

Adapted physical education: how the character development of students with physical disabilities in Yogyakarta, Indonesia?

Educación física adaptada: ¿cómo se desarrolla el carácter de los estudiantes con discapacidades físicas en Yogyakarta, Indonesia?

*Erick Burhaein, **Diajeng Tyas Pinru Phytanza, ***Carla Cristina Vieira Lourenço

*Universitas Ma'arif Nahdlatul Ulama Kebumen (Indonesia), ** Universitas Negari Yogyakarta (Indonesia), ***Polytechnic University of Viseu (Portugal)

Abstract. The purpose of this study is to describe the learning system of Adapted Physical Education for students with physical disabilities to develop the character of students with physical disabilities. The methodology used used a descriptive method with a qualitative approach and literature study. The type of data collected comes from secondary data in the form of the results of previous experiences and elaborated sentences which are answers from research subjects conducted by means of interviews. The subjects in this study were 30 Adapted PE teachers in Yogyakarta. The research instruments used interview guides and documentation. The interview instrument had previously been validated for each item through expert judgement by two experts (Gregory) with a validity score of 0.86. Adapted PE teachers use various approaches and strategies in learning for students with physical disabilities in an inclusive manner to strengthen physical and character development. The independent curriculum in Indonesia is closely aligned with inclusive education in character development by publishing the Concept and Guidelines for Strengthening Character Education. Although the use of technology has not yet been implemented, teachers agree on the development of technology in learning that is easily accessible, supports active participation of students, and can be adapted according to the individual needs of students.

Keywords: Adapted Physical Education, Character Development, Technology

Resumen. El propósito de este estudio es describir el sistema de aprendizaje de la Educación Física Adaptada para estudiantes con discapacidades físicas para desarrollar el carácter de los estudiantes con discapacidades físicas. La metodología empleada ha sido un método descriptivo con enfoque cualitativo y estudio bibliográfico. El tipo de datos recogidos proviene de datos secundarios en forma de resultados de experiencias anteriores y frases elaboradas que son respuestas de los sujetos de la investigación realizadas mediante entrevistas. Los sujetos de este estudio fueron 30 profesores de Educación Física Adaptada en Yogyakarta. Como instrumentos de investigación se utilizaron guías de entrevista y documentación. El instrumento de entrevista había sido validado previamente para cada ítem mediante el juicio de expertos por dos expertos (Gregory) con una puntuación de validez de 0,86. Los profesores de educación física adaptada utilizan diversos enfoques y estrategias en el aprendizaje de los alumnos con discapacidades físicas de forma inclusiva para reforzar el desarrollo físico y del carácter. El plan de estudios independiente en Indonesia está estrechamente alineado con la educación inclusiva en el desarrollo del carácter mediante la publicación del Concepto y Directrices para el Fortalecimiento de la Educación del Carácter. Aunque todavía no se ha implantado el uso de la tecnología, los profesores están de acuerdo en el desarrollo de tecnología en el aprendizaje que sea fácilmente accesible, apoye la participación activa de los alumnos y pueda adaptarse según las necesidades individuales de los alumnos.

Palabras clave: Educación física adaptativa, Desarrollo del carácter, Tecnología

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Erick Burhaein

erick.burhaein@umnu.ac.id

Introduction

In recent years the inclusive education system in Indonesia has received significant attention, especially in terms of providing equitable access to education for students with physical disabilities. This urgency arises from the realization that every individual, including those with physical disabilities, deserves a proper education and can develop their potential to the fullest. In Indonesia, inclusion is a mindset of giving equal opportunities to all children. The practice of inclusive education in the world has become an international agenda, including through the SDGs which mandate that all children without exception are fulfilled with social rights and quality education in all types, channels, and levels of education, and has become a major agenda in education for all in regular education units (Farah, 2022). Concern and attention to the physical activity levels and quality of children and adolescents

is increasing (Aubert, S., Barnes, J.D., & Tremblay, 2020). Adapted Physical Education (PE) is one of the main focuses because through physical activity students with physical disabilities can develop motor, social and positive character skills that are important for their lives. The disability community includes learners who have limitations due to injury or other medical conditions; those who have low fitness (including very thin or fat), inadequate motor development, or low skills; or those who have poor posture (Martin, 2014). In addition, we also know the Active Healthy Kids Global Alliance (AHKGA) which campaigns for active and healthy living guidelines (Aubert, S., Barnes, J. D., Abdeta, 2018). The importance of physical activity for children has been underscored, especially considering post-pandemic challenges, with recent studies highlighting its critical role in fostering overall health and well-being (Papaioannou et al., 2020). Adapted PE has an important role in developing the character of students

with physical disabilities. Adapted PE activities through education have an important role in shaping a person's character and knowledge (Afrizal & Rizal, 2022). Educating students must include the development of cognitive and psychomotor abilities regardless of physical appearance (Miller, 2022). Through sports activities that are tailored to their needs, students can learn values such as co-operation, discipline, responsibility, and courage. Structured physical activity can improve students' self-confidence and mental well-being. Physical activity provides various benefits on both physiological and psychological aspects in a positive way (Mahindru et al., 2023). Based on the foregoing, the development of effective and inclusive Adapted PE learning systems is essential to ensure that students with physical disabilities can reach their full potential. Although this urgency has been recognized, the implementation of Adapted PE learning systems in the field still faces various challenges. One of the main challenges is the lack of teachers' understanding and skills in adapting sports activities for students with physical disabilities. Most teachers have not received adequate training, making it difficult for them to design and implement inclusive PE programmed. Other factors such as sports facilities and facilities available in schools are also often inadequate to support Adapted PE activities.

