Bridging Gender Differences : Exploring the Effect of Social Support and Campus Culture on Self-Regulated Learning in Higher Education

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Abstract: This study aims to examine self-regulated learning (SLR) based on gender using two factors, namely social support and campus culture, and analyze the moderation effects presented by these two factors. This study was a quantitative approach with an expost facto method. The population was all students in the Social Sciences Education Study Program of the Parepare State Islamic Institute for the 2019-2023 batch of 116 students. There were 34 men and 82 women. The research sample took a saturated sample, namely the entire population. The data collection techniques were questionnaires, documentation, and interviews. Testing the research hypothesis was carried out using SmartPLS. The study found that social support significantly increased SRL, with a stronger effect on male students than female students. A positive campus culture also increases SRL, but its effect is weaker on female students. Campus culture moderates the effect of social support on SRL, amplifying its effectiveness, especially in male students. Social support also moderated the effect of campus culture on SRL, strengthening the motivation and confidence of male students, although the impact was slightly weaker on female students but still relevant. These results suggest that social support and campus culture enhance SRL, particularly among male students. It is crucial to design interventions that consider gender differences to achieve the best possible results.

Introduction

Self-regulated learning is a concept of self-management and an approach to the learning process that emphasizes strategies for cognitive and metacognitive approaches (Essa, 2022; Hamzah et al., 2023; Mejeh & Held, 2022; Panadero, 2017a). SRL does not go unnoticed by academics and practitioners in education because it influences academic achievement. As a result, several studies stated that there was a positive correlation between SRL and learning achievement (Alotaibi, 2017; Bakar et al., 2017; Eyitayo Olakanmi et al., 2017; Hakiki & Rembulan, 2019; Istiqomamah et al., 2022; Li et al., 2018; Nodeh, 2021). Some studies have also found that low SRL can increase procrastination or procrastination of tasks which ultimately has an impact on declining academic achievement (Brahma & Saikia, 2023; Haider et al., 2022; Rasanty & Qudsyi, 2023). Therefore, SRL is essential for a person to improve their academic performance.

The report from PISA 2022 shows that students in Indonesia face major challenges in terms of self-regulated learning, especially in mathematics, reading, and science skills (OECD, 2023). Based on the results of observations on students of the Social Sciences Education Study Program IAIN Parepare, conducted by researchers, information was

obtained that students tend to be unable to manage time in the learning process. This can be seen from their inability to attend lectures and submit assignments on time. Some students asked for an extension of time when they wanted to submit academic assignments. Students are not able to plan their learning, set goals, monitor understanding, and manage their study time. This shows that students do not have good SRL skills. All learning activities require independent learning management from the student side.

In this regard, Zimmerman stated that 3 things affect a person's SRL, including; a) an individual consisting of personal knowledge, the level of metacognition ability, goals to be achieved, and beliefs of self-efficacy, b) behavior which includes behavior, personal self-reaction, and the environment, c) the environment which is an influence that comes from outside a person (Li et al., 2018). The influence of the environment is in the form of active experiences, social support, and others. This research focuses on social support and campus culture as a factor that affects SRL students of the Social Sciences Education Study Program IAIN Parepare.

Social support aims to influence student SRL because, through social support, a person can feel pleasure, attention, appreciation, or help from others or his or her group. Social support can be seen through five dimensions, namely support in the form of direct assistance, emotional support, award support, information support, and support from social networks (Umayyah, 2018). Campus culture is something that is outside of students and has the power to influence student behavior. In the context of IAIN Parepare, there is a distinctive campus culture with the tagline *malebbi warekkadanna makkiade ampena* (polite in speaking, civilized in acting), campus residents have a foundation in speaking and behaving. IAIN Parepare is present not only to organize education, teaching, research, and community service that is superior and competitive but also as a center for strengthening *aqidah* and *akhlak karimah*. This makes the campus culture at IAIN Parepare interesting to study its effect on student SRL.

