

PEDAGOGY, CONTENT MASTERY, AND ASSESSMENT INFLUENCE CHARACTER EDUCATION AMONG MALAYSIAN SECONDARY SCHOOL GEOGRAPHY TEACHERS

BIN AMATAN, M. A.^{1*} – MAHAT, H.¹ – SALEH, Y.¹ – MARZUKI, M.¹ – CHE LEH, F.¹

¹ *Faculty of Human Sciences, Sultan Idris University of Education, Perak, Malaysia.*

**Corresponding author
e-mail: azri.amatan[at]fsk.upsi.edu.my*

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Abstract. This study aims to identify the influence of assessment implementation, content mastery, and pedagogical practices on character education among secondary school geography teachers in Malaysia. This quantitative survey study involved 300 geography teachers from a population of 10,631 teachers. Data were collected using the Malaysian Geography Teacher Professionalism Questionnaire Instrument with a five-point Likert scale and analyzed using hierarchical multiple linear regression using IBM SPSS Statistics 29. The findings showed that assessment implementation had a significant influence on character education with a contribution of 38.3%. The inclusion of content mastery increased the contribution of the model to 46.1%, while pedagogical practice increased the contribution of the final model to 47.5%. All three variables were significant predictors of character education, with assessment implementation identified as the most dominant factor, followed by content mastery and pedagogical practices. This study concluded that character education in geography education can be strengthened through effective assessment, solid content mastery, and appropriate pedagogical practices, in line with the aspirations of the 2027 school curriculum.

Keywords: *Geography education, character education, assessment implementation, content mastery, pedagogical practice*

Introduction

Geography education is a subject that plays an important role in shaping students who are knowledgeable, think critically, and are sensitive to the relationship between humans and the environment. In the current educational context, geography is no longer seen as a subject that only emphasizes mastering facts related to location, landforms, weather, climate, population, and natural resources but also functions as a medium for the formation of students' values, attitudes, personalities, and responsibilities towards society and the environment. This role is in line with the needs of geography education, which requires teachers to have strong professional and pedagogical competencies to ensure that geography teaching can be implemented meaningfully and effectively (Smit et al., 2023; Mahat et al., 2019). The importance of geography education in the formation of holistic students has become increasingly relevant ahead of the implementation of the 2027 school curriculum. This curriculum was introduced by the Ministry of Education of Malaysia as an effort to renew the direction of national education through an approach that is more focused on competencies, character education, basic literacy, and integrated learning. The Ministry of Education of Malaysia also prepared the 2027 School Curriculum document as a reference for the national curriculum policy. According to a Bernama report, the 2027 school curriculum emphasizes character education; basic literacy of reading, arithmetic, and writing (3M); and integrated learning classes, in addition to being based on a standard curriculum and competency-oriented to produce knowledgeable, competent, and balanced students

(Bernama, 2023). In this regard, the element of global citizenship in the geography subject is also important because geography is able to build students' awareness of global issues, social responsibility, and the relationship between society and the environment (Mohammad Zohir, 2024).

In this context, character education is an important element because student development should not be focused solely on academic achievement but should encompass aspects of values, emotions, social skills, ethics, and civic responsibility. Effective character education needs to be implemented systematically, be evidence-based, and be integrated into daily educational practices (Berkowitz, 2022). Sargeant and Trask-Kerr (2026) also emphasized that character education can be built through the process of curriculum formation that provides space for learning experiences, human values, and the development of students' personalities. The study Oldham and McLoughlin (2026) also shows that character education is increasingly receiving attention in educational research because of its need to form resilient, responsible, and ethical students. In the context of geography education, character formation is also related to the personality, skills, and professional values of teachers because teachers are important models for students in the process of forming values and personalities (Hassan et al., 2023). Geography education has great potential to support the implementation of character education because the content of this subject is closely related to real-life issues. Topics such as climate change, natural disasters, environmental sustainability, settlement, migration, urbanization, natural resources, and sustainable development not only require conceptual understanding but also require students to make value judgments and responsible decisions. Research by Pasang and Najib (2022) shows that education for sustainable development in geography subjects can help strengthen students' awareness of sustainability issues. In addition, Karpudewan (2021) emphasizes that pro-environmental attitudes in the Malaysian context are influenced by various social and educational factors, while Danaher et al. (2021) show that sustainability education in geography is important to build students' understanding of current environmental challenges. Teachers' knowledge of local wisdom related to the environment is also important because it allows teachers to relate geography learning to the local context and students' life experiences (Ahmad @ Shaari and Saidin, 2016).

