



Swim Like a Fish! Integration of Fundamental Movements in Child Literature for Enhancing Early Physical Literacy

Wulandari Putri, Agus Mahendra, Ayu Mutiara Santanu, Mesa Rahmi Stephani

Faculty of Sport and Health Education, Universitas Pendidikan Indonesia, Indonesia

*Correspondence: E-mail: wulandariputri@upi.edu

ABSTRACT

Reading has long been recognized as an essential activity to instill values, such as moral value, in children. Physical literacy, as the key factor to a child lifelong physical activity, becomes one of the potential vital values to be nurtured through reading activities. However, there has not been any child book targeting early physical literacy. Therefore, this research aimed to compile a story book for children, aged 4-6 years, specifically designed to enhance physical literacy by integrating fundamental movements in the storyline, including the locomotor, non-locomotor, and manipulative movements. This study was conducted in design-based research method framework which includes five procedures, namely need analysis, planning, product design development, testing, and revision stages. Results of expert judgment and user reviews showed that the draft of the book was suitable for use after revision. A substantial revision had been made to the draft based on the suggestions given by experts and users/practitioners and rated as suitable. This research has successfully produced a story book for children in two languages, Indonesian and English languages. The book has integrated suitable fundamental movements and been provided with pictures and illustrations to be used in reading activities. This book is expected to help children enhance early Physical Literacy in a fun way and suitable with their development stages.

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INTRODUCTION

In recent years, various international writings focus on physical literacy (Shearer et al., 2018), where much attention is paid to the importance of physical literacy (Tremblay & Lloyd, 2010). The International Physical Literacy Association (in Whitehead et al., 2018) describes physical literacy as motivation, self-confidence, physical competence, knowledge, and understanding for respect and responsibility of a person in the involvement in physical activity. Physical literacy itself is an umbrella overshadowing concepts, knowledge, skills, understanding, and values associated with human physical activity throughout their lives, regardless of physical constraints or psychological experiences (Dudley, 2015). Various elements related to physical activity are under the umbrella of physical literacy, including movement competence, motivation and skills, movement behaviours, attributes of personal and social movements, regulations, tactics, and movement strategies (Dudley, 2015). Therefore, physical literacy undeniably has an important role in engaging a person physical activity level later in life.

Physical literacy has an essential role to an individual involvement in physical activity throughout their lives. Physical literacy is seen as the concept covering knowledge, skills, understanding, and associated values related to physical activity of an individuals throughout their life span (Dudley, 2015). For this reason, instilling physical literacy early in children becomes essential. Instilling values in children, such as physical literacy, needs a fun and interesting activity. One of the media that can be used for instilling values is child literature. Integrating children literature has a potency to support learning academics in many disciplines and science, including in the field of Physical Education. To deliver values in child literature, various activities can be utilized, such as interactive reading aloud, group reading, and sharing reading. These activities not only allow children to broaden their knowledge and motivation, which are included in the affective and cognitive domains of physical literacy, but also enable them to improve their motor skills by practicing the movement provided in the book during the activity.

Increasing physical literacy in children requires an interesting approach for instilling the value. One of the media for children to build a good character is a quality book (Almerico, 2014). Through stories, children can study about characteristics, including traits, trust, respect, responsibility, justice, care and citizenship, freedom, courage, and honesty, presented through created characters and characterizations, thus a story provides a good chance to explore three components of character namely knowledge, moral feelings, and moral actions (Junaid, 2017). Hence, instilling physical literacy values is possible to be administered through stories, especially in child literature.

Various methods and activities can be used in introducing literature to children, such as group reading and reading aloud. Many aspects can be developed through this activity, including language skills, concept knowledge, content understanding (Batini et al., 2020), academic behaviors (Lawson, 2012), and embed moral values in children (Wuryandani, 2006). By embedding values through reading aloud, children can listen to the story with more persevere and more attention (Lawson, 2012), because it is conducted through fun and enjoyable activities involving children. Therefore, instilling physical literacy in children is also possible performed through reading activities.

Most importantly, reading aloud and group reading activities provide fun atmosphere and involve children in the process. Children can ask, discuss, even do a movement in the flexible reading aloud and group reading activities. Therefore, it is possible and relevant to embed physical literacy values through reading activities. Furthermore, involving child literature to school curriculum owns potency to support learning academics in many disciplines and science (Wickens & Parker, 2023), including in Physical Education. One of the methods is through reading aloud approach in an integrative activity. However, interactive reading aloud requires teachers to study every book they read carefully (McGee & Schickedanz, 2007). Meanwhile, there is limited literature in form of child books containing physical literacy, especially the book that is appropriate for reading aloud and group reading activities. Hence, composing books containing physical literacy in child books becomes important.

