further details, the following table will show the results of the validity and reliability tests from the trials of each scale.

Table 1.
Research Scale Trial Results

Variables	Discriminant Index Range	Cronbach's Alpha	
		Before Disqualified	After Disqualified
Academic Buoyancy	.308–.603	.750 (n = 50)	.866 (n = 20)
Growth Mindset	.555–.698	.915 (n = 30)	.919 (n = 10)
Grit	.348–.612	.744 (n = 20)	.835 (n = 11)

As already mentioned, several assumption tests (tests for normality, linearity, multicollinearity, and heteroscedasticity) were carried out before testing the main hypothesis in this study. Because all the assumption tests that have been carried out show the results as expected, the hypothesis test using the multiple regression test technique is carried out. The effect of each independent variable on the dependent variable is also calculated.

The following results were obtained from the results of testing the main hypothesis, which was carried out using multiple regression tests.

Table 2.
Research Hypothesis Test Results

Variables	R	R ²	F	Sig.
Academic Buoyancy– Growth Mindset– Grit	.471	.222	19.579	.000*
*) p < 0.05 is considered significant				

From the table above, it can be seen that the value of $p = 0.000$ ($p < 0.05$). These results indicate that the main hypothesis in this study is accepted, which means that growth mindset and grit influence academic buoyancy in college students who face online lectures.

From the results of hypothesis testing that has been done, the value of $p = 0.000$ ($p < 0.05$) is obtained. Thus, the hypothesis in this study is accepted, that is, growth mindset and grit affect academic buoyancy in college students who implement online lectures.

The results of data processing that have been done also show the value of R Squared (R^2) = 0.222. This result means that the effect of a growth mindset and grit together on the academic buoyancy of college students who undergo online lectures is 22%, while the rest is influenced by other variables not examined in this study.

Furthermore, in this study, further analysis was conducted to see the role of each independent variable on the dependent variable, and the following results were obtained.

Table 3.
Additional Analysis Results

Independent Variable	B	Cross Product	Regression	Effective Contribution (R ²)
Growth Mindset–Grit	.133	740.814	1620.061	22.2%

Based on the data above, an effective contribution test was done using the following formula:

$$SEx = \left| \frac{Bx \cdot CP \cdot R^2}{Regression} \right|$$

where

- Bx = Coefficient B of component X
- CP = Cross product of component X
- R² = Total effective contribution
- Regression = Regression value

The results of the effective contribution of growth mindset and grit variables to academic buoyancy are as follows.

Table 4.
Results of Additional Analysis of Effective Contribution

Independent Variables	Effective Contribution
Growth Mindset	1.35%
Grit	20.85%

DISCUSSION

Based on the results of the analysis that has been done, it is known that there is a significant influence of growth mindset and grit on academic buoyancy in college students who run online lectures. The results of this study support the results of several previous studies that have examined the role of each independent variable on the dependent variable.

The challenges in the field of education during the Covid-19 pandemic make college students need to make efforts to adjust. According to Yeager & Dweck (2012), a growth mindset can make individuals resilient to academic challenges, called academic buoyancy. This opinion supports the statement by Mosanya (2021) that the importance of a growth mindset in students

is to build resilience in dealing with academic pressure during a pandemic. A growth mindset can support students undergoing academic tasks during times of self-isolation to reduce the spread of the Covid-19 outbreak. Burnette et al. (2013) also found that someone with a growth mindset within themselves will have better self-regulation, which will ultimately lead to the establishment of academic buoyancy during a pandemic. The results of this study are also supported by the results of research from Mrazek et al. (2018), that is, the existence of a growth mindset that develops within will be able to change the view and desire to perform challenging tasks and be more diligent in completing tasks. This opinion aligns with two dimensions of academic buoyancy: self-efficacy and persistence.

Students' beliefs about intelligence play a major role in shaping how they go about their education and respond to academic setbacks or difficulties. Students with a growth mindset will see school as a fun place to grow and view challenges as opportunities to add to what is mastered (Yeager & Dweck, 2012). A growth mindset makes students prefer to work on challenging tasks and try to overcome obstacles by designing new strategies or efforts to increase academic success (Smiley et al., 2016). Broda et al. (2018) also found that providing growth mindset interventions can help students with a higher risk of poor academic performance, such as first-year college students.

A growth mindset can help students have perseverance and a desire to grow, leading them to success (Hochanadel & Finamore, 2015). Dweck (2015) also agrees that students can cultivate a growth mindset when they can appreciate every effort they have made. Previously,

Dweck (2006) also found that when students with a growth mindset got poor grades in college exams, they could bounce back when they took the next exam. When individuals see ability as something that can be developed and then view effort as more important because effort is seen as a process and setbacks are seen as a learning process, then persistence can be maintained (Yeager & Dweck, 2020).

Previous research discussing grit's role in academic buoyancy has not been found much. According to Fong & Kim (2021), although it is often understood as a personality trait, grit is often also researched in an educational context and associated with motivational construction theories, one of which is research conducted by Duckworth et al. (2007) where it was found that students who have more grit in him will be more resistant to unpleasant activities even when faced with challenges. Research conducted by Fong & Kim (2021) also found that grit can positively predict a college student's final grade.

The results of calculating the contribution of each independent variable to academic buoyancy show that the grit variable has a much more significant role than the growth mindset. Grit itself is seen as one of the non-cognitive factors in a person, which has attracted much interest in previous research in the fields of education and psychology (Fong & Kim, 2021). The magnitude of the role of grit on academic buoyancy compared to a growth mindset can be seen from the results of this study, indicating that non-cognitive factors are one of the things that have a significant influence in predicting one's academic success.

If examined further, the growth mindset only has a small role in the academic buoyancy of college students. As explained earlier, from the various definitions related to the growth mindset, it can be concluded that a growth mindset is how one perceives intelligence and psychological potential within oneself as something that can be developed. Heine et al. (2001) stated that students' mindsets influence various non-cognitive

factors, one of which is how students overcome the challenges they face. The growth mindset is thought to refer more to cognitive factors that influence non-cognitive factors in helping college students overcome challenges. This reason causes the results of the role of a growth mindset together with grit on academic buoyancy to be not too significant.

CONCLUSION

Based on the results of the tests that have been conducted, the proposed hypothesis is accepted, that is, there is a role of growth mindset and grit in academic buoyancy in college students who undergo online lectures. Furthermore, the role of a growth mindset and grit together in academic buoyancy is 22.2%. If reviewed one by one, the role of a growth mindset in academic buoyancy is 1.35%, while the role of grit in academic buoyancy is 20.85%.

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