In ensuring that character education can be implemented effectively through geography education, the teacher's mastery of content is a very important factor. Teachers who master geography content well are better able to connect geographical concepts with local and global issues, thereby guiding students to understand the relationship between knowledge, values, and actions. Study Mahat et al. (2019) shows that the professional and pedagogical competence of geography teachers in Malaysia is an important aspect in improving the quality of teaching. Mahat et al. (2019) also found that the competence of geography teachers plays an important role in meeting educational quality standards. Furthermore, Smit et al. (2023), through a systematic study of pedagogical content knowledge of geography teachers, emphasize that pedagogical content knowledge enables teachers to deliver geography content more effectively, while Smit et al. (2024) show that the development of teachers' pedagogical content knowledge needs to be given attention in the training and professional development of geography teachers. In addition to content mastery, the implementation of assessment is also an important foundation in supporting character education. In the 2027 school curriculum, classroom assessment is strengthened to identify students'

strengths and weaknesses and allow teachers to adjust teaching and learning methods based on the level of student mastery. Assessment also evaluates the learning process holistically and does not only focus on the results of assignments alone. This shows that assessment has a direct relationship with character formation because teachers can assess not only cognitive aspects but also students' skills, attitudes, involvement, values, and development as a whole. In the Malaysian context, Mohamad Marzaini et al. (2024) found that the implementation of classroom assessment still requires consistency between teacher policies and practices, while Mat Yusoff et al. (2025) emphasize the importance of alignment between classroom assessment implementation and the actual practice of teachers in secondary schools. The study by Abdul Razak et al. (2023) also shows that teachers' pedagogical content knowledge also influences the implementation of classroom assessment.

Pedagogical practices also play an important role in the success of character education through geography education. Active, contextual, and student-centered pedagogy can create more meaningful learning experiences and provide opportunities for students to apply geography knowledge in real life. Approaches such as inquiry-based learning, problem-based learning, project-based learning, field studies, current issue discussions, and collaborative activities can help students develop critical thinking, communication, cooperation, empathy, and social responsibility. Muniandy and Abdullah (2023) explain that innovative pedagogy is important in providing future education that is more responsive to student needs. Mahsun et al. (2025) also show that project-based learning can increase students' environmental awareness and critical thinking, while Hakim et al. (2025) found that problem-based and project-based learning are able to improve student engagement, academic achievement, and character. In this regard, geography education is seen to have a clear relationship with the aspirations of the 2027 school curriculum, especially in terms of developing students who are knowledgeable, skilled, have character, and are able to apply learning in the real world. Integrated learning classes in the 2027 school curriculum emphasize a combination of content and skills from various disciplines to enable students to apply knowledge, skills, and values in a holistic, meaningful, and relevant learning experience with real life. Therefore, geography education has the potential to be a suitable space to implement this approach because its content is cross-disciplinary and closely related to environmental, social, economic, and national development issues.

Although previous studies have discussed character education, classroom assessment, teacher content mastery, and pedagogical practices separately, studies examining the influence of assessment implementation, content mastery, and pedagogical practices on character education in the context of geography education still need to be strengthened. This need becomes more important ahead of the implementation of the 2027 school curriculum because character education is no longer seen as an additional element but rather as part of the main direction of the national curriculum. In this study, assessment implementation, content mastery, and pedagogical practices are set as independent variables, while character education is set as the dependent variable. This study aims to identify the most dominant variables that influence character education in the context of geography education. Therefore, this study was conducted to identify the influence of assessment implementation, content mastery, and pedagogical practices on character education among secondary school geography teachers in Malaysia. This study is relevant to the implementation of the 2027 school curriculum because the study findings can provide an empirical picture of

teacher factors that contribute to the effectiveness of implementing character education through geography education. Indirectly, this study can support the efforts of the Ministry of Education Malaysia in strengthening a curriculum that is more oriented towards competencies, values, skills, manners, character, and the formation of a prosperous person.

