Module Hypercontent for Gross Motor Learning

Ahmad Syaikhu, Suyitno Muslim, Etin Solihatin
Universitas Negeri Jakarta
ahmadsyikhu@stkipkusumanegara.ac.id

Accepted:	Reviewed:	Published:
May 14th 2023	July 18th 2023	August 30th 2023

Abstract This research aims to develop a coarse motor learning model based on hypercontent. The subjects of this study were students of the Early Childhood Education Teacher Education Program at STKIP Kusuma Negara Jakarta. The research employed the Research and Development (R&D) method, conceptualizing, proceduralizing, and implementing the coarse motor learning model. Expert one-to-one evaluations were conducted in the fields of early childhood education content, instructional design, instructional media, and the Indonesian language. Additionally, one-to-one, small group, and large group tests were administered to the students. This research can serve as a guide for future researchers to develop coarse motor learning with similar or different approaches. The outcomes of this study include a coarse motor learning model, printed modules, and instructional videos. The hypercontent-based coarse motor learning facilitates students' understanding and enhances their success in early childhood coarse motor learning.

Keywords: Learning Model Development, Gross Motor Skills, Hypercontent.

Introduction

Educational materials are a crucial component that plays a significant role in the learning process[1]. The presence of educational materials aids in the smooth learning of students and learners. These materials assist educators and instructors in conducting teaching and learning

[1] Nataliia Machynska and Mariia Dzikovska, "Challenges to Manage the Educational Process in the HEI during the Pandemic," *Revista Romaneasca pentru Educatie Multidimensionala* (2020); Elena Shchedrina et al., "Integration of Mobile Learning into Complex Problem-Solving Processes During STEM Education," *International Journal of Interactive Mobile Technologies* (2020); Irina Vitalevna Sosnovskaya et al., "Visualization Practices in Training Pedagogy Students," *Webology* (2021); Veronika Pisarenko, "Teaching a Foreign Language Using Videos," *Social Sciences* (2017); Osias Kilag et al., "ICT Application in Teaching and Learning," *Science and Education Scientific journal* (2023); Muhammad Abror Mubaroq and Muhammad Fakhri Ilham, "Peran Teknologi Dalam Peningkatan Dan Efektivitas Proses Pembelajaran," *MASALIQ* (2023); Hafizah Hafizah, Aceng Rahmat, and Saifur Rohman, "PEMBELAJARAN SASTRA ANAK DALAM MEMBENTUK KARAKTER DI SEKOLAH DASAR," *Jurnal Pendidikan Bahasa dan Sastra Indonesia Metalingua* 7, no. 2 (2022): 137–144, http://dx.doi.org/10.21107/metalingua.v7i2.12561; Rustam Hasyim and Sitirahia Hi Umar, "PERANAN GURU PPKN DALAM MENGEMBANGKAN MODEL PEMBELAJARAN (BAHAN AJAR) ABAD 21 DI SMP NEGRI 2 KOTA TERNATE," *Jurnal Geocivic* 2, no. 1 (2019), http://dx.doi.org/10.33387/geocivic.v2i1.1469; Rizki Umi Nurbaeti, "PENGEMBANGAN BAHAN AJAR IPA BERBASIS PROBLEM BASED LEARNING UNTUK SISWA KELAS V SEKOLAH DASAR," *Jurnal Cakrawala Pendas* 5, no. 1 (2019), http://dx.doi.org/10.31949/jcp.v5i1.1233.

activities in the classroom [2]. For educators, utilizing appropriate educational materials can save time [3] in teaching and can transform their role from an instructor to a facilitator, thereby improving the learning process to become more effective and interactive[4]. For learners, educational materials can help them become independent learners and can be used to assess the acquired competencies [5].

The development of educational materials can make learning more enjoyable, effective, efficient, and aligned with learning objectives[6]. Given the importance of educational materials in the learning process, educators must be capable of developing materials that align with technological and knowledge advancements. In the era of Industry 4.0 and Society 5.0, educational materials must also be in line with the current era's development. Learning should occur in a transformative and productive manner. However, several crucial factors impede transformative and productive learning, giving rise to adaptive learning methods and strategies. At least two factors hinder transformative learning. First, internal factors such as students' intelligence, low learning culture, unstable motivation, or other limitations. Second, external

