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ASSESSMENT CRITERIA WITH TEACHING METHODOLOGY COURSES: THE CASE OF ENGLISH AND MATHEMATICS - A COMPARATIVE STUDY

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Abstract: *The present research has as a main aim the identification of certain necessary conditions for the students to be interested in learning and obtaining good results in either Mathematics Teaching Methodology or English Language Teaching Methodology, with focus on nominating the pedagogical factors involved in the assessment process of the students in these two subjects. The research was conducted on 80 students, aged 20-21 years, in their 2nd year of studies at "Transilvania" University of Brasov, enrolled in the Teaching Methodology class. The assessment process with the courses consisted of several methods and techniques of evaluation: written, oral, portfolio, paper submission, role play, self-evaluation, or using interactive group methods. The conclusions drawn, after analysing the questionnaires, the school documents, as well as the answers provided by the students on the occasion of the interview we had with them show that both their interest for the subjects and their learning performances rose in direct proportion to the appropriate and varied systematic assessment applied to each learning unit.*

Key words: *Mathematics, English, teaching methodology, assessment criteria, interest, learning performances.*

1. Introduction

The curricular reforms of the past decade have led to the redefinition of the status of many disciplines in terms of the approach centred on skills. According to the National Centre for Assessment and Evaluation, "Competence is the key concept that crosses all levels of education and all disciplines" [3] and that is why its assessment needs to be an appropriate one.

The changes regarding this approach centred on competencies have also influenced the process of teaching-learning-assessing both Mathematics and the English Language, subsequently their methodologies suffered a lot of updating in this respect, as well.

Evaluation is a component of the teaching activity which, in Figari's opinion, has pedagogical functions, such as fixing the teaching process, regulating students' learning and influencing their personalities [6].

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Also, according to Cocorada, Luca, and Pavalache-Ilie, the assessment behaviour of the teacher plays a key role in giving students feedback on their performance and enhancing learning motivation [4]. This could be a reason why the roles of teachers nowadays have become more and more complex, and, for example, some of the traditional roles have been extended. Thus, Voinea even opinionated that to teach means more than to transmit information. To teach means to create an adequate learning context, to use ICT, to monitor students' learning, to help students become active participants in learning, etc. [13].

The assessment style is defined by Cocorada [5] as a pattern of knowledge, attitudes and procedures coherently expressed at a behavioural level as an outcome of the principles, norms, and methods of evaluation which are adopted by the educator / teacher in a particular situation.

As a logical consequence of the theoretical background overviewed above, the main purposes of the present paper are to describe the impact of evaluation of students' knowledge of Mathematics Teaching Methodology / English Language Teaching Methodology against the interest manifested by them in the two subjects and their learning performances and results.

There are two main reasons for matching and comparing these two domains: first of all, the footprint of two different programmes from two separate fields of study – scientific and humanistic was considered. Viewing the approach from two different angles has the advantage of better highlighting the structure of the assessment process, the intervention mechanism and the feedback, regardless of the content. Second ―each of the two chosen fields of study has a dominant role inside its own faculty. On the one side, Mathematics is a main subject and the instrument of many profiles in the scientific field, as well as a key subject in continuous learning, on the other side, the English language, as considered by Harmer, is gaining more and more field in the humanistic area as a communication medium [7].

Studying these two apparently unrelated fields and correlating them was a great challenge, but also a great interdisciplinary exercise, especially because the attempt was made less at a content level (Mathematics or English properly) and more at the level of teaching these two subjects, i.e. at the didactic level.

The Didactics of Mathematics, a border discipline of knowledge which combines Mathematics learning theories with the Psychology of Education and Pedagogy, deals, as described by both Bocos *et al* and Radu, with the study of modern mathematical concepts for the teaching of Mathematics in school, and with the problems involved in the organisation, communication, and evaluation of mathematical knowledge [1], [12].

Today, when Mathematics is the language of science, Mathematics Education has become a key activity.

Mathematics Education is understood as a whole set of actions and conditions that make the teaching of Mathematics possible. Therefore, it covers the set of knowledge, processes and conditions that allow the student-teacher interaction about mathematics topics to take place in the Mathematics class, thus, making the teaching and learning of this subject feasible. According to Llinares, Mathematics Education refers, in this case, to an activity which is intentionally used to build, understand, transmit and assess mathematical knowledge [9].

