ABSTRAK

Nina Novsyiah Sihombing, NIM 4193311081 (2023). Pengembangan Buku Digital Berbasis PMR untuk Meningkatkan Kemampuan Literasi Numerasi dan *Self-Efficacy* Siswa Kelas VIII SMP.

Penelitian ini bertujuan untuk: (1) mengetahui kevalidan buku digital berbasis pendekatan Pendidikan Matematika Realistik (PMR) yang dikembangkan; (2) mengetahui kepraktisan buku digital berbasis pendekatan Pendidikan Matematika Realistik (PMR) yang dikembangkan; (3) mengetahui keefektifan buku digital berbasis pendekatan Pendidikan Matematika Realistik (PMR) yang dikembangkan; (4) mengetahui peningkatan kemampuan literasi numerasi dengan menggunakan buku digital berbasis pendekatan Pendidikan Matematika Realistik (PMR) yang dikembangkan; (5) dan mengetahui peningkatan self-efficacy peserta didik dengan menggunakan buku digital berbasis pendekatan Pendidikan Matematika Realistik (PMR) yang dikembangkan. Instrumen penelitian yang digunakan adalah lembar validasi RPP, lembar validasi buku digital berbasis pendekatan Pendidikan Matematika Realistik (PMR) oleh ahli materi dan ahli media, lembar validasi tes kemampuan peserta didik, dan lembar validasi angket respon guru dan peserta didik, dan lembar validasi angket *self-efficacy*. Secara keseluruhan RPP, buku digital berbasis pendekatan Pendidikan Matematika Realistik (PMR), instrumen tes, dan angket dinyatakan valid oleh validator, kemudian dilakukan uji coba keterbacaan dan uji coba lapangan. Hasil penelitian menunjukan bahwa: (1) Bahan ajar berupa buku digital berbasis pendekatan Pendidikan Matematika Realistik (PMR) telah memenuhi kriteria kevalidan dengan nilai rata-rata validasi oleh ahli materi adalah sebesar 3,62 dan nilai rata-rata validasi oleh ahli media adalah sebesar 3,79 telah memenuhi kriteria sangat layak digunakan dalam rentang $3,1 \leq x \leq 4$, (2) Bahan ajar berupa buku digital berbasis pendekatan Pendidikan Matematika Realistik (PMR) yang dikembangkan telah memenuhi kepraktisan berdasarkan angket respon guru sebesar 96,43%, sedangkan sebesar 89,34% untuk angket respon peserta didik dengan respon yang positif telah mencapai $76\% - 100\%$ dalam kategori sangat praktis, (3) Bahan ajar berupa buku digital berbasis pendekatan Pendidikan Matematika Realistik (PMR) yang dikembangkan telah memenuhi kriteria efektif, yang ditinjau dari: (a) ketuntasan indikator/tujuan pembelajaran pada indikator I (kemampuan untuk menganalisis informasi yang ada di tabel, grafik, dan gambar, dsb) dengan perolehan rata-rata sebesar 84,61%, indikator II (mampu menghubungkan berbagai bentuk representasi baik berupa gambar ataupun simbol dalam menyelesaikan soal berkonteks nyata) sebesar 80,76%, dan indikator III (mampu menafsirkan (Interpretasi) matematika dan menggunakan strategi matematika untuk memecahkan konteks masalah dan memberikan argumen logis terhadap proses atau prosedur kehidupan nyata) sebesar 80,76%. Dimana hasil analisis menunjukkan semua indikator yang dirumuskan sudah berada pada ≥75% dan dapat dicapai oleh 65% peserta didik, sehingga dapat diambil kesimpulan bahwa ketuntasan indikator tercapai; (b) Nilai ketuntasan belajar peserta didik secara klasikal pada uji lapangan sebesar 88,46% telah mencapai ≥ 85% peserta didik yang tuntas KKM yaitu 70; (c) serta respon peserta didik sebesar 89,34% yang mencapai minimal 80% respon positif, (4) Terjadinya peningkatan literasi numerasi

