**Report on undertaken analysis of the initial education and continuous professional development of classroom teachers and teachers of STEM subjects from the aspect of key competences**

**Project ''Integration of key competences in education system of Montenegro''**

co-financed by the EU and Government of Montenegro, and implemented by the EPRD Consortium

**Report on undertaken analysis of the initial education and continuous professional development of classroom teachers and teachers of STEM subjects from the aspect of key competences**

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The project sincerely thanks everyone who participated in the research within this analysis, whether through focus groups or through online questionnaire.

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# Introduction

Analysis of initial education and continuous professional development of classroom teachers and STEM subjects’ teachers from the point of view of key competences was carried out within the project "Integration of key competences in the education system of Montenegro". The analysis entailed conducting a survey of teacher resources and competencies, consisting of a "desktop survey" - review of strategic documents and a catalogue of accredited training of the Institute of Education of Montenegro and "field research" through a guided interview with a focus group of teachers, as well as administering quantitative "online" surveys for teachers.

**The aim of the research** is to provide information on the extent to which teachers develop key competencies and the functional application of what has been learned with students, and to identify possible teacher advancement needs in this area. Data and recommendations of the analysis will serve as a platform for creating training approaches for 900 classroom teachers and 960 teachers of STEM subjects in primary, secondary and vocational schools planned within the Project, since the development of teacher education and professional competences is contained both in the initial education and continuing professional development (CPD) in terms of integrating key competences into learning, with a particular focus on the competences of classroom teachers and teachers of STEM subjects, is one of the three main purposes of the Project.

**Subject of the research** was focused on four areas:

* **Initial education** – gaining insight into the preparation for the teaching profession within formal education and the sophistication of this preparation in terms of general pedagogical-psychological, didactic-methodological knowledge and skills, as well as knowledge of key competences;
* **Continuous professional development** – gaining knowledge about teacher involvement in accredited training and how much training has an impact on enhancing teacher competences for the development of key competences and their application in full-time learning;
* **Planning and management of teaching and extra-curriculum activities** – gaining insight into the school climate, the level of collaboration among teachers and the support of principals, whether there is horizontal learning and joint planning of inter-subject/ extracurricular classes and extracurricular activities, monitoring the achievement of students' competences and applying formative assessment;
* **Learning and teaching approaches related to the development of key competences** – how familiar is the concept of key competences, what methods and approaches are used on a regular basis and if they are purposeful for developing key competences.

This report presents the survey findings. The report is structured according to four areas of focus. The second chapter presents a description of the survey, while the results with discussion are presented in the third chapter. Fourth, the final chapter presents the conclusions and recommendations. Attachments to the report are a list of teachers who participated in the focus group and an online questionnaire used in the survey.

The Bureau of Education Services supported the survey by identifying and inviting focus group teachers as well as sampling 220 e-mail addresses of primary and secondary school teachers to participate in the survey. The conclusions and recommendations are formulated at the Project Team meeting, held on February 27-28 2020. An overview of the programmes for pre-school and primary education and STEM group of subject programmes for primary and secondary education were given as part of the second project report.

# Description of the survey

The survey was conducted from December 2019 to February 2020. It involved documentation review and field research. The research itself relies on the Teacher Education Strategy in Montenegro (2017 - 2024), which contains a detailed analysis of initial teacher education, as well as clear conclusions, goals and activities on how to improve both initial education and CPD of teachers. In addition to the Strategy and other relevant national documents, desk research also included a review of training catalogues for continuing professional development (Catalogue of accredited training for the 2019/2020 and 2020/2021 school years as well as for previous 2017/2018 and 2018/2019 school years) to determine the extent to which key competences are represented.

The field research consisted of a meeting and a structured interview with a relevant, selected group of teachers, and an online questionnaire distributed to a sample of teachers. **The target group of these surveys** included classroom teachers as well as STEM subject teachers (mathematics, physics, biology, chemistry and informatics) for primary and secondary schools (grammar schools and vocational or mixed schools).

A total of 21 teachers from different parts of Montenegro (Berane, Pljevlja, Kotor, Tivat, Nikšić, Podgorica) participated in the **focus group**. Among them, 13 primary school teachers were present, of which 6 were classroom teachers and 7 came from subject teaching, while 8 were from secondary school, again subject teaching. The average length of service in teaching for all participants was 18.4 years (with only three having ten or fewer years of service). The list of focus group participants is given in ***Annex 1***. The focus group meeting was held on 6 February 2020 from 9.00 to 14.00 hours at the premises of the Bureau for Education Services. Initially, teachers were informed that the purpose of the meeting was to provide feedback on their formal education and professional development through work for the teaching profession with a focus on knowledge and skills to develop key competencies in students, as well as their past experiences as teachers in the field. The main points of inquiry were to identify their understanding of key competencies, find room for improvement, formulate training recommendations and opportunities to achieve an integrative approach to the development of key competences in their regular practices.

**The online questionnaire** was conducted by adapting an international TALIS survey which examines the learning environment and environment to help European countries adapt to the challenges of contemporary education. The survey was conducted between 27 January and 25 February 2020 by completing an online survey via the [www.esurv.org](http://www.esurv.org) platform. The questionnaire is contained in ***Annex 2***. The questionnaire was delivered to 220 e-mail addresses of primary and secondary school teachers. The sample was selected based on an analysis of the total number of the target group, based on data obtained from the Ministry of Education's IT department. According to these data, a total of 1,406 STEM primary and secondary school teachers and 1,966 classroom teachers were hired in Montenegro during the current school year. Thus, the size of the target group is 3,372. The targeted sample was 5%, but the questionnaire was delivered to more teachers assuming dropouts (it was assumed that not all teachers would answer the questionnaire). A total of 206 teachers (93.64%) responded and the dropout was significantly lower than expected.

