Journal of Innovative Physics Teaching
Volume 1, Issue 1 June 2023, 62 - 75
ISSN 3021-8551
https:// https://jipt.ppj.unp.ac.id/index.php/jipt
Doi: https://doi.org/10.24036/jipt/vol1-iss1/5

Meta-Analysis of the Effect of Character Education Integration in Physics Learning Material on Student's Learning Outcomes

Pratiwi Ineke Anwar[1*], Festiyed[2]
[1]Study Program of Physics Education Masters, FMIPA, Universitas Negeri Padang, Padang, Indonesia
[2]Physics Department, FMIPA, Universitas Negeri Padang, Padang, Indonesia

Article Info

Article history:

Received June 14, 2023
Revised June 29, 2023
Accepted June 30, 2023

Keywords:

Meta-analysis
Character education
Teaching materials
Learning Outcomes
Knowledge Aspect

ABSTRACT (10 PT)

Character is an urgent part for students to achieve success. However, the character value of students was still low. The solution to the problem is to integrate character education into learning materials. The purpose of this study was to investigate the effect of integrating character education into physics teaching material on student learning outcomes in the knowledge aspect. This type of research can be categorized into the method of meta-analysis. There are 22 national and international articles from 2013 to 2021 analyzed to determine the effect size. The data analysis technique is to calculate the effect size of each article. Based on the results of the study it is known that the integrated teaching materials for character education in physics teaching materials have a significant effect on learning outcomes on aspects of student knowledge. First, integrated teaching materials for the character education aspect of knowledge are very high, namely 1.76, in the class XI level category. Second, integrated teaching materials for character education provide a significant effect on learning outcomes in the knowledge aspect for the types of learning materials, namely teaching materials/teaching books with an effect size score of 1.96 in the high category. Third, integrated teaching materials for character education are effectively used at the high school level, namely work and energy, which has a score of 1.90. This means that the integrated learning material for character education have a significant effect both for class levels, types of learning materials, and learning materials.

***Correspondence:**
Pratiwi Ineke Anwar, Study Program of Physics Education Masters, FMIPA, Universitas Negeri Padang, Padang, Indonesia
· email : pratiwi.ineke23@gmail.com, Phone: 087807034272

INTRODUCTION

According to Law no. 20 of 2003, education has a noble goal to develop students' self-potential to have spiritual strength, religion, personality, self-control, noble character, intelligence, and skills needed for society, nation and country. Religious and moral values are at the root of national education, as mandated in article 2, which emphasizes the

importance of integrating religious values into the educational process. National education aims to shape dignified national character and civilization, educate life, and develop the potential of students to become individuals who believe, fear God Almighty, have noble character, are healthy, knowledgeable, capable, creative, independent, and responsible. Thus, national education plays an important role in forming a generation with integrity and making a positive contribution to society and the country (Ministry of National Education, 2003). This shows that through government laws emphasizing the importance of character building for students. In order to strengthen the spiritual, moral and ethical foundation of nation-building. National character building must be actualized in real terms as an effort to maintain national identity and strengthen national unity and integrity under the auspices of the Republic of Indonesia (Darmawan & Purbaningrum, 2019).

The presence of the industrial revolution 4.0 has had a huge impact on human life. At the same time, technology has a disruptive power. The industrial revolution 4.0 also had an impact on the world of education in Indonesia, starting with the digitization of the education system which requires every element in the education sector to be able to adapt to the changes that are taking place (Adha et al., 2020). In the world of education, the existence of the industrial revolution 4.0 has a positive impact by advancing and developing our learning system, but it also has a negative impact on our education world if it is unable to answer the challenges that arise in the current era (Asrizal et al., 2017; Rahim et al., 2019; Sadraini and Rifai, 2019; Kurniawati et al., 2019). The negative impact that has arisen and we can see today is the lack of strengthening of character education for our younger generation, in this case, school-age children.

The movement to strengthen character education in schools through the learning process and school culture has not been able to strengthen student character (Kamus et al., 2019). KPAI handled 1885 cases in the first half of 2018. There were 504 children who became criminals, starting from drug offenders, stealing, to immoral cases being the most common cases (Source: Detik.com). In ABH cases, most children have entered the Special Children's Correctional Institution (LPKA) because they have stolen 23.9 percent, 17.8 percent drug cases, 13.2 percent immoral cases, and others. Therefore, Moral degradation is still a challenge for Indonesian education today. Even though character education has been instilled in schools, the number of promiscuity, alcohol consumption, drugs, abortion practices, and student brawls even increases every year (Hidayat and Suryana, 2018). In line with the opinion (Marufah et al., 2020) that one of the impacts of the development of globalization is development in the field of technology.