ditinjau per indikator yaitu indikator I (kemampuan untuk menganalisis informasi yang ada di tabel, grafik, dan gambar, dsb) dengan *N-Gain* sebesar 0,66 dalam kategori sedang, indikator II (mampu menghubungkan berbagai bentuk representasi baik berupa gambar ataupun simbol dalam menyelesaikan soal berkonteks nyata) dengan *N-Gain* sebesar 0,64 dalam kategori sedang, dan indikator III (mampu menafsirkan (Interpretasi) matematika dan menggunakan strategi matematika untuk memecahkan konteks masalah dan memberikan argumen logis terhadap proses atau prosedur kehidupan nyata) dengan *N-Gain* sebesar 0,64 dengan kategori sedang. Berdasarkan analisis *N-Gain* diperoleh rata-rata peningkatan kemampuan literasi numerasi secara keseluruhan sebesar 0,65 dalam kategori sedang, (5) *Self-efficacy* peserta didik meningkat di uji coba lapangan yaitu: indikator *magnitude/level* diperoleh peningkatan *N-Gain* sebesar 0,35 dalam kategori ssedang dan indikator *generality* diperoleh peningkatan *N-Gain* sebesar 0,40 dalam kategori sedang. Sedangkan indikator *strengh*/kekuatan diperoleh rata-rata peningkatan *N-Gain* yaitu sebesar 0,40 dalam kategori sedang. Adapun peningkatan *self-efficacy* secara *N-Gain* keseluruhan di uji lapangan diperoleh sebesar 0,39 dalam kategori sedang.

Kata Kunci: Buku digital, berbasis pendekatan Pendidikan Matematika Realistik (PMR), literasi numerasi, *self-efficacy*.

ABSTRACT

Nina Novsyiah Sihombing, NIM 4193311081 (2023). Development of a Digital Book Based on a RME to Improve the Numeracy Literacy and Self-Efficacy of Class VIII Students of Middle School.

This study aims to: (1) determine the validity of digital books based on the Realistic Mathematics Education (PMR) approach developed; (2) knowing the practicality of digital books based on the Realistic Mathematics Education (PMR) approach developed; (3) determine the effectiveness of digital books based on the Realistic Mathematics Education (PMR) approach developed; (4) knowing the increase in numeracy literacy skills by using digital books based on the Realistic Mathematics Education (PMR) approach that was developed; (5) and find out the increase in self-efficacy of students by using digital books based on the developed Realistic Mathematics Education (PMR) approach. The research instruments used were lesson plans validation sheets, validation sheets for digital books based on the Realistic Mathematics Education (PMR) approach by material experts and media experts, validation sheets for student ability tests, and validation sheets for teacher and student response questionnaires, and self-questionnaire validation sheets. self-efficacy. Overall the RPP, digital books based on the Realistic Mathematics Education (PMR) approach, test instruments, and questionnaires were declared valid by the validator, then readability trials and field trials were carried out. The results showed that: (1) Teaching materials in the form of digital books based on the Realistic Mathematics Education (PMR) approach met the validity criteria with an average value of validation by material experts of 3.62 and an average value of validation by media experts of 3.79 has met the criteria of very suitable for use in the range $3.1 \leq x \leq 4$, (2) Teaching materials in the form of digital books based on the Realistic Mathematics Education (PMR) approach developed have fulfilled practicality based on teacher response questionnaires of 96.43%, while 89.34% for the student response questionnaire with a positive response has reached $76\% - 100\%$ in the very practical category, (3) Teaching materials in the form of digital books based on the Realistic Mathematics Education (PMR) approach developed have met the criteria of being effective, in terms of: (a) the completeness of the indicators/learning objectives in indicator I (ability to analyze information in tables, graphs and pictures, etc.) with an average acquisition of 84.61%, indicator II (ability to connect various forms representation in the form of images or symbols in solving problems with real contexts) of 80.76%, and indicator III (able to interpret (interpret) mathematics and use mathematical strategies to solve context problems and provide logical arguments against real-life processes or procedures) of $80,76\%$. Where the results of the analysis show that all the indicators formulated are already at $\geq 75\%$ and can be achieved by 65% of students, so it can be concluded that the completeness of the indicators is achieved; (b) The classical completeness score of the students in the field test was 88.46%, which reached $\geq 85\%$ of the students who completed the KKM, namely 70; (c) as well as student responses of 89.34% which achieved a minimum of 80% positive responses, (4) There was an increase in numeracy literacy in terms of indicators, namely indicator I (ability to analyze information in tables, graphs and pictures, etc.) with an N-Gain of 0.66 in the

medium category, indicator II (able to connect various forms of representation either in the form of images or symbols in solving real context problems) with an N-Gain of 0.64 in the medium category, and indicator III (able to interpret (Interpretation) of mathematics and using mathematical strategies to solve the context of the problem and provide logical arguments against real-life processes or procedures) with an N-Gain of 0.64 in the medium category. Based on the N-Gain analysis, it was obtained that the average increase in numeracy literacy skills as a whole was 0.65 in the medium category, (5) Student self-efficacy increased in field trials, namely: the magnitude/level indicator obtained an increase in N-Gain of $0,35$ in the medium category and the generality indicator obtained an increase in N-Gain of 0.40 in the medium category. While the strength indicator obtained an average N-Gain increase of 0.40 in the medium category. As for the increase in self-efficacy as a whole N-Gain in the field test it was obtained at 0.39 in the medium category.