Of the 206 teachers who answered the questionnaire, 175 were female (84.95%) and 131 were male (15.05%). The surveyed teachers have an average of 18.06 years of education experience, the respondents with the least education experience have one year of experience, while the maximum years of experiences was 37. The distribution of work experience of the interviewed teachers is presented in the following table:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Years of experience: | 1- 5 | 6 - 10 | 11 - 15 | 16 - 20 | 21 - 25 | 26 - 30 | More than 30 |
| Number of teachers: | 22 | 35 | 25 | 31 | 36 | 45 | 12 |

The geographical distribution of the surveyed teachers is presented in the following table:

|  |  |  |  |
| --- | --- | --- | --- |
| Region | Podgorica | North | South |
| Number of teachers: | 120 | 55 | 31 |
| % | 58,25 | 26,70 | 15.05 |

The distribution by education levels and the subjects they teach is presented in the following table:

| Level and subject | No. of teachers | Percentage |
| --- | --- | --- |
| Classroom teaching | 104 | 50.98 |
| Math in primary school | 22 | 10.78 |
| Informatics in primary school | 24 | 11.76 |
| Physics in primary school | 5 | 2.45 |
| Biology in primary school | 13 | 6.37 |
| Chemistry in primary school | 3 | 1.47 |
| High school math | 6 | 2.94 |
| Informatics in high school | 9 | 4.41 |
| Physics in high school | 2 | 0.98 |
| High school biology | 7 | 3.43 |
| High school chemistry | 5 | 2.45 |
| Other | 4 | 1.96 |

Of the surveyed teachers, 104 (50.98%) are primary school teachers, 67 (32.52%) are subject primary school teachers, and 37 (17.96%) are subject secondary school teachers (grammar schools and vocational high schools). A total of **83.50% of the survey participants are primary school teachers**. Such a distribution roughly corresponds to the total population of the target group, and it can be concluded that the sample is relevant.

# Survey results and discussion

The results of the research are presented in this report according to four key areas of the survey: initial education, continuing professional development, planning and management of teaching and extracurricular activities, and approaches to learning and teaching related to the development of key competences. For each of the four areas, the results of all three analyses - desk research, focus groups and online questionnaires - were integrated.

## Initial education of teachers

*Teacher Education Strategy in Montenegro (2017 - 2024)* identified the key problems of initial teacher education, emphasizing the fragmentation of study programmes and faculties where initial teacher education takes place, and reducing the number of pedagogical and didactic disciplines in subject teacher education programmes as key challenges. It was also pointed out that "the consequence of the marginalization of pedagogical-psychological and didactic-methodical disciplines is an inadequate level of quality of teaching of these teaching disciplines", and that "marginalization results in teacher education in conditions where conservative pedagogical concepts prevail, which leads to the subject teachers become specialists in a small number of academic disciplines, but not in terms of pedagogical knowledge and skills." Student attendance during initial education was assessed as insufficient.

Regarding key competences in initial teacher education, a study "Analysis of Socio-Emotional and Key Competences in Curricula for Primary and Secondary Schools and Teachers' Faculties in Montenegro", conducted in 2016 as part of the UNICEF project *How we prepare our pupils/students for employment and labour market.* The analysis found that socio-emotional and key competences in the curricula of all teaching faculties are very neglected both through the development of socio-emotional and key competences in students (development of their own competences) and through the training of students/future teachers to develop socio-emotional and key competences in their students (preparation for the profession). It was also stated that "a little more attention is paid to the development of students' personal competencies (in one third of the outcomes, some of the socio-emotional and key competences are mentioned), while the training of students/future teachers to develop socio-emotional and key competences in students is completely neglected. This issue is twofold: first, the problem is that socio-emotional and key competences are rarely encountered in the curricula of teacher faculties: students do not develop the necessary competencies in vocational education (important for forming patterns of professional behaviour). Second, as it is a teaching profession, students/future teachers in the course of their studies, have to become aware of the importance of these competences and to learn to encourage their development in students. These findings indicate a disconnection between education policy and teacher education that should put this policy into practice. Student orientation is not yet integrated into the curriculum even at teacher faculties, which do not align their programmes according to changes in the country's educational policy."

Similar results were obtained through research within this analysis. When it comes to the participants who participated in **the focus group** (21 of them), about half of them graduated from the Faculty of Natural Sciences and Mathematics (ten of them): graduate biologists, chemists and mathematicians; then the Faculty of Philosophy, the department of teacher education and the department of engineering (six classroom teachers). The remaining teachers graduated from the Faculty of Engineering, majoring in professors of engineering and computer science, and only one teacher graduated from the post-secondary school, department for classroom teaching.

**The most complete preparatory education for their profession was received by the teachers of classroom teaching** who had general and children's pedagogy, psychology, several types of teaching methodology, andragogy and other subjects of pedagogical, methodical and psychological group of subjects. **At least preparatory education was given to teachers attending the Faculty of Science**, since most of them studied applied mathematics and programming. As they explained, only the course on theoretical mathematics provided preparation for the teaching profession with courses in mathematics methodology, child psychology and the like. However, they did not attend these courses within applied mathematics. At best, they attended the methodology of their course, but all agreed that the course lasted less than one semester and did not provide sufficient knowledge or skills. Improvements in initial education in methodologies and pedagogies are seen in adding practical work to theoretic education and adding some innovative approach.

The **subject knowledge** itself, they stated, was obtained **at a very high level**. On the offered scale of 1-10, the quality of the obtained knowledge was rated 9 and 10, while the methodology and pedagogy were rated low. **They did not acquire knowledge and skills about the development of key competences in the students, and felt that they did not acquire the key competencies themselves during their studies.**

However, as the discussion focused on the quality of education and exit competencies, teachers also shared their views on the decline i in post-reform and post-university education levels: they found the study after the Bologna reform easier, but at the same time the level of knowledge and skill declined. They believe that primary and secondary education programmes are worse than the previous ones, and point out that the reason for this is the reduced number of nature and science lessons, as the contents remained the same while the number of classes decreased.

The results from the **online questionnaire** are similar. The following table shows the distribution of surveyed teachers by faculty they completed:

|  |  |  |
| --- | --- | --- |
| Faculty and department | No. | % |
| Faculty of Philosophy (subject teaching, classroom teaching), study programme for preschool education | 5 | 2.43 |
| Faculty of Philosophy (subject teaching, classroom teaching). study programme for teacher education | 96 | 46.60 |
| Faculty of Philosophy (subject teaching, classroom teaching), study programme in pedagogy | 1 | 0.49 |
| Faculty of Philosophy - basics of technique and production work | 17 | 8.25 |
| Faculty of Science and Mathematics – study programme in physics | 8 | 3.88 |
| Faculty of Natural Sciences and Mathematics - study programme in mathematics | 27 | 13.11 |
| Faculty of Natural Sciences and Mathematics - study programme in biology | 20 | 9.71 |
| Faculty of Natural Sciences and Mathematics - study programme in informatics | 11 | 5.34 |
| Faculty of Natural Sciences and Mathematics - study programme in chemistry | 8 | 3.88 |
| Other | 13 | 6.31 |

Regarding the qualification level (professional qualifications) of the surveyed teachers, 12.42% have completed higher education, 5.23% have a first cycle of higher education of three years duration - basic academic or vocational studies (180 ECTS) or equivalent (three years university education) , 75, 82% have Bachelor's Degree Academic and Professional Studies (240 ECTS) or equivalent (four years of university education in the pre-Bologna process, 5.88 are masters or masters (second cycle of higher education - 300 ECTS or equivalent), and 0.65 holds a Ph.D.