[2] Hani Irawati and Much. Fuad Saifuddin, "Analisis Kebutuhan Pengembangan Bahan Ajar Mata Kuliah Pengantar Profesi Guru Biologi Di Pendidikan Biologi Universitas Ahmad Dahlan Yogyakarta," *BIO-PEDAGOGI* 7, no. 2 (2018): 96, http://dx.doi.org/10.20961/bio-pedagogi.v7i2.27636; Nyimas Muazzomi and Hendra Sofyan, "Pengembangan Bahan Ajar Pengembangan APE Berbasis Kewirausahaan S1 PG- PAUD FKIP Universitas Jambi," *Jurnal Sains Sosio Humaniora* 5, no. 1 (2021): 388–395, http://dx.doi.org/10.22437/jssh.v5i1.14151; W. Herry Setyawan et al., "The Effect of an Android-Based Application on T-Mobile Learning Model to Improve Students' Listening Competence," in *Journal of Physics: Conference Series*, vol. 1175, 2019; Masdiana Sinambela and Tonggo Sinaga, "PENGEMBANGAN BAHAN AJAR BIOLOGI UMUM SEBAGAI SUMBER BELAJAR UNTUK BUKU PEGANGGAN MAHASISWA," *Jurnal Pelita Pendidikan* 8, no. 3 (2020), http://dx.doi.org/10.24114/jpp.v8i3.19988.

[3] Irawati and Saifuddin, "Analisis Kebutuhan Pengembangan Bahan Ajar Mata Kuliah Pengantar Profesi Guru Biologi Di Pendidikan Biologi Universitas Ahmad Dahlan Yogyakarta"; Tjutju Soendari, "Metode Penelitian Deskriptif," *Bandung, UPI. Stuss, Magdalena & Herdan, Agnieszka* 17 (2012); Dewi Pratita, Dian Eka Amrina, and Yulia Djahir, "ANALISIS KEBUTUHAN MAHASISWA TERHADAP BAHAN AJAR SEBAGAI ACUAN UNTUK MENGEMBANGKAN E-MODUL PEMBELAJARAN DIGITAL," *Jurnal PROFIT Kajian Pendidikan Ekonomi dan Ilmu Ekonomi* 8, no. 1 (2021): 69–74, http://dx.doi.org/10.36706/jp.v8i1.13129.

[4] Tiara Nita Rozanah Rachman, "PEMANFAATAN LINGKUNGAN SEBAGAI MEDIA PEMBELAJARAN UNTUK MENINGKATKAN AKTIVITAS BELAJAR SISWA," *Al-Fikru : Jurnal Pendidikan Dan Sains* (2022); James G. March, "Exploration and Exploitation in Organizational Learning," *Organization Science* (1991); James G. March, "Exploration and Exploitation in Organizational Learning," *STUDI ORGANIZZATIVI* (2021); Nurazila Sari, Suyadi Suyadi, and Na'imah Na'imah, "The Urgency of Teacher Adaptation to Post-Online Face-to-Face Learning," *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini* (2022).

[5] Ángel Fidalgo-Blanco, María Luisa Sein-Echaluce, and Francisco José García-Peñalvo, "Education 4.0-Based Method to Improve Learning: Lessons Learned from COVID-19," *RIED-Revista Iberoamericana de Educacion a Distancia* (2022); J. Voogt et al., "Challenges to Learning and Schooling in the Digital Networked World of the 21st Century," *Journal of Computer Assisted Learning* (2013).

[6] Birru Muqdamien et al., "TAHAP DEFINISI DALAM FOUR-D MODEL PADA PENELITIAN RESEARCH & DEVELOPMENT (R&D) ALAT PERAGA EDUKASI ULAR TANGGA UNTUK MENINGKATKAN PENGETAHUAN SAINS DAN MATEMATIKA ANAK USIA 5-6 TAHUN," *Intersections* (2021); Gema Bueno-De-La-Fuente et al., "Study on the Use of Metadata for Digital Learning Objects in University Institutional Repositories (MODERI)," *Cataloging and Classification Quarterly* (2009); Suarga Suarga, "KERANGKA DASAR DAN LANDASAN PENGEMBANGAN KURIKULUM 2013," *Inspiratif Pendidikan* (2017); Aldo Redho Syam, "POSISI MANAJEMEN KURIKULUM DAN PEMBELAJARAN DALAM PENDIDIKAN," *MUADDIB:Studi Kependidikan dan Keislaman* (2011).

factors encompass learning media, resources, and learning materials that are still difficult to access [7].

The Bachelor's Program for Early Childhood Education Teachers (PG PAUD) at STKIP Kusumanegara faces similar challenges. One of the mandatory courses in this undergraduate program for early childhood education is the course on the development of gross motor skills in young children. This required course is intended to help future teachers stimulate the gross motor development of children according to their developmental stages. However, the lack of learning resources, facilities, and limited learning strategies needs to be addressed and provided with appropriate solutions. Through suitable approaches and learning models tailored to the needs, it is hoped that the quality of learning will improve, and students' competence in the field of gross motor skills for young children will enhance.