The stigma and discrimination often experienced by students with physical disabilities is problematic. Students with physical disabilities often feel isolated and lack support from their school environment. Lack of awareness and understanding of the importance of inclusion and acceptance of diversity is also a barrier to the implementation of an effective Adapted PE learning system. Without adequate support from the school and community, students with physical disabilities will continue to experience barriers in developing their character and skills through PE activities.

There is still a significant gap between the government's inclusive education policy and its implementation in the field. Although there are various regulations and programmed that support inclusive education, the implementation is still far from ideal conditions. There are still many schools that have not been able to implement the policy effectively, especially in terms of providing Adapted PE learning that suits the needs

of students with physical disabilities. This suggests the need for further research to understand the constraints and formulate appropriate solutions.

The focus of this research is to explore the current profile of the Adapted PE learning system in Indonesia, particularly in the context of character development of students with physical disabilities. The research will identify best practices that have been implemented, challenges faced by teachers and students, and potential improvements that can be made to increase the effectiveness of Adapted PE learning. Thus, this research is expected to make a significant contribution to improving the quality of education for students with physical disabilities.

The research questions posed in this study are: What is the current profile of adapted PE learning systems for character development of students with physical disabilities? The purpose of this study is to answer questions related to the current profile of adapted PE learning systems for character development of students with physical disabilities and provide recommendations that can be used by policy makers, educators, and practitioners to improve the quality of the Adapted PE learning system.

Material & methods

The subjects in this study were 30 Adapted Physical Education teachers from Bantul Regency, Sleman Regency, and Yogyakarta City. The participants selected were senior teachers with no less than 15 years of experience teaching students with physical disabilities.

The research instrument used an interview guide and documentation of the adapted PE learning system for character development of students with physical disabilities. Data collection by conducting interviews and direct documentation to the research location. The interview instrument had previously been validated for each item through expert judgement of two experts (Gregory) and declared valid with a validity score of 0.86. Interview guidelines conducted with Adapted PE teachers can be seen in Table 1.

Table 1.

Interview and observation guide on adapted PE learning system for character development of students with physical disabilities

	Aspect	Question
1	Implementation of adapted PE learning	How is the current implementation of PE learning for students with physical disabilities?
2	Urgency of character development	Do you think character development is important for students with physical disabilities?
3	Alignment of curriculum with character development	In your opinion, is character development for students with physical disabilities in line with the Merdeka Curriculum in Indonesia?
4	Implementation and effectiveness of adapted PE learning system for character development	How has the adapted PE learning system for character development for students with physical disabilities been carried out effectively?
5	Use of technology in the adapted PE learning system for Character Development	To what extent do you use the adapted PE technology-based learning system for the character development of students with physical disabilities?
6	Recommendations for Adapted PE Learning System for Character Development	In your opinion, what are the recommended technology specifications for the adapted PE learning system for character development of students with physical disabilities?

Source: Primary Data

This research uses a descriptive method with a qualitative approach and literature study. The qualitative method in this research is a naturalistic research method because the research is conducted under natural conditions (natural settings), then the data collected is analyzed qualitatively (Burhaein et al., 2020). Qualitative research is considered appropriate to describe the current profile of the adapted PE learning system for student character development. adapted PE for character development of students with physical disabilities.

The type of data collected comes from secondary data in the form of the results of previous experiences, documents from various sources such as articles, library sources, and other archives, as well as explanatory sentences which are answers from research subjects conducted by means of interviews.

Results

The results and discussion in this study will be presented sequentially, the following are the results of the research that has been tested (See in Table 2).

1. Implementation of adapted PE learning

In conducting interviews and observations on the implementation of adapted PE learning, the question "How is the current implementation of PE learning for students with physical disabilities?", was shown by the results of interviews with 6 PE teachers.

Based on the results of interviews and observations from the APE teacher's statement with the initials Q1, the following is given:

"Greetings to all! In Yogyakarta, we have made significant adjustments in PJOK learning for students with physical disabilities. We focus on student inclusion and safety in every activity. Every student has unique needs, so we try to provide an individual approach in every lesson. We modify games and physical exercises according to their abilities, to ensure that every student can actively participate and feel accepted in the class. We also continue to improve accessibility facilities and training for our staff to ensure that every student has a positive and rewarding learning experience"

The results of the interview from the PE teacher with the initials Q1 are also in line with what was conveyed by the next APE teacher. The second interview with the APE Teacher with the initials T1 explained that:

"In Yogyakarta, we have made significant adjustments to sports learning for students with physical disabilities by focusing on inclusion and safety, providing an individualized approach to activities, we also modify games and physical exercises according to their abilities. This ensures that every student can actively participate and feel welcome in class. We also continue to improve accessibility and staff training to ensure every student has a positive and rewarding experience"

Well, as a conclusion from interviews and observations of the physical education learning system that is adapted to the

development of the character of students with physical disabilities, the adjustments made by PE teachers with the initials Q1 and T1 in Yogyakarta in sports learning for students with physical disabilities include an inclusive and safe approach, individual adjustments to activities, and continuous improvement in accessibility facilities and staff training to ensure a positive and satisfying learning experience for every student.

Furthermore, based on the results of interviews and observations of the statements of the APE teacher with the initials Q1, the following information was obtained:

"Greetings everyone! We in Yogyakarta are committed to providing opportunities for students with physical disabilities so that they can participate in physical education activities. We work closely with therapists and parents to design programs that fit the individual needs of students. In sports lessons, it not only focuses on physical fitness, but also on the development of social skills and independence. We get closer to our students by listening to and responding to their needs directly. By providing the necessary additional tools and support to ensure safety and comfort during the learning process."