In response to the question of how much ECTS you gained during higher education in the subject that prepares you for teaching (pedagogical and didactic knowledge, e.g. pedagogy, psychology, didactics, teaching methodology, etc.), the following distribution was noted:

| Number of ECTS that refer to pedagogy and didactics in initial education | % |
| --- | --- |
| Less than 20 ECTS credits or less than 4 one-semester or two two-semester courses | 19.61 |
| Between 20 and 25 ECTS credits (4-5 one-semester courses or equivalent in two-semesters) | 24.18 |
| Between 25 and 30 ECTS credits (5-6 one-semester or 3 two-semester courses or a combination) | 23.53 |
| Between 30 and 35 ECTS credits (more than six 1 or 3 two-semester subjects or any combination) | 29.41 |
| Other | 3.27 |

Correlating this question with the question about the faculty and the study program they have completed, it can be concluded that the majority of classroom teachers (but not all - there are 4 teachers who have completed the department of organization of engineering and production, and three teachers who have graduated the Faculty of Natural Sciences and Mathematics, 1 Department of Physics, and 2 for Biology) belong to the group of teachers who answered that they had 30-35 ECTS credits, while the Faculty of Natural Sciences and Mathematics teachers generally opted for the answer "less than 20 ECTS".

The answers from the survey are quite similar to those of the focus group, that the subject teachers received a shorter preparatory education for the teaching profession, which is confirmed by the following answers. When asked about the acquisition of knowledge and skills about key competences, only 5.26% of teachers answered that they did not acquire such knowledge and skills, while 65.79% said that they acquired such knowledge and skills as part of initial education. This information is unusual and contradictory, given that they are not part of the syllabus of higher education. According to these answers, 28.95% of teachers acquired knowledge and skills about key competences within other forms of education and training that were not part of the studies, which can be confirmed by the following data on attending accredited training.

|  |  |
| --- | --- |
| Method of acquiring knowledge and skills on key competences | % |
| I acquired pedagogical and didactic knowledge and skills on the development of key competences in students as part of my studies (higher education) | 65.79 |
| I acquired pedagogical-didactic knowledge and skills on the development of key competences in students in the framework of other forms of education that were not part of the studies | 28.95 |
| I have not acquired pedagogical and didactic knowledge and skills on the development of key competences in students | 5.26 |

Comparing the answers from the survey and those from the focus group, as well as data from other surveys, this result is at least unusual. One of the assumptions is that classroom teachers (who participated in 50.98% of the answers) perceived key competences for lifelong learning as part of the knowledge and skills they received regularly during faculty education, and the other is that this result is due to socially desirable responses. The following result regarding the representation of knowledge of key competences to the question "Were the following elements part of your formal faculty education?" can be interpreted in the same light:

|  |  |  |  |
| --- | --- | --- | --- |
| Elements of study programme | For all subjects I teach | Only for some subjects | No |
| Contents of the subject I teach | 78.43% | 15.03% | 6.54% |
| Pedagogy or teaching methods of the subject I teach | 71.90% | 16.99% | 11.11% |
| Within the methodology and pedagogy, knowledge and skills in developing key competencies in students | 59.48% | 22.22% | 18.30% |

In conclusion, it can be stated that classroom teachers have acquired satisfactory skills for the teaching profession - have acquired a longer and quality initial education (30-35 ECTS credits) and are competent in their field. However, in the case of subject teachers, a lack of pedagogical competences was observed due to the small number of primary education lessons - mainly the methodology of their subject matter with short duration (less than 20 ECTS credits). The subject knowledge is obtained at a very high level, teachers feel like subject experts. Knowledge and skills on the development of key competences are not represented in the initial teacher education programmes; teachers believe that they did not acquire the key competences themselves during their studies. The results of the survey contradict with the findings of the focus group with respect to the representation of key competences in initial education. Possible misunderstanding or confusion about the concept of key competences with other meanings of competences that are part of the initial teacher education, or giving socially desirable answers in the survey.

## Continuous professional development of teachers

In Montenegro, a system of professional development of teachers has been established, based on the General Law on Education and supported by appropriate regulations and materials. The most important components of this system are teacher training, organized professional development at the level of educational institutions, higher education system, mentoring process, publications that can assist schools and teachers in this process, etc. The policy of continuous professional development of teachers is guided by the National Council for Education, which, among other things, approves professional development programmes and relevant materials. Following institutions and bodies are responsible for the realization and monitoring of continuous professional development of teachers: the Bureau of Education Services is responsible for teachers in general (primary and secondary) education, as well as for the teachers of general education subjects in secondary vocational education; while the Centre for vocational education is responsible for teachers of vocational subjects and practical teaching in secondary vocational education. At the level of educational institutions, the primary and secondary schools (which have named coordinators for professional development) are responsible for activities in professional development of teachers.

As accredited teacher training is a significant source of continuous professional development for teachers in Montenegro, the Catalogues of accredited teacher training programmes for the 2019/2020 and 2020/2021 school year were reviewed in this analysis, as well as for the previous, school years of 2017/2019 and 2018/2019, with the purpose of analysing teacher professional development programmes in relation to the representation of key competencies development training. Both Catalogues analysed the representation of topics, elements and concepts related to the development of key competences, such as: Interdisciplinary/cross-curricular approach/ thematic teaching, project activities/project teaching, learning in the centre/constructivist approach/creating a supportive learning environment, collaborative/cooperative learning, teamwork/teaching, critical thinking/social skills, active teaching, formative assessment/self-assessment, self-evaluation, self-regulation, cooperation with parents / social partners / community /partnership, volunteer work, keywords competence: entrepreneurship, civic activism, communication, computer literacy, language, civic education, learning how to learn and the like.