The rapid development of information and communication technology has given rise to cybercrime and has an impact on the millennial generation with a moral decline, which is called moral degradation. This negative impact arises due to the easy access of the millennial generation to the internet and social media which makes them vulnerable to negative and unethical content (Fanindy and Mupida, 2021). This can affect the values and ways of thinking of the millennial generation in dealing with moral and ethical situations (Fatimah, 2021). The impact of this moral degradation not only affects individuals, but also society as a whole by disrupting social harmony and affecting relationships between individuals and can trigger acts of corruption and other law violations (As et al., 2017; Besariani and Pandin, 2021). However, with a good understanding of the positive and negative implications of technological developments and globalization, the millennial generation can use them wisely to increase morality and make positive contributions in society and cyberspace (Budiarto, 2020). In facing the ever-evolving technological era, the roles and responsibilities of all parties are very important to create a digital environment that is safe, ethical and moral.

Learning physics which is part of science consists of 3 (three) aspects, namely as a

product, process and attitude. One of the goals of learning in schools is to develop students' potential, not only cognitive ability but also student character (Oktaviana et al., 2017). In implementing physics learning, these three aspects can be optimized in facilitating character education (Siswanto, 2019). In the learning process integrating character education can be done through the introduction of values, facilitating the acquisition of awareness of the importance of values, and internalizing values into the daily behavior of students which aims to make students master the competence of physics as a whole, namely not only mastering knowledge but also realizing and internalizing values and behavior in everyday life, so that they are ingrained and become their character (Usmeldi, 2013).

In research conducted by Sriwilujeng (2017), strengthening character education refers to five main values, namely: Religious, Nationalist, Independent, Mutual Cooperation, and Integrity. These character values reflect important aspects in the formation of quality individual character. Religious values include belief in God Almighty, while Nationalists emphasize the importance of the interests of the nation and state above personal interests. Furthermore, the value of independent demands independence in realizing hopes and aspirations, while Mutual Cooperation teaches the spirit of cooperation and helping each other in solving common problems. Finally, the value of Integrity emphasizes the importance of being a person who can be trusted in words, actions and work. In an effort to apply these character values, each main value is represented by several more specific aspects to be better understood and implemented in everyday life. For example, Integrity is represented by Honesty and Discipline, Religious is represented by Worship and Religious Teachings, Nationalist is represented by Tolerance, National Spirit, and Care for the Environment, Independent is represented by Curiosity, Hard Work, and Responsibility, and Gotong Royong is represented by Cooperation, Communication, and Sincerity (Educational Assessment Center Team, 2019).

The subject matter of physics in senior high schools often contains abstract concepts that create difficulties for students' understanding and require high imagination (Hadi and Dwijananti, 2014). Each teaching and learning activity requires a medium or teaching material that supports students to better understand a material more easily and effectively (Novitasari et al., 2016). Teaching materials are all forms of materials that contain material sets arranged systematically (Asrizal, 2018). The use of teaching materials is to be able to transfer learning messages from teachers to students so that they can stimulate students' thoughts, feelings, interests and willingness to learn (Setiawan & Wawan, 2010). Referring to these objectives, the existence of teaching materials can be used as a means of instilling character values in students. This is evidenced by the many research titles related to teaching materials and character values.

The low learning outcomes of physics are influenced by many things. Some of them are material in textbooks that is too difficult to follow, learning media that are less effective, less precise use of learning media chosen by the teacher, conventional nature where students are not much involved in the learning process and class activity is mostly dominated by teachers (Supardi et al. al., 2012). Wahyuningsih (2012) states that. textbooks are now mostly in the form of textbooks, although there have been variations in the addition of illustrations but have not had a sufficient effect on increasing students' interest in reading. Low interest in reading causes low activity and learning outcomes. With the integration of character education in physics teaching materials, it is hoped that it can increase students' enthusiasm for learning. In line with what was said Indramawan & Hafidhoh (2019) that character education has an important role in the learning process to increase student enthusiasm for learning. In addition, it aims to create a fun learning atmosphere.