The results of the interview from the physical education teacher with the initials Q1 are also in line with what was conveyed by the next PE teacher. A subsequent interview with a PE teacher with the initials Q2 explained that:

"Hello everyone! We at Yogyakarta are committed to ensuring that our students with physical disabilities have the same opportunity to engage in sports activities. We work closely with therapists and parents to design programs that meet the individual needs of students. Sports lessons are not only about physical fitness but also about social skills and independence. We adopt a student-centered approach, where we listen to and respond to their needs directly. This includes providing the necessary additional tools and support to ensure safety and comfort during learning"

So, the conclusion from the results of interviews and observations of the physical education learning system is adjusted to the development of the character of students with physical disabilities in PE teachers with the initials Q1 and Q2, namely by emphasizing the commitment to provide equal opportunities for students with physical disabilities in physical education activities, with a student-centered approach, as well as cooperation between schools, therapists, and parents to create a safe learning environment. comfortable, and according to individual needs.

Furthermore, based on the results of interviews and observations on the PE teacher's statement with the initials Q1, the following information was obtained:

"Hello everyone! We in Yogyakarta strongly believe in the importance of inclusion in PE education for students with physical disabilities. We endeavor to create an environment that supports and motivates every student. One of our main approaches is to utilize technology in learning. We use apps and software specifically designed to support physical activities that are tailored to each student's abilities. In addition, we empower students to take the lead in their own activities, promoting self-confidence and independence. By continuing to

develop these strategies, we hope to create an inclusive and meaningful learning environment for all our students."

The results of the interview from the physical education teacher with the initials Q1 are also in line with what was conveyed by the next PE teacher. A subsequent interview with a PE teacher with the initials T3 explained that:

"Hello everyone! We believe in the importance of inclusion in physical education for students with physical disabilities. We strive to create an environment that supports and motivates every student. By utilizing technology in learning. We also use apps that are specifically designed to support physical activity tailored to each student's ability. In addition, we also encourage students to lead their own activities, thus increasing their confidence and independence."

So, the conclusion from the results of interviews and observations of the physical education learning system that is adjusted to the development of the character of students with physical disabilities in PE teachers with the initials Q1 and T3, is by emphasizing the importance of inclusion in physical education for students with physical disabilities, with an emphasis on the use of technology and student empowerment to encourage confidence and independence. An inclusive and meaningful learning environment is the main goal through the development of strategies that support the individual needs of students.

2. Urgency of character development

In conducting interviews and observing the urgency of character development, in the question "Do you think character development is important for students with physical disabilities?", it was shown by the results of interviews with 6 PE teachers.

Based on the results of interviews and observations from the PE teacher's statement with the initials Q2, the following is given:

"In my opinion, character development is very important for students with physical disabilities. Because with physical education learning, we not only teach physical skills, but also build their confidence, and responsibility. Students learn to overcome their physical challenges with an unyielding spirit and high discipline, which is a value in their character development."

The results of the interview of the physical education teacher with the initials Q2 are also in line with what was conveyed by the next sports teacher. A subsequent interview with a physical education teacher with the initials T1 explained that:

"I think character development is very important for students with physical disabilities. Through PE learning, we not only teach physical skills but also build confidence, perseverance, and a sense of responsibility in them. These students learn to overcome their physical challenges with an unyielding spirit and high discipline, which are important values in their character development."

So, the conclusion from the results of interviews and observations of the physical education learning system that is adjusted to the character development of students with physical

disabilities in these 2 PE teachers with the initials Q2 and T1, is that the importance of character development for students with physical disabilities through physical education. In addition to physical skills, students are also taught to have confidence, perseverance, and responsibility. These values help them overcome physical challenges with high spirit and discipline, which is an important aspect of their character development process.

Furthermore, based on the results of interviews and observations on the statements of physical education teachers with the initials Q2, the following information was obtained:

"I think character development is very important in the education of students with physical disabilities. In physical education lessons, we not only teach sports techniques but also instill values such as cooperation, respect, and resilience. They learn to overcome their physical limitations with courage and motivation, which helps them to become confident and resilient."

The results of the interview of the physical education teacher with the initials Q2 are also in line with what was conveyed by the next sports teacher. A subsequent interview with a physical education teacher with the initials T2 explained that:

"I think character development plays an important role in the education of students with physical disabilities. Because in sports lessons, we not only teach sports techniques but also teach values such as teamwork, respect, and tenacity. These students learn to overcome their physical limitations with courage and motivation, which helps them grow as confident and resilient individuals."

So, the conclusion from the results of interviews and observations of the physical education learning system that is adjusted to the character development of students with physical disabilities in the 2 PE teachers with the initials Q2 and T2 above, is that the importance of character development in the education of students with physical disabilities, especially through physical education lessons. In addition to sports techniques, students are also taught values such as cooperation, respect, and resilience, which help them overcome physical limitations with courage and motivation and develop into confident and strong individuals.

Furthermore, based on the results of interviews and observations on the statements of physical education teachers with the initials Q2, the following information was obtained:

"I believe that character development is very important for students with physical disabilities. In physical education lessons, we focus not only on the physical aspect, but also on strengthening character through self-acceptance, and resilience. So that they realize that their abilities do not limit their potential to grow and develop."

