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## **GROUP DIFFERENCES IN THE EVALUATION OF PEDAGOGICAL USABILITY OF ELEARNING MATERIALS**

### **Abstract**

*The paper reports on a study which aimed to investigate similarities and difference in evaluating the pedagogical usability of e-learning materials for foreign language teaching by examining two groups - teachers and students. Comparative analyses between sub-groups of students and teachers, native and non-native teachers and students from two universities in different e-Learning contexts show similarity in the way of evaluation and significant differences depending on exposure to e-Learning.*

**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, 2, 3, 4, 5, 6]. The main aim of this empirical study was to investigate the differences and similarities between two groups - teachers and students - who evaluated the pedagogical usability of eLearning materials for foreign language teaching.

It is reasonable to expect that the opinions of teachers of the eLearning materials would differ from the opinion of the students. Therefore the study focused more specifically on investigating how the following groups evaluated the pedagogical usability of four sets of eLearning materials: teachers and students, native and non-native English teachers, and students from two universities.

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 and UNWE. 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 %). Most of the students are from New Bulgarian University (NBU) - 36, the rest are from the University of National and World Economy (UNWE). The NBU students' profile is more varied because of the specific organisation of the study process in the foreign language course. That is, students from various age groups and majors come together in group at C1 level. The profile of the students in UNWE is more homogenous in terms of students'

age and major. More demographic data have fallen outside the scope of the present research.

As regards the organization of the learning process at NBU, a major component is the use of the institutional Moodle [7], which means that students systematically work in an online learning environment. A big part of the learning content for all the courses in NBU is provided in this online content management system; the students submit their assignments online and students' work is graded through the online system. For the UNWE students, the organisation of the process is more traditional; and eLearning is mainly accidental provided that the course tutors wish to engage in some form of online content provision.

For this study, four sets of e-learning materials (M1, M2, M3, M4) 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>.)

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 online as well at <http://goo.gl/c1aJu>.) The questionnaire was adapted to use a 6-point Likert scale from 1 (strongly disagree) to 5 (strongly agree), 6 - N/A. Both students and teachers were to do the online exercises and to evaluate the pedagogical usability of each one using the 60-item questionnaire.

During the statistical analysis with different configurations of dependent and independent variables 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.

### **1. Group differences in the evaluation of the pedagogical usability of eLearning materials between students and teachers (Repeated measures MANOVA)**

It is interesting to note that the teachers tend to evaluate the pedagogical usability systematically higher than the students. The average value of the teachers' evaluation is 17.842, and that of the students is 20.096. The difference between the average values of the students and teachers is little ( $\eta^2 = 0.124$ ) at a maximum power of the criterion ( $1-\beta = 1.000$ ).

As a separate factor the type of eLearning material does not influence the evaluation. That is the evaluation of the different eLearning materials are not significantly different ( $p = 0.063$ ).

The following figure shows the profiles of the two groups with their average values (all sub-dimensions) of the four eLearning materials. It is clearly visible that the students rate the pedagogical usability higher than the teachers.