**Review of the 2017/2018** **and 2018/19 School Year Catalogue**: A total of 339 training courses were offered, divided into 10 areas: 1. Montenegrin-Serbian, Bosnian, Croatian language and literature, 2. foreign languages, 3. mathematics and natural sciences, 4. technology, 5. social sciences and civic education, 6. art, physical and health education, 7. pedagogy, psychology and methodology (pre-school, primary and secondary school), 8. inclusive education, 9. improvement of school work, and 10. instructed professional development programmes for teachers. The largest number of trainings that directly or indirectly address the development of key competencies among students is in the area 7 (over eighty); the term "key competences" itself is not used in the definition of these trainings, but it is mentioned as "competences for lifelong learning", "competencies for democratic culture", "socio-emotional competencies in the curriculum". Some trainings fully embrace approaches to developing key competencies such as Planning and realization of cross-curricular topics, learning verbal content - about learning competence, Learning-oriented teaching, Training of trainers for realization of the programme "My values ​​and virtues," Integrative teaching and the like. There are many trainings that cover methods and approaches such as innovation of the teaching process, didactics for various subjects, topics of actively oriented teaching, which can be classified as methods for developing key competences, although they are not defined in the training descriptions. In other areas, although the titles of the training were associated with one of the competencies ("reading literacy"), they did not belong to this group, but rather to the subject approach to literacy development, when reviewing the goals and topics. The target group addressed by the training is broader: classroom teachers, subject teachers, professional assistants, principals and assistant principals. The duration of the seminar is often one day (8 hours), but there are also several days long combined seminars, that include "tet a tet" and "online learning", which were identified by the focus group teachers as extremely useful (e.g. "Interdisciplinarity and thematic integration in teaching of technical group of subjects" lasts 16 hours and includes online knowledge tests and internet browsing). The seminars that were reviewed did not cover the monitoring of the effect of working with teachers, or did not anticipate the opportunities or measures of quality of implementation in teaching and the impact on students.

**Review of the 2019/2020** **and 2020/2021 School Year Catalogue:** A total of 354 training courses are offered in this catalogue, broken down by area: 1. Assessment, 2. Active teaching/learning methods (including teaching in combined classes) 3. Working with gifted students, 4. Team work in school, 5. Working with students with special educational needs, 6. Prevention of violence, 7. Preschool education and upbringing, 8. Other programmes. The majority of trainings that directly or indirectly address the development of key competencies are in areas 2, 4, and 1. But also in the remaining ones, which is probably a result of the division into priority areas that have excluded division by subject disciplines. The review of the current catalogue reveals that one-third of the trainings, less as a whole but more in its elements, are concerned with the development of key competences. The training primarily covers approaches and methods in teaching, interdisciplinary planning, thematic teaching and formative assessment in most descriptions. The most commonly used terms are “generic skills”, “lifelong learning”, “communication competencies” and the like. The development of key competences is explicitly stated and described within topics and specific objectives in one-day training “Activating students with supportive tasks” and in six-day training “Promoting democratic culture in school”, in the context of developing competences for democratic culture, which also covers a holistic approach to development of Reference framework for democratic culture key competence. The target group and the duration of the seminar are the same as in the previous catalogue.

**General conclusions of the review of both catalogues:** The analysis of both catalogues reveals that trainings with elements of development of key competences are highly represented - almost one third cover the most common elements of development of key competences. In the first place, these elements include methods and approaches, then cross-curricular correlations that are dominated by sustainable development (most widely understood), then the development of individual competencies among which entrepreneurship and civic are most recognized, as well as the development of transversal competences such as social skills, critical thinking, problem solving, then monitoring student achievement, or formative approaches to evaluation. Extra-curricular project activities (there are three for the subject approach), collaborative teaching and collaborative teacher planning to develop key competencies and specificities of linking learning to community life, such as school partnerships with community representatives, are poorly represented, which fully corresponds with responses received from teachers through the survey and focus group.

During the **focus group** interviews, teachers stated in a limited number that they had received training to develop key competencies. The training "My Values ​​and Virtues" gives approaches to the development of key competencies in each high school course, as some have stated. **Responses about the number of hours attended CPD seminars were not consistent**, while a number of teachers did not participate in the responses. As a motivation for attending accredited seminars, teachers mentioned the need for getting the license, and not that much for learning itself. Many courses on pedagogical and methodological approaches are offered, interactive teaching, assessment, which indicates that they have attended and that those are useful. Seminars have been criticized - in their opinion, trainers are not teachers and do not know their practice, stating that "the finances were in and the quality dropped." As a good example of a useful course, math teachers cited an accredited seminar that was designed in several stages and was online, and was about active teaching of math and test design: "This is where we best understood Bloom's taxonomy’’, many said. They stated that they really learned during that course and applied the lessons learned. The trainings they attended did not have any mechanisms of continuity in monitoring the implementation of the lessons learned. The subject teachers (mathematics) stated that there is a greater supply of training for primary and high school teaching than for their field of teaching. They are of the general opinion that they need knowledge in methodology and in "student-teacher relationships". Technical conditions are also mentioned as a problem, and they need IT tools and IT skills. Regarding grading, **most teachers have stated the need to train high school teachers in formative grading.**

More accurate data were obtained from the online questionnaire. The average number of hours of formal and non-formal education within the CPD over the last 24 months is shown in the table:

|  |  |  |  |
| --- | --- | --- | --- |
| Organized professional development at school (professional development at school level) | Joint planning and preparation of classes with fellow teachers | Joint planning and preparation of project activities with fellow teachers and / or with community representatives | Through accredited licensing seminars |
| **28.42** | **47.62** | **22.44** | **38.97** |
| 17 teachers responded with 0 hours, 6 teachers with more than 100, maximum response 230 hours | 8 teachers responded with 0 hours, 20 teachers with more than 100, maximum response 400 hours | 25 teachers responded with 0 hours, 5 teachers with more than 100. maximum response 200 hours | 11 teachers answered 0 hours, 4 teachers more than 100, maximum response 154 hours |

The survey answers are the same as the focus group answers: teachers spend most of their time in joint planning, some teachers often attend training through accredited seminars or school participation, while some do not at all.