The results of the interview of the physical education teacher with the initials Q2 are also in line with what was conveyed by the next sports teacher. A subsequent interview with a physical education teacher with the initials T3 explained that:

“Yes, I believe that character development is very important for students with physical disabilities. In our sports lessons, we not only focus on the physical aspect but also build their character through self-acceptance, and perseverance. These students learn to face life's challenges with high enthusiasm and see that their abilities do not hinder their potential to grow and develop.”

So, the conclusion from the results of interviews and observations of the physical education learning system that is adjusted to the character development of students with physical disabilities in the 2 PE teachers with the initials Q2 and T3 above, is that the importance of character development in the education of students with physical disabilities, with a focus on physical education lessons to teach self-acceptance, resilience, and perseverance. To help students face life's challenges with a positive attitude and realize that their physical limitations do not hinder their potential to develop further.

3. Alignment of curriculum with character development

In conducting interviews and observations on the alignment of the curriculum with character development, in the question “In your opinion, is character development for students with physical disabilities in line with the Merdeka Curriculum in Indonesia?”, it was shown by the results of interviews with 6 PE teachers.

Based on the results of interviews and observations from the PE teacher's statement with the initials Q3, the following is given:

“Yes, I think character development for students with physical disabilities is in line with the principles of the Independent Curriculum in Indonesia. This curriculum emphasizes the importance of inclusive and comprehensive learning, allowing every student, including those with physical disabilities, to develop their potential to the fullest. In Physical Education lessons, we not only focus on physical skills, but also on the formation of values in students such as courage and self-confidence.”

The results of the interview with the physical education teacher with the initials Q3 were also in line with what was conveyed by the next sports teacher. A follow-up interview with the physical education teacher with the initials T1 explained that:

“I believe that the development of the personality of students with special needs is in line with the spirit of the Independent Curriculum in Indonesia. This curriculum emphasizes comprehensive and holistic learning, where every student, including students with special needs, can develop their potential to the maximum. In PJOK learning, we not only teach physical skills, we also teach values such as courage, self-confidence, and persistence that are closely related to the goals of the Independent Curriculum to prepare an independent and characterful generation.”

So, the conclusion from the results of interviews and observations of the physical education learning system that is adjusted to the character development of students with physical disabilities in 2 physical education teachers with the initials Q3

and T1 above, is that the Independent Curriculum in Indonesia supports the development of student character, including those with physical disabilities, through an inclusive and comprehensive learning approach. In Physical Education lessons, the focus is not only on physical skills but also on important values such as courage and perseverance, which are in line with the curriculum's goal of producing an independent and characterful generation.

Furthermore, based on the results of interviews and observations on the statements of physical education teachers with the initials Q3, the following information was obtained:

“Character development for students with physical disabilities is very much in line with the principles of the Independent Curriculum in Indonesia. This curriculum emphasizes holistic and integrative learning, covering every aspect of students' lives. In Physical Education lessons, we not only focus on physical abilities, but also on moral and social values that are important for students with physical disabilities. We believe that by building strong character, we are making a positive contribution to the vision of the Independent Curriculum to create an empowered generation.”

The results of the interview with the physical education teacher with the initials Q3 were also in line with what was conveyed by the next sports teacher. A follow-up interview with the physical education teacher with the initials T2 explained that:

“Character development for students with physical disabilities, in my opinion, is very much in line with the Independent Curriculum in Indonesia. This curriculum emphasizes holistic and integrative learning, which considers every aspect of a student's life. In physical education lessons, we not only develop physical abilities but also moral and social values that are important for students with physical disabilities. We believe that by building strong character, we are making a positive contribution to the vision of the Independent Curriculum to produce an empowered generation.”

So, the conclusion from the results of interviews and observations of the physical education learning system that is adjusted to the character development of students with physical disabilities in 2 physical education teachers with the initials Q3 and T2 above, the development of the personality of students with physical disabilities is in line with the principles of an independent curriculum that prioritizes comprehensive and integrated learning. In physical education learning, the emphasis is not only on physical skills, but also on the formation of moral and social values that are important for the success of students with physical disabilities. Thus, efforts to build strong character also support the vision of the Independent Curriculum in realizing an empowered and independent generation.

Furthermore, based on the results of interviews and observations on the statements of physical education teachers with the initials Q3, the following information was obtained:

“Yes, I believe that character development for students with physical disabilities is very supportive of the Independent Curriculum in Indonesia. This curriculum emphasizes inclusive education, where

every individual is valued and supported to reach their full potential. In Physical Education lessons, we not only teach physical skills, but also build character traits such as determination, teamwork, and integrity, which are very relevant to the values espoused by the Independent Curriculum."

The results of the interview with the physical education teacher with the initials Q3 were also in line with what was conveyed by the next sports teacher. A follow-up interview with the physical education teacher with the initials T3 explained that:

"I believe that character development for students with physical disabilities is very supportive of the Merdeka Curriculum in Indonesia. This curriculum emphasizes inclusive education and student-centered learning, where every individual is valued and supported in achieving their full potential. In PJOK lessons, we not only teach physical skills but also develop character traits such as tenacity, teamwork, and integrity, which are very relevant to the values espoused in the Merdeka Curriculum. By doing so, we ensure that our students with physical disabilities can also experience holistic development and achieve success in the future."

So, the conclusion from the results of interviews and observations of the physical education learning system that is adjusted to the character development of students with physical disabilities in 2 physical education teachers with the initials Q3 and T3 above, that character development for students with physical disabilities is in line with the principles of the Independent Curriculum which emphasizes inclusive education and student-centered learning. In Physical Education lessons, the focus is not only on physical skills but also on character building such as perseverance and cooperation. This approach supports the goal of the Independent Curriculum to ensure that all students, including those with physical disabilities, can develop holistically and achieve success in the future.