Objective and hypothesis of the study

The objective of the study are include: (1) Identify the influence of assessment implementation on character education in the context of geography education; (2) Identify the influence of content mastery on character education after taking into account assessment implementation; (3) Identify the influence of pedagogical practices on character education after taking into account the implementation of assessment and content mastery; and (4) Identify the most dominant variables that influence character education in the context of geography education. Meanwhile, the hypothesis are: H_{01} : There is no significant influence of the assessment implementation on character education in the context of geography education; H_{02} : There is no significant influence of content mastery on character education after taking into account the implementation of assessment; H_{03} : There is no significant influence of pedagogical practices on character education after taking into account assessment implementation and content mastery; and H_{04} : There is no dominant variable that affects character education in the context of geography education.

Materials and Methods

This study uses a quantitative approach with a survey design to identify the influence of assessment implementation, content mastery, and pedagogical practices on character education in the context of geography education. The survey design is appropriate because this study collects data from a large sample to explain the response pattern to the constructs studied (Cohen et al., 2018; Creswell, 2005). The study population consisted of 10.631 secondary school Geography teachers in Malaysia, while the study sample involved 300 Geography teachers who were selected as study respondents. The sample selection was made using the proportional stratified random sampling method and simple random sampling to ensure that respondents could represent the population of geography teachers by state in a more balanced manner. The determination of the sample size was based on the table Krejcie and Morgan (1970), while the use of random sampling can reduce respondent selection bias (Neuman, 2003). The Malaysian Geography Teacher Professionalism Questionnaire instrument with a five-point Likert scale was used to measure four main constructs, namely assessment implementation, content mastery, pedagogical practice, and character education. The Likert scale was applied because it was suitable for measuring the level of agreement of respondents with the study items systematically (Likert, 1932). The validity of the instrument has gone through a face and content validity process to ensure that the items are clear and represent the construct being studied (Haynes et al., 1995). The reliability of the instrument was determined using the Cronbach Alpha coefficient, with values above .70 is considered acceptable in quantitative studies (Bond and Fox, 2015).

The study data was analyzed using IBM SPSS Statistics 29 software through hierarchical multiple linear regression analysis (stepwise) because the independent variables were entered into the model in stages based on the study objectives, namely,

assessment implementation was entered first, followed by content mastery, and then pedagogical practice. In this analysis, character education was set as the dependent variable, while assessment implementation, content mastery, and pedagogical practice were set as independent variables. Regression (stepwise) is suitable to be used to evaluate the additional contribution of each variable through changes in the R-squared value and to determine the strength of the influence of each predictor on the dependent variable (Pallant, 2020; Field, 2018). Before a regression analysis can be interpreted, several key assumptions of multiple linear regression must be met. First, the relationship between the independent and dependent variables must be linear. Second, the data must be free from multicollinearity, i.e., the tolerance value must be greater than .10 and the variance inflation factor (VIF) value must be less than 10. Third, the residual distribution must be approximately normal, while the residual variance must be uniform or satisfy the assumption of homoscedasticity. Fourth, the data must be free from extreme outliers, which can be identified by standard residuals, Cook's Distance, or inspection of diagnostic plots. These assumptions are important because violations can seriously affect the accuracy of the regression model and the interpretation of the study findings (Pallant, 2020; Hair et al., 2019; Field, 2018).

The interpretation of regression output in SPSS is made through three main tables, namely Model Summary, ANOVA, and Coefficients. The Model Summary table is used to evaluate the R, R Square, Adjusted R Square, and R Square Change values. The R value shows the strength of the relationship between the independent variable and the dependent variable, while the R-squared shows the percentage contribution of the independent variable to character education. The adjusted R-squared value is used to evaluate the accuracy of the model after taking into account the number of independent variables, while the R-squared change is used to see the additional contribution of a variable when included in the model. The ANOVA table is used to determine whether the overall regression model is significant based on the F and Sig values. If the Sig. value is $< .05$, the regression model is considered significant. Next, the Coefficients table is used to identify the influence of each independent variable based on the Beta, t, and Sig values. The standardized beta value is used to compare the strength of influence between the independent variables, while the variable with the highest beta value is interpreted as the most dominant variable. The research hypothesis test was performed at a significance level of $p < .05$, meaning the null hypothesis was rejected if the significant value was less than .05 (Pallant, 2020; Hair et al., 2019; Field, 2018).

