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Democracy Through Didactics of Teaching Mathematics

Semester Module and Session Plans for Pre-Service Training of Future Teachers

Preparing Future Teachers in the Western Balkans: Educating for Democracy and Human Rights 2019-2022

Vesna Makashevska

ASCAP Agjencia e Sigurimit të Cilësisë së Arsimit Parauniversitar
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ЗАВОД ЗА УНАПРЕЂИВАЊЕ ОБРАЗОВАЊА И ВАСПИТАЊА

This manual is part of the project

Preparing Future Teachers in the Western Balkans:

Educating for Democracy & Human Rights 2019 – 2022.

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Contents

This publication is a result of the project Preparing Future Teachers in the Western Balkans: Educating for Democracy & Human Rights 2019 – 2022, led by the European Wergeland Centre. Funded by the Norwegian Ministry of Foreign Affairs and developed in close cooperation with the Department IPE of the Zurich University of Teacher Education, the project provides support for higher education institutions and universities in Albania, Bosnia and Herzegovina, Kosovo*Montenegro, North Macedonia and Serbia, that are interested in modernizing their teacher education courses, with an aim to improve the quality of teacher education for future teachers in the region.[1] The project is implemented together with 12 universities from the region and in cooperation with the Institute for Development of Education (Albania), Foundation, Education in Action (Bosnia and Herzegovina), Kosovo Education Centre (Kosovo*), the Bureau for Education Services (Montenegro), Bureau for Development of Education (North Macedonia) and the Institute for Improvement of Education (Serbia).

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*All references to Kosovo, whether to the territory, institution or population in the text shall be understood in full compliance with the UN Security Council Resolution 1244 and without prejudice of the status of Kosovo

1 The latest materials in the field of citizenship and human rights education developed by the Council of Europe and Zurich University is used as resources within the project. Examples of these materials are: Living Democracy Volumes I – VI: www.living-democracy.com , Reference Framework of Competence for a Democratic Culture (RFCDC): https://rm.coe.int/CoERMPublicCommonSearchServices/DisplayDCTMContent?documentId=09000016806ccc07 , and Teaching Controversial Issues: https://rm.coe.int/16806948b6

Introduction: University teaching sets the example

This manual contains the semester plan of a training module for prospective teachers as well as the detailed planning of all 12 semester units- week per week.

The module: „Democracy Through Didactics of Teaching Mathematics "was developed as part of the project Future Teachers in the Western Balkans, which was initiated by the European Wergeland Centre, financed by the Norwegian government and planned and implemented in cooperation with the Zurich University of Teacher Education.

The project focuses on three important issues. How can approaches and contents of democracy education and consideration of the newly developed Council of Europe approach to fostering a culture of democracy (RFCDC) be incorporated into teacher education? Can we incorporate the urgently needed practical orientation of teacher training, and how can university teaching in its form and approach become a good (methodological) example for future teachers.

Experts from Albania, Kosovo and Montenegro guaranteed that the regional conditions would be met and that the different experiences and professional approaches would be incorporated. All 12 participating universities (from the region) are developing their own semester modules within the framework of the project, whereby some of them deal with democracy as such, while other modules (such as this one) have a specific content (here: Didactics of Teaching Mathematics) and then attempt to transversally incorporate the methodological approaches to democracy education as well as appropriate content elements.

Examples of the application of the concept of democracy through the methodology of teaching mathematics are presented in the book. The first part gives a semester plan of the module. Then, the detailed description of all 12 sessions follows with the estimates about detailed session plan on already completed module.

Thanks to the presentations of the detailed planning, it becomes clear how much attention was paid to active participation of all students, in which the Bloom's taxonomy was actively used and is reflected in the work proposals for the students.

The author does not claim this module is perfect. It is an example of a semester module implemented in real life and shows the students how to achieve their goals step by step. However, this is the first university module that integrates academic subject content (Didactic of Mathematic) and democracy content.

The implementation was conducted at the Faculty of Pedagogy "St. Kliment Ohridski", University "Ss. Cyril and Methodius" in Skopje, North Macedonia in the winter semester, October 2020- January 2021.

We truly hope that the module and session plans will encourage and support creative efforts to include the Culture of Democratic Citizenship / Human Rights Education in other academic and school subjects.

This work would not have reached its aim, if we did not have unconditional support and inspiration during the whole process- first of all in the creation of the module, next in its implementation and of course, in the writing of this book.

Thank you prof. Rolf Golob!

1. The module

Introduction: Implementation experience

The challenge of incorporating democratic content into the various university modules aimed for education of future teachers was really big- elements of democratic culture should have been included in the developed university curricula. The specificity is even greater when it comes to the implementation of methodology of mathematics. We have decided to create a module that implements democratic culture with the use of the key competencies of EDC / HRE integrated with the basic content of the course- Methodology of Mathematics.

Contemporary standards for creation of the high-quality university curricula, and each subject/module that corresponds it, are highly demanding. New module has to provide integrated, holistically oriented educational process, and in our case - to provide students to reach competences for realization of teaching in mathematics together with competences for democratic culture.

Due to the situation with the COVID-19 pandemic, the plans of the individual sessions had to undergo some changes. It goes especially for the planned activities: practical teaching and mock model could not be realized in online teaching that did not provide conditions to acquired foreseen competencies that referred to the practical skills of the students. We tried to reduce this damage through cooperation with mentors- primary school teachers. That is why during the semester the students often cooperated with the mentors, especially in doing homework, which was proved to be a successful practice in these conditions.

The planned session 3 from the semester plan was not conducted online, but through the preparation of homework due to the specificity of the content. Each student received individualized feedback on own success and directions for further application.

We hope that with this graphic presentation of the module with the semester plan and 11 detailed descriptions of each session, we managed to integrate a series of procedures and activities for the application of content from civil democracy and mathematics methodology. This unusual assembly is a demonstration of an educational model that will hopefully encourage other teachers from higher education institutions to apply strategies for the development of democratic culture in their modules.

1. 1. General Information:

Title of the module: **Didactics of Teaching Mathematics**, spring 2020

Name of University: Ss. Cyril and Methodius University, Skopje

Name of Faculty: Faculty of Pedagogy "St. Kliment Ohridski"

Development Team: Vesna Makashevska, Lulzim Ademi, Maja Raunik Kirkov

Implementing Lecturer: **Vesna Makashevska**

Number of teacher students in the training: 20- 30

Number of classes per week: 2 lecture classes + 2 classes of practical work at the university + 1 class of practical work at primary school

Number of class visits:(due to the Corona virus situation we do not have class visits)

Number of lessons taught by teacher students: The pandemic made it impossible this semester for the students to do any practical teaching/learning in schools.

Number of Model classes taught by the lecturer: 2

1.2 Short description of the contents of the module:

General introduction to the module:

1. Content: Didactics of Teaching Mathematics in the Framework of Democratic Citizenship

2. Competences the students will have after the module:

- Valuing human dignity and human rights, valuing cultural diversity, autonomous learning skills, skills of listening and observing, respect, responsibility, self – efficacy, knowledge and critical understanding of the self, knowledge and critical understanding of the world:.
- Ability to express didactical strategies for introduction of mathematical concepts in different ways ability to translate everyday life situations into mathematical structures and ability to solve and pose problems. .
- Knows and understands mathematical contents, has skills and abilities to transfer it into didactical strategies for their application and in-depth study.
- Ability to apply the didactic-methodological components (forms, methods, principles and means) in function of the realization of the teaching and shows skills in their adaptation to the needs of the students and the teaching.
- Applies modern concepts for lesson planning, organization and implementation based on the principles of democratic citizenship

3. Resources to be used:

   a. Maths content

   b. Maths didactics

   c. Democracy: www. living democracy

   d. RFCDC

   e. Teaching controversial issues

4. The potential of Democracy in Maths: Teaching democracy in mathematical education can support the learning process and provide environment where students can not only gain knowledge of the necessary subject matter, but also methodical and decision-making competencies and skills for implementation of democratic thinking and behaviour from classroom knowledge to real life.

Problem solving is a core competence trained and applied in maths. Students need to go through moments of frustration and challenges. Solving math problems helps them to further develop citizenship values and competencies, if they also reflect on this after the class. We believe that young teachers need to be aware of this potential, and that once learned, they will be able to implement it in any other subject they are going to teach.

5. Understanding of teaching about democracy and through democracy is a necessary basic competence for realization of the contemporary educational process, which enables students- future teachers to establish democratic culture among their primary school students. With the knowledge and skills about democracy in education, teachers can be actively engaged in the use of the examples and inroads for understanding citizenship and human rights education in schools and in non-formal settings of education.

1.3 Competences for Democratic Culture addressed:

	Competences	Descriptors
Values	Valuing human dignity and human rights	No. 1. Argues that human rights should always be protected (basic level)
	Valuing cultural diversity	No. 9. Expresses the view that the cultural diversity within a society should be positively valued and appreciated (intermediate level)
Skills	Autonomous learning skills	No. 58. Shows ability to identify resources for learning (e.g., people, books, internet) (basic level)
	Analytical and critical thinking	No. 68. Can identify any discrepancies or inconsistencies or divergences in materials being analysed (advanced level)
	Skills of listening and observing	No.75. Notices how people with other cultural affiliations react in different ways to the same situation (advanced level)
Attitudes	Respect	No.27. Gives spaces to others to express themselves (basic level)
	Responsibility	No. 42. Shows that he/she takes responsibility for own mistakes (intermediate level) No 43. Consistently meets commitments to others (advanced level) No. 44. Expresses a belief in his/her own ability to understand issues (basic level)
	Self – efficacy	No. 44. Expresses a belief in his/her own ability to understand issues (basic level) No. 45. Expresses the belief that he/she can carry out activities that he/she has planned (basic level)
Knowledge and critical understanding	Knowledge and critical understanding of the self	No. 106. Can describe his/her own emotions (basic level) No. 109. Can reflect critically on himself/ herself from a number of different perspective (intermediate level)
	Knowledge and critical understanding of the world: environment……	No. 118. Can explain why everybody has a responsibility to respect the human rights of others

1.4 Module overview – session by session

Session 1: Macro Planning + Governments and Politics

Session No/Date	Topic of the session	Didactics of Teaching Mathematics content:	Democracy content:	CDC addressed:	Session step by step (brief version)	Approximate Percentage division
Student's preparation: To renew didactical knowledge for macro planning from didactical subject previously learned						
Session 1 **14.10.2020**	Planning in Teaching Mathematics - macro planning Democratic atmosphere in the classroom	Short introduction of an overview on the semester module plan Short introduction to the Aims and Objectives of Teaching Mathematics Analyses of the process of planning, aims and purpose of Teaching Mathematics Types of planning in education Web research of primary schools' curriculums	**Key Concept:** **Government And Politics** Content: How to develop a democratic atmosphere in the classroom? volume-1/ part-2/ unit-1/ chapter-2/ lesson-7/	**C1 D 4** **C3 D14** **C 10 D 58** **C 11 D 65**	**Lecturer:** introduction of an overview on the semester module plan Introduction with the process of planning of teaching and types of teaching planning in mathematics **Task for students:** Web research and presentations of various ways of planning's in math education. **Lecturer:** to read the text from the site living.democracy.com Work file 7 Task for students to explain and discuss creation of democratic atmosphere in the classroom based on the web research and experiences from Democracy Trough Visual Art Education **Lecturer:** plenary discussion **Task for students:** Implementation of the technique of Venn diagram to distinguish similarities and differences in mathematical content with objectives in democratic content.	Lecturing: **50%** Activities: **50%**
Homework/ Individual tasks To explore activities in micro planning.						