4. Implementation and effectiveness of adapted PE learning system for character development

In conducting interviews and observations about the implementation and effectiveness of adapted PE learning system for character development, on the question "How has the adapted PE learning system for character development for students with physical disabilities been carried out effectively?", it was shown by the results of interviews with 6 physical education teachers.

Based on the results of interviews and observations from the statements of physical education teachers with the initials Q4, the following are given:

"In Yogyakarta, the Physical Education learning system that we adapted for the character development of students with physical disabilities has shown positive results. We apply an inclusive approach that is tailored to the individual needs of each student. Thus, we provide different modifications and approaches to each student. During this process, there is an increase in physical abilities and an increase in character development such as self-confidence, perseverance, and responsibility."

The results of the interview with the physical education teacher with the initials Q4 were also in line with what was conveyed by the next sports teacher. A follow-up interview with the physical education teacher with the initials T1 explained that:

"The adapted PE learning system adapted for character development of students with physical disabilities that we have implemented in Yogyakarta has proven effective. We have integrated an inclusive and tailored approach, to the needs of each student. For example, we provide modifications and different approaches so that all students feel involved and develop optimally. In the process, we see improvements not only in physical abilities but also in character development such as self-confidence, perseverance, and a sense of responsibility."

So, the conclusion from the results of interviews and observations of the physical education learning system that is adjusted to the character development of students with physical disabilities in 2 physical education teachers with the initials Q4 and T1 above, that the Physical Education learning system that is adjusted for students with physical disabilities in Yogyakarta has proven effective. The inclusive approach and modifications provided allow all students to feel involved and develop both in physical and character aspects, including self-confidence, perseverance, and responsibility.

Furthermore, based on the results of interviews and observations on the statements of physical education teachers with the initials Q4, the following information was obtained:

"The adapted PE learning system that we have implemented for students with physical disabilities in Yogyakarta is very effective. We have taken an approach that not only pays attention to physical aspects but also values such as cooperation, courage, and integrity. Through continuous adjustments to facilities and infrastructure and the use of simple and supportive aids, we see that our students make significant progress in character development."

The results of the interview with the physical education teacher with the initials Q4 were also in line with what was conveyed by the next sports teacher. A follow-up interview with the physical education teacher with the initials T2 explained that:

"In Yogyakarta, this system has shown very positive results. We adopt an approach that focuses not only on the physical aspect, but also on values such as cooperation, courage, and integrity. By continuously adjusting the facilities and infrastructure and using simple supporting tools, we see significant progress in the development of students' characters. They learn to face challenges with high spirits and increase their independence."

So, the conclusion from the results of interviews and observations of the physical education learning system that is adjusted to the character development of students with physical disabilities in 2 physical education teachers with the initials Q4 and T2 above, that the physical education learning system that has been adjusted for students with physical disabilities in Yogyakarta is very effective in encouraging character development. The approach that integrates important values and

adjustments to facilities and infrastructure supports student progress in facing challenges with enthusiasm and increasing their independence.

Furthermore, based on the results of interviews and observations on the statements of physical education teachers with the initials Q4, the following information was obtained:

“The Physical Education learning system that we apply in Yogyakarta has proven to be effective in developing the character of students with physical disabilities. We do not only focus on the physical aspect, but also pay close attention to the psychosocial and moral aspects. With various activities that are in accordance with the abilities and interests of students and support them with simple tools, we see students not only improving their physical skills but also developing values such as patience, honesty, and cooperation.”

The results of the interview with the physical education teacher with the initials Q4 were also in line with what was conveyed by the next sports teacher. A follow-up interview with the physical education teacher with the initials T3 explained that:

“The Physical Education learning system that we implement in Yogyakarta has proven to be effective in developing the character of students with physical disabilities. We do not only focus on the physical aspect, but also pay serious attention to the psychosocial and moral aspects. By providing a choice of activities that suit the abilities and interests of students, and supporting them with simple assistive devices, we see that students are not only able to improve their physical skills, but also develop values such as patience, honesty, and cooperation.”

So, the conclusion from the results of interviews and observations of the physical education learning system that is adjusted to the character development of students with physical disabilities in 2 physical education teachers with the initials Q4 and T3 above, that the physical education learning system that is adjusted in Yogyakarta is successful in developing the character of students with physical disabilities by balancing the focus on physical as well as psychosocial and moral aspects. Through the choice of adjusted activities and the support of simple aids, students can improve physical skills and internalize important values such as patience, honesty, and cooperation.

5. Use of technology in the adapted PE learning system for Character Development

In conducting interviews and observations about the use of technology in the adapted PE learning system for character development, on the question "To what extent do you use the adapted PE technology-based learning system for the character development of students with physical disabilities?", it was shown by the results of interviews with 6 physical education teachers. Based on the results of interviews and observations from physical education teachers with the initials Q5, the following were given:

“So far in Yogyakarta, we have not intensively utilized technology-based learning systems in Physical Education that are adapted for

students with physical disabilities. We emphasize direct interaction between teachers and students and the use of conventional aids in physical activities. Nevertheless, we still prioritize character development in our learning, with a special emphasis on values such as courage, perseverance, and cooperation.”