Based on these problems, a lot of research has been carried out to develop teaching

materials that are integrated into character education in it. Given the large number of studies on the development of teaching materials that are integrated into character education, it is necessary to conduct a meta-analysis of research related to teaching materials that are integrated into character education. This meta-analysis study aims to: 1) determine the effect size of the effect of integrated Physics teaching materials on character education on learning outcomes in the aspect of student knowledge in terms of each class; 2) determine the effect size of the effect of integrated Physics teaching materials on character education based on the type of teaching materials; 3) determine the effect size of the effect of integrated Physics teaching materials on character education based on the learning material raised.

METHODS

This research is a literature study about the description *Effect size* in educational research. This meta-analytic research method according to Cooper and Hedges in (Nisa et al., 2021) consists of steps, namely problem formulation, data collection (study), data coding, and data analysis and interpretation. The procedures for this meta-analysis method are as follows:

Literature Search Procedure

The studies analyzed in this study were carried out using several approaches. The search was carried out on an electronic database using the keywords "character education, influence, learning physics, teaching materials". The first search was carried out using electronic databases, including Google Scholar and DOAJ, both in the form of national and international journals. Overall the data base from the literature comes from high schools in Indonesia.

Inclusion Criteria

Inclusion criteria are carried out by synthesizing research that investigates the effectiveness of integrated teaching materials for character education. In high school physics learning in Indonesia. The studies included in this analysis are R&D research, experimental and quasi-experimental research that compares students who are taught with integrated teaching materials for character education and students who are taught conventionally. Synthesized studies were limited to research conducted in Indonesia. Designs that did not have a comparison group were not used in the analysis. Non-reporting studies effect *size* and the statistics required for the transformation are also not included. The statistics needed for this transformation are the mean, standard deviation, or various parametric statistics such as the results of the t test and F test.

Data Coding

Code sheets have been prepared as a tool to translate variable and effect size information into a consistent and standardized coded form for each study in this research. The main function of this code sheet is to serve as a guide for researchers in providing a representative for each variable identified in the study. The use of this code sheet facilitates the systematic organization of data, facilitates structured data analysis, and ensures consistency in reporting research results.

Metrics to Express Effect Size

The steps of data analysis are (1) identify the type of research and research variables that have been found, enter them in the appropriate variable column, (2) identify the mean and standard deviation of the experimental group data / before treatment and the control class / after treatment for each subject / sub-research that has been tested, (3) calculating effect size using the following statistical parameters (Amelia Rini et al., 2021). Details are

presented in Table 1 below.

Table 1. How to Determine the Magnitude of the Effect Size

No	Statistics	Formula	Formula
1	Average in one group	$EN=\frac{\underline{X}_{post}-\underline{X}_{pre}}{SD_{pre}}$	Fr-1
2	Average in each group (two groups posttest only)	$EN=\frac{\underline{X}_{AND}-\underline{X}_{C}}{SD_{C}}$	Fr-2
3	Average in each group (two groups pre-post tests)	$EN=\frac{(\underline{X}_{post}-\underline{X}_{pre})_{AND}-(\underline{X}_{post}-\underline{X}_{pre})_{C}}{\frac{SD_{preC}+SD_{preE}+SD_{postC}}{3}}$	Fr-3
4	Chi-Square	$EN=\frac{2r}{\sqrt{1-r^2}}$; $\sqrt{\frac{x^2}{n}}$	Fr-4
5	t count	$EN = you\sqrt{\frac{1}{n_{AND}}+\frac{1}{n_C}}+$	Fr-5
6	P value	CMA (Comprehensive Meta Analysis Software)	Fr-6

Based on the established criteria, the results of Effect size measurements are grouped into several categories (Glass, 1981). If the effect size is ≤ 0.15, then the resulting effect can be ignored. If 0.15 < Effect size ≤ 0.40, then the resulting effect is categorized as a low effect. Meanwhile, if 0.40 < Effect size ≤ 0.75, then the resulting effect is categorized as a moderate effect. When the effect size is in the range of 0.75 < effect size ≤ 1.10, the resulting effect is categorized as a high effect. Furthermore, if 1.10 < Effect size ≤ 1.45, then the resulting effect is categorized as a very high effect. Finally, if the effect size is > 1.45, the resulting effect is categorized as a high-impact effect. By using this category, researchers can clearly assess the level of influence of the integration of character values in teaching materials on learning outcomes, so that it can provide valuable guidance in designing effective learning programs and providing maximum benefits for students.

