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ИННОВАЦИОННЫЕ ПРОЦЕССЫ В ИССЛЕДОВАТЕЛЬСКОЙ И ОБРАЗОВАТЕЛЬНОЙ ДЕЯТЕЛЬНОСТИ

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В сборник включены тезисы докладов молодых ученых, аспирантов, соискателей и магистрантов, представленных на международной конференции, посвященной инновационным решениям актуальных вопросов современной науки и техники.

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LATENT STRUCTURES OF TEACHERS AND STUDENTS IN EVALUATING THE PEDAGOGICAL USABILITY OF E-LEARNING MATERIALS FOR LANGUAGE TEACHING

Abstract: The paper reports on a study which aimed to investigate how different the latent structures of teachers and students are in evaluating the pedagogical usability of e-learning materials for foreign language teaching. Factor analysis showed similarities between the two participant groups and a more consistent way of evaluation by teachers.

Keywords: pedagogical usability, e-learning, material design and development, foreign language teaching.

Little research has been carried out in the evaluation of the pedagogical usability of e-learning materials [1–6]. The main aim of this empirical study was to investigate how different are the latent structures of teachers and students which underline the evaluation of e-learning materials for foreign language teaching.

It is reasonable to expect that the opinions of teachers of the e-learning materials would differ from the opinion of the students and that certain difference would be notable.

For this study, four sets of e-learning materials were developed for teaching grammar and vocabulary and for developing reading and listening skills at an advanced English level (C1 CEFR) in accordance with the syllabus for this level at New Bulgarian University (NBU). (The materials can be viewed at http://ewbooks.info/survey.)

The participants in the study were two groups – 20 language teachers from 8 countries and 80 students currently undertaking their C1 English language courses at NBU. The teacher's group comprises 10 male and 10 female language teachers from 9 nationalities who are known to develop interactive online learning content and who could act as expert evaluators. The distribution by nationality is as follows: 8 teachers from Bulgaria, 5 from the UK, and 1 from each of the other countries, namely Australia, France, Germany, The Netherlands, New Zealand, Poland, and the USA. Additionally, 8 (40 %) of the teachers were native speakers of English; the rest are speakers of their mother tongue depending on their country of origin.

The students' group includes 80 students – 48 male (60 %) and 32 female (40 %) from two universities. The biggest age sub-group (20–30 years) includes 67 students (83.75 %).

A questionnaire (PLMQ), developed by Nokelainen [6] from the University of Tampere, Finland, was used to investigate the pedagogical usability of the e-learning materials. The randomized questions fall into the following ten categories of pedagogical usability: 1. Learner control, 2. Learner activity, 3. Cooperative/Collaborative learning, 4. Goal orientation, 5. Applicability, 6. Added value, 7. Motivation, 8. Valuation of previous knowledge, 9. Flexibility, 10. Feedback. (The questionnaire can be seen at http://goo.gl/c1aJu.)

Both students and teachers were to do the online exercises and to evaluate the pedagogical usability of each one using the 60-item questionnaire. The questionnaire was adapted to use a 6-point Likert scale from 1 (strongly disagree) to 5 (strongly agree), 6 – N/A.

During the statistical analysis questions with numbers 16–18 were removed because they were inapplicable to the e-materials, i.e. there were no additional utility programs necessary for the material and such were thus not provided. Questions 57–60 were also removed from the analysis since they concern only teachers and were thus not answered by the students. Hence the researcher analysed 53 questions (indicators). Also during the analysis, the answers of 20 students were randomly chosen to match the number of teacher responses.

Factor analysis was performed on the correlation matrices with Pearson correlation coefficient separately for each set of e-materials and for each participant group. The analysis was performed at a starting configuration of factor models which assumes the existence of 53-factor structure, i.e. assuming that the number of latent factors equals the number of dependent variables (indicators) at a minimal value of the factors λ_{Fi}=0.00. The reason for such a configuration is that, in theory, it is possible that the rating given by the research participants on a given indicator is fully independent of the rest of the indicators in the questionnaire. In other words, the researcher assumed that it was possible that each answer to a question could correspond to a separate latent factor and that all the factors are independent of each other. The following graph shows the profiles of the factors configuration of the two groups of participants for material 4, which are similar to the profiles of the other three materials.