The results of the interview with the physical education teacher with the initials Q5 were also in line with what was conveyed by the next sports teacher. A follow-up interview with the physical education teacher with the initials T1 explained that:

“We in Yogyakarta have not used technology-based learning systems intensively in PJOK learning that is adapted for students with physical disabilities. We rely more on traditional approaches that emphasize direct interaction between teachers and students, as well as the use of conventional aids in physical activities. Thus, we believe that character development remains the focus in our learning, with special attention to values such as courage, perseverance, and cooperation”

So the conclusion from the results of interviews and observations of the physical education learning system adapted to the character development of students with physical disabilities in 2 physical education teachers with the initials Q5 and T1 above, that in Yogyakarta, the use of technology in the Physical Education learning system adapted for students with physical disabilities is still limited, with a focus on traditional approaches that emphasize direct interaction and conventional aids. However, character development remains the focus, with special attention to values such as courage, perseverance, and cooperation.

Furthermore, based on the results of interviews and observations on the statements of physical education teachers with the initials Q5, the following information was obtained:

“In Yogyakarta, we still use conventional learning methods in Physical Education that are adapted for students with physical disabilities. We prioritize a personalized approach and direct modification of physical activities according to the individual abilities of students. However, we still focus on character development by strengthening moral values and independence through direct interaction and tailored guidance.”

The results of the interview with the physical education teacher with the initials Q5 were also in line with what was conveyed by the next sports teacher. A follow-up interview with the physical education teacher with the initials T2 explained that:

“We in Yogyakarta still use more conventional learning methods in PJOK that are adapted for students with physical disabilities. The use of technology has not been an integral part of our approach. We prioritize a personalized approach and direct modification of physical activities according to the individual abilities of the students. However, we still focus on character development, by strengthening moral values and independence through direct interaction and personalized guidance.”

So, the conclusion from the results of interviews and observations of the physical education learning system that is adjusted to the character development of students with physical disabilities in 2 physical education teachers with the initials Q5 and T2 above, that in Yogyakarta conventional learning methods are still dominant in physical education that are adjusted to students with physical disabilities, with minimal use of technology. Personal approaches and direct modification of physical activities according to student abilities are a priority. However, character development remains the focus, with an emphasis on moral values and independence through direct interaction and individual guidance.

Furthermore, based on the results of interviews and observations on the statements of physical education teachers with the initials Q5, the following information was obtained:

“The Physical Education learning system that we implement in Yogyakarta has not yet made technology a major part of character development for students with physical disabilities. We rely more on conventional strategies that prioritize direct adjustments to physical activity and provide personalized psychosocial support to students. However, we remain committed to building student character with values such as patience, integrity, and responsibility.”

The results of the interview with the physical education teacher with the initials Q5 were also in line with what was conveyed by the next sports teacher. A follow-up interview with the physical education teacher with the initials T3 explained that:

“The PJOK learning system that we implement in Yogyakarta has not adopted technology as its main part. We still rely on conventional strategies that prioritize direct adaptation to physical activity and provide personalized psychosocial support to students. Although we have not utilized technology significantly, we remain committed to building student character with values such as patience, integrity, and a sense of responsibility.”

So, the conclusion from the results of interviews and observations of the physical education learning system that is adjusted to the character development of students with physical disabilities in 2 physical education teachers with the initials Q5 and T3 above, that in Yogyakarta the physical education learning system that is adjusted to students with physical disabilities still does not integrate technology significantly. The focus is still on conventional strategies with direct adjustments to physical activity and personal psychosocial support. Although technology is not the main part, character development of students by emphasizing values such as patience, integrity, and responsibility remains a top priority.

6. Recommendations for Adapted PE Learning System for Character Development

In conducting interviews and observations about the recommendations of adapted PE learning system for character development, on the question “In your opinion, what are the recommended technology specifications for the adapted PE learning system for character development of students with

physical disabilities?”, it was shown by the results of interviews with 6 physical education teachers. Based on the results of interviews and observations from the physical education teacher with the initials Q6, the following are given:

“In my opinion, in this system, the recommended technology should be easily accessible and support students' active participation in physical activities. My recommendation is the use of motion sensors that can accurately monitor and record students' physical activities, as well as applications that allow students to access personalized exercise guides and information about health and fitness. This technology should be friendly to various types of physical disabilities to ensure inclusivity in learning.”

The results of the interview with the physical education teacher with the initials Q6 were also in line with what was conveyed by the next sports teacher. A follow-up interview with the physical education teacher with the initials T1 explained that:

“In the Adapted PE Learning System for students with physical disabilities in my opinion, the recommended technology should be easily accessible and support students' active participation in physical activities. Such as, the use of motion sensors that can monitor and record students' physical activities accurately, and applications that allow students to access personalized exercise guides and information about health and fitness. This technology should be friendly to various types of physical disabilities to ensure inclusivity in learning.”

So, the conclusion from the results of interviews and observations of the physical education learning system that is adjusted to the character development of students with physical disabilities in 2 physical education teachers with the initials Q6 and T1 above, that in the physical education learning system that is adjusted for students with physical disabilities, the recommended technology must be easily accessible and support active student participation. The use of motion sensors and applications that provide exercise guidance and health information can improve students' learning experiences. This is important to ensure that this technology can be used inclusively by students with various types of physical disabilities.

Furthermore, based on the results of interviews and observations on the statements of physical education teachers with the initials Q6, the following information was obtained:

“In my opinion, in this Physical Education learning system, the suggested technology should include solutions that support ease of access and interaction. For example, a digital platform that offers learning modules that can be adjusted to each student's physical abilities, as well as virtual assistance to train their motor skills. This technology should be flexible and can be adjusted to the specific needs of students.”