The development of a coarse motor learning model is expected to provide solutions to common issues in the learning process, fostering creative thinking and problem-solving skills[8], ultimately equipping students with life skills and the ability to innovate [9]. Emerging innovations in education must be harnessed by educators to facilitate the learning process. Furthermore, the development of learning models should align with technological and informational advancements [10] to avoid falling behind. Digital tools have been widely used for learning, such as the utilization of Digital Book Creator Media [11], inquiry-based learning technology implementation [12], reconceptualizing game-based learning in early childhood environments [13]. One form of innovation is the introduction of hypercontent-based printed educational materials.

Hypercontent is a learning approach that aids learners in enhancing their abilities. Hypercontent has proven successful and can address various challenges and developments in the

[7] Miratul Hayati and Ahmad Syaikhu, "Project-Based Learning in Media Learning Material Development for Early Childhood Education," *AL-ATHFAL: JURNAL PENDIDIKAN ANAK* 6, no. 2 (2020): 147–160, http://dx.doi.org/10.14421/al-athfal.2020.62-05.

[8] Nan L Maxwell, Yolanda Bellisimo, and John Mergendoller, "Problem-Based Learning: Modifying the Medical School Model for Teaching High School Economics," *The Social Studies* 92, no. 2 (2001): 73–78.

[9] Ibrahim Bilgin, Yunus Karakuyu, and Yusuf Ay, "The Effects of Project Based Learning on Undergraduate Students' Achievement and Self-Efficacy Beliefs towards Science Teaching," *Eurasia Journal of Mathematics, Science and Technology Education* (2015).

[10] H.B.A Jayawardana, Ianatuz Zahro, and Eky Prasetya Pertiwi, "Identifikasi Kesulitan Guru Paud Di Masa Pandemi," *PAUDIA : Jurnal Penelitian dalam Bidang Pendidikan Anak Usia Dini* (2020); Ratri Kusumaningtyas, Ina Mar'atus Sholehah, and Nika Kholifah, "Peningkatan Kualitas Pembelajaran Guru Melalui Model Dan Media Pembelajaran Bagi Generasi Z," *Warta LPM* 23, no. 1 (2020): 54–62, http://dx.doi.org/10.23917/warta.v23i1.9106; Tantri Mayasari et al., "APAKAH MODEL PEMBELAJARAN PROBLEM BASED LEARNING DAN PROJECT BASED LEARNING MAMPU MELATIHKAN KETERAMPILAN ABAD 21?," *Jurnal Pendidikan Fisika dan Keilmuan (JPFK)* 2, no. 1 (2016): 48, http://dx.doi.org/10.25273/jpfk.v2i1.24; Mrs Deepa Bisht and Mrs Priyanka Rani, "LEARNING STYLES PREFERENCES AMONG PROSPECTIVE SCIENCE, ARTS AND COMMERCE FEMALE TEACHERS" (2017).

[11] Isatul Hasanah Siti Rodi'ah, "Strategi Pembelajaran Pendidikan Jasmani Berbantu Media Book Creator Digital Dalam Meningkatkan Kemampuan Motorik Kasar Siswa Pada Tingkat Sekolah Dasar," *Continuous Education: Journal of Science and Research* 2, no. 2 (2021): 23–35, http://dx.doi.org/10.51178/ce.v2i2.225.

[12] Alf Inge Wang et al., *Introducton to Gamification*, *International Journal of Computer Games Technology*, 2010.

[13] Jason Nolan and Melanie McBride, "Beyond Gamification: Reconceptualizing Game-Based Learning in Early Childhood Environments," *Information, Communication & Society* 17, no. 5 (2013): 594–608, http://dx.doi.org/10.1080/1369118x.2013.808365.

era of Industry 4.0 . Hypercontent learning modules are highly effective for self-directed learning by students Additionally, hypercontent-based learning is valid and effective for instruction[14].

Hypercontent modules offer advantages over traditional modules. They interconnect concepts within different materials simultaneously through a specific digital technology program. Logically, hypercontent operates akin to hypertext, where one text contains links to many interconnected texts. In practice, this manifests as menu options on a web page, leading users to various related materials upon clicking. In other words, one text houses and connects with other texts (hyperlinks). Furthermore, hypercontent-designed learning involves modules with topics presented using text, audio, graphics, images, and videos. Concepts are enriched with supplementary content related to various engaging content sources like YouTube, Google Web, and/or Wikipedia. These online resources can be accessed via QR Code scanning on devices or smartphones.

With hypercontent modules, learners can control their learning processes, selecting topics to explore randomly using the hypercontent system. However, limitations in educators' online teaching skills, creativity, and ability to present materials may lead to reduced student interest in learning the subject of coarse motor skills in early childhood education. This can affect students' comprehension. Observing the educational materials used during online learning, such as videos, school-provided books, and practice questions, underscores the importance of addressing these challenges.