The introductory part of the paper was focused on discussing mainly the Mathematics field on purpose, because the English subject represents only a comparison group.

2. Purpose and methodology of the research

The aim of the present ascertaining type of research consisted of identifying the role of assessment in the Mathematics Teaching Methodology and the English Language Teaching Methodology courses in order to enhance students' interest and to improve their learning performances in these two subjects.

The dependent variable was represented by the students' interest and their results in Mathematics Teaching Methodology / English Language Teaching Methodology while the independent variable consisted of the assessment. The variables were measured at the beginning, throughout and at the end of the courses.

The main objectives of the ascertaining type of research, are: 1. the identification and comparison of students' opinion, seen as future teachers, regarding the importance of the process of their evaluation in, Mathematics Teaching Methodology / English Language Teaching Methodology with the intention of raising their interest in the two subjects; 2. the identification of the degree of efficiency in using different assessment methods and techniques on the students taking Mathematics Teaching Methodology / English Language Teaching Methodology, the aim being that of improving students' results in these two courses; 3. the comparative analysis of the results within the same course, in this case Mathematics Teaching Methodology, of the students belonging to the same experimental group (EG1), results obtained after the evaluation of the same scientific content, using different assessment methods and techniques. Mention needs to be made that the objectives are complementary.

The authors started from two assumptions, the first one being related to the fact that *the interest* of the students in the study of Mathematics Teaching Methodology / English Language Teaching Methodology is influenced by the assessment methods and techniques used for their evaluation in these two subjects, while the second one referred to the fact that students' *results* in Mathematics Teaching Methodology / English Language Teaching Methodology are also directly influenced by the assessment methods and techniques used for their evaluation with the same two subjects.

The research sample comprises 80 students enrolled into two different full-time study programmes for initial training, as follows: 40 students from the BA full–time Mathematics profile, in their 2nd year of studies, enrolled for participating in the Psycho-Pedagogical module, level 1, who formed the 1st experimental group (EG1); and 40 students from the BA full–time Philology profile, still in their 2nd year of studies, also enrolled for participating in the Psycho-Pedagogical module, level 1, but who formed the 2nd experimental group (EG2) used only for comparison.

The research has been developed over a period of one semester, (meaning over the time span of the two courses: Mathematics Teaching Methodology / English Language Teaching Methodology).

The following methods were used in order for the aims of the paper to be achieved: an experiment, a questionnaire based survey, an interview with the students who subjected themselves to participating in the study, and the analysis of school papers. The instruments of these methods were, as follows:

The first instrument was a questionnaire with 10 multiple-choice closed questions (Q1-Q10) based on students' experience in evaluation. The items were organised around two themes: 1. students' perception regarding the connection which might exist between students' interest in the study of Mathematics Teaching Methodology /

English Language Teaching Methodology and the methods and techniques used for the assessment of their knowledge of these two subjects (Q1, Q2, Q7, Q9, and Q10); 2. students' perception regarding the connection which might appear between the results obtained in the Mathematics Teaching Methodology / English Language Teaching Methodology courses and the assessment methods and techniques used by the course coordinator /teacher for the assessment of their knowledge of these two subjects (Q1, Q3, Q4, Q5, Q6, and Q8). The questionnaire was distributed to the participants in order to be filled in, by some peer colleagues, who ensured the necessary degree of objectivity, on the occasion of a face to face meeting.

The second instrument was based on the students' results in different evaluations made at the Mathematics Teaching Methodology / English Language Teaching Methodology courses.

The third instrument, which consisted of a structured interview as in [2], aimed, on the one hand, at identifying students' interest in Mathematics Teaching Methodology / English Language Teaching Methodology at the beginning and throughout the courses, and, on the other hand, at identifying students' opinion regarding the knowledge and skills acquired as a result of their participation in the Mathematics Teaching Methodology / English Language Teaching Methodology courses.

3. The presentation and interpretation of the results

For the purpose of validating the first hypothesis, the primary analysis of the results of the questionnaire was made, related to the items regarding the connection between Mathematics Teaching Methodology / English Language Teaching Methodology as courses and the methods and techniques used for the evaluation of students' knowledge of these subjects. Thus, the interpretation of the Q2 item, whose general statement is: "I am convinced that choosing the appropriate assessment method for Mathematics Teaching Methodology / English Language Teaching Methodology influences the raise in the interest I manifest for the study of this discipline" proved the fact that 97.5% of the EG1 students and 90% of the EG2 students agree with this statement.

