!" 004.65:004.89 (045)

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МЕТОДИКА РОЗРОБКИ АДАПТИВНИХ ЕЛЕКТРОННИХ НАВЧАЛЬНИХ КУРСІВ

&(*+-%(/0%12(3+(*+2%12%+368:1$6$
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"#$& '))*,'"*#- '#./1&*3$)*5'6 ,$9/6 :;/<$ =>'",$9@##BB;/C3' >'"E/3/,;$.*F',5',)* 1*FH#/; ,>1/,*"J@##B '#./1&*5'K#/ -/C,'3#-/E/ C@1@"/,$9)* &/J<$,'C3L ,'"'"*<@#/-E/ "/C3H>H"/ &*3@1'*<',. M<@1$,'"'"*<@#'K1/O/3') #*,P*<-#$&$ 1@CH1C*&$C;<*"#L-=3-CB#*<*E/"J@##B), 'B);H,$;<*"*P -C3H"@#3 H#@&/J<$,<L=E#HP;H"*>3*5'L ;H1CH>'" ,$&/E$;/1$C3H,*P*. Q C3*33' 1/)E<B"*=3-CB&@3/"$;* 1/)1/O;$ *"*>3$,#$F @<@;31/##$F #*,P*<-#$F;H1C',P@1@#)*<') ,$&/E ;/1$C3H,*P', 3* 6FO*)/,$K 1',@#-)#*#-

Ключові слова: (<(=$13%-%(3>(/0%?($68+(/1, 6/6#$8-%%%(3>(/0%#48:1, %(3>(/0%12=8-*6: , $6:$-3+@(3<(%%A

Вступ

B4>(:%12 8-@31$-# 6/6#$8-%%-D-:3+$1 G(@4H$0%A(=-$4I%-?4 =+<J84%$+-+%K-8?(*+2%1L$6L%-/-N+,2 G+/0O+:$0@%1L86(/+@4H$0>A686@$6L%-/-N+D6/6#$-8-%%1L N+=68$6#:$-31L<-#4?6%$+,3 A#+3=8-3(<I4P$0:A #-%:-8*+4?-? W3C. Q/6-#8+?=86<:$(3/6%1L3 $6#:$-3-?4 K-8?(-$+<(%1L3 ?686I+ +:%4I-36/1>6@%#(+/0-#+:$0<-#4?6%$+3 6/6#$8-%%-K2-8?+, A#(%6=+<<(H$0:A%<6#:(*+(D- =8A?-?4 <--:$4=4. S-<+G%<(%%?-I4$0 G4$131#--81:$(%+@%(3>(/0%-P ?6$-P, (/6 %6?(-P$0 @(=-3%6%1L6$(<(%1L, U- 4%6?-I-/13/PH 8-G-$4@*1?1 <(%1?13 N+=68$6#:$-3-?4 K-8?($+.

!-:$4=%+:$0 +?(:O$(G%+:$0-G:AN+36/6#$8-%%1L%(3>(/0%1L #48:+3 (V&")/1O6 =-N/1G/PP$0 :#/(<%+:$0 (%(/+@4A#-:$+2-N- @?+:$-3%-N%(=-3%6%%@$--><#1 @-84@(3<(%%0%(3>(/0%-N- =8-*6:4 (&S). X# +<- =-A31 Z%$68%6$4# +%(:0-N-<%+8+O6%%A8- <-*+/0%+:$0@(:$-:43(%%A=63%-D%K-8?(*+D %(3>(/0%-?4 =8-*6:+ ?-I6 =812%A$11O6 6#:=68$@=86<?6$%-DG/(:$+ (S\ ) @%(%$-O4# $((%(/+@=-$8+G%-N=/A &S $6#:$4%68+<#-=-$86G4I@(36/1#-N>(:4.

\#86?-P =8-G/6?-P =81 K-8?4-3(%%+V&" H 3+<:4$%+:$0-=686<%0-N-(%(/+@4#-%$1%N6%$4-81:$43(>+3 $(O31<#-N-@3-8-$%-N@'3A@#4U-<- @(:3-H%%?A($68+(/4. !(%+ %6<-/+#14%6?-I/1 -3/PP$0 N%4>##-81N43($1#48: %(3>(%%AU- =81@3-<1$0- %6A#+:%-N%(<(%%A-:3+$%+L-:/4N.