The module is equipped with various features such as videos and quizzes. Hypercontent-based learning can assist in this regard, allowing students to access learning resources through QR codes. Multiple studies have indicated that learning using hypercontent-based modules can be effectively implemented by combining virtual, self-directed, and collaborative learning spaces while considering the characteristics of each unit within the hypercontent module designed to stand alone, and the content structure is presented with message design principles. Hypercontent-based modules can be effectively utilized in independent learning activities for students and have been proven to enhance learning outcomes.

Another advantage of hypercontent-based e-modules is that they allow learners to choose the topic or material they want to study first, whether randomly or sequentially. This aligns with Prawiradilaga's assertion that the characteristics of modules using hypercontent concepts possess a non-linear nature, affording readers the opportunity to deeply engage with module content without strictly following the sequence or arrangement of materials [15].

Through this research, the author aims to create a coarse motor learning model that meets students' needs and aligns with the current era's advancements. This approach seeks to make coarse motor learning more diverse and contextual. The research focuses on the theme

[14] Pujiati Pujiati et al., "Needs Analysis E-Module Based Hypercontent to Improve Collage Students' Critical Thinking Skills," *International Journal of Social Science Research and Review* (2022); S. Rufaida and N. Nurfadilah, "The Effectiveness of Hypercontent Module to Improve Creative Thinking Skills of Prospective Physics Teachers," in *Journal of Physics: Conference Series*, 2021; Pujiati Pujiati et al., "Effectiveness of Using Hypercontent Based E-Module to Improve College Students' Critical Thinking Skills," *WSEAS TRANSACTIONS ON ADVANCES in ENGINEERING EDUCATION* (2022).

[15] Dewi Salma Prawiradilaga, *Prinsip Desain Pembelajaran* (Kencana, 2015).

"Development of Coarse Motor Learning Model for Early Childhood Based on Hypercontent." It is expected that this research will contribute to making the teaching of coarse motor skills more effective and efficient.

.

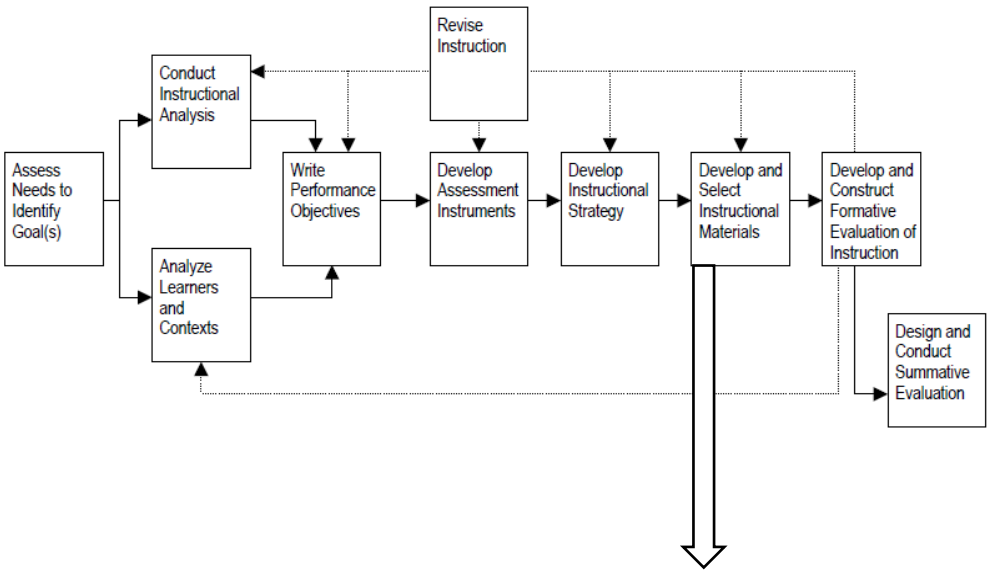
Method

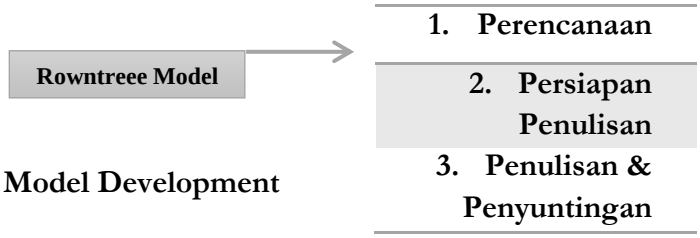
The research and development model employed in this study utilizes an instructional design approach. This approach entails implementing learning based on a needs analysis, which is then translated into general and specific learning objectives and instructional materials. To facilitate learning, instructional design is combined with a curriculum integration model, enabling students to enhance their competencies in coarse motor skills learning.