Session 2: Planning + Responsibility

Session No/Date	Topic of the session	Didactics of Teaching Mathematics content:	Democracy content:	CDC addressed:	Session step by step (brief version)	Approximate Percentage division
Student's preparation: Bloom's taxonomy of Educational Objectives –defining the aims in mathematical curriculum						
Session 2 **21.10.2020**	Planning in Teaching Mathematics – micro planning Correlation of daily planning and Key Concept: **Responsibility**	Analysis of the process of daily planning with detailed overview on the all components and their interaction in daily planning Correlation of daily planning and Key Concept: **Responsibility to support mutual understanding and meaningful dialogue in the classroom**	Key Concept: **Responsibility** Content: **Worksheet for students to plan their learning schedules:** volume-1/ part-3/ unit-2/ tool-1/ responsibility (Vol. III, part 2, unit 6, lesson 2)	**C7 D43** **C8 D45** **C20 D118**	**Lecturer:** presentation of daily planning models and distinction of the aims and purpose **Task for students:** to define aims of daily planning for specific mathematical content **Lecturer:** models of articulation of the session step by step **Task for students:** to create concept of daily preparation using web resources and textbooks **Lecturer:** analysis and discussion of the created plans	Lecturing: **40%** Activities: **60%**
Homework/Individual tasks: Livingdemocracy.com to find documents connected with the educational planning related with the concept Government and Politics						

Session 3: Evaluation + RFCDC/Identity

Session No/Date	**Topic of the session**	**Didactics of Teaching Mathematics content:**	**Democracy content:**	**CDC addressed:**	**Session step by step (brief version)**	**Approximate Percentage division** Lecturing, Activities, Practice
Student's preparation: To explore the CDC key concept Diversity and pluralism						
Session 3 **28.10.2020**	Evaluation of Learning in Mathematics RFCDC in Math teachings	Process of following, evaluating, grading in Math teachings Introduction of the RFCDC as a tool for following, evaluating, grading in general Creation of task for students	Key Concept: **Identity** Content: **Student hand-out for planning activities and learning related to the evaluation process** textbooks/ volume-1/ part-3/ unit-2/ tool-1/	**C2 D9** **C4 D23** **C5 D29** **C13 D79**	**Lecturer:** presentation of the grading process, forms of grading T**ask for students:** Discussions about own experiences vs. presented material **Lecturer:** presentation and analysis of various tests and analysis of the instruction for creating a Textbook for students- how to plan learning activities **Task for students:** Discussions about the process and way of variation of tests by emphasizing their interconnection **Task for students:** to create a quiz, work in small groups, project activities, plenary discussions	Lecturing: **40%** Activities: **60%**
Homework/Individual tasks: Analyses of e-sources of model of testing in math and search of documents connected with test and student's workout from the https://www.living-democracy.com						

Session 4: Study of numbers + Diversity and Pluralism

Session No/Date	**Topic of the session**	**Didactics of Teaching Mathematics content:**	**Democracy content:**	**CDC addressed:**	**Session step by step (brief version)**	**Approximate Percentage division** Lecturing, Activities, Practice
Student's preparation: e-materials- Reference Framework of competences Vol. 2: 15-23						
Session 4 **4.11.2020**	Methodological approaches to the study of numbers- the nature of numbers The value and the concept of numbers – in mathematics and in real life sense and application based on the Key Concept: **Diversity and Pluralism**	Introduction to concept number, procedures for getting acquainted with natural numbers, comparing numbers, sequences of numbers.	Key Concept: **Diversity and Pluralism** Content: **All different, all equal** volume-6/ shapter-4/ exercize-4.1/	**C2 D8** **C9 D51** **C13 D79**	N. Presentation of ways to introduce numbers up to 20, their writing and comparison S: Analysis of textbooks for first grade and allocation of appropriate tasks for practicing the concept of number- work in pairs Presentation of tasks and creation of similar solutions Monitoring a mock lesson by a teacher-mentor, lesson analysis discussion, presentation, lecture	Lecturing: **50%** Activities: **50%**
Homework/Individual tasks: /						

Session 5: Adding numbers + Equality

Session No/Date	**Topic of the session**	**Didactics of Teaching Mathematics content:**	**Democracy content:**	**CDC addressed:**	**Session step by step (brief version)**	**Approximate Percentage division** Lecturing, Activities, Practice
Student's preparation: Analysis of the mathematics textbooks for 1st,2nd, 3rd grade by reviewing numbers collection models and selecting different tasks						
Session 5 **11.11.2020**	Methodological approaches to the study of numbers. Putting didactics of teaching math in relation to the democratic key concept of 'Equality'.	Calculating devices Concept of adding numbers	Key Concept: **Equality** Content: **Understanding of the EDC key concept Equality in a relation with Didactics of Teaching Mathematics** volume-6/ unit-4/ lesson-4.3/	**C7 D43** **C8 D45** **C 20 D118**	**Lecturer:** Overview about students' homework, presents the concept- adding numbers and connection with the HRE Key Concept: "Equality". **Task for students:** Debate: math concept of equality and democracy concept of "Equality" **Lecturer:** Presents the process of adding numbers **Task for students:** Work in small groups (5 students): select one type of tasks with adding numbers from homework materials, Model class learning: and presents activity from the website V2 U3 L1. All different, all equal	Lecturing: **30%** Activities: **30%** Mock teaching: **40%**
Homework/ Individual tasks Students have to explore the concept of Equality on the web-site livingdemocracy.com and to identify and compare different ways of equality concepts in math and society, to answer the question: How can I teach math, so all learners have a chance to learn?"						

Session 6: Calculating devices + Media

Session No/Date	**Topic of the session**	**Didactics of Teaching Mathematics content:**	**Democracy content:**	**CDC addressed:**	**Session step by step (brief version)**	**Approximate Percentage division** Lecturing, Activities, Practice
Student's preparation: Analysis of the mathematics textbooks for 1st,2nd, 3rd grade by reviewing the concept of number subtraction and selection of various tasks						
Session 6 **18.11.2020**	Methodological approaches to the study of numbers -Calculating devices.	Introduction to the concept of number subtraction Subtraction patterns for numbers up to 10, 100 and 1 000 How to solve and create math problems	Key Concept: **Media** Content: **The power of knowledge and skills!** volume-2/ unit-9/ lesson-2/	**C14 D84** **C16 D94**	**Lecturer:** Presents the concept of subtraction **Students:** Present different models of tasks (homework) Tasks are analysed together to see if all number subtraction models have been found. If necessary, the professor demonstrates the other models through a presentation. **Students:** independent work: searching the internet for sources about various types of problem tasks. Students solve the tasks in pairs and then present a way to solve the task. **Practical work at schools:** mock teaching performed by the lecturer	Lecturing: **40%** Activities: **40%** Mock teaching: **20%**
Homework/ Individual tasks Analysis of the mock teaching realized by teacher – mentor						

Session 7: Multiplication and division + Rules and Law

Session No/Date	**Topic of the session**	**Didactics of Teaching Mathematics content:**	**Democracy content:**	**CDC addressed:**	**Session step by step (brief version)**	**Approximate Percentage division** Lecturing, Activities, Practice
Student's preparation : Analysis of the mathematics textbooks for 1st,2nd, 3rd grade by reviewing the models of multiplication and division of numbers						
Session 7 **25.11.2020**	Methodological approaches to the study of numbers -Calculating devices- multiplication and division Rules and Law as necessity in everyday life and in multiplication and division	Presentation of the models of multiplication and division of numbers Textbook analyses Demonstration of rules and regulations in multiplication and division	Key concept: **Rules and Law** Content: **Why do we need Rules and Law?** volume-2/ unit-5/ lesson-1/ Understanding other people points of view in teaching controversial issues.	**C6 D33** **C9 D51** **C10 D59** **C14 D82**	**Lecturer:** Discussions on the analysis of the following lesson - advantages and disadvantages, giving suggestions for better practice **Lecturer:** Presentation of models of multiplication and division of numbers **Task for students:** Discussion of the separate tasks from the mathematics textbooks, separation of models that are not included in the presentation **Lecturer:** Introduction to the concept Rules and laws explanation of the game "Guess what are my rules" **Task for students:** Plenary discussion on the game and the meaning of the rules and connection with the pavilion and the laws in multiplication and division operations **Lecturer:** The discussion concludes on the connection between the concept of rules and laws and the legality of multiplication and division operations. **Practical work at schools:** small groups 3-4 students, one student in the position of a teacher, others are observing his work with pupils	Lecturing: **40%** Activities: **40%** Practice: **20%**
Homework/Individual tasks To create protocol for evaluation of realized practical work in schools or for preparation of realization of practical work.						

Session 8: Fractions + Rules and Law

Session No/Date	**Topic of the session**	**Didactics of Teaching Mathematics content:**	**Democracy content:**	**CDC addressed:**	**Session step by step (brief version)**	**Approximate Percentage division** Lecturing, Activities, Practice
Student's preparation: Analysis of the textbooks for mathematics and mathematical curriculum, materials connected with Democracy content						
Session 8 **2.12.2020**	Methodological approaches to the study of Fractions Comparing Content: **At what age** and at what age, comparison with the term fractions	Introduction to models for studying the term fractions, connection with everyday life Procedures for comparing fractions, addition and subtraction	Key concepts **Rules and Law** Content: **"At what age"** volume-3/ part-4/ unit-8/ lesson-2/	**C11 D69** **C18 D109**	**Lecturer:** Analysis of the questionnaire from the lesson "At what age", giving instructions for working in pairs "How should the law be applied to young people? **Task for students:** work in pairs, discussion about the result**s** **Lecturer:** Highlighting the conclusion that can be reached at what age, comparison with the term fractions, from the analysis of the textbooks and the program giving direction for work in the groups and determining at what age it is studied **Task for students:** work in pairs discussion about the results **Lecturer:** presentation of models for studying fractions and analysis and comparison with group work **Practical work at schools:** small groups 3-4 students, one student in the position of a teacher, others are observing his work with pupils	Lecturing: **40%** Activities: **40%** Practice: **20%**
Homework/Individual tasks						

Session 9: Measurement + Identity

Session No/Date	Topic of the session	Didactics of Mathematics content:	Democracy content:	CDC addressed:	Session step by step (brief version)	Approximate Percentage division
Student's preparation: Read the text -Differences and similarities: Am I equal? Am I different? V3, U2, L1						
Session 9 **9.12.2020**	Methodological approaches to the study of Measurement Concept of differences and similarities in concept of measurement	Learning the procedure of measurement, measure units Models for introduction of measurement and measure units to primary school students Creating problem situations connected with everyday life	Key Concept: **Identity** Content: **Differences and similarities** **Am I equal? Am I different?** volume-3/ part- 1/ unit-2/ lesson-1/	**C1 D2** **C2 D11** **C4 D24** **C8D44**	**Lecturer:** presentation of the models for learning the measurements in mathematics **Task for students:** Plenary discussion about the approaches and attitudes of students toward difficulties in introduction of learning of measurements in mathematics **Lecturer:** Concluding the discussion about difficulties regarding the concept of Identity. **Task for students:** group work and creating a list of questions about students' possibilities **Task for students:** presentation, plenary discussion **Practical work at schools:** small groups 3-4 students, one student in the position of a teacher, others are observing his work with pupils	Lecturing: **30%** Activities: **20%** Practice: **50%**
Homework/ Individual tasks Each student prepares tasks for pupils in accordance with individual abilities.						