There is various method for integrating physical literacy in child books, such as presenting various movements in the story. Fundamental movement content seems to be relevant for the child literature. Fundamental movements that must be acquired by a person since early age includes locomotor, non-locomotor, and manipulative movements (Muslihin, 2018). From those three movements, locomotor and non-locomotor movements are most likely movements to be integrated in child books for reading aloud activities because the movements are simple to be included in the story and to be practiced in reading aloud and group reading activities without requiring a wide space.

There are many situations in communal and collective domains where language and sports, as cultural artifacts, intertwine (Lindberg, 2024) and language and motor skills are closely interrelated developmental areas which have frequently been recognized (Wang et al., 2014). However, the integration of content knowledge and language does not hold a prominent place in the literature of PE (Mateu, 2013). Limited number of sources regarding these two fields are found where the positive correlation between the two are apparent. In Physical Education, it has been explained how picture books can support basic reading skills and psychomotor concepts as well as how graphic novels can enhance disciplinary contents (Wickens & Parker, 2022). Moreover, teachers could use language to guide students to continuously improve their movements, as an essential teaching session (Qi & Zhang, 2020). In addition, combining both movement and story- telling appears to offer synergistic benefits in relation to physical and communication development, which are critical for good development in the early years (Duncan et al., 2019). Also, combining movement and storytelling was also proven to narrow the motor skill gap in South Asian children (Eyre et al., 2020). However, there has been no research studying the use of child literature itself, whether its intervention or innovation that can be used by practitioners, especially the intervention and innovation to improve child physical literacy. These scarcity would results in unfavourable impacts, such as the dearth of the book to be used in the field. Therefore, this study aimed to arrange a child book integrating fundamental movements, especially locomotor, non-locomotor, and manipulative movements, to be used in reading aloud activities to enhance child physical literacy as an effort to fill the gap in the innovation product in this field.

Instilling physical literacy in children through reading activities need child books as the main media. However, the story book for children to be used in reading aloud activity which contains physical literacy values is rarely found. Even, physical literacy alone is still a new concept. Considering the shortcomings, even the unavailability of literature containing physical literacy for children, a book containing physical literacy for children is necessary as

an answer for the absence in the literature. Therefore, this study aimed to compile a child book in two languages (English and Indonesia) to increase physical literacy of children by integrating fundamental movements, including locomotor, non-locomotor, and manipulative movements, to be used in reading activities for Early Childhood Education Practitioners and Physical Education Practitioners. The product from this study can further be used in school and home settings. For example, teachers can hold a sharing reading session using the book and parents can use the book for bedtime story for younger children.

METHODS

Design and Methods of the Study

This study was conducted using design-based research method. This method was chosen because this study focused on constructing an educational material as an essential part from research to be implemented (Bakker & van Eerde, 2015). Stages of the development of child book integrating fundamental movement content was adapted and simplified from (Easterday et al., 2016) iterative seven stages (over and over again if required), including deciding the focus of the problem, understanding the problem, defining goals, conceiving the outline of a solution, building the solution, testing the solution, and presenting to stakeholders. The stages were adapted and simplified into five iterative stages, including administering need analysis of users, designing drafts of the book, developing the book, and conducting the tests. The iterative process in this study would allow the researchers to revise and improve the content more than once, if necessary, based on the evaluation of the expert and practitioners. The test was conducted to measure the quality of the manuscript that included three domains, namely the fundamental movement and physical literacy content, illustration, and language for children administered by expert judgment panels and by presenting the product to the user candidates.

Participants of the Study

Participants of this study were Early Childhood Education Practitioners, Expert in the fields of Physical Education, and Expert in the field of Early Childhood Education. The experts were selected according to their expertise and experiences. Each expert was taken from the relevant latest education background and had been focusing on their field for more than 5 years.

Instrument of the Study

Instruments used in this study consisted of two instruments, namely interview and questionnaire. Interview was conducted to analyze the need and to prepare the manuscript, including the fundamental movement contents, design of illustrations, and framework of logical storyline. The questionnaire for expert judgment included three aspects, namely the suitability of movement content, conformity of language, appropriateness of stories, and activities in script according to development of children. The questionnaire was adapted from the research conducted by Santika (2022). The adaptation of the questionnaire was also validated by the language and Physical Education experts. The questionnaire was also given to user candidates to seek the input on the drafted manuscript.