This study falls under the category of Research and Development (R&D). The research design used to develop the coarse motor skills learning model involves a combination of development and instructional models. The process includes the following stages:

1. Research and Information Collecting: The initial step involves collecting research and information to inform the development of the learning model. This stage draws from models such as Borg and Gall's Edition, Step of System Approach Model of Educational Research and Development, Dick and Carey model, and others.
2. Analyzing Needs: This stage employs the Dick and Carey model to analyze the needs of the learners. It involves writing general and specific learning objectives, selecting appropriate instructional materials based on developmental milestones or specific objectives, and choosing teaching strategies and instructional media.

The integration of these models aims to create a coherent learning model that aligns with the needs of the students. The overall research process follows these stages and flows accordingly.





Design of the Developed Learning Model Development

Information from the analysis of learners is utilized to formulate and implement a learning model using various media tailored to the characteristics of the learners. The participants in this study are first-semester students in the Early Childhood Education Teacher Education Program. The class consists of 24 participants, and the average student is a regular participant. The participants come from diverse backgrounds, with the following composition:

Table 3.1 Learner Backgrounds

Background	Amount
Fresh graduate	1 people
Have Taught	23 people
Female	23 people
Male	1 people
Regular	21 people
Transfer	3 people
Resident of Jakarta	24 people

The participants in the coarse motor skills course are predominantly students who have prior teaching experience. They display a high enthusiasm for seeking new knowledge, and their proactive engagement is evident through their active participation in discussions, question-and-answer sessions, and the provision of field-related examples pertaining to the practice of coarse motor skill learning.

However, there exists a notable constraint due to the students' predominantly urban residency, primarily centered in Jakarta. This circumstance has implications for the practical application of coarse motor skill learning. The limitation stems from the scarcity of adequate land area within Early Childhood Education schools, where these students are engaged in teaching. Consequently, the availability of open spaces, especially outdoors, is limited.

While the students exhibit great interest and involvement, the geographical constraint hampers their ability to fully engage in hands-on practice of coarse motor skills. Despite their enthusiasm for incorporating practical examples from their teaching experiences, the urban context affects their opportunities for real-world application due to the shortage of suitable physical spaces for outdoor activities. This scenario emphasizes the need for creative

solutions to provide practical experiences within the constraints of the urban setting, enhancing the effectiveness of their learning process in the realm of coarse motor skills.

Result and Discussion

1. The initial state of the coarse motor learning model based on hypercontent reveals a requirement for learning that emphasizes relevant learning resources aligned with the subject matter of the course. This indicates a need for instructional materials that are closely related to the content being taught.

   The description highlights the starting point of the coarse motor learning model, which is based on the concept of hypercontent. In this context, the analysis underscores the recognition of a fundamental need within the learning environment. Specifically, it emphasizes the importance of incorporating pertinent learning resources that directly correspond to the subject matter of the course. This recognition suggests that the existing educational materials or resources might not fully meet this requirement.

   The implication of this observation is that the conventional or existing materials might not sufficiently address the specific learning goals or objectives related to coarse motor skills. The identification of this need stresses the significance of aligning instructional resources closely with the content being taught. In doing so, it recognizes the value of integrating appropriate tools and materials that can effectively convey the principles, techniques, and concepts associated with coarse motor skill development.

   Furthermore, by acknowledging the requirement for relevant learning resources, the educational approach moves towards an instructional design that ensures students' engagement and comprehension of the subject matter. This aligns with the broader pedagogical principle of creating a learning environment where students can explore and grasp concepts effectively. Consequently, the statement underscores the necessity for a learning model that leverages hypercontent, a dynamic and adaptable approach that can better cater to the specific demands of teaching and learning coarse motor skills.
2. The developed learning model has undergone a Research and Development (R&D) process, creating a model for teaching coarse motor skills based on hypercontent. This was achieved by combining elements from the Borg & Gall model, the Dick and Carey model, and the Rowntree model. This collaborative approach draws from various instructional design frameworks to create a comprehensive and effective learning model.

   The description highlights the evolution of the learning model through a structured and iterative Research and Development (R&D) process. This process has led to the creation of a specific instructional framework for teaching coarse motor skills, which is based on the concept of hypercontent.

   In this case, the collaborative nature of the approach is evident as it draws on elements from three established instructional design models: the Borg & Gall model, the Dick and Carey model, and the Rowntree model. Each of these models contributes unique principles and methodologies that, when combined, result in a comprehensive instructional framework for teaching coarse motor skills.

By incorporating various aspects of these models, the developed learning model benefits from the strengths of each individual model. The Borg & Gall model might provide systematic data collection and evaluation, the Dick and Carey model could offer systematic instructional planning and development, and the Rowntree model might contribute a focus on assessment and evaluation strategies.