RESULTS AND DISCUSSION

Results

In this study, data were collected from 22 research journals from various sources on the internet. These journals specifically discuss teaching materials that are integrated with character education. The data obtained from these journals is very valuable to support the purpose of this research. To facilitate data processing and analysis, each article has been coded using the unique codes listed in Table 2 which contains a list of the article's codifications. Through this codification, researchers can easily identify each article and relate it to relevant data. In addition, codification also assists in ensuring uniformity and regularity in reporting research results. Article coding can be seen in Table 2 below.

Table 2. Article coding

Journal Code	Writer	Character value	Effect Size
J1	(Rodi et al., 2017)	Curiosity, fond of reading, hard work, honest, creative	2.75

J2	(Saputra et al., 2015)	Religious, social care, responsibility, tolerance, hard work, communicative and love peace	0.88
J3	(Delin et al., 2014)	Religious, honesty, discipline, hard work, curiosity, fond of reading, responsibility and communicative	0,.49
J4	(Fauziah et al., 2015)		0.52
J5	(T. Dela Sari et al., 2014)	Religious, honest; tolerance; hard work.	0.54
J6	(Anggraeini et al., 2013)	Religious, Honest; Discipline; Hard work; Curiosity; Communicative.	0.93
J7	(Rahmatika et al., 2014)	Religious, cooperation, hard work, discipline, creative, thorough, independent and curious, 3)	1.41
J8	(Rhozy et al., 2016)	Religious, disciplined, independent, curious, creative, cooperative and hard working	2.94
J9	(Basviani et al., 2014)	Religious, curiosity, fond of reading, hard work, communicative, discipline and responsibility	0.68
J10	(Kartini et al., 2014)	Religious; Honest; discipline; hard work Patience; cooperation	1.11
J11	(Octaviani et al., 2017)	Spiritual attitude (religious) and social attitude (honest, curiosity, responsibility, cooperation, hard work and discipline)	0.50
J12	(Ridha et al., 2021)	Religious, honest, disciplined, hard working, curiosity, fond of reading, and responsibility	1.07
J13	(Ferdori et al., 2010)	Religious, curiosity, cooperation, creative, hard work, and	5.39

		discipline	
J14	(A. M. Sari & Ariswan, 2021)	Independent, hard work, responsibility, independence,	0,.44
J15	(Angela et al., 2013)	Religious, critical thinking, creative, cooperation and hard work	3.65
J16	(Situmorang et al., 2021)	Religious, honest, responsible, curious, independent and disciplined.	2.56
J17	(She et al., 2019)	Spiritual, responsible, honest, disciplined and curious	0.80
J18	(Satria & Handhika, 2015)	Hard work, discipline, honest, open, democratic, creative, thorough, thorough, communicative and responsible	2.60
J19	(Musanni et al., 2015)	-	0.99
J20	(Hairlinda et al., 2018)	-	0.71
J21	(Kamus et al., 2019)	Social attitude and emotional attitude	2.89
J22	(Kamus et al., 2020)	Spiritual attitude	4.01

Effects of Character Education Based on Class Levels

The first result of the meta-analysis study of the effect of teaching materials containing character values on learning outcomes in the knowledge aspect in terms of class level is presented in Table 3. The results are in the form of Effect size which is based on grade level, with a focus on the effect of the use of character value-laden teaching materials on learning outcomes in the knowledge aspect. The effect size is used as a statistical measure to evaluate the extent of differences or relationships between the integration of character values in learning and the level of students' understanding and academic skills, which are compared between various levels or grade levels.

Table 3. Effect Size Based on Grade Level

Class	Code	Effect Size	Rate-rate effect size
X	J1	2.75	1.75
	J2	0.88	
	J4	0.52	
	J9	0.68	

	J11	0.5	
	J13	5.39	
	J21	2.89	
	J22	4.01	
	J3	0.49	
	J5	0.54	
	J7	1.41	
	J8	2.94	
	J10	1.11	
	J12	1.07	
XI	J14	0.44	1.76
	J15	3.65	
	J16	2.56	
	J17	0.8	
	J18	2.6	
	J19	0.99	
	J20	0.71	

From calculations Effect size described above it can be seen that the effect of integrated teaching materials on character education on learning outcomes in the aspect of knowledge based on class level, Effect size the highest was obtained ES=1.76 with category effect size very high for grade XI level; ES=1.75 by category effect size very high for class X level. With a score that is not much different, it shows that the use of character education integrated teaching materials at each level has the same value effect size. This shows that the integrated teaching materials for character education are very effectively used at all grade levels in high school physics learning.