Procedure of The Study

This study was conducted through five iterative stages. The first stage was need analysis for candidate users. At this stage, researchers analysed the fundamental movement content necessary and possible to be integrated in the book. Besides that, on this stage, researchers also analysed movement content, narrative, plot of story, and appropriate design graphics. This stage was administered with the guidance and consultation from experts in the fields of Physical Education and Early Childhood Education through an interview process. The second stage was designing the draft of materials by arranging outline of the story and design graphic. The third stage was the development of script and illustration. In this stage, a professional

illustrator was involved. The fourth stage was the evaluation stage from the expert in the field of Physical Education and Early Childhood Education. The stage 3 and stage 4 were carried out repeatedly for administering the revision and editing process. The fifth stage was presenting the existing manuscript to the expert panels and user candidates in the Physical Education or Early Childhood Education fields. After obtaining the input and suggestions for script improvement from user candidates and experts, the child book developed was revised, published, and printed to be distributed.

Data Analysis

Data analysis of this study used the inductive analysis, including data categorization and codification, data interpretation, and retrieval of general conclusion stages. Data were categorized and analyzed based on the category. General analysis taken from the analysis was to examine the response of experts and user candidates, weaknesses of the product, and suggestions for improvements. The data analysis process also included statistic descriptive calculation. The data were assessed and checked by more than one researchers to ensure that the data were correctly interpreted and free from bias.

RESULTS

This study was conducted in accordance with stages that had been arranged. This study included preparation, equalization of perception related to content and illustrations, interview with expert related to fundamental movement content, storyline, illustrations, and language use, preparation of the design/outline of the script, preparation of the storyline of the manuscript, preparation of manuscript illustration, expert judgments, presentation of product to Early Childhood Education practitioners, revisions, and evaluation.

Innovation Product

Product developed in this study is a story book for children provided with pictures/illustrations using two languages, namely English and Indonesian. The use of bilingual language is expected to help practitioners and give accessible context and setting for practitioners from Indonesia and worldwide. In addition, bilingualism in this book is also expected to better enhance children who are in the process of learning one of the languages while comprehending the physical literacy content presented in the book. In this integrated book, fundamental movement is aimed to increase physical literacy of children aged 4-6 years, in three physical literacy domains, namely knowledge, motivation, and skills. This book contains 23 pages of content and 4 pages of complement (outer cover, inside cover, and author biodata). This book was arranged for group reading, independent reading, sharing reading, and reading aloud activities. Figure 1 and Figure 2 show the cover page and a sample of book content.



Figure 1. Final Published Cover Page



Figure 2. Example of the Content Page in Draft

Assessment Results of Experts and Reviews of Prospective Users/Practitioners

Figure 3 presents the assessment results on the quality of the presented story. The data show that 50% of respondents evaluated very suitable for the title of the book, implying that it is interesting for target audience. Moreover, 50% of respondents evaluated very suitable on the language used, implying that it is simple and can be understood by the target audience. Regarding the relevancy of the message in the book for the target audience, the majority of the raters (75%) evaluated it as suitable. Regarding the clarity of the message conveyed in the book, the majority (75%) of raters evaluated it as suitable. In addition, 50% of respondents evaluated very suitable for the presentation of the story, implying that it has a high possibility for the book to engage the audience to participate in reading aloud activity, while the remaining 50% evaluated suitable. Lastly, the data also depict that half of the raters (50%) evaluated very suitable on the number of pages of the book, while the remaining 50% evaluated suitable.



Figure 3. Quality of The Story

Figure 4 presents the results of the assessment on the displays of the book. Half of the raters evaluated the illustration style of the books as very suitable, while the other half rated suitable and fairly suitable. This implies that the illustration has been appropriate, interesting, and acceptable for the target audience, but there was still a room for improvement. Regarding the color style and layout, half of the raters evaluated it as suitable, the other half evaluated as very suitable and fairly suitable. Moreover, the data also show that the majority of raters (75%) evaluated suitable, while the remaining 25% evaluated fairly suitable for the combination of layout and illustration.



Figure 4. Quality of Displays

Figure 5. presents the quality of movement contents integrated in the story. The majority of respondents (75%) rated that the clarity of movement content had been suitable, while the remaining 25% of respondents evaluated very suitable, implying that it can be understood by target audience. Regarding the practicality of the movement content, the majority of respondents (75%) evaluated it as very suitable, while the other 25% rated as suitable, implying that the movement content is possible to be followed and practiced by the target audience in reading aloud activity (in supervision). The relevancy of the movement presented in the book was evaluated very suitable by half of the respondents, while the other half evaluated suitable, implying that the movement content does not violate principles and theories of movements in Physical Education. Moreover, the majority (75%) of raters rated very suitable for the possibility of the movement content to enable the target audience understand the importance of the presented movement skills. For example, the manipulative movements which are presented during catching fish activity.