Answers on topics of continuing professional development training:

|  |  |  |
| --- | --- | --- |
| **Topic** | **Attended (%)** | **Not attended (%)** |
| Knowledge and understanding of the areas of the **subject(s)** I am teaching (subject content and its improvement) | 48,32 | 53,68 |
| **Teaching, pedagogical competences** (methods and forms of work) for teaching the subjects I teach | 52,94 | 47,06 |
| Knowledge of the subject **programme** I teach / training for the outcome-based teaching programme | 37,04 | 62,96 |
| Building knowledge that transcends subject lines: An integrative approach to learning outcomes / **Interdisciplinarity and thematic integration** | 20,15 | 79,85 |
| Creating an **Incentive Learning Environment** / Learning Environment | 32,09 | 67,91 |
| Collaborative teaching (referring to the **collaboration of teachers in joint planning and delivery of teaching** and/or projects) | 29,10 | 70,90 |
| **Formative** assessment as part of student evaluation and assessment | 39,55 | 60,56 |
| **Project** methods in teaching and extracurricular activities | **14,93** | **85,07** |
| **Partnerships** of schools with the community (cooperation of the school with other community institutions - cultural, sports, business and other institutions) | **10,45** | **89,55** |
| Developing **key competencies** in students (e.g. entrepreneurial learning, learning how to learn) | 25,37 | 74,63 |
| Approaches for **developing cross-curricular topics** (e.g. cultural awareness, sustainable development) | 19,40 | 80,60 |

The first three topics offered do not directly relate to the development of key competences, and according to the answers, most teachers attended them. However, in the field of the full name of the topic as given in the Catalogue, many trainings are duplicates, that is, repetition in the topics offered below, such as assessment, development of critical thinking, interactive methods, etc. A similar distribution of responses was obtained from the focus group. **The answers are also in line with the analysis of the Catalogue's offer, so we could conclude that future training should give particular emphasis to those which connect the school and the community and engage and relate knowledge with real contexts and learning environments through project and extracurricular activities.**

When asked about knowledge of the concept of key competences, teachers provided the answer shown in the graph below. Although only 2% of teachers answered that they did not know the concept of key competences, the answer to this question should be sought “between the lines”, especially since teachers could mark a maximum of two answers to this question. Planning for the development and development of core competencies does not necessarily mean developing core competencies. The ambiguity of the questions asked leaves room for interpretation of answers. Bearing in mind the fact that 51% of surveyed teachers are classroom teachers who develop key competencies through an integrative programming approach, these answers are reliable. In any case, at least 26% of the surveyed teachers are not sure whether they develop key competences in their work, which indicates a lack of knowledge of the concept of key competences.

|  |  |
| --- | --- |
| **Answers on awareness on key competences** | **In %** |
| I do not know the concept of key competencies | 2.14 |
| I do not know the concept of key competencies but I have heard about it | 5.88 |
| I develop competencies in my teaching work but am not sure if they are called key | 20.32 |
| I develop subject competencies and thus key ones | 19.25 |
| At school, we plan to develop key competencies | 20.86 |
| I know the concept of key competences and partially apply them in teaching | 24.6 |
| I am very familiar with the concept of key competences, I regularly include this approach in my work | 6.95 |

In conclusion, it can be stated that there is an inconsistency in attending CPD seminars - some teachers often attend accredited trainings or attend them at school, while some do not at all. Seminars that combine an online approach with conventional training methods are useful. The trainings attended do not have mechanisms of continuity in monitoring the application of the learned.

The need of subject teachers for the training on students’ motivation, the "teacher - student" relationship and formative assessment was expressed. Offered by the CPD Catalogue, one-third represent trainings that mostly provide fragmented elements of key competencies development: the most common are method and approach training. Less common are trainings that develop key competencies in community context - through project extracurricular activities.

## Planning and management of teachings and extra-curricular activities

The teachers at the **focus group** described the climate in the school, which includes cooperation with fellow teachers and the principal, as very cooperative and positive. They also cited frequent meetings, informal exchanges of experience, joint planning. As forms of horizontal learning, they cited experiment and distinguished classes, transferring knowledge from subject-team training, working in teams for CPD, career guidance, supplementary teaching, internal evaluation, and the like.

However, there was no consensus on the number of hours of joint planning, on what joint planning encompasses, or on the frequency of distinguished, experimental, and public lessons. Some teachers claimed that these classes happen at their school every month, and some that it is twice or once a year. Joint **planning and preparation of project activities** with colleagues was **not cited as a common practice**, **while classroom teachers unanimously confirmed the integration of teaching** with colleagues who teach English and computer science. Public classes and workshops are held to mark significant dates, it is also stated that doctors, psychologists are invited to participate in them. The **subject teachers** of primary and secondary schools said that they **did not have time to organize** and carry out these activities due to lack of time (hourly), which indicates that extracurricular activities are not realized as often in the II and III cycle of primary school and in secondary schools.

During free discussion, teachers expressed their concern about the problem of “learning to get the grade” and **felt pressured by both students and parents regarding the assessment**. The discussion crystallized the importance of transparency in the assessment criteria that both students and parents should be informed about. In addition to this problem with summative assessment, most teachers stated that they use feedback as part of formative grading, although they did not specify which forms they use.

From this it can be concluded that in most schools the climate for teacher cooperation with one another and for cooperation with the headmaster is very positive, and that teachers spend a lot of time in planning, but that there is no consensus on the number of hours of joint planning and what joint planning entails as well as what is the aim of planning in relation to the development of key competences. There is a practice of 'horizontal' learning within subject-teams, teams for CPD, public, distinguished and experimental lessons. There are also practices of formative assessment and monitoring of student achievement.

## Approaches to learning and teaching related to development of key competences

The answers given by the teachers in the **focus group** show that extracurricular activities are most recognized as events, marking important dates when lecturers from the community come to school, students take occasional visits to museums or exhibitions, and there are volunteer activities, which is not negligible as part of social activities, but the question is **how much these activities are related to what is being learned**. The basic question is how much these activities relate to the learning content and their **relevance to the students' living environment and experiences**. This seems more important as the student progresses towards the upper grades after the classroom teaching, when learning begins to be separated into the subject areas.

According to the answers of teachers, the implementation of cross-curricular topics from sustainable development approach occurs within the sections (e.g. ecological section, young chemist, etc). At the classroom level, the outcomes of the curriculum are easily "paired" with the outcomes of sustainable development; however, the same opinion was not shared by the subject teachers. They consider "that students from the 6th grade onwards think that everything (they learn) are definitions." They mentioned the difficulties in "how to animate students" and the **need to work with parents as a result of pressure from students and parents regrading students’ assessment.**

From the responses of the teachers it was noticed that they understand **the cross-curricular connection narrowly**, within the subject, that is - they apply an integrative approach by finding meaningful links with other related subject (correlations) or proposed topics from the sustainable development programme. This approach is important and makes one way of organizing an integrative approach, while **the future focus could be on organizing multiple courses and broader domains of knowledge**, around the freely selected topics of the students themselves in consultation with the teacher.