The collaborative approach to integrating these models demonstrates a deliberate effort to harness the advantages of multiple methodologies. This approach recognizes that a single model might not fully address the intricacies and multifaceted nature of teaching coarse motor skills with hypercontent. The combined elements ensure that the learning model is well-rounded, adaptable, and effective, catering to various instructional needs, assessment strategies, and overall learning objectives. This approach reflects a thoughtful and strategic design process aimed at optimizing the learning experience for students engaging with coarse motor skill development through hypercontent.

3. The effectiveness of the developed coarse motor skills learning model based on hypercontent was evaluated through effectiveness testing with a small group. The results of the t-test calculations showed that the calculated t-value (3.822) was greater than the critical t-value (2.228), leading to the rejection of the null hypothesis (Ho). The same pattern emerged in the field trial, where the calculated t-value (13.457) exceeded the critical t-value (2.131), resulting in the rejection of the null hypothesis. This suggests a significant difference between pre-test and post-test scores in the context of coarse motor skills learning based on hypercontent. As a result, it can be concluded that the hypercontent-based coarse motor learning approach is effective in enhancing learning outcomes.

   The assessment of the effectiveness of the newly developed coarse motor skills learning model, which is rooted in the concept of hypercontent, was carried out through a rigorous effectiveness testing process involving a small group of participants.

   To determine the impact of the hypercontent-based learning approach, statistical analysis was employed. The calculated t-values were used to compare the pre-test and post-test scores of the participants. In both the controlled setting and the practical field trial, the calculated t-values—3.822 and 13.457, respectively—were significantly higher than the critical t-values (2.228 and 2.131), leading to the rejection of the null hypothesis (Ho).

   This outcome underscores a pivotal point: there is a substantial and statistically meaningful difference between the participants' initial understanding (pre-test) and their acquired knowledge (post-test) after experiencing the hypercontent-based coarse motor skills learning model. In essence, the participants' learning outcomes were significantly enhanced through the utilization of the hypercontent-based instructional approach.

   The findings confirm the efficacy of the hypercontent-based model in effectively facilitating the acquisition and retention of knowledge related to coarse motor skills. Consequently, it is valid to conclude that the designed learning approach, which strategically integrates hypercontent principles, has a demonstrably positive impact on the participants' learning outcomes. This outcome adds empirical support to the notion that the hypercontent-based

coarse motor learning approach contributes to improved educational outcomes and validates the effectiveness of this innovative approach in promoting enhanced learning experiences.

Conclusion

The development of the coarse motor skills learning model based on hypercontent, through the integration of the Borg & Gall model, the Dick and Carey model, and the Rowntree model, can yield a more effective and constructive learning approach. By combining these instructional design models, educators can provide a broader range of insights to students through diverse reference options, as exemplified in the instructional framework utilizing hypercontent.

This collaborative approach leverages the strengths of each individual model, fostering a more comprehensive and adaptable instructional strategy. The Borg & Gall model's systematic data collection, the Dick and Carey model's structured instructional planning, and the Rowntree model's emphasis on assessment collectively contribute to an enhanced learning experience.

With this blended approach, educators are encouraged to offer varied perspectives and insights to students by incorporating a diverse array of instructional references. This mirrors the approach utilized within hypercontent-based instruction, where a wide range of materials and resources are accessible to learners. By doing so, educators can foster a more engaging and interactive learning environment, encouraging students to explore different viewpoints and deepen their understanding of coarse motor skills.

References

Bilgin, Ibrahim, Yunus Karakuyu, and Yusuf Ay. "The Effects of Project Based Learning on Undergraduate Students' Achievement and Self-Efficacy Beliefs towards Science Teaching." *Eurasia Journal of Mathematics, Science and Technology Education* (2015).

Bisht, Mrs Deepa, and Mrs Priyanka Rani. "LEARNING STYLES PREFERENCES AMONG PROSPECTIVE SCIENCE, ARTS AND COMMERCE FEMALE TEACHERS" (2017).

Bueno-De-La-Fuente, Gema, Tony Hernández-Pérez, David Rodríguez-Mateos, Eva M. Méndez-Rodríguez, and Bonifacio Martín-Galán. "Study on the Use of Metadata for Digital Learning Objects in University Institutional Repositories (MODERI)." *Cataloging and Classification Quarterly* (2009).

Fidalgo-Blanco, Ángel, María Luisa Sein-Echaluce, and Francisco José García-Peñalvo. "Education 4.0-Based Method to Improve Learning: Lessons Learned from COVID-19." *RIED-Revista Iberoamericana de Educacion a Distancia* (2022).

Hafizah, Hafizah, Aceng Rahmat, and Saifur Rohman. "PEMBELAJARAN SASTRA ANAK DALAM MEMBENTUK KARAKTER DI SEKOLAH DASAR." *Jurnal Pendidikan Bahasa dan Sastra Indonesia Metalingua* 7, no. 2 (2022): 137–144. http://dx.doi.org/10.21107/metalingua.v7i2.12561.