Previous research has examined SRL in different locations, objects, methods, and even different SRL theories or variables (An et al., 2024; Bidjerano, 2005; Findyartini et al., 2024; Holzer et al., 2024; Jakešová & Kalenda, 2015; Karlen et al., 2024; Lee et al., 2024; Li & Lajoie, 2022; Lukes et al., 2020; Martínez-López et al., 2024; Mejeh & Held, 2022; Panadero, 2017; Puustinen & Pulkkinen, 2001; Schunk & Zimmerman, 2012; Wang, 2021). In contrast to the previous study, this study examines SRL based on gender using two factors, namely social support and campus culture. Examines the moderation effect presented by these two factors. The article begins by presenting four arguments. First, social support enhances SRL in both male and female students. Second, the culture on campus affects the SRL of both male and female students. Third, campus culture moderates the effect of social support for male and female students' SRL. Fourth, social support moderates the effect of campus culture on male and female students' SRL.

Research Method

This study was approached with an expost facto method. The population of this study was all students in the Social Sciences Education Study Program for the 2019-2023 batch of 116 students. There were 34 men and 82 women. While the research sample took a saturated sample, namely the entire population. The data collection techniques were questionnaires, documentation, and interviews. The questionnaire was used to obtain data on SRL, social support, and campus culture. Meanwhile, documentation and interviews were used to deepen the data obtained. The questionnaire used in this study was tested to determine its validity and reliability. To test the validity, measurement (outer) evaluation is used, namely convergent

validity, the magnitude of the loading factor for each > 0.50 for the intended variable. In addition, a validity test was also carried out with discriminant validity, namely looking at and comparing discriminant validity and the square root of average variance extracted (AVE). If the value is higher than the value of the correlation between the constructs, then good discriminant validity is achieved (when the AVE > 0.50). The reliability test used an internal consistency approach with the Cronbach Alpha technique. The criterion for instrument reliability is if the r value is at least in the high category (0.70). The research data was collected using questionnaires. The data includes self-regulated learning, social support, and campus culture. Testing the research hypothesis was carried out using SmartPLS. By looking at T Statistics and P Values. The criteria for hypothesis acceptance or rejection are H0 is accepted if the t table ≤ or α > is 0.05 and Ha is accepted if the t table > or α ≤ 0.05 (Lestari and Yudhanegara, 2015).
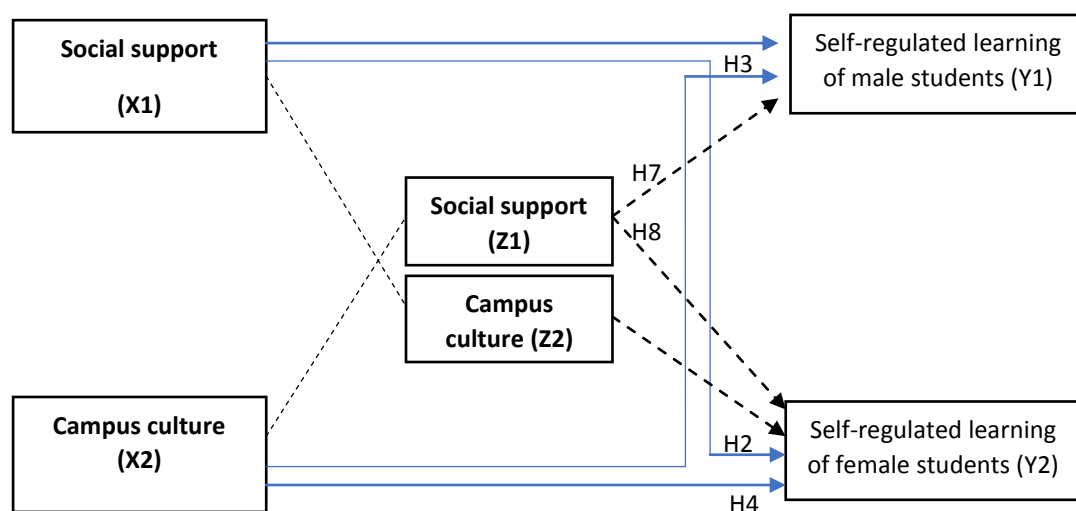

Figure 1. Research Rationale Framework

SRL based on gender is intended in this study as a type of SRL that is seen based on gender, namely male and female. This study suspects that student SRL is affected by two factors, namely social support and campus culture. These two factors not only act as independent variables that directly affect students' SRL but also act as moderator variables that affect the strength or direction of the relationship between independent variables and bound variables. In simple terms, a moderator variable can change or moderate the relationship between the two variables.