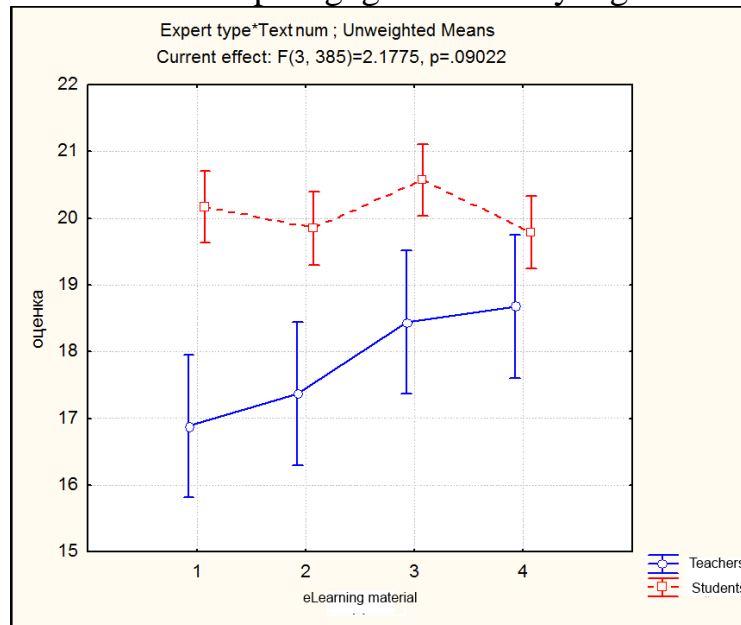


Fig. 1 Interaction between evaluators and eLearning material

Another characteristic is seen in the following figure which shows the profiles of the two main groups of participants according to their average ratings on the different dimensions for the four eLearning materials.

There is a clear similarity between the two profiles. This means that the two groups rate the pedagogical usability of the eLearning materials in very similar ways. The figure illustrates that the values of the students' ratings are higher than the teachers' ratings.

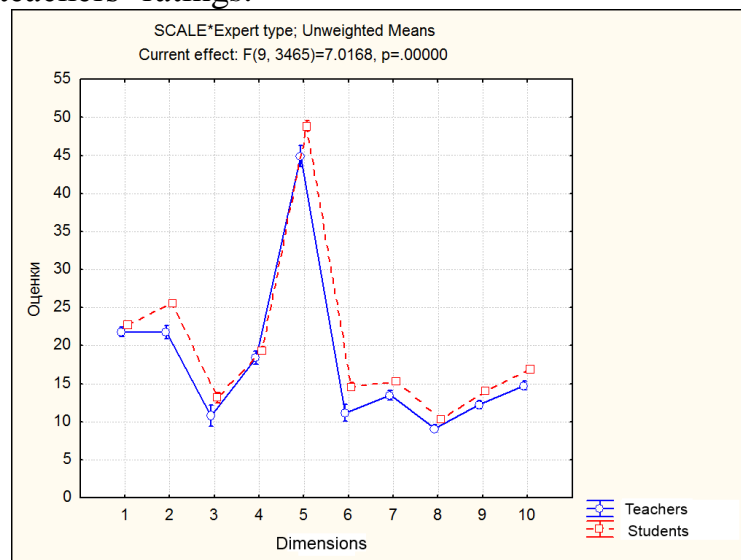


Fig. 2 Interaction between evaluators and PMLQ dimensions

## 2. Group differences in the evaluation of the pedagogical usability of

## eLearning materials between native and non-native English teachers

A second complex analysis was performed for the teachers' group. The factor "native speaker" with two levels was introduced as an independent variable. The second independent variable with four levels is the type of eLearning material. The dependent variables (intra-group factor) are the composite ratings of the teachers on the separate dimensions in the PMLQ questionnaire.