Hasyim, Rustam, and Sitirahia Hi Umar. "PERANAN GURU PPKN DALAM MENGEMBANGKAN MODEL PEMBELAJARAN (BAHAN AJAR) ABAD 21 DI SMP NEGRI 2 KOTA TERNATE." *Jurnal Geocivic* 2, no. 1 (2019). http://dx.doi.org/10.33387/geocivic.v2i1.1469.

Hayati, Miratul, and Ahmad Syaikhu. "Project-Based Learning in Media Learning Material Development for Early Childhood Education." *AL-ATHFAL : JURNAL PENDIDIKAN ANAK* 6, no. 2 (2020): 147–160. http://dx.doi.org/10.14421/al-athfal.2020.62-05.

Herry Setyawan, W., A. Budiman, D. Septa Wihara, T. Setyarini, Nurdyansyah, R. Rahim, and M. Barid Nizarudin Wajdi. "The Effect of an Android-Based Application on T-Mobile Learning Model to Improve Students' Listening Competence." In *Journal of Physics: Conference Series*. Vol. 1175, 2019.

Irawati, Hani, and Much. Fuad Saifuddin. "Analisis Kebutuhan Pengembangan Bahan Ajar Mata Kuliah Pengantar Profesi Guru Biologi Di Pendidikan Biologi Universitas Ahmad Dahlan Yogyakarta." *BIO-PEDAGOGI* 7, no. 2 (2018): 96. http://dx.doi.org/10.20961/bio-pedagogi.v7i2.27636.

Jayawardana, H.B.A, Ianatuz Zahro, and Eky Prasetya Pertiwi. "Identifikasi Kesulitan Guru Paud Di Masa Pandemi." *PAUDIA : Jurnal Penelitian dalam Bidang Pendidikan Anak Usia Dini* (2020).

Kilag, Osias, Ghuen Segarra, Anna De Gracia, Adones Socorro, Cara Abendan, Glennifer Camangyan, and Eduard Mahasol. "ICT Application in Teaching and Learning." *Science and Education Scientific journal* (2023).

Kusumaningtyas, Ratri, Ina Mar'atus Sholehah, and Nika Kholifah. "Peningkatan Kualitas Pembelajaran Guru Melalui Model Dan Media Pembelajaran Bagi Generasi Z." *Warta LPM* 23, no. 1 (2020): 54–62. http://dx.doi.org/10.23917/warta.v23i1.9106.

Machynska, Nataliia, and Mariia Dzikovska. "Challenges to Manage the Educational Process in the HEI during the Pandemic." *Revista Romaneasca pentru Educatie Multidimensionala* (2020).

March, James G. "Exploration and Exploitation in Organizational Learning." *STUDI ORGANIZZATIVI* (2021).

———. "Exploration and Exploitation in Organizational Learning." *Organization Science* (1991).

Maxwell, Nan L, Yolanda Bellisimo, and John Mergendoller. "Problem-Based Learning: Modifying the Medical School Model for Teaching High School Economics." *The Social Studies* 92, no. 2 (2001): 73–78.

Mayasari, Tantri, Asep Kadarohman, Dadi Rusdiana, and Ida Kaniawati. "APAKAH MODEL PEMBELAJARAN PROBLEM BASED LEARNING DAN PROJECT BASED LEARNING MAMPU MELATIHKAN KETERAMPILAN ABAD 21?" *Jurnal Pendidikan Fisika dan Keilmuan (JPFK)* 2, no. 1 (2016): 48. http://dx.doi.org/10.25273/jpfk.v2i1.24.

Muazzomi, Nyimas, and Hendra Sofyan. "Pengembangan Bahan Ajar Pengembangan APE Berbasis Kewirausahaan S1 PG- PAUD FKIP Universitas Jambi." *Jurnal Sains Sosio Humaniora* 5, no. 1 (2021): 388–395. http://dx.doi.org/10.22437/jssh.v5i1.14151.

Mubaroq, Muhammad Abror, and Muhammad Fakhri Ilham. "Peran Teknologi Dalam Peningkatan Dan Efektivitas Proses Pembelajaran." *MASALIQ* (2023).

Muqdamien, Birru, Umayah Umayah, Juhri Juhri, and Desty Puji Raraswaty. "TAHAP DEFINISI DALAM FOUR-D MODEL PADA PENELITIAN RESEARCH & DEVELOPMENT (R&D) ALAT PERAGA EDUKASI ULAR TANGGA UNTUK MENINGKATKAN PENGETAHUAN SAINS DAN MATEMATIKA ANAK USIA 5-6 TAHUN." *Intersections* (2021).

Nolan, Jason, and Melanie McBride. "Beyond Gamification: Reconceptualizing Game-Based Learning in Early Childhood Environments." *Information, Communication & Society* 17, no. 5 (2013): 594–608. http://dx.doi.org/10.1080/1369118x.2013.808365.

