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METAKOGNITIVNI PROBLEMSKI BAZIRANI MODULI: ŠTA DALJE?

METACOGNITIVE PROBLEM-BASED MODULES: WHAT'S NEXT?

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SAŽETAK

Metakognitivni problemski bazirani moduli (MKPB) imaju modularni i fleksibilni dizajn, budući da su koncipirani kao sukcesivno rešavanje problema korak po korak usmeravano vođenim pitanjima.Postojeći MKPB moduli trenutno omogućavaju rešavanje problema unutar jedinstvenog formata i njihova prva nadogradnja može ići u pravcu kombinovanja različitih medijskih formata, uključujući tekst, slike, zvuk i video, čime se povećava angažovanje studenata i podstiče multimodalno usvajanje znanja.Primena algoritama asocijativnog učenja (npr. Apriori, Eclat, FP-Growth) omogućava prepoznavanje čestih obrazaca grešaka i veza među koracima u rešavanju problema. U okviru MKPB modula identifikacija obrasca rešavanja problema i najčešćih grešaka omogućava generisanje personalizovanih preporuka studentima kako da unaprede proceduru rešavanja, a samim tim i svoje znanje.Modularnost MKPB u okviru Moodle platforme otvara mogućnost kreiranja transdisciplinarnih modula usmerenih na rešavanje kompleksnih i višestepenih problema. U zavisnosti od odabrane teme, moguće je kombinovati više pojedinačnih MKPB modula u zajedničku, povezanu strukturu, čime se omogućava transdisciplinarni pristup učenju i rešavanju problema u realnim kontekstima. Ovakav pristup omogućava razvoj višestepenih MKPB celina, koje povezuju različite discipline u jedinstveni tok učenja.Kao dodatna podrška metakognitivnom razvoju studenata, može se na početku kursa primeniti Metacognitive Awareness Inventory upitnik, čiji rezultati, uz pomoć postojeće generativne veštačke inteligencije, mogu poslužiti za kreiranje prilagođenih preporuka studentima o tome kako da unaprede svoje metakognitivne sposobnosti.Obučeni modeli generativne veštačke inteligencije mogu se iskoristiti i za kreiranje novih MKPB modula na osnovu strukture i primera koji se daju kao mustre. Modularnost MKPB i otvorenost Moodle platforme pružaju izuzetno široke mogućnosti za dizajn i prilagođavanje, ograničene pre svega znanjem, iskustvom i kreativnošću autora.
Ključne reči: metakognicija, problemski bazirano učenje, veštačka inteligencija

ABSTRACT

Metacognitive problem-based learning modules (MCPB) are characterized by a modular and flexible design, as they are conceived as step-by-step problem-solving processes guided by structured prompting questions.The existing MPBL modules currently support problem-solving within a single format, and their first stage of enhancement may involve integrating diverse media formats - such as text, images, audio, and video - which increases student engagement and promotes multimodal knowledge acquisition.

The application of association rule learning algorithms (e.g., Apriori, Eclat, FP-Growth) enables the identification of frequent error patterns and connections between steps in the problem-solving process. Within MCPB modules, recognizing such patterns and common mistakes allows for the generation of personalized recommendations for students on how to improve their problem-solving strategies and, consequently, their knowledge.The modular nature of MCPB within the Moodle platform enables the development of transdisciplinary modules designed to address complex and multi-level problems. Depending on the selected topic, multiple individual MCPB modules can be combined into an integrated structure, facilitating a transdisciplinary approach to learning and problem-solving in real-world contexts. This approach supports the creation of multi-phase MCPB units that connect various disciplines into a cohesive learning sequence.As additional support for the metacognitive development of students, the Metacognitive Awareness Inventory (MAI) can be administered at the beginning of a course. The results interpreted through generative artificial intelligence can be used to create tailored recommendations for students on how to enhance their metacognitive skills.Trained generative AI models can also be used to develop new MCPB modules based on structural templates and sample cases provided as examples.

Finally, the modularity of MPBL and the openness of the Moodle platform offer extensive opportunities for instructional design and customization limited primarily by the knowledge, experience, and creativity of the module developers.
Keywords: metacognition, problem-based learning, artificial intelligence