Information:

H1: The effect of social support on SRL of male students
H2: The effect of social support on SRL of female students
H3: The effect of campus culture on SRL of male students
H4: The effect of campus culture on SRL of female students
H5: The effect of social support moderated by campus culture on SRL of male students
H6: The effect of social support moderated by campus culture on SRL of female students
H7: The effect of campus culture moderated by social support on SRL of male students
H8: The influence of campus culture moderated by social support on SRL of female students

Results and Discussion
Evaluation Model
Convergent Validity

The validity test was carried out using the measurement (outer) model evaluation, namely by using the convergent validity of the magnitude of the loading factor for each > 0.50 for the intended variable. The following is the output of the measurement model or outer model with PLS.
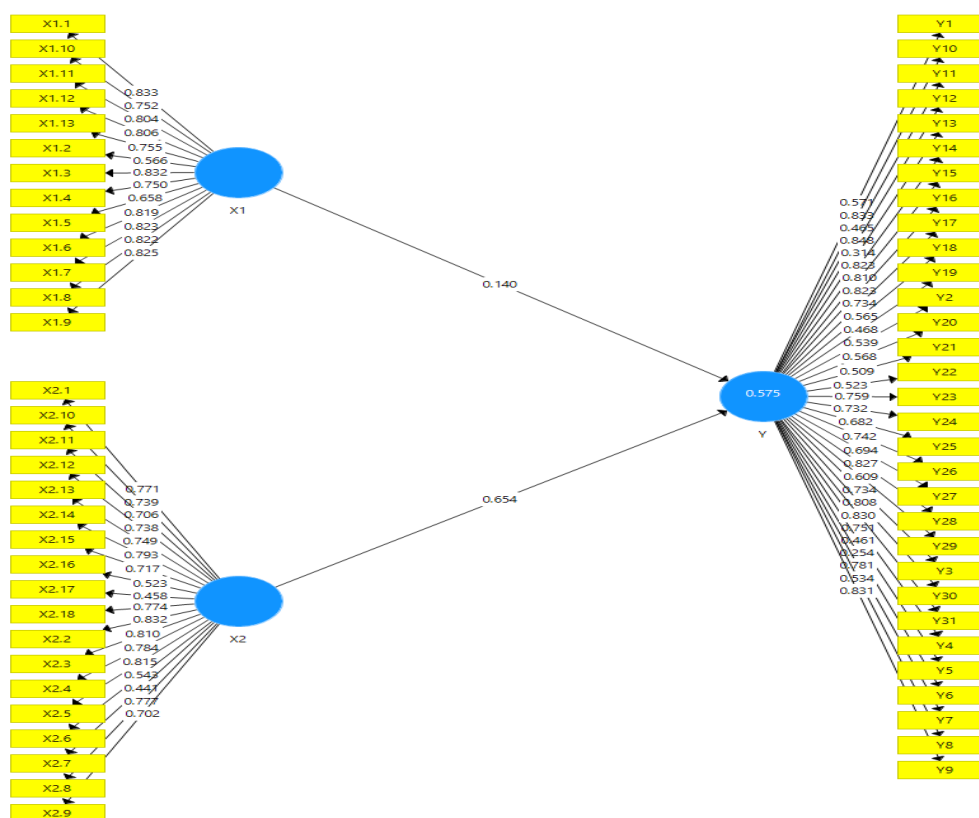

Figure 2. Measurement Model Output

The next evaluation was using the value of discriminant validity and the square root of average variance extracted (AVE). The measurement model is assessed based on the value of cross-loading with constructs. If the correlation of the construct with each indicator is greater than the size of the other construct, then the latent construct predicts the indicator better than the other construct. If the value is greater than the value of the correlation between the constructs, the discriminant validity is met, namely if the AVE > 0.5. The following are the results of AVE measurements on each variable.