When the students were asked, by administrating the Q7 item, if the methods and techniques used for their evaluation in the Mathematics Teaching Methodology / English Language Teaching Methodology had contributed to the raise in their interest for the study of these courses, 88.5% from the EG1 students and 80% from the EG2 students answered affirmatively.

In what the Q10 item is concerned, regarding the extent to which they like Mathematics Teaching Methodology / English Language Teaching Methodology as courses, 77.5% of the students belonging to EG1 and 70% of the students belonging to EG2 answered: much and very much. It is worth mentioning the fact that the answers of both EG1 students and EG2 students are sensitively equal.

Asked to pass their opinions on which type of assessment used in the Mathematics Teaching Methodology / English Language Teaching Methodology courses had aroused their interest in the study of these disciplines (item Q9), from EG1 60% of the students placed role play on first position, 27.5% had a positive opinion about the oral examination, 10% valued more the portfolio approach, while only 2,5% appreciated the written exam; the students in EG2, 70% ranked role-playing on top of the options, 15% emphasised oral examination as a better variant for them, 5% accepted the idea of handing in a portfolio as a friendlier

approach towards their assessment, while only 5% liked the idea of a written evaluation.

As a mini-conclusion, it can be noticed that both for the Mathematics Teaching Methodology course and for the English Language Teaching Methodology one the interest of the students is stimulated by the usage of the same methods of assessment: role-play (or microteaching – with the terminology used for the ELT class) and oral examination.

The students who participated in the interview confessed that, at the beginning of the semester, their interest in Didactics was medium, as they expected to study an easy subject, sometimes boring, of no great importance, but, as the classes started to unfold and the continuous type of assessment was being implemented throughout the semester on a weekly basis for their homework both with the course and with the seminars, the joy of studying this subject started to emerge. An important influence for this change of attitude played their enrolment and involvement in the teaching practice, as well, where they had the chance to practically apply what they had previously been taught during the specialised methodological classes of either Mathematics or English.

Moreover, they also confessed that, due to the enhanced interest in Didactics, they started preparing materials for this subject by supplementing the hours dedicated to it with 3 to 5 hours weekly. This amount of time spent under the form of individual work referred to doing homework and preparing for different extra evaluations.

For the purpose of validating the second hypothesis, what was carried out was the primary analysis of the results obtained from the items regarding the connection which might exist between the results the students had in Mathematics Teaching Methodology / English Language Teaching Methodology and the methods and techniques used in their evaluation.

The analysis of the Q4 item regarding the statement: "I am convinced that choosing the most appropriate assessment criteria by means of which to be evaluated with Mathematics Teaching Methodology / English Language Teaching Methodology influences the final mark" highlighted the fact that 95% of the students belonging to EG1 and 87.5% belonging to EG2 are in perfect agreement with this statement.

The same connection between students' results and the assessment methods used for their evaluation are obvious when analysing the Q5 item, which asked them to state what method or technique they would like to be used in their evaluation with the Mathematics Teaching Methodology / English Language Teaching Methodology courses was, in order for them to be able to obtain a good mark. Thus, the students in EG1 preferred the following means of evaluation, in this exact order: 42.5% - written exam, 30% - portfolio, 10% - oral examination, 10% - role-play, and 7.5% - interactive group methods, while for the students in EG2, the ranking, accompanied by the percentages, looked like this: 42,5% - portfolio, 30% - role-play, 15% - oral exam, 10% - written exam, and only 2,5% - interactive group methods. Thus, another obvious symmetry can be traced in point students' options regarding their assessment in these two subjects, irrespective of the totally opposed status, in point of profiles, the two disciplines display.

Regarding the Q8 item, which consisted of the following question: "To what extent do you consider that the methods and techniques used for your evaluation in Mathematics Teaching Methodology / English Language Teaching Methodology have contributed to the improvement of your learning performances in these subjects?", 95% from the students

belonging to EG1 and 90% of the ones belonging to EG2 answered "to a great extent" and "to a very great extent". In this way, another striking similarity between the two groups could be identified. It is their type, i.e. methodology about teaching these subjects, and the assessment criteria that were used for the evaluation of the students, that brought them together and enabled the authors of the present paper to establish a common pattern regarding them both.