The results of the interview with the physical education teacher with the initials Q6 were also in line with what was conveyed by the next sports teacher. A follow-up interview with the physical education teacher with the initials T2 explained that:

“I think that in the Adapted PE Learning System for students with physical disabilities, technology must integrate solutions that support accessibility and easy interaction. For example, digital platforms that provide learning modules that can be adapted to each student's physical abilities, as well as virtual aids to train their motor skills. This technology must be flexible and adaptable according to the specific needs of students.”

So, the conclusion from the results of interviews and observations of the physical education learning system that is adjusted to the character development of students with physical disabilities in 2 physical education teachers with the initials Q6 and T2 above, that in the physical education learning system that is adjusted for students with physical disabilities, the recommended technology must support ease of accessibility and interaction. Flexible digital platforms and virtual assistance that can be adjusted to students' physical abilities will increase the effectiveness of learning and motor skill training.

Furthermore, based on the results of interviews and observations on the statements of physical education teachers with the initials Q6, the following information was obtained:

“In my opinion, the recommended technology specifications in this Physical Education Learning system are those that allow for easy personalization and customization. The technology should be able to provide real-time feedback on students' physical progress, as well as applications that allow for social interaction and collaboration in physical activities. The technology should also support integration with the physical aids that students need to fully participate in learning.”

The results of the interview with the physical education teacher with the initials Q6 were also in line with what was

conveyed by the next sports teacher. A follow-up interview with the physical education teacher with the initials T3 explained that:

“In my opinion, the recommended technology specifications in the Adapted PE Learning System for the development of students with physical disabilities allow for easy personalization and adaptation. We need technology that can provide immediate feedback on students' physical progress, as well as applications that allow for social interaction and collaboration in physical activities, with the physical aid's students need to fully participate in learning.”

So the conclusion from the results of the interviews and observations of the physical education learning system adapted to the character development of students with physical disabilities in 2 physical education teachers with the initials Q6 and T3 above, that the recommended technology in the adapted physical education learning system must allow for easy personalization and adjustment, provide real-time feedback on students' physical progress, and support social interaction and collaboration. In addition, technology must be integrated with the necessary physical aids so that students can participate optimally in learning and character development.

Discussion

The purpose of this study is to describe the learning system of adapted physical education for students with physical disabilities to develop the character of students with physical disabilities. Furthermore, the analysis of the results is described into 6 dimensions as in Figure 1.

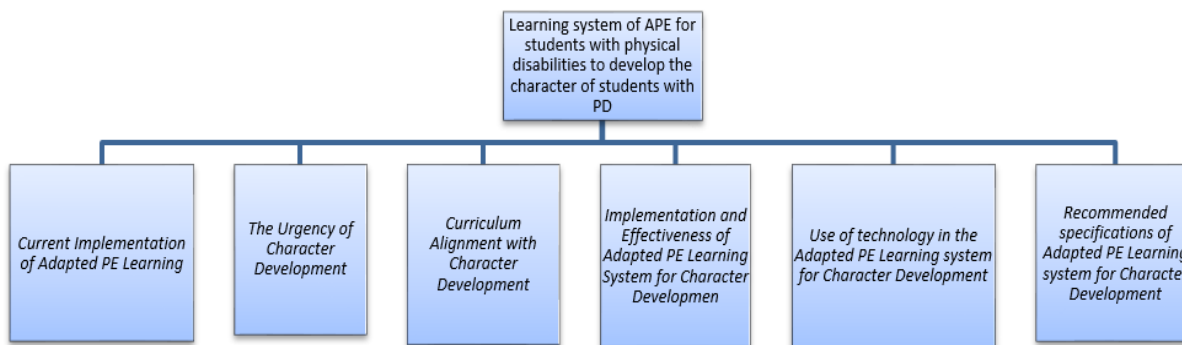


Figure 1. Learning system of adapted physical education for students with physical disabilities to develop the character of students with physical disabilities

Current Implementation of Adapted PE Learning

The responses from the three adapted PE teacher participants reflected a range of approaches and strategies that adapted PE teachers in Yogyakarta can use in implementing learning for students with physical disabilities, with a focus on inclusion, adaptation, and holistic approaches. Adapted PE learning is about how placement decisions are made and how those decisions

can influence the experiences of students with disabilities (Block et al., 2020). Teachers need to consider the selection of appropriate learning methods for students to create successful learning activities (Heinich, R., Molenda, M., Russell, J. D., & Smaldino, 1982). Students may require individually designed programmes to meet unique goals and ob-

jectives (Martin, 2014). Adapted PE teachers are responsible for children's physical activity levels, including being responsible for providing an environment that stimulates children to move more (Seghers, J., de Martelaer, K., & Cardon, 2009).

The Urgency of Character Development

From the answers obtained from the three adapted PE teachers in Yogyakarta, it can be said that character development is considered very important for students with physical disabilities. They agree that values such as self-confidence, perseverance, co-operation, and courage not only help students in physical activities but also in everyday life. Their experience shows that through learning PE, students can build adaptability and overcome obstacles with high spirit. PE education is not only about physical development but also strengthening the character and mentality of students with physical disabilities to reach their full potential in life. Students' character development is formed and nurtured through social interaction (Widodo et al., 2020). Social interaction in students can be obtained in learning activities. Interactions that occur in learning can provide opportunities for students to learn and understand experiential character education (Mak, 2014). The current curriculum in Indonesia, the independent curriculum, is designed with the principle of character development (Kemendikbud, 2024). Strengthening character is one of the points launched by the president of Indonesia, this commitment is followed up by cultivating character education in the world of education and launching Strengthening Character Education in stages each year (Kemendikbud, 2019).