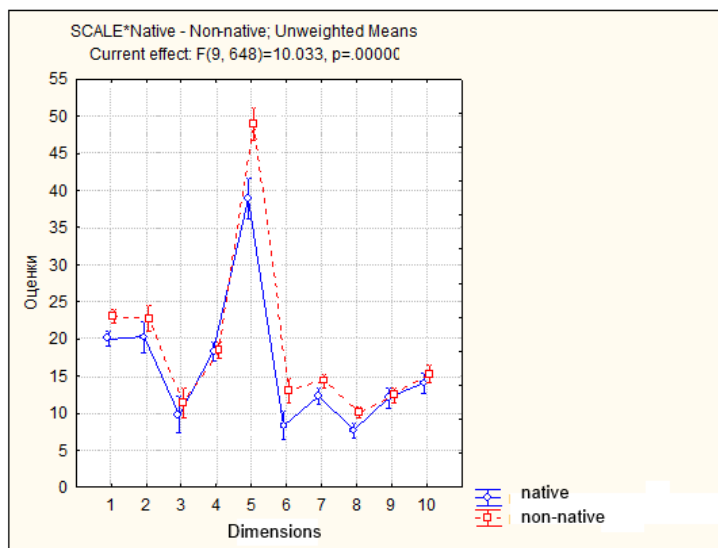


Fig. 3 Interaction between teachers and PMLQ dimensions

There's a striking similarity with Fig. 2 but this time the place of the students' profile is taken by the non-native teachers. The same tendency is evident in the two profiles, which illustrates that the two sub-groups of teachers rate the pedagogical usability of the eLearning materials in the same way on the different dimensions in the questionnaire. Fig. 3 also demonstrates the tendency for higher ratings from the non-native English teachers.

If the type of eLearning material is introduced in the analysis, there is a tendency for systematically higher values in the ratings of the non-native teachers. This tendency is observed in each of the ten dimensions for each eLearning material.

### 3. Group differences in the evaluation of the pedagogical usability of eLearning materials between the students from NBU and UNWE

As already mentioned, the students participating in this study belong to two sub-groups from two universities – NBU and UNWE. The participants groups' characteristics differ in the intensity and frequency of eLearning that they engage in. This justified the analysis of their evaluations of eLearning materials for foreign language learning and to look for differences and similarities as in the previous analyses.

The average ratings of the students from the two sub-groups on the basis of all materials and all dimensions of the PMLQ show statistically significant differences ( $p = 0.000$ ); the average value of the eLearning materials by the NBU students is 19.596, while that of the UNWE students is 22.580. In other words, NBU students are more critical of the qualities and effectiveness of the eLearning materials. This is probably due to the fact that they regularly use the institutional NBU Moodle which is a major component of their studies at university.

The following figure presents the combined influence of the factors eLearning materials and university. It can be seen that the UNWE students evaluate higher the pedagogical usability of the materials than the students from NBU and the difference between the two groups is statistically significant at  $p = 0.000$ . It is worth noting also that materials 3 and 4 contribute mostly to these differences.

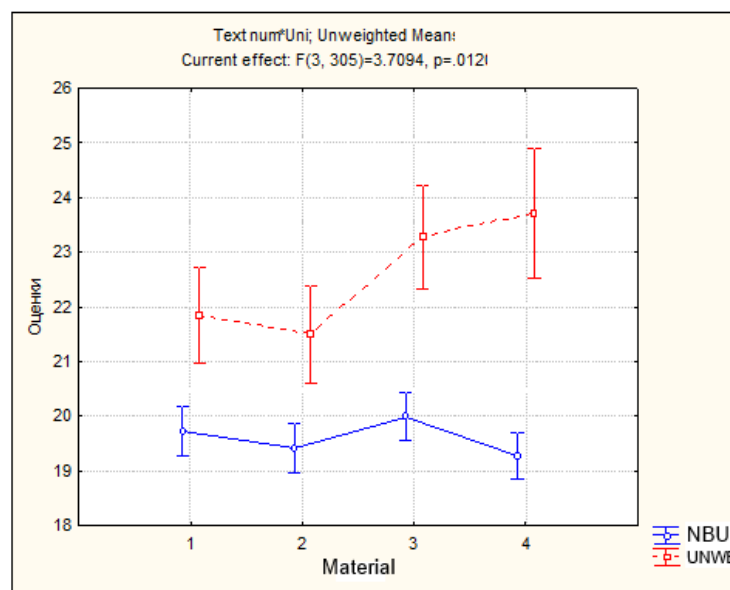


Fig. 4 Interaction between students and eLearning material

The following figure (Fig. 5) presents one more significant interaction. It illustrates how the students from each sub-group have evaluated the four eLearning materials according to the different dimensions in the PMLQ questionnaire.

This figure is strikingly similar to the previous two in which we compared the responses of students and teachers (Fig. 2) and the two sub-groups of teachers native and non-native speakers of English (Fig. 3).