The analysis of the Q6 item meant to emphasise the students' point of view concerning the assessment methods and techniques which are considered the least relevant to their knowledge in Didactics. Thus, 75% of the EG1 students pointed out that the assessment based on paper / project submission and the one using educational software was not very helpful to them, while 87.5% from the students belonging to EG2 underlined the lack of relevance in point of their assessment when educational software was used and when interactive group methods of evaluation were applied.

The strong connection between the assessment technique used and the good results the students obtained in that field became even clearer with EG1 students, when the same scientific content was evaluated by means of different approaches. Thus, in what solving arithmetical drills using three different methods was concerned, the oral type of assessment, role-playing and written individual examination triggered different results, considering the fact that 77.5% of the students were assigned three completely different marks when evaluated by means of three completely different methods, while only 22.5% obtained similar marks when tested by using different criteria.

However, the percentages obtained as a result of the analysis of the Q5 and Q9 items prove that, at least on one occasion, students' opinions can vary drastically depending on the experimental group they belong to. Consequently, the same method of evaluation can be placed by the students either on the first place or on the last but one position. For example, the written exam enhanced the students' results in the study of English Language Teaching Methodology to a very little extent, as only 10% of the students from EG2 ranked it as important, while the same method triggered a lot of good results in the study of Mathematics Teaching Methodology, as 42,5 % of the students belonging to EG1, highly appreciated its importance, this also proving internal consistency with the previous answers provided to similar items by them.

In what the analysis of the Q1 and Q3 items is concerned, a considerable symmetry can be identified again, one regarding students' opinions related to two important and interesting aspects in their evaluation: 97.5% of the students from EG1 and 90 % of those from EG2 are satisfied with the way in which they were assessed in Mathematics Teaching Methodology / English Language Teaching Methodology. The 87.5%, shared by both EG1 and EG2 students demonstrates their degree of satisfaction regarding the knowledge gained as a result of their participation in the specialised classes dedicated to teaching methodology. A possible explanation for the minor 7.5% difference with the first criterion could consist in a powerfully developed sense of self-evaluation and self-critique of the students.

In order to carry the interpretation of the data to an ultimate result and also to render a correct research perspective to the approach we had for this paper, we also took into account the results of the students in all evaluations in the Mathematics Teaching Methodology / English Language

Teaching Methodology classes, results which were meant to measure the knowledge gained by the students in these disciplines. Moreover, these results were compared against the answers provided by the same series of students who agreed to participate in our surveys, as well as the interview, in order for the validity of the endeavour to be a consistent one.

Thus, the results for the Mathematics Teaching Methodology students in the written exam were: 20 grades of 10 (50 %), 10 grades of 9 (25%), 5 grades of 8 (12.5%), 2 grades of 7 (5%), 1 grade of 6 (2.5%), and 2 grades of 5 (5%). The results for the English Language Teaching Methodology students were: 12 grades of 10 (30 %), 15 grades of 9 (37.5%), 7 grades of 8 (17.5%), 3 grades of 7 (7.5%), 2 grades of 6 (5%), and 1 grade of 5 (2.5%). The results obtained by the students in the Mathematics Teaching Methodology course regarding the assessment based on portfolio evaluation consisted of 26 grades of 10 (65%), 6 grades between 9 and 10 (15%), 4 grades between 8 and 9 (10%), 1 grade between 7 and 8 (2.5%), 2 grades between 6 and 7 (5%) and 1 grade between 5 and 6 (2.5%).

The results for the English Language Teaching Methodology students based on the same portfolio evaluation system consisted of 27 grades of 10 (67.5%), 5 grades between 9 and 10 (12.5%), 4 grades between 8 and 9 (10%), 2 grades between 7 and 8 (5%), 1 grade between 6 and 7 (2.5%) and 1 grade between 5 and 6 (2.5%).

The Mathematics Teaching Methodology students all obtained the maximum mark, i.e. 10, when they were evaluated for their role-play, while the English Language Teaching Methodology students oscillated between marks such as 7, 8, 9, and 10 for their microteaching activity, as the role of a teacher proved to be, for some of them, too challenging on their very first attempt.

Strictly related to the above method used in the evaluation of the students, in both Mathematics Teaching Methodology and English Language Teaching Methodology cases, it can be seen that role-play / microteaching represents an essential assessment tool for candidates who prepare to become teachers and its usefulness was proved especially when the turn of the teaching practice came, either under the form of internship or even in the initial stage of temporary / permanent teaching activity with the students of both study programmes.