\$I6 , (#$4(/0%-P %(4#-3–=81#/(<%-P =8-G/6?-P, U- =+</AN(I31-8+O6%%PH 3+<:4$%+:$0 :4>(:%1L V&" 3/(:$13-:$+ (<(=$43(%%A@(N(/0%-DG(@1@%(%8S %(-:%-3+(3$-?($1>%-N-#-81-N43(%%A1<4 $(=-8A<#4=86<:$(3/6%%A?($68+(/+3V&" @?-I/13+:$P =+<$81?#1+%$68(#$13%K4%#*+2^(@-? @+%O1?1K(#$-8(?1, =8-G/6?(=81@3-<1$0- @%(>%-D @(/6I%-:$+ &S 3+< 6#:=68$(-31#/(<(>(.

Постановка проблеми

Z%K-8?(*+2%$6L%-/-N+D36<4$0<--<-#-8+%%-D?+%?6$-<+3+:=-:-G+3 -$81-?(%%A%-31L@%(%06K6#$13%-D3N(%+@(*+D=+@%(3(/0%<D-A/0%-:$+$4<6%$(%(-:%-3+ +%<13+<4(/+@(%(D>(%%A81 @G686I6%%+*+/+:%-:$+ 3:0-N- %(3>(/0%-N-=8-*6:4 @(8(L4%-# =8-N8(?-3(%-:$+ $(<1%(?+>%-D(=$(*+D%(3>(/0%1L=8-N8(?+%(3>(/0%-N-=8-*6:4 <- =-$86G318-G-%1*$3(+:4:=+/0:$3(. !/A *1L *+/62 ?-I -%(:$3-81$1 (<(=$13%-6/6#$8-%%%(3>(/0%-#48:1.

!/A =-G4<-31 (<(=$13%1L6/6#$8-%%1L%(3>(/0%1L#48:+3=-$8+G%318+O1$1%(:$4=%@(3<(%%A

1) 31@%(>1$@?+;$8-@8-G1$1$84-#$484+@(:-G136<6%%A(@1@%(%1:$6-?1 $6:$43(%%A

2) :K-8?43($1 G(@4@%(%6/6#$8-%%1L%(3>(/0%1L#48:+3=86<?6$%-DG/(:$+$(@(3<(%%A $6:$43(%%A$4<6%$+34=8(3/+%%A%(3>(/0%1?=8-*6:-? +$6:$43(%%A$((/N-81$?+3 4=8(3/+%%A1:$6-?-P .

@(N(/0%-?4 1=(<#4@(3<(%%A@8-G#1 (<(=$13%1L6/6#$8-%%1L%(3>(/0%1L#48:+3?-I6 G4$1@36<6%%(: 4<-:#- -%(/6%%A@(:-G+3K-8?(/+@(*+D@%(%08-:$4<6%$+3K-8?(/+@(*+D@%(%08- %(3>(/0%12=8-*6: +$6:$43(%%A(-*+%#12-N-86@4/0$($+38-@8-G*+?($6?($1>%1L?- -<6/62 -:%-3%1L#-?=-%6%$+3<(=$13%1L%(3>(/0%1L#48:+3$(DL(/N-81$?4 4=8(3-/+%%A

Формалізація даних та знань

S81 K-8?(/0%-?4 =86<:$(3/6%%+@%(%08- =86<?6$%4-G/(:$0 =-31%%(38(L-343($1:A DD#+/0#+:%($-8-%(4 31-N/A<+<(%1L -:#+/0#1 =-%A$$A<@%(%%A3#/P>(H 3 :6G6 =-%A$$A<(%%, A#+?- -I4$0 3+<=-3+<($1G6@/+>%(#$+3+3+<%-:1%?+I 6/6?6%$(?1 U- 4$3-8PP$0*+ K(#$1 [1-2].