Effects of Character Education Based on Types of Teaching Materials

The second result in this study is related to analysis effect size and the influence of the use of integrated teaching materials for character education on learning outcomes in the aspect of knowledge in terms of the type of teaching materials. The calculations obtained are presented in Table 4.

Table 4. *Effect Size* Based on the Type of Teaching Material

No	Type	Code	Effect Size	Rata-rata effect size
1	Module	J1	2.75	1.87
		J7	1.41	
		J18	2.6	
		J20	0.71	
		J20	0.88	
2	LKS/LKPD	J3	0.49	0.7
		J4	0.52	
		J5	0.54	
		J12	1.07	
3	Teaching	J6	0.93	1.96

Materials	J8	2.94
	J9	0.68
	J10	1.11
	J11	0.5
	J13	5.39
	J15	3.65
	J16	2.56
	J17	0.8
	J19	0.99
	J21	2.89
	J22	4.01

Based on the analysis of the effect of integrated teaching materials on character education based on the type of teaching materials, it was found that there were significant differences in their effectiveness. The results showed that teaching materials in the form of modules and teaching materials with effect size values of 1.96 and 1.87 respectively, obtained a very high effect. This indicates that the integration of character education in physics teaching materials has a very large impact on student learning outcomes. Meanwhile, for the type of student worksheet), the effect obtained is in the medium category with an effect size value of 0.7. Even though this effect size value is lower than that of modules and teaching materials in the form of textbooks, it still shows a positive influence from integrating character education into student worksheet teaching materials.

These results indicate that teaching materials in the form of modules and textbooks are more effective in integrating character education than LKS teaching materials. The use of modules and textbooks provides greater opportunities for students to be involved in learning that emphasizes character values, so as to improve their understanding and academic skills.

Effects of Character Education Based on Learning Materials

In this study, an analysis of the effects of character education on learning outcomes in the context of physics teaching materials was carried out based on the content of the relevant subject matter. The distribution of the research samples, which were carefully and detailed about the learning materials, is presented in Table 5. This table provides important information about the effect size of each subject matter, illustrating the extent to which the integration of character education influences student learning outcomes on various physics topics.

Table 5. *Effect Size* Based nn The Subject Matter on Teaching Materials

No	Material	Code	Effect Size	Average effect size
1	Momentum and Impulse	J3	0.49	1.42
		J7	1.41	
		J11	0.5	
		J12	1.07	
		J15	3.65	
2	Elasticity	J5	0.54	0.78
		J9	0.68	

		J10	1.11	
		J5	0.54	
		J8	2.94	
3	Harmonic Motion	J9	0.68	1.14
		J10	1.11	
		J11	0.5	
		J12	1.07	
		J7	1.41	
		J8	2.94	
4	Work and Energy	J12	1.07	1.90
		J14	0.44	
		J15	3.65	

Data Table 5, it is known that in general there are 4 learning materials presented with character values in them. Based on the table it can be concluded that the effect of integrated teaching materials on character education in terms of learning materials in high school has very good results with the results showing the high and medium categories, the highest category is 1.90. This is because Work and Energy are closely related to everyday life so that students' interest in learning to use teaching materials on this material is high. In line with Mulyasa's opinion in Kurniasari et al., (2020) which suggests that teaching materials contain learning and evaluation materials. The function of teaching materials is to guide the learning process and provide motivation and develop creations, so that the presence of teaching materials containing material can make learning easier. It is hoped that this textbook which contains character values can motivate students while studying, so that learning will be interesting and meaningful because the material they learn is analogous to everyday life. For example in business material, where the effort occurs when a number of forces act on an object causing the object to move, we can explain that the character values contained are working together (Anggela et al., 2013). The other materials with very high categories are Momentum and Impulse material as well as Simple Harmonic Motion material. While the average score effect size being on the material elasticity with a score of 0.78.

Discusssion

The results of this study indicate that the use of integrated teaching materials for character education in physics learning in high school has a very significant effect on student learning outcomes in the aspect of knowledge. This finding is in line with learning theories which emphasize the importance of integrating character values in the learning process to increase students' understanding and learning motivation (Cahyadi, 2014; Harahap, 2018; Widagdo, 2018; Haruna et al., 2021).