The school's partnerships have been described very affirmatively. According to the teachers, the schools are developing and partnering with NGOs, the Red Cross, entrepreneurs, the fire service, the health centre, telecommunication companies (like MTEL, telco provider). These **partnerships, as extracurricular activities**, in order to develop competencies, should be **more closely linked to the content of knowledge and thus functionalized**.

The room for the integration of key competences has been recognized by both groups of teachers in **10% of the free, open curriculum that the teacher is free to design**, e.g. project extracurricular activities, volunteering activities within the volunteer club, bringing guest-lecturers and visits out of school. The useful use of a free part of the programme **depends on their inventiveness**, as they themselves have said.

When asked what learning methods they use, most answered that they use interactive methods such as mind map, associations, cluster, developing critical thinking and the like. Interactivity in teaching should necessarily be linked to learning processes and constructivist knowledge building.

When asked about priorities for future training aimed at enhancing teacher competencies to develop students' key competencies, teachers overwhelmingly answered that all four topics were equally needed:

1. Understanding concept of key competences (what they are and what they are used for);
2. Methods and approaches for developing key competences in students;
3. Interdisciplinary planning and realization of learning in order to develop key competences (collaborative teaching, interdisciplinary networking, project teaching, partnerships, extracurricular activities);
4. Development of instruments for monitoring development and assessing the achievement of key competences.

When it comes to **online questionnaire**, teachers have summed up their practice into the following:

|  | **Never** | **Sometimes** | **Often** | **Always** |
| --- | --- | --- | --- | --- |
| Students in my classes work in groups to solve a task | 0% | 51.54% | 46.92% | 1.54% |
| Students in my classes make projects mostly team-based | 3.85% | 60.77% | 33.85% | 1.54% |
| **I organize out-of-school student visits with topics that I relate to the material and their learning** | **22.31%** | 52.31% | 20.00% | 5.38% |
| **Students in my classes interact with community representatives e.g. a local entrepreneur, writer, traffic worker, and the like, who come to school to talk to them** | **21.54%** | 50.77% | 23.08% | 4.62% |
| I make preparations for the class in collaboration with teachers from my school **so that students in different subjects can learn about related topics and phenomena** | **8.46%** | **44.62%** | 41.54% | 5.38% |
| The students in my classes learn from a variety of sources: they gather information from the internet, from the media, make PPT presentations, conduct their own research on the topic I give them | 0.77% | 34.62% | 48.46% | 16.15% |
| Before designing a project, researching, working independently or in a team with students, I establish criteria and associated indicators for assessing the quality of the tasks completed | 2.31% | 36.15% | **38.46%** | **23.08**% |
| I provide written feedback to students along with giving a grade | 6.92% | 30.00% | **39.23%** | **23.85%** |
| I organize students into pairs or small groups so that they give each other affirmative and critical feedback on their individual or group assignment, assess how much they have learned about a given topic or solution to a problem | 3.85% | 40.00% | 50.00% | 6.15% |

This group of questions examined the approaches to learning and teaching related to the development of key competences and from the answers, if we take away some of the social desirability in answers, we can conclude that teachers make very satisfactory use of student-centered teaching, formative assessment, group work and learning from various sources. In line with previous findings, **the room for improvement is visible in the enhancement of extracurricular project activities that would meaningfully connect with school learning processes and within interdisciplinary learning, integrating multiple subjects across broad areas or domains of knowledge.**

Research has shown that the concept of key competences is not clear enough, and although the parts are understood, teachers are not sure enough to develop key competences. Teachers regularly use a variety of interactive methods, CPD provides many trainings in the field of active teaching/learning methods, but the question is how much they use those in the process of developing process knowledge and skills of key competences. The cross-curricular approach and classroom cooperation are applied, more in one or two subjects and specifically in the cross-curricular area of sustainable development.

## Opinions about the training needs

Opinions about the training needs were researched through the **online questionnaire**. The results are shown in the following table:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Opinions about the training needs | Currently not necessary | Low level of need | Moderate level of need | High level of need |
| Understanding the concept and framework of key competences as a basis for lifelong learning | 1.54% | 15.38% | **54.62%** | **28.46%** |
| Teachers' competences for the development of key competences in students: planning and palette of approaches, methods and forms of work aimed at key competence development in students | 1.54% | 15.38% | **52.31%** | **30.77%** |
| Developing teachers' competencies to develop tools to monitor development and evaluate the achievement of key competences | 0.77% | 10.77% | **53.08%** | **35.38%** |

The answers grouped at the top of the scale (moderate and high need) partially match with the responses got at the focus group, where teachers gave an even **higher level of need for all proposed topic groups** (bearing in mind that the palette of approaches is separately given from planning). On the other hand, the assumption is that understanding the concept and framework of key competencies as a basis for lifelong learning is not completely clear, according to the survey teachers who responded that they were learning about key competences in their initial education (which they couldn’t because that wasn’t part of the syllabus of higher education). Also, within the survey 6.95% said that they know and apply this concept, while 24.6% partially apply it. According to the survey, the highest level of need is for the development of instruments for monitoring and assessing the achievement of key competences.

# Conclusions and recommendations

The overall results of the analysis of the target group in both research approaches (survey and focus group) fully support the previous findings, which state that teacher initial education programmes do not provide sufficient knowledge of the pedagogical and methodological group of subjects, while the knowledge on development of key competences isn’t present. According to the findings of the survey, contrary to the findings in the focus group, there is an impression that there is some confusion in understanding the concept of key competencies, since a large number of survey teachers (65.79%) stated that they acquired this knowledge and skills during their study, while we found that they are not part of the formal syllabus. Six faculties of the University of Montenegro provide initial teacher education with unequal distribution of methodological and pedagogical subjects and content across the curricula of different faculties. In the study programmes for teacher education, almost half of the programmes consist of subjects from the pedagogical-methodical group of subjects, while at the faculties of the natural sciences it is visibly smaller.