Table 1. Measurement Results with Average Variance Extracted

	Average Variance Extracted (AVE)
X1	0.625
X2	0.596
Y	0.652

Validity tests with convergent validity and discriminant validity obtained 11 valid items to measure social support (X1), 14 valid items to measure campus culture (X2), and 16 items to measure SRL (Y).

Reliability test
Reliability test with composite reliability

To determine composite reliability, if the composite reliability value > 0.80, it is concluded that the construction has reliability in the high category, while the composite reliability value > 0.60 is in the fairly reliable category. The following are the results of the reliability test with composite reliability.

Table 2. Measurement with Composite Reliability

Variable	Composite Reliability
Social Support	0.948
Campus Culture	0.954
SRL	0.968

From the measurement results, all latent variables have a composite reliability value of > 0.80 which means that all independent latent variables are appropriate and suitable to be used as variables to be tested to determine their effect on the dependent latent variable, namely self-regulated learning.

Reliability Test with Cronbach Alpha

The results of the instrument reliability test by looking at the Cronbach Alpha value are summarized in Table 3.

Table 3. Reliability Test Results

Variable	Cronbach's Alpha	Critical value	Information
Social Support	0.938	0.70	Reliable
Campus Culture	0.948	0.70	Reliable
SRL	0.964	0.70	Reliable

The results of the validity test with Cronbach's Alpha obtained a value for the social support variable of 0.938, the campus culture variable of 0.948, and the self-regulated learning variable of 0.964 which is greater than 0.70 so that the three instruments are reliable to measure the data.

R-Square

The goodness of fit model was measured using the R-Square dependent latent variable with the same interpretation as the regression. R-Square predictive relevance for structural models, measuring how well the observation values are generated by the model as well as estimating its parameters. An R-squared value of > 0 indicates that the model has predictive relevance. On the other hand, if the R-Square value $\leq$ is 0, it indicates that the model lacks predictive relevance. The results of the measurement of the inner model with PLS are as follows.

Table 4. R Square

	R Square	Adjusted R Square
Y	0.522	0.514

The value of the R Square is 0.522. The R Square results explain that the effect of social support and campus culture on student SRL is 52.2%, the remaining 47.8% is influenced by other variables that are not studied in this study. The Adjusted R Square value in this study was 0.514 or 51.4%. Therefore, it can be concluded that 51.4% of the variation that occurs in the SRL variable can be explained by social support and campus culture variables, and the remaining 48.6% can be explained by other variables outside this study.

Hypothesis testing

The Effect of Social Support on Self-Regulated Learning Based on Gender

Table 5. Bootstrapping Hypothesis 1 and Hypothesis 2

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
X1➔Y Male	0.572	0.558	0.113	4.625	0.000
X1 ➔Y Female	0.350	0.336	0.103	4.303	0.002

P-value X1➔Y male students showed that the effect of social support on SRL was very significant. In a statistical context, a p-value of 0.000 means that the probability of this outcome happening by chance is very small. In other words, social support has a very strong and reliable effect on SRL students. P-value X1➔Y female students of 0.002 also showed that the effect of social support on SRL on female students was statistically significant, although slightly larger than that of female students. The original sample value of X1➔Y of male students of 0.572 shows a strong positive correlation between social support and SRL in male students. This means that as social support increases, SRL in male college students tends to increase as well. Meanwhile, the original sample value of X1➔Y for female students of 0.350 showed a weaker positive correlation between social support and SRL in female students compared to male students. Although there is still a positive relationship, the effect of social support on SRL on female students is not as strong as the effect on male students.

The study found that social support affected student SRL in both male and female students. Social support affects SRL because social support from friends, family, and lecturers, can increase students' motivation and self-confidence. When college students feel socially supported, they are more likely to believe in their ability to manage their learning. This is in line with research showing that social support is positively correlated with increased self-efficacy, which is an important component of SRL (Panadero, 2017b).

The difference in correlation between social support for SRL between male and female students can occur due to different social and psychological factors between these two groups. Male college students tend to rely more on social support to develop their SRL skills, while female college students may have strategies or other factors that are more influential in regulating their learning. Factors such as gender roles, social expectations, and academic pressure can also be the cause of these differences (Martínez-López et al., 2024). Students who receive social support tend to use effective learning strategies more often. For example, peer support can encourage discussion and collaboration, which helps students develop better learning strategies. Research has shown that students who feel social support tend to be more proactive in using strategies such as time management and note-taking, which are part of SRL (Richardson et al., 2012a).