Results and Discussion

Identify the influence of assessment implementation on character education in the context of geography education

H₀₁: There is no significant influence of the implementation of assessment on character education in the context of geography education.

Based on *Table 1*, the R value of .619 indicates that there is a moderately strong relationship between assessment implementation and character education. The R-squared value of .383 indicates that assessment implementation contributes 38.3% to the change in character education. The ANOVA results showed that the regression model was significant, $F(1, 298) = 184.675$, $p < .001$ (*Table 2*). Based on *Table 3*, assessment implementation has a significant influence on character education, with a value of $\beta =$

.619, $t = 13.590$, and $p = .000$. The implementation of assessment has a significant influence on character education in the context of geography education. Since the significant value is $p = .000 < .05$, then H_{01} is rejected. This finding shows that the better the implementation of assessment by geography teachers, the higher the implementation of character education in the teaching and learning process of geography.

Table 1. Summary of Regression Model 1.

Models	R	R Square	Adj R Square	Std. Error	R Square Change	F Change	Sig. F Change
1	.619	.383	.381	.36168	.383	184.675	.000

Table 2. ANOVA for Model 1.

Models	Sum of Squares	df	Mean Square	F	Sig.
Regression	24.157	1	24.157	184.675	.000
Residual	38.982	298	.131	-	-
Total	63.139	299	-	-	-

Table 3. Regression coefficients for Model 1.

Variable	B	Std. Error	Beta	t	Sig.
Constant	1.750	.195	-	8.963	.000
Assessment Implementation	.652	.048	.619	13.590	.000

Identify the influence of content mastery on character education after taking into account the implementation of assessment

H_{02} : There is no significant influence of content mastery on character education after taking into account assessment implementation.

Based on *Table 4*, the inclusion of content mastery into the model increased the R-squared value from .383 to .461. This finding indicates that the combination of assessment implementation and content mastery contributed 46.1% to character education. The R-squared change value of .078 indicates that content mastery contributes an additional 7.8% to character education after taking into account assessment implementation. This increase is significant based on the F change value = 43.259, $p = .000$ (*Table 5*). The ANOVA results showed that Model 2 was significant, $F(2, 297) = 127.062$, $p < .001$. Based on *Table 6*, content mastery has a significant influence on character education with a value of $\beta = .335$, $t = 6.577$, and $p = .000$. This shows that content mastery is a significant predictor of character education after taking into account assessment implementation. Content mastery has a significant additional influence on character education after taking into account assessment implementation. Since the significant value for Content Mastery is $p = .000 < .05$, H_{02} is rejected. In the context of geography education, teachers who master geography content well are more able to connect topics such as the environment, sustainability, climate change, settlements, resources, and global issues with the formation of students' values and character.

Table 4. Summary of Regression Model 2.

Models	R	R Square	Adj R Square	Std. Error	R Square Change	F Change	Sig. F Change
2	.679	.461	.457	.33847	.078	43.259	.000

Table 5. ANOVA for Model 2.

Models	Sum of Squares	df	Mean Square	F	Sig.
Regression	29.113	2	14.557	127.062	.000
Residual	34.026	297	.115	-	-
Total	63.139	299	-	-	-

Table 6. Regression coefficients for Model 2.

Variable	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
Constant	1.020	.214		4.774	.000	-	-
Assessment Implementation	.458	.054	.434	8.523	.000	.698	1.432
Content Mastery	.344	.052	.335	6.577	.000	.698	1.432

Identify the influence of pedagogical practices on character education after taking into account the implementation of assessment and content mastery

H₀₃: There is no significant influence of pedagogical practices on character education after taking into account assessment implementation and content mastery.