Curriculum Alignment with Character Development

Based on the responses of the three adapted PE teachers in Yogyakarta, they agreed that character development for students with physical disabilities is in line with the Merdeka Curriculum in Indonesia. They emphasized that Merdeka Curriculum promotes inclusive and holistic education, which allows every student, including those with physical disabilities, to develop as a whole person. In PE learning. A teacher not only teaches physical skills but also builds values such as courage, perseverance, co-operation, and integrity, which are integral to building a strong character. Character development for students with physical disabilities not only supports the Merdeka Curriculum's vision of producing a generation that is independent and characterized, but also ensures that inclusion and empowerment are in line with the values upheld in education in Indonesia. Character values can be included as part of the curriculum in schools (Sylva, 1994). As a teacher also has an important role in the character development part of students (Widodo et al., 2020). Character development in learning activities is found in the school curriculum. There is

alignment between character development and the independent curriculum in Indonesia, this is supported by the guidebook for Strengthening Character Education by the Ministry of Education and Culture of the Republic of Indonesia (Kemendikbud, 2019).

Implementation and Effectiveness of Adapted PE Learning System for Character Development

From the answers of the three adapted PE teachers in D.I.Yogyakarta, it appears that the adapted PE learning system for character development of students with physical disabilities has proven to be effective. They integrate inclusive, adapted and values-oriented approaches to ensure that each student can grow and develop holistically. The use of adapted facilities and infrastructure is key in supporting students' participation in physical activities, while values such as self-confidence, perseverance, cooperation, and integrity are continuously emphasized and reinforced. Thus, this learning system not only supports the development of physical abilities but also builds strong character in students with physical disabilities, in line with the goals of inclusion and individual-centred education in Yogyakarta. Sport education has long been recognized as an effective way to improve students' physical health and mental well-being (Bisa, 2023). Except for students with disabilities, the application of Adapted PE can also be used by teachers to develop the character of students with disabilities. Physical education has been shown to play an important role in building character and teaching values that are essential for success in life (Schmidt et al., 2020).

Use of technology in the Adapted PE Learning system for Character Development

Based on the answers of the three adapted PE teachers in D.I.Yogyakarta, no one has used technology in learning. Adapted PE learning relies on conventional methods and personalized approaches in teaching students with physical disabilities. Although they have not adopted technology-based learning systems intensively, they still focus on character development by strengthening values such as courage, perseverance, co-operation, and other moral values. The synthesis of these answers shows that although their approaches do not use technology, their main goal is to prepare students with physical disabilities to become independent and characterful individuals. In conclusion, the approach taken by each teacher seeks to provide holistic and inclusive education for students with physical disabilities in D.I.Yogyakarta, although with different strategies. the use of learning media, one of which is the application of technology, is one of the important aspects in the implementation of education (Heinich, R., Molenda, M., Russell, J. D., & Smaldino, 1982). The application of technology in education is expected to improve the quality of education and help reduce disparities in education (Rabani et

al., 2023). Technology can be used to enhance character development, academic achievement, and respect for diversity (Mahindru et al., 2023).

Recommended specifications of Adapted PE Learning system for Character Development

Based on the responses of the three adapted PE teachers in Yogyakarta, they recommend different but complementary technology specifications. These teachers agreed that the recommended technology should support inclusivity, personalisation and adaptation in adapted PE learning for students with physical disabilities. They highlighted the importance of technology that is easily accessible, supports students' active participation, and can be adapted according to students' individual needs to ensure learning effectiveness. Based on the responses of adapted PE teachers in Yogyakarta, it is hoped that the application of technology in adapted PE learning for students with physical disabilities can be key to improving inclusivity and learning effectiveness. Recommended technology specifications include ease of access, personalisation, and integration with physical aids needed by students. Adapted PE learning by utilising these technologies appropriately is expected to be more effective in supporting the development of character and physical skills of students with physical disabilities in D.I.Yogyakarta. Adapted PE requires breakthrough services due to delays in cognitive, physical, communication and social emotional development (Kaloka, P.T., Purwanto, S., & Wibowo, 2019). Technological developments have influenced the learning process (Arwen & Puspita, 2020).

Conclusion

Various approaches and strategies have been used in learning for students with disabilities in an inclusive manner. PE education is not only about physical development but also strengthening students' character and mentality to reach their maximum potential in life. There is an alignment between the curriculum in Indonesia Merdeka Curriculum and Adapted PE, Merdeka Curriculum has a mission to produce a generation that is independent and has character. Adapted PE integrates an inclusive, adapted and values-orientated approach to ensure that every student can grow and develop holistically. The recommended technology should support inclusivity, personalisation, and adaptation in adapted PE learning, the importance of technology that is easily accessible, supports active student participation, and can be adapted according to individual student needs.

This research provides recommendations for stakeholders in the utilisation and use of technology in effective Adapted PE learning to improve students' character development holistically. There are still limitations to this research, this research is still limited to 1 province of D.I.Yogyakarta. This research provides ideas or suggestions for future research in the form of technology development in the implementation

of effective Adapted PE learning for the development of students with physical disabilities.

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Datos de los/as autores/as y traductor/a:

Erick Burhaein
Diajeng Tyas Pinru Phytanza
Carla Cristina Vieira Lourenço Lourenço
Ndayisenga Japhet

erick.burhaein17@gmail.com
diajengtyas@uny.ac.id
ccvl@ubi.pt
ndayisengajaphet59@gmail.com

Autor/a
Autor/a
Autor/a
Traductor/a