The results of the analysis also show that the effect of using integrated teaching materials for character education is equally high at various grade levels, as suggested by other studies which state that integrating character values can be used at all levels of education (Imtihanudin, 2020; Istiningsih & Dharma, 2021; Astuti et al., 2021). In addition, the difference in effectiveness between types of teaching materials, such as modules and worksheets, also gets support from other studies which state that the form of teaching materials can affect their effect on student learning outcomes (Paolini, 2015; Doan & McCaffrey, 2020). Increased knowledge competency is caused by the use of teaching materials because in these teaching materials students can learn independently with direct interaction of students with teaching materials and already includes the required material

(Ela et al., 2019) and modules as an alternative in facilitating empowerment building student character values (Zaidah et al., 2020).

Based on data from material analysis results, this research shows that there are 4 learning materials presented with character values in them, namely Effort and Energy, Momentum and Impulse, Simple Harmonic Motion, and Elasticity. The results of the analysis show that the learning material "Effort and Energy" has the highest effect size value, namely 1.90, which indicates that the use of integrated teaching materials for character education in this material is very effective in improving student learning outcomes. This is understandable because the material "Effort and Energy" is closely related to everyday life, so that students' interest in learning to use teaching materials on this material is high (Ikmal et al., 2018).

In addition, the materials "Momentum and Impulse" and "Simple Harmonic Motion" also received a very high category with effect size values of 1.76 and 1.75 respectively. This finding is in line with other research which states that physics learning that is integrated with character education can increase students' understanding and motivation in understanding these materials (Anwar et al., 2021; Hidayat et al., 2022; Maulana, 2022). However, it should be noted that there is one material, namely "Elasticity," which obtains a moderate effect size average score of 0.78. Even though the effect size value still shows a positive influence from integrating character education into the material, the value is lower than the other three materials.

However, it should be noted that this research has some limitations. First, the number of journals that are the source of data is limited to 22 journals, so it does not cover all journals that are relevant to this research topic. Second, even though the collected articles have been coded to facilitate analysis, there is still a possibility of bias in the selection of articles or data used. Third, this study only focuses on the effects of using integrated teaching materials for character education on student learning outcomes in the aspect of knowledge. Other aspects such as students' skills and attitudes have not been considered, so further research is needed to explore the impact of using this teaching material in a comprehensive manner.

Nonetheless, the findings of this research make a valuable contribution in the context of developing effective learning methods in improving student learning outcomes. Integrating character education into teaching materials can be a useful strategy in increasing students' understanding of learning materials and strengthening their character formation. It is hoped that this research can become the basis for further research that is more comprehensive and diverse in considering the impact of the integration of character education on various aspects of student learning outcomes**.**

CONCLUSION

Based on the results and discussion that have been described, three conclusions were obtained from this meta-analysis study. First, integrated teaching materials for character education in the aspect of knowledge are very high, namely 1.79 in the class X level category. Effect size of 1.95 with the high category. Third, integrated teaching materials for character education are very effectively used at the high school level, namely Newton's Law, which has a score of 2.75. The three results show that the integrated teaching materials for character education have a significant effect on each class, each teaching material, and the materials. The implication of this research is to be able to provide important information as a basic idea for further research regarding integrated physics teaching materials for character education.

REFERENCES

Adha, L. H., Asyhadie, Z., & Kusuma, R. (2020). Indonesia Industrial Digitalization And Its Impact On Labor And. *Jurnal Kompilasi Hukum*, V(2), 32.

Anggela, M., Masril, & Darvina, Y. (2013). Pengembangan Buku Ajar Bermuatan Nilai-Nilai Karakter Pada Materi Usaha Dan Momentum Untuk Pembelajaran Fisika Siswa Kelas XI SMA. *Pillar of Physics Education*, 1(1), 63–70.

Anwar, P. I., Pasaribu, A., Ariska, M., & Akhsan, H. (2021). Character Education Oriented Physics E-Module Development in the Static Fluid Section. *Berkala Ilmiah Pendidikan Fisika*, 9(2), 174-184.

AS, A. S. W., Fitrianti, F., & Hayati, U. (2017). Game Onet Abc (Anak Baik Dan Cerdas) Animasi Game Kekinian Sebagai Upaya Mengatasi Degradasi Moral Pada Anak. *Jurnal PENA: Penelitian dan Penalaran*, 4(2), 742-753.