Social support can provide the emotional resilience necessary for students to face academic challenges. Students who feel socially supported are better able to cope with academic stress and pressure, which allows them to stay focused and disciplined in their studies. In other words, social support helps them develop the ability to self-regulate in challenging situations (Wilks & Spivey, 2010).

The Effect of Campus Culture on Self-Regulated Learning Based on Gender

Table 6. Bootstrapping Hypothesis 3 and Hypothesis 4

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
X2 ➔Y Male	0.773	0.782	0.147	5.266	0.000
X2 ➔Y Female	0.431	0.465	0.132	3.265	0.001

P-value X2➔Y male students of 0.000 shows that the effect of campus culture on SRL is statistically significant. Meanwhile, the p-value of X2➔Y of female students of 0.001 shows that the effect of campus culture on SRL on female students is also statistically significant, although slightly larger than the p-value of male students.

The original sample value of X2➔Y of male students of 0.773 shows that there is a very strong positive correlation between campus culture and SRL in male students. This means that campus culture has a very significant influence on the ability of male students to

organize their learning. This figure shows that when the campus culture is supportive, male students tend to have better SRL skills. On the other hand, the original sample value of X2→Y of female students of 0.431 shows that there is a moderate positive correlation between campus culture and SRL in female students. Although campus culture still has an influence on SRL on female students, it is not as strong as it is on male students. This value suggests that there is a positive, yet weaker, relationship, which means that in addition to campus culture, there may be other factors that are more dominant in influencing the SRL of female students.

Campus culture has a very strong influence on the SRL of male students. A supportive campus environment can significantly enhance male students' ability to organize their learning. Campus culture also affects the SRL of female students, but the influence is weaker compared to male students. This suggests that female students may be influenced by factors other than campus culture in developing their SRL. Therefore, the development and maintenance of a conducive campus culture is very important. While campus culture is important, these results may indicate that female students need a more holistic approach, which considers other factors outside of campus culture to improve their SRL.

The Effect of Campus Culture Moderated by Social Support on Self-Regulated Learning Based on Gender

Table 7. Bootstrapping Hypothesis 5 and Hypothesis 6

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Z1 →Y Male	0.175	0.139	0.230	4.762	0.004
Z1 →Y Female	0.164	0.141	0.085	3.917	0.003

The P-value of Z1→Y of male students of 0.004 shows that the effect of social support moderated by campus culture on the SRL of male students is statistically significant. Meanwhile, the p-value of Z1→Y of female students of 0.003 also shows a very strong statistical significance for the influence of social support moderated by campus culture on SRL on female students.

The original sample value of Z1→Y of male students of 0.175 shows that there is a positive effect of social support moderated by campus culture on SRL on male students. That is, when campus culture helps moderate the relationship between social support and SRL, the result is an increase in the ability of male students to manage their learning. As for female students, the original sample value of 0.164 showed a similar, albeit slightly weaker, positive effect of social support moderated by campus culture on SRL in female students. As in male students, this effect suggests that campus culture can strengthen the relationship between social support and SRL of female students. Although the impact is slightly smaller than that of male students, campus culture still plays a positive role in improving the ability of female students to manage their learning through social support.

This study found that campus culture was able to moderate the effect of social support on student SRL. Campus culture can moderate the effect of social support on SRL because campus culture affects how individuals interact, behave, and adjust to the learning environment. The findings of this study show that the social support provided to students has a positive influence on their ability to manage learning independently. However, this influence becomes stronger when campus culture plays the role of moderator. With a supportive campus culture both through a conducive physical environment, values embraced, and assumptions formed on campus, the social support received by students can be more effective in helping them develop the ability to manage their learning (San & Guo, 2023).

