

INTISARI

MODEL ASESMEN UNTUK MENENTUKAN TINGKAT KEMAMPUAN PEMBELAJAR PADA E-LEARNING

Oleh

Wenty Dwi Yuniarti
19/453406/SPA/006725

Pembelajaran online yang sistematis, logis, terstruktur, dengan asesmen memotivasi bersesuaian dengan paradigma pembelajaran *Outcome-Based Education* (OBE) saat ini. Sayangnya, *electronic learning* (*e-Learning*) memiliki keterbatasan penyediaan instrumen asesmen sesuai kebutuhan, seperti asesmen aspek kompleks dan detil serta pengakomodasian data asesmen numerik maupun linguistik. Permasalahan lain terkait aktivitas pembelajar dimana kehadiran dan keterlibatan pembelajar ternyata berdampak pada performa dan hasil belajar. Penelitian ini bertujuan untuk membangun model asesmen pembelajar untuk pembelajaran online secara baik di perguruan tinggi.

Penelitian ini mengusulkan suatu model asesmen untuk menentukan tingkat kemampuan pembelajar pada *e-Learning* yang meliputi rancangan pembelajaran dengan pendekatan OBE, penentuan tingkat kemampuan, analisis performa aktivitas, dan rekomendasi. Dalam rangka mengatasi keterbatasan instrumen serta mengakomodasi asesmen komprehensif, model ini menambahkan instrumen *electronic rubric* (*e-Rubric*) pada *e-Learning*. Ragam data asesmen, baik numerik maupun linguistik diunifikasi menggunakan *fuzzy linguistik 2-tuple*, menghasilkan tingkat kemampuan dalam bentuk 2 tuple (s, α) . Analisis performa berdasar data *event logs* menggunakan teknik statistik deskriptif dan *alignment-based conformance checking*, menghasilkan lima variabel performa aktivitas, yaitu frekuensi kehadiran, durasi kehadiran, frekuensi akses materi, jumlah *posting* pendapat dalam forum, serta kesesuaian aktivitas pembelajar dengan desain aktivitas. Nilai performa setiap variabel diubah menjadi tingkat performa dalam tiga kategori: Tinggi, Sedang atau Rendah. Tingkat kemampuan dan tingkat performa diproses menggunakan *rule-based* menghasilkan rekomendasi tahapan pembelajaran (Sub-CPMK) dan arahan performa aktivitas.

Pengukuran performansi model menggunakan validasi isi, *Standard Error of Measurement* (SEM) dan angket penerimaan model oleh pengguna. Koefisien validasi isi 0.91. Nilai *standard error* performansi dengan model representasi *fuzzy linguistik 2-tuple* sebesar 3.385. Nilai ini lebih kecil dibandingkan tanpa model representasi sebesar 3.853. Berdasar angket diketahui penerimaan pengguna atas model sebesar 3.617 atau 90.43% yang berarti diterima dengan sangat baik.

Kata kunci : asesmen, *e-Learning*, tingkat kemampuan, analisis performa aktivitas, *fuzzy linguistik 2-tuple*, *alignment based conformance checking*, rekomendasi, *rule-based*

ABSTRACT

ASSESSMENT MODEL TO DETERMINE THE LEARNER'S ABILITY LEVEL IN E-LEARNING

By

Wenty Dwi Yuniarti
19/453406/SPA/006725

Systematic, logical, structured online learning with motivating assessments is in line with the current Outcome-Based Education (OBE) learning paradigm. However, e-Learning has limitations in providing assessment instruments according to needs, such as assessing complex and detailed aspects and accommodating a variety of numerical and linguistic assessment data. Moreover, the presence and involvement of learners affect their performance and learning outcomes. This research aims to build a learner assessment model for good online learning that can be implemented generally in higher education.

This research proposes an assessment model to determine learner's ability level in e-Learning. The assessment model features learning design using the OBE approach, learner's ability level, activity performance analysis, and recommendations. To overcome instrument limitations and accommodate comprehensive assessments, this model adds the e-Rubric instrument to e-Learning. Various numerical and linguistic assessment data are unified using 2-tuple fuzzy linguistic, producing ability levels in the form of 2 tuples (s, α) . Performance analysis was based on event logs data using descriptive statistical techniques and alignment-based conformance checking, resulting in five activity performance variables, namely frequency of attendance, duration of attendance, frequency of material access, number of opinion posts in forums, and conformity of learner activities with activity design. The performance value of each variable is converted into performance levels: High, Medium, or Low. The ability level and performance level are processed using rule-based methods to produce recommendations for learning stages (lesson learning outcomes) and activity performance directions.

The model performance is measured using content validity, Standard Error of Measurement (SEM) and a user acceptance questionnaire. Content validity coefficient is 0.91. The standard error value of performance using 2-tuple fuzzy linguistic representation model is 3.385. This value is smaller than without a representation model, which was 3.853. Furthermore, the questionnaire results show that user acceptance of the model was 3.617 (90.43%), meaning it was very well received.

Keyword : assessment, e-Learning, ability level, activity performance analysis, 2-tuple fuzzy linguistic, alignment based conformance checking, recommendation, rule-based method