Nurbaeti, Rizki Umi. "PENGEMBANGAN BAHAN AJAR IPA BERBASIS PROBLEM BASED LEARNING UNTUK SISWA KELAS V SEKOLAH DASAR." *Jurnal Cakrawala*

Pendas 5, no. 1 (2019). http://dx.doi.org/10.31949/jcp.v5i1.1233.
Pisarenko, Veronika. "Teaching a Foreign Language Using Videos." *Social Sciences* (2017).
Pratita, Dewi, Dian Eka Amrina, and Yulia Djahir. "ANALISIS KEBUTUHAN MAHASISWA TERHADAP BAHAN AJAR SEBAGAI ACUAN UNTUK MENGEMBANGKAN E-MODUL PEMBELAJARAN DIGITAL." *Jurnal PROFIT Kajian Pendidikan Ekonomi dan Ilmu Ekonomi* 8, no. 1 (2021): 69–74. http://dx.doi.org/10.36706/jp.v8i1.13129.
Prawiradilaga, Dewi Salma. *Prinsip Desain Pembelajaran*. Kencana, 2015.
Pujiati, Pujiati, Fanni Rahmawati, Rahmawati Rahmawati, and Albet Maydiantoro. "Effectiveness of Using Hypercontent Based E-Module to Improve College Students' Critical Thinking Skills." *WSEAS TRANSACTIONS ON ADVANCES in ENGINEERING EDUCATION* (2022).
———. "Needs Analysis E-Module Based Hypercontent to Improve Collage Students' Critical Thinking Skills." *International Journal of Social Science Research and Review* (2022).
Rachman, Tiara Nita Rozanah. "PEMANFAATAN LINGKUNGAN SEBAGAI MEDIA PEMBELAJARAN UNTUK MENINGKATKAN AKTIVITAS BELAJAR SISWA." *Al-Fikru : Jurnal Pendidikan Dan Sains* (2022).
Rufaida, S., and N. Nurfadilah. "The Effectiveness of Hypercontent Module to Improve Creative Thinking Skills of Prospective Physics Teachers." In *Journal of Physics: Conference Series*, 2021.
Sari, Nurazila, Suyadi Suyadi, and Na'imah Na'imah. "The Urgency of Teacher Adaptation to Post-Online Face-to-Face Learning." *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini* (2022).
Shchedrina, Elena, Elena Galkina, Irina Petunina, and Richard Lushkov. "Integration of Mobile Learning into Complex Problem-Solving Processes During STEM Education." *International Journal of Interactive Mobile Technologies* (2020).
Sinambela, Masdiana, and Tonggo Sinaga. "PENGEMBANGAN BAHAN AJAR BIOLOGI UMUM SEBAGAI SUMBER BELAJAR UNTUK BUKU PEGANGGAN MAHASISWA." *Jurnal Pelita Pendidikan* 8, no. 3 (2020). http://dx.doi.org/10.24114/jpp.v8i3.19988.
Siti Rodi'ah, Isatul Hasanah. "Strategi Pembelajaran Pendidikan Jasmani Berbantu Media Book Creator Digital Dalam Meningkatkan Kemampuan Motorik Kasar Siswa Pada Tingkat Sekolah Dasar." *Continuous Education: Journal of Science and Research* 2, no. 2 (2021): 23–35. http://dx.doi.org/10.51178/ce.v2i2.225.
Soendari, Tjutju. "Metode Penelitian Deskriptif." *Bandung, UPI. Stuss, Magdalena & Herdan, Agnieszka* 17 (2012).
Sosnovskaya, Irina Vitalevna, Nadezhda Ilinichna Nikonova, Svetlana Yrievna Zalutskaya, Nina Pavlovna Terentyeva, and Elena Olegovna Galitskyh. "Visualization Practices in Training Pedagogy Students." *Webology* (2021).
Suarga, Suarga. "KERANGKA DASAR DAN LANDASAN PENGEMBANGAN KURIKULUM 2013." *Inspiratif Pendidikan* (2017).
Aldo Redho Syam. "POSISI MANAJEMEN KURIKULUM DAN PEMBELAJARAN DALAM PENDIDIKAN." *MUADDIB:Studi Kependidikan dan Keislaman* (2011).
Voogt, J., O. Erstad, C. Dede, and P. Mishra. "Challenges to Learning and Schooling in the Digital Networked World of the 21st Century." *Journal of Computer Assisted Learning* (2013).
Wang, Alf Inge, Bian Wu, D. Burgos, Pablo Moreno-ger, J. L. Sierra, Baltasar Fernandez-Manjon, M. Specht, et al. *Introducton to Gamification*. *International Journal of Computer Games Technology*, 2010.