

**PENGEMBANGAN E-LKPD BERBASIS TEORI APOS UNTUK
MENINGKATKAN KEFASIHAN PROSEDURAL SISWA KELAS IV SD
NO 2 LEGIAN TAHUN AJARAN 2024/2025**

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ABSTRAK

Penelitian pengembangan ini dilatarbelakangi atas permasalahan rendahnya hasil belajar matematika khususnya pada materi bilangan cacah. Penelitian ini bertujuan (1) mendeskripsikan rancang bangun E-LKPD berbasis teori APOS untuk meningkatkan kefasihan prosedural, (2) mengetahui kelayakan E-LKPD berbasis teori APOS untuk meningkatkan kefasihan prosedural, dan (3) mengetahui efektivitas E-LKPD berbasis teori APOS untuk meningkatkan kefasihan prosedural. Penelitian pengembangan ini menggunakan model pengembangan ADDIE. Subjek penelitian ini adalah siswa kelas IV sekolah dasar yang berjumlah 28 siswa. Metode pengumpulan data yang digunakan adalah metode wawancara, observasi, angket, dan tes. Analisis data yang digunakan adalah analisis deskriptif kuantitatif, kualitatif, dan analisis statistik inferensial. Hasil penelitian ini berupa (1) rancang bangun E-LKPD berbasis teori APOS yang digambarkan melalui *flowchart* dan *storyboard*, (2) Kelayakan E-LKPD berbasis teori APOS menunjukkan hasil dari uji ahli isi materi pembelajaran sebesar 100% (sangat baik), uji ahli desain intruksional sebesar 95,38% (sangat baik), uji ahli media pembelajaran sebesar 91,67% (sangat baik), uji coba perorangan sebesar 93,75% (sangat baik), dan uji coba kelompok kecil sebesar 92,13% (sangat baik), (3) Efektivitas E-LKPD berbasis teori APOS berdasarkan hasil uji-t *sample dependent* diperoleh t_{hitung} sebesar 43,324 dan t_{tabel} berdasarkan taraf signifikansi 5% dengan $db = n - 1 = 28 - 1 = 27$ sebesar 1,703. Hasil tersebut menunjukkan bahwa $t_{hitung} > t_{tabel}$ ($43,324 > 1,703$), sehingga H_0 ditolak dan H_1 diterima. Maka dapat disimpulkan bahwa E-LKPD berbasis teori APOS untuk meningkatkan kefasihan prosedural sangat layak dan efektif digunakan dalam proses pembelajaran dikarenakan dapat meningkatkan hasil belajar siswa kelas IV SD No 2 Legian.

Kata Kunci : Pengembangan, E-LKPD, APOS, dan Kefasihan Prosedural.

**DEVELOPMENT OF E-LKPD BASED ON APOS THEORY TO IMPROVE
PROCEDURAL FLUENCY OF GRADE IV STUDENTS OF SD NO 2
LEGIAN IN THE 2024/2025 ACADEMIC YEAR**

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ABSTRACT

This development research is motivated by the problem of low mathematics learning outcomes, especially in the material of whole numbers. This study aims to (1) describe the design of E-LKPD based on APOS theory to improve procedural fluency, (2) determine the feasibility of E-LKPD based on APOS theory to improve procedural fluency, and (3) determine the effectiveness of E-LKPD based on APOS theory to improve procedural fluency. This development research uses the ADDIE development model. The subjects of this study were 28 grade IV elementary school students. The data collection methods used were interview, observation, questionnaire, and test methods. The data analysis used was quantitative descriptive analysis, qualitative analysis, and inferential statistical analysis. The results of this study were (1) the design of E-LKPD based on APOS theory which was described through flowcharts and storyboards, (2) The feasibility of E-LKPD based on APOS theory showed the results of the expert test of learning material content of 100% (very good), the instructional design expert test of 95.38% (very good), the learning media expert test of 91.67% (very good), individual trials of 93.75% (very good), and small group trials of 92.13% (very good), (3) The effectiveness of E-LKPD based on APOS theory based on the results of the dependent sample t-test obtained a t-count of 43.324 and a t-table based on a significance level of 5% with $db = n - 1 = 28 - 1 = 27$ of 1.703. The results show that $t_{count} > t_{table}$ ($43.324 > 1.703$), so H_0 is rejected and H_1 is accepted. So it can be concluded that E-LKPD based on APOS theory to improve procedural fluency is very feasible and effective to be used in the learning process because it can improve the learning outcomes of fourth grade students of SD No. 2 Legian.

Keywords: Development, E-LKPD, APOS, and Procedural Fluency.