Analyses of the resources and competences of teachers within the Project, fit in and assist the recommendations and measures defined by the Teacher Education Strategy in Montenegro (2017-2024). They relate primarily to the advancement of knowledge and skills in pedagogical, methodological and psychological fields and the development of key competences for lifelong learning. The Strategy envisages measures for determining the minimum representation of the pedagogical-psychological and didactic-methodical group of subjects as well as determining the minimum representation of key competences in the study programmes through which teachers are being educated. This could certainly be supplemented by updating the contents of the initial education programme and CPD as recommended by the Working Groups appointed by the responsible institutions and as contained in the document of the *Montenegrin Framework Programme of Key Competences*. The results of the analysis conducted by the Project further recommend more concrete approaches for improvement in this area, and link to existing capacities that have already been developed and provide a solid basis for integrating key competences as a lifelong learning process into regular school and community activities.

|  |
| --- |
| **1. Initial education -** preparation for the teaching profession within formal education, the sophistication of this preparation in terms of general pedagogical-psychological didactic-methodological knowledge and skills, as well as knowledge of key competences; |
| **CONCLUSIONS** |
| * Satisfactory for classroom teachers - they have acquired longer and quality initial education (30-35 ECTS credits); competent in their domain; * Insufficient for subject teachers in pedagogical terms, small number of lessons, mainly the methodology within their subject, short duration (less than 20 ECTS); * Subject knowledge gained at a very high level makes teachers feel like subject experts; * Knowledge and skills on the development of key competences are not represented; teachers find that they have not acquired key competencies themselves during their studies; * The results of the survey contradict the findings of the focus group in relation to the representation of key competences in initial education. Possible misunderstanding or confusion about the concept of key competences with other meanings of competences that are part of the initial teacher education, or giving socially desirable answers in the survey. |
| **RECOMMENDATIONS** |
| * Measures from the Strategy supported: determining the minimum representation of the pedagogical-psychological and didactic-methodical group of subjects as well as determining the minimum representation of key competences in the study programmes by which teachers are educated; * Introduce innovative approaches, add practice to theoretical education, create excellence centres in schools. |

|  |
| --- |
| **2. Continuous professional development** - offering accredited training for the development of key competences, participation in them and the impact of the training on the improvement of teacher competences for the development of key competences and their integration into regular learning; |
| **CONCLUSIONS** |
| * There is an inconsistency in attending CPD seminars; some teachers often attend accredited training or participate in their schools, while others do not; * Useful seminars that combine an on-line approach with conventional training methods; * The trainings attended do not have mechanisms for continuity in monitoring the application of the learned; * Expressed the need of subject teachers for the content of the training in motivating the students, the “teacher-student” relationship and formative assessment; * The CPD Catalogue offers one-third of training that mostly provide fragmented elements of the development of key competences: the most common are method and approach trainings; * From the survey, as well as CPD's offer, the least prevalent are the trainings that develop key competencies in the community context - through project extracurricular activities that link learning to real life contexts and environments. |
| **RECOMMENDATIONS** |
| * Motivate teachers to apply learning strategies and teaching methods that are effective in education for key competencies; * Include mixed learning forms into training, as much as possible, that combine the use of online platforms and conventional tet a tet forms; * Training for development of key competencies with a focus on formative assessment is a priority for subject teachers, especially in high schools; * The necessity to introduce monitoring, support and quality assurance within the training offer and implementation; * Include development of instruments for monitoring and assessing the achievement of key competences in the training; * Include a section concerning activities and approaches that connect the school and the community in the training, that is, engage and link content knowledge with real contexts and learning environments through project and extracurricular activities. |

|  |
| --- |
| **3. Planning and management of teaching and extracurricular activities** - school climate, collaboration, horizontal learning and collaborative planning, monitoring student achievement and applying formative assessment; |
| **CONCLUSIONS** |
| * The climate in the school, teacher cooperation with one another and that one with the principal is very positive; * Teachers spend a lot of time planning, but there is no consensus on the number of hours of joint planning, what joint planning entails and what is the objective of that planning in relation to the development of key competences; * There is a practice of “horizontal” learning within subject teams, CPD teams, public, distinguished and experimental classes; * There are practices of formative assessment and monitoring of student achievement. |
| **RECOMMENDATIONS** |
| * Include the specifics of planning the development of key competences in the training, from annual, cross-curricular to subject, as well as the preparation and organization of extracurricular, project activities; * Include existing horizontal learning resources in key competency trainings - learning within subject teams, CPD teams, public, distinguished and experimental classes; * Include in the training the development of instruments for monitoring and evaluating the achievement of key competencies with a link to the internships (recommendation identical to those under 2). |

|  |
| --- |
| **4. Approaches to learning and teaching related to development of key competences –** to what extent the concept of key competences is known, what methods and approaches are used on a regular basis and whether they aim at developing key competences. |
| **CONCLUSIONS** |
| * The concept of core competencies is not clear enough, although the parts are understood, teachers are not sure enough whether they develop key competences; * Teachers regularly use many interactive methods, CPD provides many trainings in the field of active teaching/learning methods, but the question is how much they use in the process of developing process knowledge and skills of key competences; * Cross-curricular approach and relatedness in teaching are applied, more in one or two subjects and specifically within cross-curricular area of sustainable development programme. |
| **RECOMMENDATIONS** |
| * Within one training module (90min duration), provide an explanation of the concept of key competences, what they serve and how they are developed, in order to build links with existing activities, knowledge and experiences of teachers; * Include clarifications and links to existing knowledge in the application of diverse approaches in the training, with the aim to develop processed knowledge and skills of key competences; * Include an extension of an interdisciplinary approach in the training with a focus on more subjects and broad areas or domains of knowledge, through inclusion of extracurricular activities and projects, around freely selectable topics, in order to apply the content learned. |

## Recommendation for the content of teacher training

According to the recommendations, at the end of the analysis, there is an overall proposal for capacity development for future teacher training within the Project.

Goals:

* Getting familiar with the concept of key competences and links to the Montenegrin Framework for Key Competences.
* Motivating teachers to apply learning strategies and teaching methods that are effective in education for key competences, integrating it with past practices.
* Tools for preparation, conduct and evaluation of the teaching for key competences:

- teaching methods and forms for key competences,

- preparation for teaching - yearly planning, cross-curricular, planning extracurricular activities and projects, scenario,

- quality indicators, self-evaluation of teachers, peer observation, student self-assessment of lessons learned, evaluation of teaching delivered.

* Featuring good examples of preparation for teaching that includes key competencies:
  + annual planning, lesson plan (one-subject, multiple-subject, school-level (days devoted to a particular issue)), at the extracurricular activity level and how each of the key competencies can be applied in STEM subjects.
* Preparation of individual and group preparations for the achievement of key competences.