Session 10: Geometric concepts + Rights and Freedom

Session No/Date	**Topic of the session**	**Didactics of Teaching Mathematics content:**	**Democracy content:**	**CDC addressed:**	**Session step by step (brief version)**	**Approximate Percentage division** Lecturing, Activities, Practice
Student's preparation /						
Session 10 **16.12.2020**	Methodological approaches to the study of geometric concepts Rules in everyday life compared with rules in perimeter calculation	Development of geometrical thinking Models of introduction of 2D forms Drawing 2D shapes Procedures for calculating the perimeter of 2D shapes	Key Concept: **Rights and Freedom** Content: **Why must we obey rules?** volume-5/ part 1 unit-9/ lesson-3/	**C6** **D33** **C7** **D42** **C8** **D47**	**Lecturer:** presentation of the development of geometric thinking and modelling of 2D forms **Task for students:** Work in small groups. Students will be faced with a problem situation: how to introduce pupils in calculating the perimeter of 2D forms. Presentation and joint analysis of solutions. Plenary discussions and Comparison of the results **Lecturer:** presenting models that weren't previously presented as needed **Practical work at schools:** small groups 3-4 students, one student in the position of a teacher, others are observing his work with pupils	Lecturing: **30%** Activities: **50%** Practice in school **20%**
Homework / Individual tasks no/						

Session 11: Differences 2D/3D + Rights and Freedom

Session No/Date	Topic of the session	Didactics of Mathematics content:	Democracy content:	CDC addressed:	Session step by step (brief version)	Approximate Percentage division
Student's preparation: Analyse of the math curriculum 1-5 grade						
Session 11 **23.12.2020**	Methodological approaches to the study of geometric concepts Differences in education for democratic citizenship and differences in geometry expressed by the differences in 2D and 3D forms	Models for introducing the 3D shapes to primary school children Procedures for calculating the area of a rectangle Problem solving	Key Concept: **Rights and Freedom** Content: **Difference** volume-6/ chapter 4 excercise-4.2/	**C11 D64** **C12 D73** **C16 D95**	**Lecturer:** analyses, synthesis, critical thinking for various mathematical tasks Data Handling from the previous preparation (mathematic textbooks) **Lecturer:** Summary of what is presented by the students and if necessary- presentation and explanation of other models. **Task for students:** Students will have to create a math problem situation and to find a solution. They will have to analyse the content, selection of various models of data collection, to show different ways of displaying data, to connect the mathematical with social life context regarding solutions about conflict. Discussion about solutions **Lecturer:** introduction of the concept Conflict and the content Conflict: What kinds of solutions can we implement to solve a problem? **Practical work at schools:** small groups 3-4 students, one student in the position of a teacher, others are following his work with pupils	Lecturing: **30%** Activities: **50%** Practice in school:**20%**
Homework / Individual tasks To write an essay on the topic: development of logical thinking and creativity						

Session 12: Study of Data + Conflict

Session No/Date	Topic of the session	Didactics of Mathematics content:	Democracy content:	CDC addressed:	Session step by step (brief version)	Approximate Percentage division
Student's preparation: Analyses of student's textbooks for mathematic from 1st to 5 the grade, search for the various types of tasks for collection, processing and displaying of data						
Session 12 **30.12.2020**	Methodological approaches to the study of Data Handling Solving problems in community and personal conflict in the process of solving math tasks	Data collection models Ways of displaying data Representation of the contents in the mathematics textbooks	Key Concept: **Conflict** Content: **What solutions we have about the problems?** volume-2/ unit-4/ lesson-2/	**C5 D28** **C9 D56** **C16 D94** **C17 D100** **C17 D104**	**Task for students:** analyses, synthesis, critical thinking for various mathematical tasks Data Handling from the previous preparation (mathematic textbooks) **Lecturer:** Summary of what is presented by the students and if necessary- presentation and explanation of other models. **Task for students:** Students will have to create a math problem situation and to find a solution. They will have to analyse the content, selection of various models of data collection, to show different ways of displaying data, to connect the mathematical with social life context regarding solutions about conflict. Discussion about solutions **Lecturer:** introduction of the concept Conflict and the content Conflict: What kinds of solutions can we implement to solve a problem? **Practical work at schools:** small groups 3-4 students, one student in the position of a teacher, others are following his work with pupils	Lecturing: **30%** Activities: **50%** Practice in school **20%**
Homework/Individual tasks To create an educational game.						

2. Detailed Session Plans

Introduction: Prepared in detail for the whole semester

The detailed plans of the 11 sessions give an overview of how the contents of democracy are realized in the study of the methodology of mathematics. Implementing democracy in mathematics means choosing teaching methods that will enable active learning approaches for all participants. In addition, the distribution of teaching time and student activity time should set an example of how everyone in the learning process can be integrated (teacher, student, and content). That is why in this presentation of sessions we provided various activities which unfortunately due to the current situation with the pandemic of COVID-19 were realized as on-line lectures.

The main goal was to activate different levels of students' thinking, to stimulate critical and creative approach and to evaluate their achievements. More difficult was to provide the same quality of transmission of information, as well as gaining adequate knowledge by on-line sessions.

But shortened time for contact with the students during on-line sessions, forced us to become more focused on each detail of the lecturing. The precise planning of the time needed was crucial.

2.1. Session 1: Macro Planning + Governments and Politics

Date: 14.10.2020	**Time: 9:00-10:15 11:00 -13:00**	**on-line via Microsoft Teams**
Session No. 1		**Lecturer(s):** Vesna Makashevska

Part I – General information

Title of Session:	Planning in Teaching Mathematics- macro planning • Aims and Objectives • Process of planning • Types of planning in education		
Overview, issues addressed:	• Introduction to the Aims and Objectives • Analyses of the process of planning, aims and outcomes • Types of planning in education • Analyses of primary schools' curriculums		
Aims and learning outcomes:	• Students will distinguish between the goals and expected results in mathematics • Students will classify and interpret different types of planning • Students will be able to define the goals and outcomes of mathematics • Students will compare and define short-term, medium-term and long-term goals for achieving a democratic atmosphere • Students will analyse and illustrate objectives in mathematical content with objectives in democratic content		
Practice teaching elements included:	No		
Percentage of time allocation:	**Lecture**	**Active learning by university students**	**Teaching practice in university or mock teaching**
	50%	**50 %**	**/**
Practice teaching format used:	☐ mock model lesson at the University by lecturer ☐ by student ☐ model class in schools ☐ by student ☐ classroom teacher ☐ lecturer ☐ other format (specify):		
RFCDC: Competences (C)and descriptors (D) to be applied or trained:	**C1 D 4** Argues that all public institutions should respect, protect and implement human rights **C3 D14** Argues that laws should always be fairly applied and enforced **C 10 D 58** Shows ability to identify resources for learning (e.g., people, books, internet) **C 11 D 65** Uses evidence to support his/her opinions		
Room preparation, infrastructure (board, beamer, flipchart etc.):	• **Computer** • **Internet connection**		
Materials needed	**Computer**		

Part II – Session step by step:

Lecture and group work/discussions: 9:00 – 10:30

Part 1: 9:00- 9:45
Lecturer: Introduction with the process of planning of teaching and types of teaching planning,
Introduction to the Aims and Objectives in math teaching.

Part 2: 9:45-10:30
Task for students: Web research and presentations (Learning trough doing – treasure hunt in group)
Students will choose and interpret various ways of planning in math education.
They will list types of planning and analyse the differences**.**

Part 3: 10:30-11:00
Task for students: plenary discussion based on the results of the task performed.

Part 4: 11:30-11:40
Lecturer: Introduction of the task for students: to read the text from the site livindemocracy.com
Work file 7: How to develop a democratic atmosphere in the classroom

Part 5: 11:40-12:00
Task for students: Students read the text from the site livindemocracy.com
Work file 7: How to develop a democratic atmosphere in the classroom.
Individual work: Students will explain and illustrate the ways to create democratic atmosphere in the classroom based on the web-based material: How to develop a democratic atmosphere in the classroom
volume-1/ part-2/ unit-1/chapter-2/lesson-7/

Part 6: 12:00-12:30
Task for students:
Students will analyse and illustrate objectives in mathematical content with objectives in democratic content. They will implement the technique of Venn diagram to distinguish similarities and differences in the ways of defining the aims in both contents.

Part 7: 12:30-12:50
Plenary discussion

Part 8: 12:50-13:00
Debriefing and evaluation of the session:
Students will summarize the outcomes of the session

Part III – Report (Debriefing and evaluation):

General remarks from students:	Students were motivated to work and were happy about possibility to expand their knowledge of teaching mathematics, but were also interested to work on developing competencies for implementation of democracy in education.
Debriefing of the Didactic of Math Content including homework	Students searched the Internet to find different types of planning in math teaching. They worked in groups and very accurately described the different types of planning: daily, thematic and annual. During the presentation of the group work, they analysed the types of plans and selected the differences between them. Noteworthy is the fact that several of them at the end of the class successfully defined the outcomes of this session.
Debriefing of the Democracy (EDC/HRE) content	Students analysed and illustrated objectives in mathematical content with objectives in democratic content. They implemented the technique of Venn diagram to distinguish similarities and differ-ences in the ways of defining the aims in both contents. By reading the web-based material: How to develop a democratic atmosphere in the classroom volume-1 / part-2 / unit-1 / chapter-2 / lesson-7 , students have successfully identified different types of goals and steps for creating a democratic classroom, and then in Part 6 they easily distin-guished similarities and differences in the ways of defining the goals in both contents.
Debriefing of the RFCDC: Competences (C)and descriptors (D) applied or trained:	**C1 D 4** **Argues that all public institutions should respect, protect and implement human rights** Students confirmed that public institutions should respect, protect and implement human rights. As evidences presented in the plenary discussion (Part 7) they presented state document: Mathemat-ics Curriculum **C3 D14** **Argues that laws should always be fairly applied and enforced** During an on-line debate, students discussed that an implementation of the document - teaching curriculum, its concept and content, provides equal conditions for learning for all pupils which con-firms state support and fair treatment for all. **C 10 D 58** **Shows ability to identify resources for learning (e.g. people, books, internet)** Students have acquired this competence in task at Part2, when they identified various ways of planning in math education during web-search. **C 11 D 65** **Uses evidence to support his/her opinions.** This competence was confirmed at the debate during the lecture and especially in the answers to the homework where various examples from the literature were pointed out as a confirmation of their position.
General remarks by the lecturer:	This is a new teaching experience, but it is still a challenge that we will answer. Further lectures will undergo changes in the time frame at the request of students, in terms of duration and daily schedule.