Based on *Table 7*, the inclusion of pedagogical practices into the model increased the R-squared value from .461 to .475. This finding indicates that the three independent variables contribute 47.5% to character education. The R-squared change value of .014 indicates that pedagogical practices contributed an additional 1.4% to character education after accounting for assessment implementation and content mastery. Although the contribution is small, this increase is significant based on the F change value = 7.999, $p = .005$. The ANOVA results show that Model 3 is significant, $F(3, 296) = 89.370$, $p < .001$. This finding means that assessment implementation, content mastery, and pedagogical practices together have a significant influence on character education (*Table 8*). Based on *Table 9*, pedagogical practices have a significant influence on character education with a value of $\beta = .156$, $t = 2.828$, and $p = .005$. This finding shows that pedagogical practices are still a significant predictor even though assessment implementation and content mastery have been included first in the regression model. In addition, the tolerance values for all variables are above .10, while the VIF values are less than 10. These results show that there is no multicollinearity problem in the regression model. Pedagogical practices have a significant additional influence on character education after taking into account assessment implementation and content mastery. Since the significant value for Pedagogical Practices is $p = .005 < .05$, H₀₃ is rejected. In the context of geography education, pedagogical practices such as inquiry-based learning, current issue discussions, field studies, problem-based learning, and collaborative activities can help shape students' character more effectively.

Table 7. Summary of Regression Model 3.

Models	R	R Square	Adj R Square	Std. Error	R Square Change	F Change	Sig. F Change
3	.689	.475	.470	.33455	.014	7.999	.005

Table 8. ANOVA for Model 3.

Models	Sum of Squares	df	Mean Square	F	Sig.
Regression	30.009	3	10.003	89.370	.000
Residual	33.130	296	.112	-	-
Total	63.139	299	-	-	-

Table 9. Regression coefficients for Model 3.

Variable	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
Constant	.870	.218	-	3.992	.000	-	-

Assessment Implementation	.377	.060	.357	6.240	.000	.540	1.850
Content Mastery	.307	.053	.300	5.766	.000	.657	1.522
Pedagogical Practice	.168	.059	.156	2.828	.005	.581	1.722

Identify the most dominant variables that influence character education in the context of geography education

H₀₄: There is no dominant variable that influences character education in the context of geography education.

Based on *Table 10*, assessment implementation is the most dominant variable influencing character education in the context of geography education, with a value of $\beta = .357$. This is followed by content mastery with a value of $\beta = .300$ and pedagogical practice with a value of $\beta = .156$. This finding shows that assessment implementation has the strongest influence on character education compared to the other two variables. In the context of geography education, effective assessment not only assesses students' academic achievement but also helps teachers shape values, attitudes, responsibility towards the environment, sensitivity to local and global issues, and sustainability awareness. Based on the standardized beta value, there is a dominant variable that influences character education, namely assessment implementation. Therefore, H₀₄ is rejected. The most dominant variable that influences character education in the context of geography education is assessment implementation. Overall, the study findings show that assessment implementation, content mastery, and pedagogical practices are significant predictors of character education in the context of geography education. The final model shows a value of $R = .689$, $R^2 = .475$, and adjusted $R^2 = .470$. This finding means that the three independent variables contribute 47.5% to the change in character education. The ANOVA findings also show that the final model is significant, $F(3, 296) = 89.370$, $p < .001$. In terms of dominant variables, assessment implementation is identified as the strongest factor influencing character education, followed by content mastery and pedagogical practices. This finding proves that character education in geography education can be strengthened through the implementation of effective assessment, solid mastery of geography content, and pedagogical practices that are appropriate to the learning needs of students.

Table 10. Order of dominant variables based on standardized Beta values.

Arrangement	Variable	Standardized Beta	t	Sig.	Results
1	Assessment Implementation	.357	6.240	.000	Most dominant
2	Content Mastery	.300	5.766	.000	Second dominant
3	Pedagogical Practice	.156	2.828	.005	Third dominant

The influence of assessment implementation of character education in the context of Geography education

The findings of the study show that the implementation of assessment affects character education in the context of geography education. This illustrates that assessment does not only function to measure students' academic achievement but also serves as an important tool to guide the development of students' values, attitudes, and personalities. In geography education, assessment that is implemented continuously,

authentically, and based on learning activities can help teachers assess students' understanding of geographical issues in addition to identifying the level of appreciation of values such as responsibility for the environment, sensitivity to the community, cooperation, rationality, and awareness of sustainability. This finding is in line with the view of Berkowitz (2022), which emphasizes that character education needs to be implemented and evaluated systematically to ensure that the formation of student values occurs in a planned manner. In this context, assessment serves as a learning support process that allows teachers to provide feedback, guide student reflection, and continuously evaluate character development. Arifin (2017) also explained that teaching and assessment methodologies have an important relationship in the implementation of character education because teachers need to assess not only students' knowledge but also attitudes and behaviors that are formed through the learning process.