Asrizal, A., Festiyed, F., & Sumarmin, R. (2017). Analisis Kebutuhan Pengembangan Bahan Ajar IPA Terpadu Bermuatan Literasi Era Digital untuk Pembelajaran Siswa SMP Kelas VIII. *Jurnal Eksakta Pendidikan (JEP),* 1(1), 1-8.

Astuti, S., Pramudiani, P., Masykuroh, K., & Ulfah, S. (2021). Sinergitas Guru Dan Orang Tua Dalam Integrasi Nilai Karakter Pada Pembelajaran Daring Di Masa Pandemi Covid-19. *Jurnal Pendidikan Karakter*, 1, 117-133.

Besariani, K. C., & Pandin, M. G. R., Dr., M.Si., M.Phi., M.Psi., Psi. (2021, June 27). Moral Degradation In The Millennial Generation Due To Modernization.

Budiarto, G. (2020). Indonesia dalam pusaran globalisasi dan pengaruhnya terhadap krisis moral dan karakter. *Jurnal Pamator: Jurnal Ilmiah Universitas Trunojoyo*, 13(1), 50-56.

Cahyadi, A. (2014). Menguatkan Indonesia: Revitalisasi pembelajaran pendidikan karakter. ANALISIS: Jurnal Studi Keislaman, 14(2), 357-374.

Darmawan, I., & Purbaningrum, D. (2019). Pengembangan Modul Fisika Bermuatan Emotional Spiritual Quotient (ESQ) Untuk Memberdayakan Pengetahuan Dannilai Karakter Siswa Gurunya . *Kappa Jurnal*, 3(1), 36–49.

Doan, S., & McCaffrey, D. (2020). Relationships Between Teaching Practices and Student Outcomes.

Ela, Y., Yenni, S., Amali, D., & Sari, Y. S. (2019). Pengaruh Penerapan Bahan Ajar Interaktif Bermuatan Karakter Menggunakan Model Pembelajaran Discovery Learning Pada Materi Fluida Terhadap Pencapaian Kompetensi Siswa Kelas Xi SMAN 7 Solok Selatan. *Pillar of Physic Education*, 12(4), 769–776.

Fanindy, M. N., & Mupida, S. (2021). Pergeseran Literasi pada Generasi Milenial Akibat Penyebaran Radikalisme di Media Sosial. Millah: Jurnal Studi Agama, 195-222.

Fatimah. (2020). Pendidikan Karakter Secara Komprehensif; Sebuah Keniscayaan. *Al-Mubin; Islamic Scientific Journal*, 3(2), 95-103.

Harahap, A. (2018). Implementasi Nilai-Nilai Karakter dalam Pembelajaran Tematik Kelas III SDIT Darul Hasan Padangsidimpuan. *Abdau: Jurnal Pendidikan Madrasah Ibtidaiyah*, 1(1), 21-38.

Haruna, N. A., Setiawan, D. G. E., & Odja, A. H. (2021). Penerapan E-Learning Menggunakan Media Edmodo dalam Pembelajaran Fisika Berbasis Nilai Karakter Untuk Meningkatkan Hasil Belajar Pada Konsep Usaha dan Energi. *Physics Education*

Research Journal, 3(1), 65-74.

Hidayat, M., Rozak, R. W. A., Hakam, K. A., Kembara, M. D., & Parhan, M. (2022). Character Education in Indonesia: How Is It Internalized And Implemented in Virtual Learning. *Cakrawala Pendidikan*, 41(1), 186-198.

Ikmal, M., Darvina, Y., & Murtiani, M. (2018). Pengaruh Bahan Ajar Elektronik Interaktif Bermuatan Karakter dengan Pendekatan Saintifik pada Materi Usaha dan Energi Terhadap Pencapaian Kompetensi Siswa Kelas X SMA. *Pillar of Physics Education*, 11(2), 161-168.

Imtihanudin, D. (2020). Model Penanaman Karakter Dalam Pembelajaran Al Qur'an Metode Tilawati. *Cakrawala Pedagogik*, 4(1), 106-112.

Indramawan, A., & Hafidhoh, N. (2019). Pendidikan Karakter Sebagai Upaya Meningkatkan Semangat Belajar. Semdikjar: Seminar Pendidikan dan Pembelajaran, 477–485.