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For male students, a positive campus culture magnifies the benefits of social support in improving their ability to plan, manage time, and set study goals independently. The same applies to female students. Although the influence is slightly weaker than that of male students, campus culture still has an important role in strengthening the relationship between social support and the ability of female students to organize their learning (Wang, 2021; Wolters & Taylor, 2012). Therefore, educational institutions need to pay more attention to efforts to create and strengthen a campus culture that can support the development of independent learning for all students by increasing the effectiveness of social support in the campus environment (Bråten et al., 2011; Komarraju & Nadler, 2013; Richardson et al., 2012b; Zimmerman, 2002b).

The Effect of Campus Culture Moderated by Social Support on Self-Regulated Learning Based on Gender

Table 8. Bootstrapping Hypothesis 7 and Hypothesis 8

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Z2 →Y Male	0.265	0.125	0.215	2.715	0.003
Z2 →Y Female	0.244	0.150	0.090	2.515	0.002

The P-value of Z2→Y of male students of 0.003 shows that the effect of campus culture moderated by social support on SRL of male students is statistically significant. Meanwhile, for female students, a p-value of 0.002 also shows a very strong statistical significance for the effect of campus culture moderated by social support on female students' SRL.

The original sample value of Z2→Y of 0.265 shows that there is a strong positive influence of campus culture moderated by social support for SRL in male students. This means that when social support strengthens or moderates campus culture, the result is a significant increase in male students' ability to organize their learning. On the other hand, the original sample value of 0.244 in female students showed a similar, albeit slightly lower, positive influence of campus culture moderated by social support for SRL in female students. Just like in male students, this means that social support reinforces the positive influence of campus culture on female students' ability to organize their learning. This value indicates that although the influence is slightly weaker than that of male students, there is still a significant positive influence of the interaction between campus culture and social support on the SRL of female students.

This study found that social support was able to moderate the influence of campus culture on SRL (Lambropoulos et al., 2012; San & Guo, 2023; Umayyah, 2018). Social support includes family support, friend support, and support of the closest people. This shows that male students can be more effective in managing their learning when they are in a campus environment supported by a good social system. However, although the positive effects of a moderated campus culture by social support were also seen in female students, the impact was slightly lower compared to male students. This indicates that, while social support continues to reinforce the influence of campus culture on female students' SRL, it is not as strong as that of male students. This means that female students may be influenced by additional factors in addition to social support in their SRL development process.

Conclusion

The study concluded four things, namely: First, social support, including from family, friends, and close people, significantly increases SRL. Although the effect of social support on SRL is stronger in male students than in female students, social support is still important

for both. This difference indicates that there are additional factors that affect SRL in female students. Second, campus culture including artifacts, values, and assumptions has a significant effect on student SRL. A positive and supportive campus culture effectively increases the SRL of male students. However, its effect on female college students was slightly weaker, suggesting the need for additional approaches to improve SRL in female college students. Third, campus culture moderates the effect of social support on SRL. A supportive campus culture through physical environments, values, and assumptions increases the effectiveness of social support in helping students manage their learning independently. A positive campus culture reinforces the benefits of social support, especially for male students, and remains relevant for female students, albeit with a slightly weaker effect. Fourth, social support from family, friends, and close people moderates the effect of campus culture on SRL. Social support strengthens the positive effects of campus culture on SRL, increasing the motivation and confidence of male students. Although the impact of social support on female students is slightly weaker, the role of social support remains crucial in maximizing the development of SRL.

Recommendation
Based on the findings of the research, here are the suggestions that can be given. First, educational institutions must strengthen the social support system by involving family, friends, and closest people. Programs that support family involvement and provide strong social networks can improve students' SRL, especially female college students, by paying attention to additional factors that may affect their SRL. Second, the campus needs to focus on developing a culture that supports SRL through the improvement of artefacts, values, and assumptions. Creating a comfortable physical environment, reinforcing positive values, and building a supportive assumption of independence can maximize the influence of campus culture on student SRL. Third, given that the influence of campus culture on female students' SRLs is slightly weaker, additional approaches such as specialized mentoring or more focused support programs for female students are needed, to increase the effectiveness of their SRLs. Fourth, integrating social support within a supportive campus culture can enhance social relationships. Institutions should craft strategies that combine social support with a positive campus environment, considering the differing needs of male and female students. Additionally, parents are encouraged to provide emotional and psychological support through open communication and by recognizing their children's progress to foster independence.

Acknowledgment

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