2.2. Session 2: Planning + Responsibility

Date: 21.10.2020	Time: 17:00-20:00	on-line via Microsoft Teams
Session No. 2		**Lecturer(s):** Vesna Makashevska

Part I – General information

Title of Session:	Planning in Teaching Mathematics – micro planning		
Overview, issues addressed:	• Analysis of the process of daily planning • Detailed overview of all the components and their interaction in daily planning		
Aims and learning outcomes:	• Students will analyse and distinguish different models of daily planning in the contexts of the responsibility • Students will select the adequate model of daily planning • Students will create their own model of daily planning in accordance with pupils' age • Students will define learning objectives based on Bloom`s taxonomy • Students will create worksheet to reflect on their learning		
Practice teaching elements included:	/No		
Percentage of time allocation:	**Lecture**	**Active learning by University Students**	**Teaching practice in university or mock teaching**
	40%	**60 %**	**0%**
Practice teaching format used:	☐ mock model lesson at the University by lecturer ☐ by student ☐ model class in schools ☐ by student ☐ classroom teacher ☐ ecturer ☐ other format (specify):		
RFCDC: Competences (C)and descriptors (D) to be applied or trained:	**C7 Responsibility** D43 Consistently meets commitments to others (advanced level) **C8 Self –efficacy** D 45 Expresses the belief that he/she can carry out activities that he/she has planned (basic level) **C 20 Knowledge and critical understanding of the world: environment……** D 118 Can explain why everybody has a responsibility to respect the human rights of others		
Room preparation, infrastructure (board, beamer, flipchart etc.):	• **Computer** • **Internet connection**		
Materials needed	**Computer**		

Student's homework →

Почитувајќи ги правилата самите ученици ќе покажат транспарентност со што тие веќе им се познати и јасни им се целите и можат активно да учествуваат или вербално со дискусија со наставникот или преку пишана форма каде ќе можат да ги запишат своите забелешки. Треба да им се доближи на децата поимот за формални и неформални поравила па самите да сфатат како би ги разликувале и како би ги применувале во училиштето и во самиот тек на животот.

Марија Николовска - 11523

Part II – Session step by step:

Part 1: 17:00- 17:30

Lecturer: presentation of models of daily planning and distinction of the aims and purpose

Part 2: 17:30-17:50

Task for students: to define aims of daily planning for specific mathematical content based on the homework – to implement the Bloom's taxonomy of educational objectives

Part 3: 17:50- 18:15

Task for students: students show presentation of task realization and elaborate their choice**s**

Part 4: 18:15 – 18:45

Lecturer: models of articulation of the session step by step

Part 5: 18:45 – 19:30

Task for students: to create complete daily preparation with application of the web resources livingdemocracy. com and math textbooks:

Worksheet for students to plan their learning schedules

Volume 1Part 3 Unit 2 Tool 1

Part 6: 19:30 – 20:00

Lecturer and students: analyse and discuss about created planning

Homework / Individual tasks:

To create an essay based on the web resources used: Worksheet for students to plan their learning schedules, and to explain efficiency of the material in the context of daily planning.

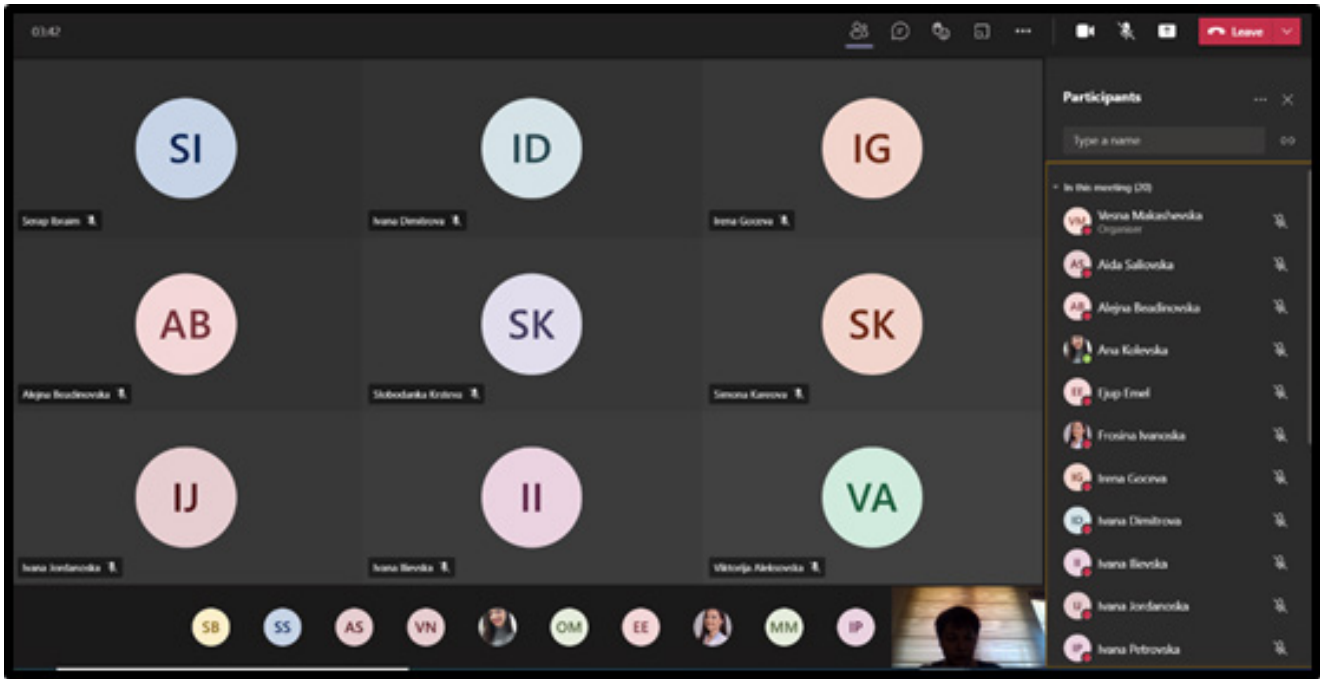
Debriefing and evaluation of the session:

Students will comment and evaluate the session based on the possibility for its practical implementation.

Part III – Report (Debriefing and evaluation):

General remarks from students:	Students generally notice the lack of physical communication and practical work, mainly because of the specificity of the subject and need the personal experiences in implementation of the content to pupils.
Debriefing of the Didactic of Math Content including homework	After presentation of the principles and models of daily planning, students defined goals for specific mathematical content and applied Bloom's taxonomy. There were mistakes at the beginning, but later, with the help of the list of verbs for the application of Bloom`s Taxonomy students solved the task well. In the presentation of the work, they explained their own planning choices and reasons for choosing them.
Debriefing of the Democracy (EDC/HRE) content	By doing the homework "Worksheet for students to plan their learning schedules" students learned and showed that each activity has to be planned well to obtain successful teaching. They created plans and explained possibilities to apply them in practice. Students adapted their planning's to the children's needs, thus confirming their own responsibility to respect the dif-ferences in children`s learning.

Debriefing of the RFCDC: Competences (C)and descriptors (D) applied or trained:	**C7 Responsibility** D43 Consistently meets commitments to others (advanced level) Regular submission of homework on time and solving tasks during the class. **C8 Self –efficacy** D 45 Expresses the belief that he/she can carry out activities that he/she has planned (basic level) With the activity to create their own model of daily planning in accordance with pupils' age, stu-dents were introduced to develop competence Self –efficacy, but due to the impossibility to check the plan into practical realization, I cannot confirm the achievement of this competence. **C 20 Knowledge and critical understanding of the world: environment……** My mistake- I did not check this competence. D 118 Can explain why everybody has a responsibility to respect the human rights of others In Part 6, when students were analysing and discussing created plans, they emphasized the need to adjust the plans to all pupils, which shows that they take into account children rights.
General remarks by the lecturer:	These contents must be followed by student`s practical work in schools or mock. But conditions do not allow it.



2.3. Session 4: Study of numbers + Diversity and Pluralism

Chemistry Content: Planning and organization of the teaching process

Democracy Content: /

Competences for Democratic Culture: No. 6, 14, 18

Date: 28.10.2020	**Time: 17:00–20:00**	**on-line via Microsoft Teams**
Session No. 3		**Lecturer(s):** Vesna Makashevska

Part I – General information

Title of Session:	**Study of numbers** • Introduction to the concept of number, • Procedures for getting acquainted with natural numbers, • Comparing numbers, sequences of numbers.		
Overview, issues addressed:	• Introduction to methodological approaches to the concept of number • Analyses of the concept number, procedures for getting acquainted with natural numbers, • Illustrate the methodological approaches to comparing numbers, sequences of numbers • Analyses of primary math textbook		
Aims and learning outcomes:	• Students will classify and interpret different types of methodological approaches of introduction the concept of number • Students will be able to define the goals and outcomes of concept of number • Students will analyse and compare the concept of numbers – in mathematics, in real life and application based, different and equal, based on the Key Concept: Diversity and Pluralism		
Practice teaching elements includ-ed:	Preparing global, thematic and operational/daily planning		
Percentage of time allocation:	**Lecture**	**Active learning by University Students**	**Teaching practice in university or mock teaching**
	50 %	**50 %**	**/**
Practice teaching format used:	☐ mock model lesson at the University by lecturer ☐ by student ☐ model class in schools ☐ by student ☐ classroom teacher ☐ lecturer ☐ other format (specify):		
RFCDC: Compe-tences (C)and descriptors (D) to be applied or trained:	**C2 D8** Promotes the view that one should always strive for mutual understanding and meaningful dialogue between people and groups who are perceived to be "different" from one another **C9 D51** Shows that he/she can suspend judgments about other people temporarily **C13 D79** Takes other people's feelings into account when making decisions		
Room prepara-tion, infrastruc-ture (board, beamer, flipchart etc.):	• Computer • Internet connection		
Materials needed	Computer		

Part II – Session step by step:

Lecture and group work/discussions: 17:00 – 18:30

Part 1: 17:00 – 17:30
Lecturer: Presentation of ways to introduce numbers up to 20, their writing and comparison.

Part 2: 17:30 -18:00
Task for students: Web research and presentations (Learning trough doing – treasure hunt in group) Students will choose and interpret various ways of planning in math education. They will list types of planning and analyse the differences.