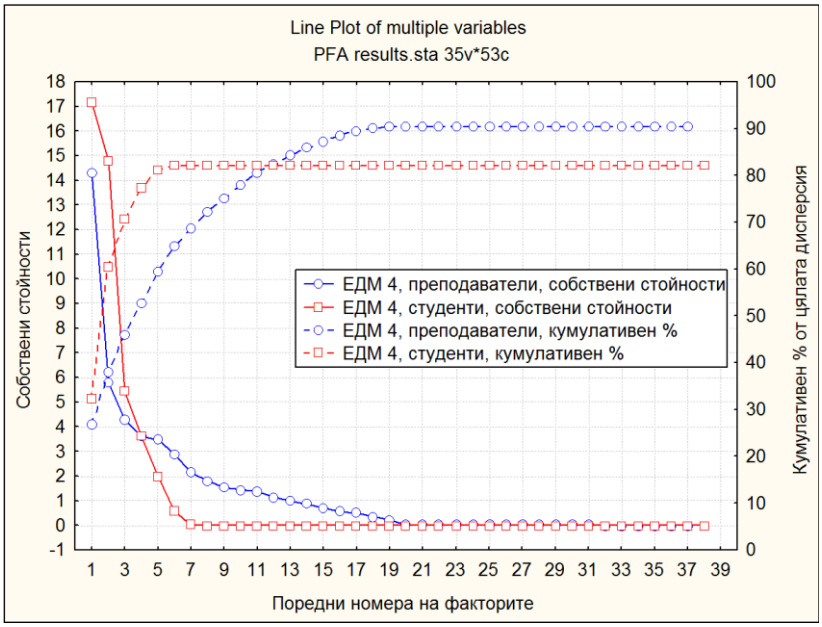

Fig. 1. Factors values for material 4, teachers and students

The different profiles of the two participant groups are interesting to note in the above graph. While the teachers' profile keeps its smooth form with gradually declining values, the students' profile shows a sharp decline of the left side, which after the 6th factor is almost horizontal. This means that the students tend to evaluate the pedagogical usability of the e-materials for language learning in a more holistic way than the teachers, i.e. with fewer dimensions.

The consistent way the teachers have constituted the latent structures for the different e-materials is also worth noting. The profiles of the four e-materials are almost overlapping (Fig. 2). The lowest profile is at the 95th percentile of the simulated values which are used for reference values. It can be seen that this profile crosses the others around the 10th factor, i.e. we can conclude that the latent structure underlying the evaluation by the teachers includes close to 10 factors, which is also the number of the dimensions of the pedagogical usability criteria scale.

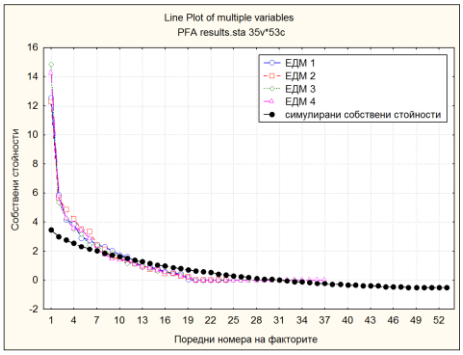

Fig. 2. Parallel analysis of factor configurations for materials 1–4 teachers data

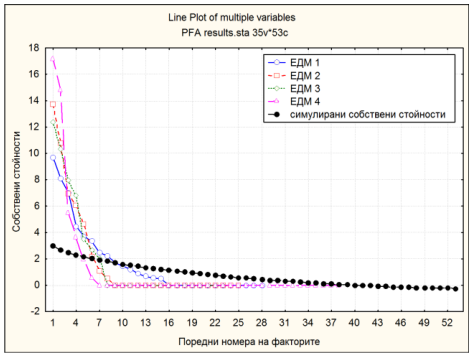

Fig. 3. Parallel analysis of factor configurations for materials 1–4 students data

The profile of the students (Fig. 3) crosses the others between the 5th and the 9th factor, i.e. it could be accepted that the latent structures underlying the students' evaluations include between 5 and 9 factors (for the different e-materials).

In conclusion from the above data it could be argued that the students activate and use more simple latent structures than the teachers. The above also makes it clear that when evaluating the pedagogical usability of different e-materials teachers and students activate latent structures with different number of dimensions. Data also show that the teachers are more consistent in their evaluations than the students.

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