Istiningsih, G., & Dharma, D. S. A. (2021). Integrasi Nilai Karakter Diponegoro dalam Pembelajaran untuk Membentuk Profil Pelajar Pancasila Di Sekolah Dasar. *Kebudayaan*, 16(1), 25-42.

Kamus, Z., Asrizal, Diny Putri, A., & Indah Putri, S. (2019). Development of Social And Emotional Intelligence Values In Physics Learning Material For Strengthening Character Education. *Journal of Physics: Conference Series,* 1317(1), 0–6.

Kemendikbud. (2019). Model Penilaian Pendidikan Karakter.Jakarta: Pusat Penilaian Pendidikan

Kemendiknas.(2011). Panduan Pelaksanaan Pendidikan Karakter, (Jakarta: Pusat Kurikulum

Kurniasari, A., Pribowo, F. S. P., & Putra, D. A. (2020). Analisis Efektivitas Pelaksanaan Belajar Dari Rumah (Bdr) Selama Pandemi Covid-19. *Jurnal Review Pendidikan Dasar: Jurnal Kajian Pendidikan Dan Hasil Penelitian*, 6(3), 1–8.

Kurniawati, A., Festiyed, F., & Asrizal, A. (2019). Analisis Efektifitas Multimedia Interaktif Dalam Menghadapi Tantangan Pendidikan di Era Globalisasi Industri 4.0. *Jurnal Penelitian Pembelajaran Fisika (JPPF)*, 5(2).

Marufah, N., Rahmat, H. K., & Widana, I. D. K. K. (2020). Degradasi Moral Sebagai Dampak Kejahatan Siber. *Nusantara: Jurnal Ilmu Pengetahuan Sosial*, 7(1), 191–201.

Maulana, M. I. (2022). Teachers'enactments of Character Education: A Case Study From Indonesia. *Jurnal Pendidikan Karakter*, 13(2).

Nisa, U., Yuliani, H., Syar, N. I., & Nastiti, L. R. (2021). Meta Analisis Pengembangan E-Modul Berbantuan Sigil Pada Pembelajaran Fisika. *Optika: Jurnal Pendidikan Fisika* Vol., 5(1), 64–73.

Paolini, A. (2015). Enhancing Teaching Effectiveness and Student Learning Outcomes. *Journal of Effective Teaching*, 15(1), 20-33.

Rahim, F. R., Suherman, D. S., & Murtiani, M. (2019). Analisis Kompetensi Guru dalam Mempersiapkan Media Pembelajaran Berbasis Teknologi Informasi Era Revolusi Industri 4.0. *Jurnal Eksakta Pendidikan (JEP),* 3(2), 133-141.

Sadraini, S., & Rifai, H. (2019). Meta Analisis E-Book dan Edupark Terhadap Landasan Pendidikan Pada Pembelajaran Revolusi Industri 4.0. *Jurnal Penelitian Pembelajaran Fisika (JPPF)*, 5(2).

Setiawan, A., & Wawan. (2010). Pengembangan E-Modul Pada Mata Kuliah Aljabar Prodi Matematika Iaim-Nu Metro Lampung. *Indonesian Journal of Chemistry*, 5(1), 71–75.

Siswanto, J. (2019). Membekali Kompetensi Dan Pendidikan Karakter Di Era Revolusi Industri 4 . 0 Melalui Pembelajaran Fisika. *Prosiding Seminar Nasional Fisika*, 164–168.

Usmeldi. (2013). Penerapan Pendidikan Karakter Melalui Pembelajaran Berbasis Masalah Untuk Meningkatkan Kompetensi Fisika Siswa SMK Negeri 1 Padang. *Prosiding Semirata BKS Barat FMIPA Unila*, 43–50.

Widagdo, A. (2018). Implementasi Model Pembelajaran CLT Untuk Meningkatkan Kemampuan Berbicara Aktif Bahasa Inggris Berbasis Nilai-Nilai Karakter Berbahasa. *MAGISTRA: Media Pengembangan Ilmu Pendidikan Dasar dan Keislaman*, 9(2), 172-195.

Zaidah, A., Hardani, & Hidayatullah, A. (2020). Pengembangan Modul Fisika Berbasis Ctl Untuk Memberdayakan Pengetahuan Dan Nilai Karakter Siswa. Nusra: *Jurnal Penelitian dan Ilmu Pendidikan*, 1(2), 1–9.