- Students will analyse the textbooks for first grade and allocate of appropriate tasks for practicing the concept of number- work in pairs. Students will choose and interpret various ways of procedures for getting acquainted with natural numbers, comparing numbers, sequences of numbers.

Part 3: 18:00-18:30
Task for students: plenary discussion based on the results of the task performed.

Part 4: 18:30-18:40
Lecturer: Introduction of the task for students: to read the text from the site livindemocracy.com

Part 5: 18:40-19:00
Task for students: Students read the text from the web site livindemocracy.com Work file: volume-6/ chapter-4/ exercise-4.1/ All different, all equal

Individual work: Students will explain and illustrate the ways to create activities similar to content of the web-based material: All different, all equal volume-6/ chapter-4/ exercise-4.1/

Part 6: 19:00-19:30
Presentation of individual work and discussion about possibilities to create integrative activities maths and democracy

Part 7: 19:30-19:40
Plenary discussion: Students will summarize the outcomes of the session

Part III – Report (Debriefing and evaluation):

General re-marks from stu-dents:	The students were satisfied with the way this session was conducted and the way the theory and practice were intertwined, as well as with the discussion and expression of their own opinions and views and the opportunity to ask questions to the mentor teachers.
Debriefing of the Didactic of Math Content including homework	In online research of math textbook students defined different models and strategies for introducing natural numbers to pupils. Their knowledge was completed through the presentation. Thus, in the plenary discussion, they successfully compared the different models and expressed the difference between them. In the final discussion they success-fully defined goals and outcomes of concept of number.
Debriefing of the Democracy (EDC/ HRE) con-tent	At the beginning students were not able to see the similarity of the idea of "different and equal numbers" in connection with the Key Concept: Diversity and Pluralism. With the guidance of the professor they agreed on the close connection and similarity of the two concepts.
Debriefing of the RFCDC: Competences (C) and de-scriptors (D) applied or trained:	**C2 D8** Promotes the view that one should always strive for mutual understanding and meaningful dialogue between people and groups who are perceived to be "different" from one another During the debate, students expressed tendency to understand attitudes of other students, different than their own, to convince to understand different opinions, especially those that connect possibilities to connect mathematics and democracy. **C9 D51** Shows that he/she can suspend judgments about other people temporarily I did not succeed to check this descriptor. **C13 D79** Takes other people's feelings into account when making decisions With expression to understand other students' attitudes, students showed that they take other students' feelings into consideration.
General re-marks by the lecturer:	Because the students' lack of knowledge and experiences for the introduction of mathematical concepts, we did not conduct planned Session 3, but went on with Session 4.

2.4. Session 5: Adding numbers + Equality

Date: 4.11.2020	Time: 17:00-20:00	on-line via Microsoft Teams
Session No. 5		**Lecturer(s):** Vesna Makashevska

Part I – General information

Title of Session:	Methodological approaches to the study of numbers • Calculating devices • Concept of adding numbers		
Overview, issues addressed:	• Introduction to the concept of didactic of adding numbers • Procedures of adding numbers: oral and written • Adding numbers by applying on number line • Compensation in collection of numbers • Introduction of the concept of " Equality" as one of the key Concepts of EDC/HRE		
Aims and learn-ing outcomes:	• Students will know how to analyse and distinguish math concept of equality and democracy concept of "Equality" • Students will experience how to select and decide on type of tasks with adding numbers in accordance with pupils' age • Students decide about the adequate model/s of adding numbers based on mathematical procedures		
Practice teaching	/		
Percentage of time allocation:	**Lecture**	**Active learning by University Students**	**Teaching practice in university or mock teaching**
	40 %	**60 %**	**/**
Practice teaching format used:	☐ mock model lesson at the University by lecturer ☐ by student ☐ model class in schools ☐ by student ☐ classroom teacher ☐ lecturer ☐ other format (specify):		
RFCDC: Compe-tences (C)and descriptors (D) to be applied or trained:	**C7 Responsibility** D43 Consistently meets commitments to others (advanced level) C8 Self –efficacy **D 45 Expresses the belief that he/she can carry out activities that he/she has planned (basic level)** C 20 Knowledge and critical understanding of the world: environment…… **D 118 Can explain why everybody has a responsibility to respect the human rights of others**		
Room etc.:	**Computer: Internet connection**		
Materials need-ed	Computer		

Part II – Session step by step:

Lecture and group work/discussions: 17:00 – 10:15

Part 1: 17:00- 17:20

Lecturer:

Lecturer gives overview about student`s homework related to their analysis of the content of textbooks in Mathematics I, II and III with focus on mathematical models of adding numbers. Lecturer also comments student's selection of different tasks with adding numbers for primary school children.

Lecturer presents the concept- adding numbers and connection with the HRE Key Concept: "Equality"

Part 2: 17:20-17:30

Task for students:

Debate: students analyse and distinguish math concept of equality and democracy concept of "Equality"

Part 3: 17:30- 17:50

Lecturer:

Presents the process of adding numbers by applying on arithmetical number line, oral and written adding of numbers, compensation in number adding

Part 4: 17:50 – 18:30

Task for students:

Work in small groups (5 students): each group of students have to select one type of tasks with adding numbers from homework materials. Students have to decide about the adequate model/s of adding numbers.

Students show their solution on a presentation and elaborate of the model of adding numbers they have chosen.

Part 5: 18:30 – 18:45

Analysis of presented model/s of adding numbers, with emphasizing their advantages and disadvantages in math teaching.

Part 6:

Lecturer: Teacher conducted activity with the students: website V6 C4 U4.3. True and false – explaining how equality in a group of pupils can be applied to equality of group of numbers.

Task for students:

Students are required to illustrate situations with their own examples.

Discussion with the students about term "Equality" and analyses of the use in maths and relations in society.

Task for students:

1. Students solve the task of adding numbers presented by teacher. They apply procedures of adding numbers: oral and written.
2. Students explain the procedures of adding numbers in various tasks.

Part 7: 19:50-20 :00

Debriefing and evaluation of the session:

Plenary discussion with the students about content and teaching/learning approach. And about implementation of the content in primary school class.

Homework

Students have to explore the concept of Equality on the web-site livingdemocracy.com and to identify and compare different ways of equality concepts in maths and society.

Part III – Report (Debriefing and evaluation):

General remarks from students:	The students doubted the connection between mathematics and democracy, and they expressed their opinion: students at school are small and they see equality in adding as much as in everyday life (democracy)
Debriefing of the Didactic of Math Content includ-ing homework	Students working in groups showed that they can make the right choice of types of tasks for adding numbers. Students decided about the adequate model / s of adding numbers. They also used examples from practice to justify their own choices. Students were active in solving prob-lem situations in math tasks and made adequate choices of resettlement models.
Debriefing of the Democracy (EDC/HRE) con-tent	In the debate from Part 6, students pointed out the possibility to study the math concept of equality in parallel with the democracy concept of "Equality" by applying appropriate activities. They explained how equality in a group of pupils can be applied to equality of group of num-bers.
Debriefing of the RFCDC: Compe-tences (C)and descriptors (D) applied or trained:	**D43 Consistently meets commitments to others (advanced level)** Students collaborated actively in groups and finished tasks with responsibility: with responsible attendance on the on-line lecturing and finishing homework on time. **D 45 Expresses the belief that he/she can carry out activities that he/she has planned (basic level)** In part 4 when presenting homework, on my question: “Can pupils solve discussed model easier?” students answered affirmatively and gave their own arguments. **D 118 Can explain why everybody has a responsibility to respect the human rights of others** When students are required to illustrate situations with their own examples
General remarks by the lecturer:	I am very satisfied with the way the students think and their ability to create activities in accord-ance with pupils’ needs. Because we cannot conduct mock, we organized practical work in small groups and debated afterwards.

2.5. Session 6: Calculating devices + Media

Date: 11.11.2020	Time: 17:00-20:00	on-line via Microsoft Teams
Session No. 6		Lecturer(s): Vesna Makashevska

Part I – General information

Title of Session:	Methodological approaches to the study of numbers – Calculating		
Overview, is-sues addressed:	• Introduction to the concept of number subtraction • Subtraction patterns for numbers up to 10, 100 and 1 000 • How to solve and create math problems • Introduction of the concept of " Media" as one of the key Concepts of EDC/HRE		
Aims and learn-ing outcomes:	• Students will know how to analyse and evaluate media sources and mathematical tasks • Students will experience how to select and decide type of tasks with adding numbers in accordance with pupils' age • Students decide about the adequate model/s of adding numbers based on mathematical procedures • Students will know how to analyse and create math problems		
Practice teach-ing	/		
Percentage of time allocation:	**Lecture**	**Active learning by University Students**	**Teaching practice in university or mock teaching**
	40%	**60 %**	**/**
Practice teach-ing format used:	☐ mock model lesson at the University by lecturer ☐ by student ☐ model class in schools ☐ by student ☐ classroom teacher ☐ lecturer ☐ other format (specify):		
RFCDC: Compe-tences (C)and descriptors (D) to be applied or trained:	C14. Flexibility and adaptability D84 Adapts to new situations by using a new skill C16 Co-operation skills D94 Builds positive relationships with other people in a group		
Room prepara-tion etc.	Computer: Internet connection		
Materials need-ed	Computer		

Part II – Session step by step:

Part 1: 17:00- 17:30
Lecturer:
Lecturer gives overview about student's homework related to their analysis of the content from the textbooks in Mathematic I, II and III with focus on mathematical models of adding numbers up to 10, 100 and 1 000.
Students: Presents different models of tasks of adding numbers up to 10, 100 and 1 000 from the content of textbooks in Mathematic I, II and III (homework). Lecturer also comments student's selection of different tasks. Tasks are analysed together to see if all number subtraction models have been found. If necessary, the professor demonstrates other models.

Part 2: 17:30-17:45
Lecturer:
Presents the concept of subtraction through a presentation

Part 3: 17:30- 17:50
Students: independent work: searching the internet for sources about various types of problem tasks. Students solve the tasks in pairs and then present a way to solve the task.

Part 4: 17:50 – 18:30
Task for students:
Work in small groups (2-5 students): each group of students has to find photographs from e-resources with the content "Emotions" and to share/publish on our internal internet/FB group page.
Discussion with the students about adequacy of presented photographs to the given task.

Part 5: 18:30 – 19:00
Lecturer: Teacher conducts activity with the students: website V2 U9.L2. The power of knowledge and skills! and importance of media for finding the information from the adequate resource.

Discussion with the students about connection of importance of the media as the source of information and various models of testing in math education.

Part 6: 19:00 – 19:30
Task for students:
Work in small groups (2-5 students): each group of students have to create test for pupils with the topic of adding and subtracting numbers up to 1 000.

Part 7: 19:30 – 20:00
Presentation and evaluation of created tests.