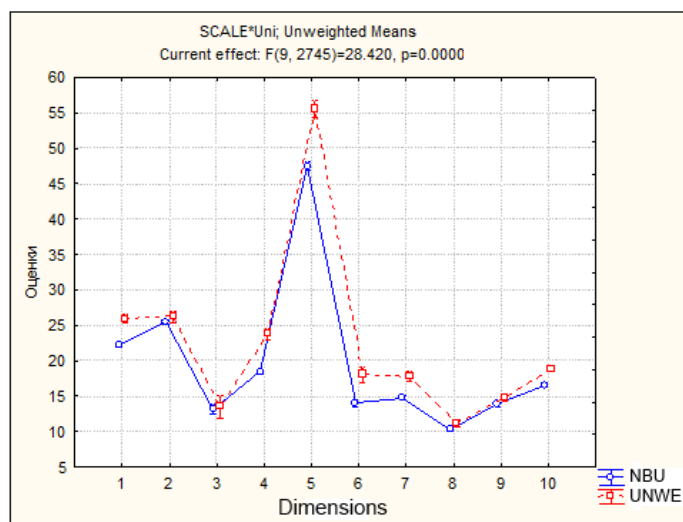


Fig. 5 Interaction between students and PMLQ dimensions

Fig. 5 demonstrates that the students from UNWE give systematically higher ratings to the pedagogical usability of the eLearning materials in the different dimensions than the students from NBU. It is to be noted here that significant differences are observed in dimensions *1. Learner control*, *4. Goal orientation*, *5. Applicability*, *6. Added value*, *7. Motivation* and *10. Feedback*, all at  $p = 0.000$ . Similarly, when the factor ‘type of eLearning material’ is included in the analysis, significant differences are observed not only in the sub-dimensions, but in the different eLearning materials. Most of these differences are statistically significant at  $\alpha = 0.05$ .

The results from the analysis showed differences and interesting similarities in the evaluation of eLearning. The first is the constant higher rating by the students compared to that of teachers, and the second is the higher ratings of the non-native English teachers compared to that of the native teachers. A possible explanation could be found on the one hand in the age differences and on the other hand in the perceived usefulness of computer technology for learning. Students are representatives of the younger generation and are more receptive of the new technologies, while the teachers could be more skeptical about the effectiveness of the computer technology for learning. This could lead to lower ratings of the pedagogical value of the eLearning materials. On the other hand, although only a speculation, the native teachers come from countries where eLearning has been adopted for longer, which could lead to more critical perception of the quality of the eLearning materials.

Similar differences have been shown in the two student subgroups. NBU students have been exposed longer and more intensively to learning with the new technology, and this could have helped them develop more critical opinions concerning the pedagogical value of the multimedia delivered learning content.

These two aspects could be explored further in the future to see how they influence the perception of the pedagogical value and quality of eLearning content.

Although students and teachers evaluate the pedagogical usability in a

similar way, significant differences, the higher rating of the students in the sub-dimensions point at dimensions which seem of greater importance for the learner, namely collaboration, applicability, added value and feedback. Those aspects have been rated the highest by the students and teachers should be aware of this when developing eLearning content. This is clearly evident from the higher ratings on materials 3 and 4 in which more multimedia is present and learners have greater choice and freedom as regards the sequencing of the content, and with more practical applicability. Although subjective, the higher students' ratings clearly reflect their perception of the learning process as a whole, namely the questions whose answers learners identify the learning process with: *how and who with do I learn, where and how this is applicable, how is this more effective than traditional forms of learning, and how well do I perform.*

It is necessary to explore how technology is perceived and how these perceptions influence the evaluation of the pedagogical usability. Another aspect for further research could be cultural factors which may play a role in perceiving the pedagogical value, as well as if age and gender influence those perceptions. These fell outside the scope of the present study and future research could throw some light on the issue.

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