!/A 4%+K+#(*+D(=$13%1L%(3>(/0%1L#48:+3?-<6/+ -G'H#$+34=8(3/+%%A$(=86<?6$%-DG/(:$+ %(3>(%%A$6:$43(%%A =-31%%+@(G6@=6>43($1<(%%A @%(%0%A H<1%1?1%-? !/A *0-N- <4I6 <-G86=+<L-<A$0:6?(%$1>%?686I+ @%(%08-6<?6$%-DG/(:$+. S86<:$(3/6%%A@%(%0U- G(-@4P$0:A%(:6?(%$1>%12686I(L , =-/AN(H3 $-?4, U- =86<?6$%(-G/(:$0 8-@N/A<(H$0:AA# :4#4=%+:$0-G'H#$+3(:4$%-:$62,=-%A$)0+@'A@#+3+<%-:1%?+I %1?1[2].

`-8?(/0%- ?686I63+ ?-<6/+ @(<(P$0:A4 31N/A<+

$$H=<I,C_1,C_2,\ldots,C_n, Q>,$$

<6I – G6@/+>%K-8?(*+2%1L-?=-%6%$+3U- @G68+N(P$0:A34@/(L?686I+; $C_1, C_2,$ ..., C_n – $1=1@'A@#+?3-I +%K-8?(*+2%1?16/6?6%$(?1, Q – 3+<-G8(I6%%A#63:$(-%-3/PH 3+<=-3+<%+:$0-I G6@/+>>P%K-8?(*+2%1L-?=- -%6%$+3686I+.

S6863(N(?1:6?(%$1>%1L?686I , A#@(:-G+3-<(%%A@%(%0DL36/1#+318(@%+?-I/13-:$+ , %(->%+:$0:1:$6?1 @%(%0=86<:$(3/6%-DN8(K+>%"8+? $-N-, :6?(-%$1>%?686I+ ?(P$0 <-G86(=8-G-3(%4%(4#-34G(@4 31N/A<$6-8+DN8(K+3

Розробка моделі і алгоритму функціонування адаптивних електронних навчальних курсів

"-?=/6#:%(?-<6/0 (<(=$13%1L%(3>(/0%1L#48:+3G4<4H$0:A%(-:%-3+ ?- -<6/62 =86<?6$%-DG/(:$+, #/(:1K+#(*+D:$4<6%$+3-?=-%6%$+31:$6?1 4=8(3/+%%A$6:$43(%%A?$6:$43(%%A@%(%08-6<?6$%-DG/(:$+ :$4<6%$+3a6 =-31%%(G4$1 G(N($-8+3%63?(<6/0 4 31N/A<+K4%#*+-%(/0%-D6?(%$1>%-D?686I+ %(368L-%0-?48+3%=86<:$(3/6%%A@%(%08-@N(/4I6%-D:1:$6?1 $6:$43(%%A#(#6843(/(G 313-<-? 31:%-3#+3%(%1I%+L8+3%AL?-<6/+ $6:$43(%%A@%(%04@(N(/0%P3(/(86@4/0$($31:%-3#+34:+L8+3%+3

"-?=/6#:%12 (/N-81$? K4%#*+-%43(%%A<(=$13%1L%(3>(/0%1L#48:+3G4<4H$0:A%(=+<:$(3#-%*6=$4(/0%-D?-<6-/+, A#(3+<-G8(I(H:4$%+:$0-8-*6:4 K4%#*+-%43(%%A1:$6?1. "-?=/6#:%12 (/N--81$? =-31%6%4=8(3/A$1 #-?=-%6%$(?1(<(=$13%1L%(3>(/0%1L#48:+3+-G8-G/A-$1 +%K-8?(*+P=8- 86@4/0$($1$6:$43(%

Розробка тестових завдань

\:%-3%1?1 31?-N(?1 <- $6:$-31L@(3<(%%H

– %6@(/6I%+:$0@(3<(%0

– =8-:$-$(+#-?=(#$%+:$0K-8?4/P -3(%%A1$(%0

– 31#/P>6%%A%6-<%-@%(>%-N--@4?+%%1$(%%A

!/A 8-@8(L4%#4-#(@%1#+G3K6#$1-3%-:$+$6:$4G4<4H$0:A($81*A 86@4/0$($+3$6:$43(%%A31@%(>(H$0:A/(<%+:$0