Part III – Report (Debriefing and evaluation):

General remarks from students:	Students were satisfied with this way of learning. They confirmed that using internet sources reveals various possibilities.
Debriefing of the Didactic of Math Content including homework	Based on the analyses of the textbook in mathematics, students became able to discover patterns in the addition of numbers up to 10, 100 and 1 000. Searching the internet was shown to be a good practice because students had the opportunity to choose and also to explain their own selection based on the specificity of the age of pupils. It was interesting to see that a group of students showed solutions that were not suitable for the age group. With the arguments presented by the lecturer, they understood mistakes and did the corrections. By the end of the session, students independently created math tests to check pupils' knowledge. Each test was analysed separately.
Debriefing of the Democracy (EDC/ HRE) con-tent	Students discussed the concept of Media with a special focus on their influence on the public life. I focused the discussion to the Internet sources of math tests, pointed the intensity of their media support. We concluded that during the selection of math tests from Internet sources we always have to consider the goals of the activity and individual possibilities of the pupils.
Debriefing of the RFCDC: Compe-tences (C)and descriptors (D) applied or trained:	**D84 Adapts to new situations by using a new skill** With the task to create math problem situations tasks in which different procedures of adding and subtracting numbers to 1000 are implemented. **D94 Builds positive relationships with other people in a group** Proved to be realized with: quality of received student answers based on continuous work in groups, success in realization of the tasks and cooperation with mentors
General remarks by the lecturer:	Students were tired, so I decided to realize last parts 6 and 7 as homework, because better concen-tration for their fulfilment was needed. For realization of the homework, mentors were also con-sulted. Since we couldn't do mock lesson, we organized practical work in small groups and debated afterwards.

2.6. Session 7: Multiplication and division + Rules and Law

Date: 18.11.2020	Time: 17:00-19:00	on-line via Microsoft Teams
Session No. 7		Lecturer(s): Vesna Makashevska

Part I – General information

Title of Session:	*Methodological approaches to the study of numbers-Calculating devices- Methodological approaches to the study of numbers- Calculating devices- multiplication and division*		
Overview, issues addressed:	• Introduction to the concept of multiplication and division • Procedures of multiplication and division of numbers up to 100 and 1 000 • How to solve and create math problems • Introduction of the concept of " Rules and Law" as one of the key Concepts of EDC/HRE		
Aims and learning outcomes:	• Students will know how to compare concept of rules and laws and the legality of multiplication and division operations. • Students will experience how to select and decide on the type of tasks with multiplication and division of numbers in accordance with pupils' age • Students decide about the adequate model/s of multiplication and division of numbers based on mathematical procedures • Students will know how to analyse and create math problems		
Practice teaching	/		
Percentage of time allocation:	**Lecture**	**Active learning by University Students**	**Teaching practice in university or mock teaching**
	40%	**60 %**	**/**
Practice teaching format used:	☐ mock model lesson at the University by lecturer ☐ by student ☐ model class in schools ☐ by student ☐ classroom teacher ☐ lecturer ☐ other format (specify):		
RFCDC: Competences (C)and descriptors (D) to be applied or trained:	**C6 D33** Expresses a willingness to co-operate and work with others **C9 D51** Shows that he/she can suspend judgments about other people temporarily **C10 D59 S**eeks clarification of new information from other people when needed **C14 D82** Modifies his/her opinions if he/she is shown through rational argument that this is required		
Room preparation, etc.:	**Computer: Internet connection**		
Materials needed	• Computer • E-materials		

Part II – Session step by step:

Part 1: 17:00- 17:20
Lecturer:
Lecturer gives overview about student`s homework about math test- adding and subtraction. Discussions on the analysis of the homework- advantages and disadvantages, giving suggestions for better practice.

Part 2: 17:20-17:40
Lecturer:
Presenting the concept of multiplication and division through a presentation

Part 3: 17:40- 18:00
Task for students:

- Students have to find the separate tasks from the mathematics textbooks, models of separation that are not included in the presentation.

Part 4: 18:00 – 18:30
Discussion about tasks, different models of multiplication and division

Part 5: 18:30 – 18:45
Lecturer: Introduction to the concept Rules and laws, explanation of the game "Guess what are my rules"

Part 6: 18:45 – 19:00
Task for students:
Plenary discussion by students on the game and the meaning of the rules and connection with the pavilion and the laws in multiplication and division operations
Lecturer: The discussion concludes on the connection between the concept of rules and laws and the legality of multiplication and division operations.

Part III – Report (Debriefing and evaluation):

General remarks from students:	Students expressed satisfaction on the work with mentors, while solving the next task.
Debriefing of the Didactic of Math Content includ-ing homework	Students successfully analysed textbooks and found new solutions and models of multiplication and division of numbers. This highlights the ability to analyse and evaluate. It is especially im-portant that students explained how to select and decide which type of task with multiplication and division of numbers corresponded the pupils' age. Students faced difficulties in creation of tests, especially with selection of tasks, but in consultation with mentors they overcame difficulties and found adequate solutions.
Debriefing of the Democracy (EDC/ HRE) con-tent	Students easily determined connection of math concepts with real life situations- in this case- Key concept Rules and laws. This was based on their prior knowledge and experiences with the con-cept of democracy, but also based on their own math knowledge of the principles of subordination in the operation of multiplication and division.
Debriefing of the RFCDC: Compe-tences (C)and descriptors (D) applied or trained:	**C6 D33 Expresses a willingness to co-operate and work with others** When working on the final task (math test) when it is easy to approach the mentors to solve dilemmas. **C9 D51 Shows that he/she can suspend judgments about other people temporarily** I did not succeed to evaluate – my mistake. **C10 D59 Seeks clarification of new information from other people when needed** Presented as obtained during lecturing in the part of explanation of the concepts and in various ways to solve math tasks. **C14 D82 Modifies his/her opinions if he/she is shown through rational argument that this is required** Accepts lecturer's suggestions about how to include connections between the concept of rules and laws and the legality of multiplication and division operations in teaching practice**.**
General remarks by the lecturer:	In the absence of direct communication and practical work, we cannot succeed to reach some competencies (C10 D59). This has to be provided in the conditions for realization of online ses-sions.

2.7. Session 8: Fractions + Rules and Law

Date: 25.11.2020	Time: 17:00–19:00	on-line via Microsoft Teams
Session No. 8		**Lecturer(s):** Vesna Makashevska

Part I – General information

Title of Session:	**Fractions** • Introduction to models for studying the term fractions, • Procedures for comparing fractions, addition and subtraction		
Overview, issues addressed:	• Introduction to methodological approaches to the concept of fractions • Analyses of the concept of fractions, Illustrate the methodological approaches to comparing fractions, addition and subtraction • Analyses of primary math textbook		
Aims and learning outcomes:	• Students will interpret different models of methodological approaches of introduction of the concept of fractions • Students will be able to define the goals and outcomes of the concept of fractions • Students will analyse and compare the concept of fractions – in mathematics in real life and application based different and equal based on the Key Concept: Rules and Law		
Practice teaching elements included:			
Percentage of time allocation:	**Lecture**	**Active learning by University Students**	**Teaching practice in university or mock teaching**
	50%	**50 %**	**/**
Practice teaching format used:	☐ mock model lesson at the University by lecturer ☐ by student ☐ model class in schools ☐ by student ☐ classroom teacher ☐ lecturer ☐ other format (specify):		
RFCDC: Competences (C)and descriptors (D) to be applied or trained:	**C11 D69** Can use explicit and specifiable criteria, principles or values to make judgments **C18 D109** can reflect critically on himself/herself from a number of different perspectives		
Room preparation, infrastructure (board, beamer, flipchart etc.):	• Computer • Internet connection		
Materials needed	Computer		

Part II – Session step by step:

Part 1: 17:00 – 17:30
Lecturer: Presentation of models for studying fractions and analysis and comparison

Part 2: 17:30-18:00
Task for students: Students will analyse the first grade textbooks and allocate the appropriate tasks for practicing the concept of fractions- work in pairs. Students will choose and interpret various types of tasks

Part 3: 18:00-18:15
Task for students: discussion based on the results of the task performed.

Part 4: 18:15-18:40
Lecturer: Analysis of the questionnaire from the lesson “At what age”, giving instructions for working in pairs "How should the law be applied to young people?

Part 5: 18:40-19:00
Task for students: work in pairs, discussion about the results.

Part 6: 19:00-19:20
Lecturer: Highlighting the conclusion that can be reached at what age, comparison with the term fractions, from the analysis of the textbooks and the program giving direction for work in the groups and determining at what age it is studied

Part 7: 19:20-19:30
Task for students: plenary discussion about the results

Part III – Report (Debriefing and evaluation):

General remarks from students:	Students asked to analyse their homework together with emphasizing the advantages and flaws.
Debriefing of the Didactic of Math Content including homework	In absence of the practical work in schools and implementation of mock model, students defined the goals and outcomes of the concept of fractions. In the plenary, they presented their own standpoints and discussed about different models of methodological approaches of introducing the concept of fractions. They argued and defended various approaches, pointed out at the end the need to obtain quality didactic materials to present the abstract concept of fractions to pupils.
Debriefing of the Democracy (EDC/ HRE) content	With the text "At what age", the students who worked in pairs discussed "How should the law be applied to young people?" They connected very easily the concept of fractions with the knowledge that has to be reached in accordance with pupil`s age.
Debriefing of the RFCDC: Competences (C) and descriptors (D) applied or trained:	**C11 D69 Can use explicit and specifiable criteria, principles or values to make judgments** Students created their own list of math tasks based on the criteria and principles that arise from individual judgements about pupil needs. **C18 D109, Can reflect critically on himself/herself from a number of different perspective**s There was no possibility to reach or to evaluate
General remarks by the lecturer:	Competence C18 D109 which had to be reached with practical work and own reflection couldn't not be obtained. This opens the question for different organization of the students' practical work.

2.8. Session 9: Measurement + Identity

Date: 2.12.2020	Time: 17:00–19:00	on-line via Microsoft Teams
Session No. 9		Lecturer(s): Vesna Makashevska

Part I – General information

Title of Session:	**Measurement** • Methodological approaches to the study of Measurement • Concept of Differences and similarities in concept of measurement		
Overview, issues addressed:	• Learning the procedure of measurement, measure units • Models for introduction of measurement and measure units to primary school students • Creating problem situations connected with everyday life • Introduction of the concept of **Identity**		
Aims and learning outcomes:	• Students will interpret different procedure of measurement • Students will be able to create the problem situations connected with everyday life • Students will analyse and compare the Concept of Differences and similarities in concept of measurement		
Practice teaching elements included:			
Percentage of time allocation:	**Lecture**	**Active learning by University Students**	**Teaching practice in university or mock teaching**
	50%	**50 %**	**/**
Practice teaching format used:	☐ mock model lesson at the University by lecturer ☐ by student ☐ model class in schools ☐ by student ☐ classroom teacher ☐ lecturer ☐ other format (specify):		
RFCDC: Competences (C) and descriptors (D) to be applied or trained:	**C1 D2,** Argues that specific rights of children should be respected and protected by society **C2 D11, A**rgues that intercultural dialogue should be used to develop respect and a culture of "living together" **C4 D24,** Expresses an appreciation of the opportunity to have experiences of other cultures **C8D44** Expresses a belief in his/her own ability to understand issues		
Room preparation, infrastructure (board, beamer, flipchart etc.):	**Computer** **Internet connection**		
Materials needed	**Computer**		

Part II – Session step by step:

Part 1: 17:00 – 17:30

Lecturer: presentation of the models for learning the measurement in mathematics

Part 2: 17:30-18:00

Task for students: Plenary discussion about the students' approaches and attitudes toward difficulties in introduction of learning the measurement in mathematics. Students will analyse the e-material on website EDUINO, and allocate the appropriate activities for practicing the measuring. Students will choose and interpret various types of tasks

Part 3: 18:00-18:15

Task for students: discussion based on the results of the task performed.