4. Conclusions

As a first conclusion, the quantitative results show that the interest and performance of the students enrolled in the Mathematics Teaching Methodology / English Language Teaching Methodology courses are influenced to a great extent by the methods and techniques used in these two subjects in the assessment step of the teaching-learning process, and, more importantly, by the emotional attachment that the students develop in relation to a certain evaluation method they feel more comfortable with.

As a second conclusion, the quantitative analysis also revealed the fact that students' interest and results in Mathematics Teaching Methodology / English Language Teaching Methodology is determined by the way in which the assessment of mathematical / English knowledge is undertaken, because using different assessment criteria for the same scientific content could lead to a situation in which students obtained different results.

According to the analysis above, for rendering the best performance within the evaluation process of these two disciplines, extremely important proves to be the choice in point of the most appropriate

assessment criterion, the one suited both for the content which is under evaluation and for the personality of the students engaged in evaluation.

It is indicated that, both for the immediate interest of the student (related to performance improvement and interest arousal in Didactics), and for the enhancement of self-awareness regarding the importance of assessment (sometimes different, but always systemic), the use of as many methods and techniques of evaluation as possible should be considered. And this, in order to be able to cater for various student needs and for variable contents, especially with meta-subjects such as Mathematics Teaching Methodology / English Language Teaching Methodology, whenever it comes to stimulating students' interest and to transforming lower marks into higher marks for their pupils in the future.

Another conclusion of the present research, which is related to the first hypothesis is that for both Mathematics Teaching Methodology and English Language Teaching Methodology, the interest of the students is stimulated by the usage of the same evaluation methods: role-play and oral examination. Involving students in the teaching practice by using the appropriate method, that of role-playing or microteaching, in other words allowing them to step into the shoes of a teacher for at least 20 minutes, is likely to stimulate interest in Mathematics Teaching Methodology / English Language Teaching Methodology altogether.

From the point of view of the second hypothesis, it could be concluded that in order to improve students' performance and results in Mathematics Teaching Methodology, the written evaluation, as well the one based on portfolio assessment, can be used, as criteria, while for the English Language Teaching Methodology course the methods that proved efficient to the students were: portfolio based assessment and role-play.

According to existential evidence, as well as to the specialised literature, there are two types of very good students interested in the courses that deal with teaching the methodology of teaching: the ones passionate about it and naturally gifted, in other words the ones with an inborn inclination towards teaching, but also the hard working ones, very serious and ambitious in their endeavour to make a career out of teaching.

For such students, but not only, the evaluation process must be approached with focus on the affective dimension of assessment, on fostering positive motivation, as well as with emphasis on solving concrete, authentic tasks that may keep "up" students' interest in didactics [14].

The limits of the present research are set with the impersonal questionnaire used for the survey, as well as with the low number (80) of subjects in the experimental groups.

The benefits that may result from treating these two generally acknowledged opposite disciplines in parallel opened two directions:

On the one hand, it can be observed that, by comparing some assessment methods considered of great usefulness in stimulating the interest and improving the performance in the specialised fields of methodological subjects of the students enrolled in each profile, a certain connecting bridge could be created between the two subjects (Mathematics and English). The interdisciplinary approach in general enforces a possible information transfer which enables an exchange of experience and competences from one domain to the other, thus aiming at adaptation, improvement and reciprocal correction of possible malfunctions [11].

On the other hand, it can be seen that the limit between the two profiles situated at distant ends, scientific and humanistic, is diluted.

As a general conclusion to such an audacious research attempt, the analysis regarding assessment methods, techniques and criteria is worth being approached at a meta-discursive level, as successfully proved in the present paper. Even though critical contributions regarding the type of general tests that can be applied to any students, anytime, irrespective of profile enrolment, as well as discrete point studies regarding specific fields and their appropriate evaluation methods that fit their profile better [8], [10] have existed for quite a long period of time, an analysis on the assessment techniques applied with meta-specialised courses, such as those disciplines focused on teaching "teaching" need to exist as well. Why? Because they too have to end with an evaluation session and, as with all the other items included in their syllabus, they set an example for their very content, meaning they serve as meta-examples in point of all three steps involved in the process of any teaching methodology: teaching, learning and assessing, with focus, in our case, on the last one, irrespective of the profile variation.

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