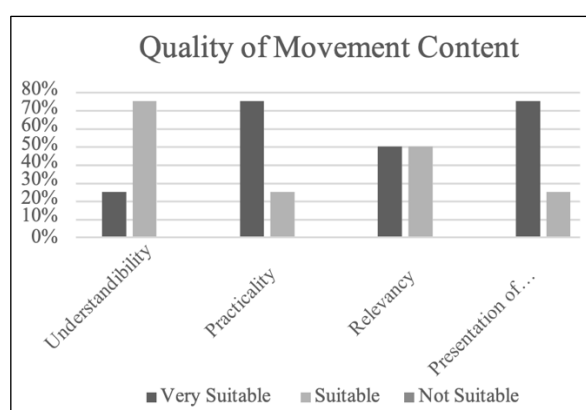


Figure 5. Quality of Movement Content

Besides the aforementioned quantitative data on the quality of the book, the data also present qualitative data on the suggestions for the book improvement from the experts and candidate users. The data exert that the layout of the book had been appropriate but some of the texts were attached to the image, making it a little difficult for readers to read it. Meanwhile, the activities presented were easy to be understood by the readers and could enable readers to imagine and get engaged in the story. There was also a suggestion regarding the background color and the addition of other elements to make it more interesting, contrast, and clearer. Another suggestion was given to font, such as the use of bold color and italic for the English language version. The modifications had been made to improve the presentation of the book, such as the adjustment of the color, the box repositioning, and the adjustment of other elements. Moreover, it was suggested that every physical movement should be provided with information to identify the movement and the information of age category should be given on the book cover, either for lower grades or upper grades.

DISCUSSION

The results of the judgement expert evaluation and the assessment from the user candidates showed that the draft of the book, entitled *Fun Camping: The Great Adventure Series*, was suitable for use after revision. The comments depicted that the book had been suitable and contained an easy-to-understand story. In addition, the suggestions for improvement were also obtained from the experts and user candidates. The suggestions

included the combination of colors, movement identifications, and information regarding age category. The final revision had been administered by considering suggestions from experts and user candidates. A substantial amount of revision and improvement had been carried out in the final revision, especially for the illustration, font, and combination of color. The information had been provided in the last page of the book. However, the age category was not printed on the cover, because this book is aimed to be used for a variety of reading activities, which can be read individually by older children or by the adult, such as teachers, in group reading activities for lower grade children. The book is more flexible to be used by a wider age range with an appropriate approach and diverse activities.

The final draft of the book, that had been revised according to the suggestions of experts and candidate users, proceeded a final evaluation from an expert and was rated as ready to be published. The book, as the innovation product of this research, has been published and ready to be distributed and introduced to the society. By considering physical literacy as the umbrella of concept knowledge, skills, understanding, and associated values for physical activity of individuals throughout their lives (Dudley, 2015), the product of this study is expected to have a positive contribution to the improvement of physical literacy as well as physical activity of the society. In addition, since one of the ways for children to enhance a good character is through a quality book for children (Almerico, 2014), this book has a great potential to enhance child physical literacy by embedding this literature in various activities for children in early age both at home and school environments.

Although literatures had shown that there are many situations in communal and collective domains where language and sports, as cultural artifacts, intertwine (Lindberg, 2024) and language and motor skills are closely interrelated developmental areas and have frequently been recognized (Wang et al., 2014), the integration of content knowledge and language does not hold a prominent place in the literature of PE (Mateu, 2013). While movement based-approach is seen as a beneficial approach to improve children related physical health and skills, the utilization of literature could provide this approach in various activities, such as in sharing and group reading activities. Therefore, this book can fill the gap in the literature. Besides, previous research, despite its limited number, had proven that language and Physical Education can have a positive contribution to each other. In addition, a study had demonstrated the efficacy of combining movement and storytelling, over movement or storytelling alone, to benefit both motor competence and language ability in pre-schoolers, showing that combining both movement and storytelling appears to offer synergistic benefits in relation to physical and communication development, which are critical for good development in the early years (Duncan et al., 2019). Meanwhile, the combination of movement and storytelling could also narrow the motor skill gap in children as found in (Eyre et al., 2020). Therefore, this innovation product can also be a medium for assisting the story telling activities that specifically arranged to enhance child physical literacy.

CONCLUSION

This study had produced innovative product through the design-based research method, namely a child book with picture using two languages (Indonesian and English). The resulting book is addressed for interactive reading aloud, sharing reading, and group reading activities for children aged 4-6 years and independent reading for older children. The results of expert judgment and user assessments, in general, showed that the book had been suitable to be published after the revision. A substantial revision and improvement had been administered based on suggestions from expert and prospective users/practitioners, with the final draft was rated as suitable to be published. The result of this study would help practitioners to use

the product for various reading activities in classes. Also, by using this book, the children are possible to indirectly enhance their physical literacy through a joyful and engaging process.

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AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. The authors confirmed that the paper was free of plagiarism.

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