Part 4: 18:15-18:4 0

Lecturer: Introduction with analyses of the Key Concept: Identity Content: Differences and similarities: Am I equal? Am I different volume-3/ part- 1/ unit-2/ lesson-1/

Task for students: Concluding the discussion about difficulties students can have regarding the concept of Identity and text analysis and the offered work model text.

Part 5: 18:40- 18:50

Task for students: individual work – to create a list of questions about various pupils' possibilities toward solving math tasks.

Part 6: 18:50-19:00

Task for students: Student present the list of questions
Plenary discussion about the different pupils' possibilities

Part III – Report (Debriefing and evaluation):

General remarks from students:	Students indicated the individual children's needs and necessity for respect of children's rights, not only in the education, but in society in general.
Debriefing of the Didactic of Math Content including homework	Students understood the need of introduction of the procedure of measuring with non-standard measures, which facilitates the introduction of standard measures and procedures. Students elaborated various procedures of measurement very successfully. To challenge the concepts of measurement of great importance and resilience to the problem of everyday life because students have the task of creating problematic situations and to suggest a model of resilience.
Debriefing of the Democracy (EDC/HRE) content	After the analysis of the concepts of Identity and the Content: Differences and similarities: Am I equal? Am I different? Students gave examples of various pupils' abilities and pointed out the necessity to provide the appropriate conditions for reaching expected results for each pupil.

Debriefing of the RFCDC: Competences (C)and descriptors (D) applied or trained:	**C1 D2, Argues that specific rights of children should be respected and protected by society** Showed in part 6 during presentation of the list of various students' needs – students emphasized: - Inclusive school gave a possibility for education based on pupils' individual needs. **C2 D11, Argues that intercultural dialogue should be used to develop respect and a culture of "living together"** Proved as truth during group work – students are from different nationalities and gave support to the colleagues whose mother tongue is different than Macedonian. They cooperate and solve methodical problems together. **C4 D24, expresses an appreciation of the opportunity to have experiences of other cultures** Students express satisfaction with having opportunities for joint activity with colleagues. **C8D44 Expresses a belief in his/her own ability to understand issues** By comparing the different pupils' needs, students showed the ability to understand the problems that the pupils might have. -For Pupils who do not understand the conversion of most units from large to small or vice versa concrete materials to illustrate the task should be used.
General remarks by the lecturer:	Although students supported and cooperated in fulfilling their obligations, by my opinion to gain C4 D24, practice in a multi-ethnic environment is needed. Because we could not conduct practical work in schools, we organized practical work in small groups and debated afterwards.

2.9. Session 10: Geometric concepts + Rights and Freedom

Date: 9.12.2020	Time: 17:00–19:00	on-line via Microsoft Teams
Session No. 10		**Lecturer(s):** Vesna Makashevska

Part I – General information

Title of Session:	**Geometric concepts** • Methodological approaches to the study of geometric concepts • Rules in everyday life compared with rules in perimeter calculation		
Overview, issues addressed:	• Development of geometrical thinking • Models of introduction of 2D forms • Drawing 2D shapes • Procedures for calculating the perimeter of 2D shapes • Introduction of the concept of **Rights and Freedom**		
Aims and learning outcomes:	• Students will interpret different methodological approaches to the study of geometric concepts • Students will be able to create the problem situations for calculating the perimeter of 2D shapes, connected with everyday life • Students will analyse and compare the Concept of Rights and Freedom in geometric concept		
Practice teaching elements included:			
Percentage of time allocation:	**Lecture**	**Active learning by University Students**	**Teaching practice in university or mock teaching**
	50%	**50 %**	**/**
Practice teaching format used:	☐ mock model lesson at the University by lecturer ☐ by student ☐ model class in schools ☐ by student ☐ classroom teacher ☐ lecturer ☐ other format (specify):		
RFCDC: Competences (C) and descriptors (D) to be applied or trained:	**C6 D33, Expresses a willingness to co-operate and work with others** **C7 D42, Shows that he/she takes responsibility for own mistakes** **C8D47 If he/she wants to change, he/she expresses confidence that he/she can do it**		
Room preparation, infrastructure (board, beamer, flipchart etc.):	**Computer** **Internet connection**		
Materials needed	• Computer		

Part II – Session step by step:

Part 1: 17:00 – 17:30

Lecturer: presentation of the development of geometric thinking and methodological approaches of the study of geometric concepts and modelling 2D forms

Part 2: 17:30-18:00
Task for students: Students works in small groups (2-3). They are faced with a didactical math problem situation: to create the solution for introduction of pupils in calculating the perimeter of 2D forms.

Part 3: 18:00-18:30
Task for students: Presentation and joint analysis of solutions.

Part 4: 18:30-18:40
Lecturer: presenting models that were not previously presented as needed

Part 5: 18:40- 18:50
Lecturer: Presents the Key Concept: Rights and Freedom and introduces the Content: Why must we obey rules? volume-5/part 1 unit-9/lesson-3/

Part 6: 18:50-19:00

Task for students: To compare rules and freedom as a concept of citizenship vs. rules and freedom as a concept in geometry.
Part 7: 19:00-19:15
Plenary discussion

Part III – Report (Debriefing and evaluation):

General remarks from students:	Students showed interest to compare the concept of rules and freedom in citizenship education and geometrical concepts. They claimed that more serious connection is needed to apply because of the very strong interest and connection in the reality.
Debriefing of the Didactic of Math Content including homework	Students independently came up with models for introduction of geometric concepts, based on the concept of the development of geometric thinking. By improving the characteristics of the intended mathematical knowledge, students solved the didactic problem – how to introduce geometric concepts to pupils.
Debriefing of the Democracy (EDC/ HRE) content	Students compared the Concept of Rights and Freedom in social life and in geometry. They used the concept of rules and freedom as a concept of citizenship vs. rules and freedom as a concept in geometry. They connected the civil rights with the rules in drawing geometric shapes with specific characteristic.
Debriefing of the RFCDC: Competences (C)and descriptors (D) applied or trained:	**C6 D33, Expresses a willingness to co-operate and work with others** Students worked together in part 2 – creating the models of methodological math training. **C7 D42, shows that he/she takes responsibility for own mistakes** Students accepted my suggestion about the solution in the proposed models for solving perimeter math tasks and implemented accepted requests. **C8D47 If he/she wants to change, he/she expresses confidence that he/she can do it** Students presented the evidences with realized homework that they understand the connection of both concepts. -„We (students-teachers) have to introduce the concept of Rights and Freedom to pupils and enable them to understand and apply in real life and in mathematics, too.
General remarks by the lecturer:	The session ended at 18.50, and activity in Part 6 was assigned for homework. Because we could not conduct practical work in schools, we organized practical work in small groups and debated afterwards.

2.10. Session 11: Differences 2D/3D + Rights and Freedom

Date: 16.12.2020	Time: 17:00–19:00	on-line via Microsoft Teams
Session No. 11		Lecturer(s): Vesna Makashevska

Part I – General information

Title of Session:	**Geometric concepts** • Methodological approaches to the study of geometric concepts • Differences in education for democratic citizenship and differences in geometry expressed by the differences in 2D and 3D forms		
Overview, issues addressed:	• Models for introducing the 3D shapes to primary school children • Procedures for calculating the area of a rectangle • Problem solving in the area of 3D shapes • Introduction of the concept of **Rights and Freedom**		
Aims and learning outcomes:	• Students will interpret different methodological approaches to the study of geometric concepts of-3D forms • Students will analyse and compare 2D and 3D forms • Students will be able to create the problem situations for calculating the area of 3D shapes • Students will analyse and compare the Concept of Rights and Freedom in geometric concept		
Practice teaching elements included:	/		
Percentage of time allocation:	**Lecture**	**Active learning by University Students**	**Teaching practice in university or mock teaching**
	50%	**50 %**	**/**
Practice teaching format used:	☐ mock model lesson at the University by lecturer ☐ by student ☐ model class in schools ☐ by student ☐ classroom teacher ☐ lecturer ☐ other format (specify):		
RFCDC: Competences (C)and descriptors (D) to be applied or trained:	**C11 D64 Can identify similarities and differences between new information and what is already known** **C12 D73 Can listen effectively in order to decipher another person's meanings and intentions** **C16 D95 When working as a member of a group, does his/her share of the group's work**		
Room preparation, infrastructure (board, beamer, flipchart etc.):	**Computer** **Internet connection**		
Materials needed	Computer		

Part II – Session step by step:

Part 1: 17:00 – 17:30
Lecturer: presenting models for introducing geometric concepts of 3D forms and procedures for calculating 3D area

Part 2: 17:30-18:00
Task for students: Students works in small groups (2-3): Compare developmental levels and match them with goals in the math curriculum.

Part 3: 18:00-18:30
Task for students: Discussion and presentation of group works

Part 4: 18:30-18:40
Lecturer: presentation of concept of Rights and Freedom- Difference and introduction to debate: Differences in education for democratic citizenship and differences in geometry expressed by the differences in 2D and 3D forms

Part 5: 18:40- 18:50
Task for students: individual work and they read the content: Difference volume-6/ chapter 4 exercise-4.2/

Part 6: 18:50-19:20
Task for students: Student debate: Differences in education for democratic citizenship and differences in geometry expressed by the differences in 2D and 3D forms

Part 7: 19:20-19:30
Plenary discussion and conclusion

Part III – Report (Debriefing and evaluation):

General remarks from students:	Students emphasized the need to connect mathematics with everyday life and in that connection, they see real the relationship with graphic education: • differences in democracy are similar to differences in geometric shapes
Debriefing of the Didactic of Math Content including homework	Students mastered the concepts of similarity and diversity in 2D and 3D formats, as a methodical procedure in introducing these concepts to pupils. This was shown in the discussion with the display of the specific model in the design of the specified 2D or 3D format. The similarities and differences were shown in the tasks with math problems that were created by the students.
Debriefing of the Democracy (EDC/ HRE) content	After analysing the Concept of Rights and Freedom through the content Difference in maths, students easily found elements of similarity as a geometric concept and as a concept in education for democratic citizenship.
Debriefing of the RFCDC: Competences (C) and descriptors (D) applied or trained:	**C11 D64 Can identify similarities and differences between new information and what is already known** Students easily recognized the similarities of 2D formats as if they had already knew the new information about 3D formats. **C12 D73 Can listen effectively in order to decipher another person's meanings and intentions** **T**his competence can be developed in group work, but it would be better if it is implemented during practical work in schools – which was unfortunately impossible**.** **C16 D95 When working as a member of a group, does his/her share of the group's work** Successful collaboration in groups, and especially in the group presentations which involved all group members
General remarks by the lecturer:	Because it was impossible to realize the mock and practical work at school, I organized group work, divided them in small group and debated. But that wasn't enough to reach the D73 goal.