In the context of Malaysian education, these findings also support the study by Mohamad Marzaini et al. (2024), which emphasizes the importance of alignment between classroom assessment policies and teachers' actual practices. Mat Yusoff et al. (2025) also show that the effectiveness of classroom assessment implementation depends on teachers' ability to understand policies, adapt assessment practices, and implement them consistently in the classroom. Mohamad Marzaini and Mat Yusoff (2026) also explain that inconsistency in assessment practices can affect the effectiveness of assessment on student learning. In geography education, good assessment implementation can be done through real-life-related tasks such as field studies, sustainability projects, climate change issue presentations, map analysis, settlement studies, and discussions on natural disasters. Activities like these not only measure students' understanding of geography content but also provide space for teachers to assess character values such as responsibility, leadership, empathy, cooperation, and environmental awareness. Therefore, assessment implementation can be considered an important medium in strengthening character education through geography education.

The influence of content mastery on character education after taking into account the implementation of assessment

The study findings also show that content mastery influences character education after taking into account the implementation of assessment. This shows that teachers who master geography content well are more able to connect geographical concepts, facts, and issues with real-life values. Content mastery allows teachers to explain a topic in more depth, select relevant examples, and guide students to understand the relationship between geography knowledge and social and environmental responsibilities. This finding is in line with the study by Mahat et al. (2019), which shows that the professional and pedagogical competence of geography teachers is an important foundation in improving the quality of geography teaching in Malaysia. Mahat et al. (2019) also emphasized that the competence of geography teachers is important in ensuring that teaching can meet educational quality standards. This shows that a competent teacher must not only be skilled in delivering content but also be able to make that content meaningful to students. In a more specific context, Smit et al. (2023) explain that pedagogical content knowledge is an important aspect of teaching geography because teachers need to combine content mastery with appropriate delivery strategies. Smit et al. (2024) also show that the development of pedagogical content knowledge of geography teachers needs to be given attention because it influences the

way teachers build students' understanding of geography concepts. Therefore, content mastery is not just related to teachers' knowledge of facts and concepts but also involves the teachers' ability to process the content in a way that can support the formation of students' values and character.

In geography education, topics such as climate change, pollution, resource management, sustainable development, migration, urbanization, settlements, and natural disasters have great potential for implementing character education. For example, learning about climate change can shape students' awareness of their responsibility to care for the environment, while learning about migration and urbanization can build empathy and sensitivity to social issues. Pasang and Najib (2022) show that education for sustainable development in the subject of geography can help strengthen students' awareness of sustainability issues. Karpudewan (2021) also emphasized that pro-environmental attitudes are influenced by educational factors and students' social context. Therefore, the findings of this study show that content mastery plays an important role in strengthening character education. Teachers who master geography content well are more able to make the teaching process a space to build students' knowledge, values, attitudes, and actions more comprehensively.

The influence of pedagogical practices on character education after taking into account the implementation of assessment and content mastery

The findings of the study show that pedagogical practice also influences character education after taking into account the implementation of assessment and content mastery. This shows that the way teachers deliver content and manage students' learning experiences remains important in shaping character. Although content mastery and assessment are a strong foundation, pedagogy determines how students experience, understand, and appreciate the values contained in geography learning. Active, contextual, and student-centered pedagogical practices can help students connect geography knowledge with the realities of life. Approaches such as inquiry-based learning, problem-based learning, project-based learning, field studies, current issue discussions, and collaborative activities can provide opportunities for students to think critically, collaborate, communicate, and make value-based decisions. This finding is in line with research by Muniandy and Abdullah (2023), which emphasizes that innovative pedagogy is important in providing future education that is more responsive to student needs.