2.11. Session 12: Study of Data + Conflict

Date: 23.12.2020	Time: 17:00–19:00	on-line via Microsoft Teams
Session No. 12		Lecturer(s): Marina Stojanovska

Part I – General information

Title of Session:	• **Methodological approaches to the study of Data Handling** • **Solving problems in community and personal conflict in the process of solving math tasks**		
Overview, issues addressed:	• Data collection models • Ways of displaying data • Representation of the contents in the mathematics textbooks		
Aims and learning outcomes:	• Students will interpret different models of data collection • Students will analyse and compare different ways of displaying data • Students will be able to create the solving problems in community and personal conflict in the process of solving math tasks		
Practice teaching elements included:	/		
Percentage of time allocation:	**Lecture**	**Active learning by University Students**	**Teaching practice in university or mock teaching**
	50%	**50 %**	**/**
Practice teaching format used:	☐ mock model lesson at the University by lecturer ☐ by student ☐ model class in schools ☐ by student ☐ classroom teacher ☐ lecturer ☐ other format (specify):		
RFCDC: Competences (C)and descriptors (D) to be applied or trained:	**C5 D28** Expresses respect for other people as equal human beings **C9 D56** Enjoys the challenge of tackling ambiguous problems **C16 D94** Builds positive relationships with other people in a group **C17 D100** Can communicate with conflicting parties in a respectful manner **C17 D104** Regularly initiates communication to help solve interpersonal conflicts		
Room preparation, infrastructure (board, beamer, flipchart etc.):	**Computer** **Internet connection**		
Materials needed	Computer		

Part II – Session step by step:

Part 1: 17:00 – 17:30

Task for students: Students works in small groups (2-3): analyses, synthesis, critical thinking for various mathematical tasks Data Handling from the previous preparation (math textbooks)

Part 2: 17:30-18:00

Task for students: Discussion and group presentation

Part 3: 18:00-18:10

Lecturer: summary of what is presented by the students and if necessary lecturer presents and explains the other models of data handling

Part 4: 18:10-18:30

Task for students: Students will have to create a math problem situation and to find a solution. They will have to analyse the content, selection of various models of data collection, to show different ways of displaying data, to connect the mathematical with social life context regarding solutions about conflict.

Part 5: 18:30- 18:40

Discussion about solutions

Part 6: 18:40-18:50

Lecturer: introduction of the concept Conflict and the content Conflict: What kinds of solutions can we implement to solve a problem?

Part 7: 18:50-19:00

Plenary discussion and conclusion

Part III – Report (Debriefing and evaluation):

General remarks from students:	Students were motivated for work and solved tasks easily and with understanding. • Data Handling connects mathematics with the real life but with civic education, too.
Debriefing of the Didactic of Math Content including homework	After analysing the task books in math, students discovered independently various models of models of data collection. They compared this models in discussion in part 5 with the presentation of various solutions of math problems that can be used in the work with data. They found connection of the concept of problem in real life and in maths.
Debriefing of the Democracy (EDC/HRE) content	After the presentation of the democracy concept Conflict: What kinds of solutions can we implement to solve a problem? Students presented different examples of conflicts from everyday life. Some students who had the opportunity to volunteer at schools presented the examples of unsuccessful practices in conflict resolution. The discussion supported students to understand that problems in everyday life can be related to the conflict of interest in resolving mathematical problems.

Debriefing of the RFCDC: Competences (C)and descriptors (D) applied or trained:	**C5 D28 Expresses respect for other people as equal human beings** Students carefully listened to other students` presentations and respected their attitudes. **C9 D56 Enjoys the challenge of tackling ambiguous problems** **S**tudents worked with enthusiasm to create mathematical problem tasks: - "It is a challenge to work on mathematical problem tasks connected with conflict situations." **C16 D94 Builds positive relationships with other people in a group** During group tasks they work and create solutions together. **C17 D100 Can communicate with conflicting parties in a respectful manner** We cannot confirm this competence – students were not allowed to conduct practical work in schools. **C17 D104 Regularly initiates communication to help solve interpersonal conflicts** We cannot confirm this competence – students were not allowed to conduct practical work in schools
General remarks by the lecturer:	Because we could not conduct practical work in schools, we organized practical work in small groups and debated afterwards. Unfortunately, at the end we can confirm that is hard to reach needed competences to teach mathematics, even more presenting the connection between mathematics and education for democracy.

3. Semester Survey: General results

Participants: 8 female students,

University and Faculty: University St. Cyril And Methodius in Skopje, Faculty of Pedagogy "St. Kliment Ohridski" - Skopje

The course was on bachelor level: 4th year of university studies, 7th semester

Introduction

During the winter semester 2020/2021 students followed the new course: "Democracy through Didactics of Teaching Mathematics" as pilot module. Students that were following this module have already attended the course: "Culture of Democracy through the Visual Art Education" as pilot project, during the last summer semester. We conducted 11 Sessions online (platform Microsoft Teams). At the end of the semester, when all the sessions in this module were introduced to the students, we sent a survey to assess students' thoughts, opinions and feelings about the module.

3.1 Students' Reflections

In the general part of the survey, students gave the highest marks to the reached knowledge of the Reference Framework for Competences for Democratic Culture (RCRD)- Council`s of Europe, materials/ manuals related to democracy and human rights education, and especially to their own abilities to think critically about their future professional practice.

Students find that from several listed options, following aspect of the module are the most useful for their future teaching practice:

- Learning about key competences and descriptors in accordance with the Reference Framework of Competences for Democratic Culture
- New resources/ manuals introduced related to democracy and human rights education
- The possibility for presentation and analysis of activities
- Interactive group work

Deciding to choose these options clearly presents the strong part of the module – introduction of democracy content / resources, and possibility to develop teaching skills even without possibility of real practice.

I am also glad that some of the students pointed out the interactive group work, probably referring to the group activities of online teaching.

3.1.1 Democracy content and RFCDC

Responses on the questions about Democracy content and RFCDC are so encouraging. It is so great for me to see that almost all students confirmed that by participation in the module their own views on "the importance of creating a democratic culture in schools have greatly changed".

3.1.2 Teaching skills

Concerning the teaching skill aspect, 4 of 8 students believe that they are to the great extent ready to create a democratic culture in schools, and the rest of students presented opinion that they are ready only to some degree. This conclusion could be done because they had a lack of practical work in schools.

Concerning the question about the implementation of critical thinking in the terms of future professional practice, the most of the students expressed the feeling of being highly prepared.

It is especially interesting that all other students confirmed high satisfaction with the preparation for application of the tools / strategies for active and participatory methods they were equipped with during the course. The most interesting were the answers with open-ended questions – students projected their individual approaches toward the materials and activities introduced. All students were positive that they will use activities in their own future training.

Part of the students participated in the cooperation with the municipalities from Skopje, and were included in the regular teaching process, as substitute teachers. In that way they had the opportunity to teach practical classes. Example: student (Survey No.1) indicated the activity from the web-site livingdemocracy.com she have applied in her practical work:

> "I had the opportunity to realize the activity **Rights and Duties**. "The main goal of this activity is to acquaint students with their rights and duties that they have as children in a democratic state."

3.2 Conclusion and recommendations

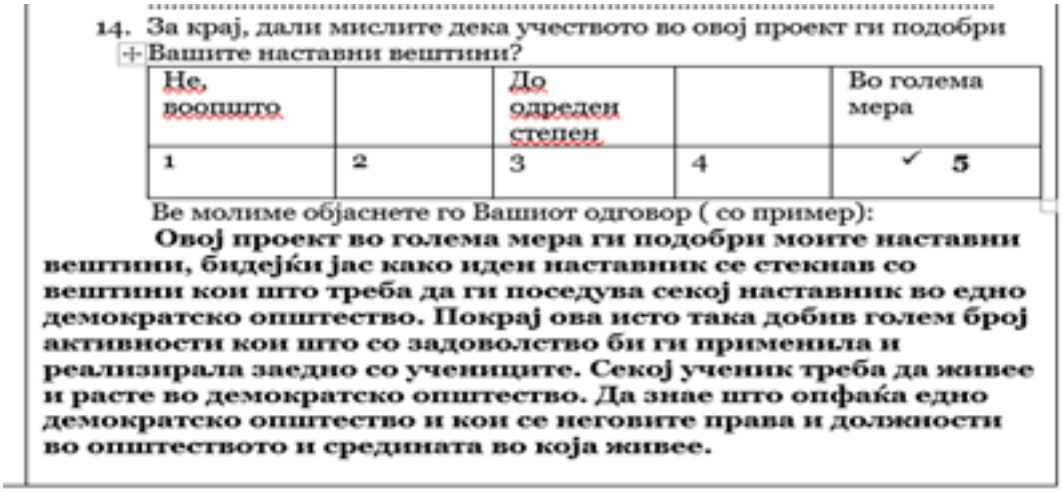
Based on the analysis of the survey, I can confirm that we have to be satisfied with students' understanding of the content and possibilities for practical implementation of the module.

Students confirmed belief that introduction to principles of democratic practice and human rights education will improve their future role as a teacher. Even more- participation on this module enables and encourages them to look more critically and with deeper understanding on the main subject content.

It is of great importance that the most of the students were included in the practical teaching in the primary schools, so they were able to implement some activities provided in the manual.

For me, as one of the creators of this module and a lecturer, the most comprehensive are statements supported by all students in different ways that they are ready to create a democratic atmosphere in their classroom to the great extent.

I hope that these students 'experiences will be a motive for overcoming new challenges, not only in my own practice as a university professor, but also to the other colleagues from the Pedagogical Faculty "St. Kliment Ohridski as well as from other faculties that educate future teachers.



14. За крај, дали мислите дека учеството во овој проект ги подобри Вашите наставни вештини?

Не, воопшто		До одреден степен		Во голема мера
1	2	3	4	✓ 5

Ве молиме објаснете го Вашиот одговор (со пример):

Овој проект во голема мера ги подобри моите наставни вештини, бидејќи јас како иден наставник се стекнав со вештини кои што треба да ги поседува секој наставник во едно демократско општество. Покрај ова исто така добив голем број активности кои што со задоволство би ги применила и реализирала заедно со учениците. Секој ученик треба да живее и расте во демократско општество. Да знае што опфаќа едно демократско општество и кои се неговите права и должности во општеството и средината во која живее.

Vesna Makashevska

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