Study Mahsun et al. (2025) also supports this finding by showing that project-based learning can increase students' environmental awareness and critical thinking. In the same context, Hakim et al. (2025) found that problem-based and project-based learning can increase student engagement, academic achievement, and character building. This suggests that pedagogy that allows students to solve real problems can build not only academic understanding but also values such as responsibility, cooperation, empathy, and resilience. In geography education, appropriate pedagogical practices can be implemented through activities such as environmental conservation projects, disaster management simulations, field studies on pollution, debates on sustainable development, and analysis of land use issues. Such activities allow students to experience active learning and see the connection between geography knowledge and responsible action. Kaldybekova et al. (2024) also emphasized that an activity-based learning approach in geography can help achieve learning objectives and develop students' critical thinking. However, pedagogical practice cannot be seen in isolation

from content mastery and assessment. Engaging pedagogy that is not supported by strong content can lead to less in-depth learning. Similarly, good pedagogy needs to be accompanied by appropriate assessment so that teachers can assess student development holistically. Therefore, pedagogical practice functions as a link between geography content, learning experiences, and the formation of character education.

The most dominant variables that influence character education in the context of geography education

The findings of the study show that the implementation of assessment is the most dominant factor influencing character education in the context of geography education. This shows that assessment has a major role in helping teachers identify, guide, and strengthen the development of students' character. Good assessment allows teachers to see students' development more comprehensively, not only in terms of knowledge mastery but also in terms of attitudes, values, social skills, and decision-making ability. The position of assessment implementation as the most dominant factor can be understood because assessment is a process that occurs throughout teaching and learning. Through assessment, teachers can provide constructive feedback, assess student progress, identify weaknesses, and plan appropriate interventions. In geography education, assessment also allows teachers to assess how students understand environmental issues, show concern for the community, and apply sustainability values in learning tasks. This finding supports the view of Berkowitz (2022) that character education needs to be implemented and evaluated based on evidence so that its effectiveness can be identified. In addition, this finding is also in line with Arifin (2017), which emphasizes that assessment in character education needs to take into account aspects of students' attitudes, values, and behavior. In the context of classroom assessment in Malaysia, studies by Mohamad Marzaini and Mat Yusoff (2026), Mat Yusoff et al. (2025), and Mohamad Marzaini et al. (2024) show that effective implementation of assessment requires teacher understanding, alignment with policies, and consistent practice in the classroom.

Although assessment implementation is the most dominant factor, content mastery and pedagogical practice remain important in strengthening character education. Content mastery allows teachers to select appropriate geography issues to shape values, while pedagogical practice provides learning experiences that allow students to understand and practice those values. Rawlings Smith and Rushton (2023) explain that the effectiveness of teaching geography depends on a combination of content knowledge and pedagogical strategies, while Mahat et al. (2019) emphasize the importance of geography teacher competence in improving teaching quality. Overall, these findings indicate that character education in geography education needs to be implemented through an integrated approach. Teachers need to plan authentic assessments, master geography content in depth, and use active and contextual pedagogy. This approach is in line with the requirements of the 2027 School Curriculum, which emphasizes the formation of students who are knowledgeable, skilled, have character, and are able to apply learning in real life. Overall, the discussion of this study shows that character education in geography education can be strengthened through a combination of assessment implementation, content mastery, and pedagogical practice. Assessment implementation serves as the main mechanism to assess and guide the development of students' character. Content mastery enables teachers to connect geography concepts with real-life issues, while pedagogical practice provides an active,

meaningful, and student-centered learning experience. This finding implies that geography teachers need to be given professional support that focuses on classroom assessment, mastery of contemporary geography content, and active pedagogy. This is important to ensure that geography education can be an effective medium in shaping students who not only master knowledge but also have values, manners, social responsibility, and awareness of environmental sustainability.

Conclusion

Overall, this study shows that assessment implementation, content mastery, and pedagogical practices influence character education in the context of geography education. Assessment implementation is identified as the most dominant factor because effective assessment not only assesses academic achievement but also guides the development of students' values, attitudes, and personalities. Content mastery, on the other hand, allows teachers to connect geographic issues such as sustainability, climate change, and sustainable development with character formation, while active and contextual pedagogical practices help students appreciate values through meaningful learning experiences. Therefore, geography education has the potential to be an important medium in forming students who are knowledgeable, have character, and are responsible for society and the environment, in line with the aspirations of the 2027 school curriculum.

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Conflict of interest

The author declares that there are no conflicts of interest in the research and publication of this article.

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