\* \* \*

# Annexes

## Annex 1.: List of participants at the focus group

|  |  |  |  |
| --- | --- | --- | --- |
|  | Name and surname | Subject | School, town |
|  | Aleksandra Babović | Biology, high school | „Spasoje Raspopović,“ Podgorica |
|  | Ivana Ćetković | Math, high school | „Spasoje Raspopović,“ Podgorica |
|  | Tanja Dragašević | Biology, high school | „Tanasije Pejatović“, Pljevlja |
|  | Ivana Anđelić | Informatics, primary and high school | „Tanasije Pejatović“, Pljevlja |
|  | Nataša Tmušić | Chemistry, primary school | „Radomir Mitrović,“ Berane |
|  | Tatjana Radević | Classroom teaching | „Radomir Mitrović, Berane |
|  | Nada Lalatović | Classroom teaching | „Olga Golović“ Nikšić |
|  | Radoje Stanić | Informatics, primary school | „Olga Golović“ Nikšić |
|  | Jasna Medojević | Bology, high school | „Slobodan Škerović“ Podgorica |
|  | Marija Jaćimović | Math, high school | „Slobodan Škerović“ Podgorica |
|  | Svetlana Vučević | Biology and chemistry, primary school | „Savo Pejanović“ Podgorica |
|  | Ankica Martinović | Classroom teaching | „Savo Pejanović“ Podgorica |
|  | Sandra Krstović | Math, high school | „Mladost“ Tivat |
|  | Zorina Grubišić | Biology, high school | „Mladost“ Tivat |
|  | Snežana Perović | Classroom teaching | „Njegoš“ Kotor |
|  | Branka Antović | Biology, primary school | „Njegoš“ Kotor |
|  | Ivana Janković | Math, primary school | „Pavle Rovinski“ Podgorica |
|  | Aleksandra Jelić | Classroom teaching | „Pavle Rovinski“ Podgorica |
|  | Tanja Crvenica | Engineering and computer science, primary school | „Pavle Rovinski“ Podgorica |
|  | Katarina Baković Boljović | Classroom teaching | „Maksim Gorki“ Podgorica |
|  | Jelena Blečić | Math, primary school | „Maksim Gorki“ Podgorica |

## Annex 2: Questionnaire for teachers in primary and secondary schools

**Continuous Professional Development (CPD) for classroom teachers and teachers of mathematics and science in the development of key competences for lifelong learning**

Dear Teacher,

The questionnaire is organized within the framework of the EU-funded project for technical assistance *"Integration of Key Competences in the Montenegrin Education System";* beneficiary is the Ministry of Education of Montenegro.

The questionnaire aims to find out to what extent teachers of classroom teaching, mathematics and natural sciences (physics, biology, chemistry and informatics) develop key competences and functional application of the lessons learned with students, and to identify possible teacher advancement needs in this field. Certain questions in the Questionnaire have been adapted from an international TALIS survey that examines the learning environment and environment to help European countries adapt to the challenges of contemporary education.

The analysis and interpretation of the research will provide information relevant to the creation of a training approach for the 900 classroom teachers and 960 mathematics and science teachers of the primary schools, high schools and vocational secondary schools planned within the Project. Therefore, we ask teachers to respond honestly so that the training programme can be developed to meet real needs and subsequently be implemented as part of continuous training.

The Questionnaire requires teachers to answer questions about their initial education and subsequent professional development, as well as their views and approaches used in teaching and learning.

All information collected in this research will be considered confidential and will be used solely for the purposes of the Project.

About the questionnaire:

* The person completing this questionnaire should be a teacher from primary, secondary and vocational secondary schools who teach mathematics and natural sciences (physics, biology, chemistry and computer science).
* It takes 15 minutes to answer this questionnaire.
* Guidelines for answering questions are given in *italics*. Most questions can be answered by ticking one of the most appropriate answers. When you have completed this questionnaire, please submit it by [date ].
* If you are unsure about any aspect of the questionnaire or need additional information, you can contact us using the following contact information: [Nevena Čabrilo [nevena.cabrilo@zzs.gov.me](mailto:nevena.cabrilo@zzs.gov.me) and Ljubica Špirić [ljubicasam@gmail.com](mailto:ljubicasam@gmail.com)]

Thank you for your participation!

**PART 1 – BASIC INFORMATION**

**1) Gender?**

( ) Female

( ) Male

**2) Please indicate the total number of years of service in education**

*Circle the whole number.*

**3) Your work place at school: I am a teacher of:**

*Mark one answer.*

( ) classroom teaching

( ) mathematics in primary school

( ) informatics in primary school

( ) physics in primary school

( ) biology in primary school

( ) chemistry in primary school

.................................................. ...........................

( ) maths in secondary school

( ) informatics in secondary school

( ) physics in secondary school

( ) biology in secondary school

( ) chemistry in secondary school

( ) other, specify:..............................................

**4) Name of the school where you teach.**  
*If you work in multiple schools, please provide the name of the main school.*

*...........................................................................*

**5) In which municipality do you work?**

*Pick (the main) one form the list:*

( ) Andrijevica

( ) Bar

( ) Berane

( ) Bijelo Polje

( ) Budva

( ) Cetinje

( ) Danilovgrad

( ) Gusinje

( ) Herceg-Novi

( ) Kolašin

( ) Kotor

( ) Mojkovac

( ) Nikšić

( ) Petnjica

( ) Plav

( ) Plužine

( ) Pljevlja

( ) Podgorica

( ) Golubovci

( ) Rožaje

( ) Šavnik

( ) Tivat

( ) Tuzi

( ) Ulcinj

( ) Žabljak

**PART 2 – INICITIAL EDUCATION AND CONTINUOUS PROFESSIONAL DEVELOPMENT**

**6) Mark the faculty and study programmes you attended**

( ) Faculty of Philosophy:

( ) Preschool education

( ) Teacher education

( ) Philosophy

( ) Geography

( ) Pedagogy

.................................................. .................................................. .....................................

Faculty of Science and Mathematics - the study programme of

( ) Physics

( ) Mathematics

( ) Biology

( ) Informatics

( ) Chemistry

( ) Other

**7) What is the highest level of formal education you have received?**

*Mark one answer.*

*The ECTS is the European Credit Transfer System (60 credits), a measure of the average student's workload in the academic year, and it is estimated that 25-30 hours of student work should be invested in one point.*

( ) After high school or college

( ) Basic academic and vocational studies (180 ECTS) or equivalent.

( ) Graduate Academic and Professional Studies (240 ECTS) or equivalent.

( ) Master academic studies or integrated medical studies (300 ECTS) and specialist academic studies (360 ECTS) or equivalent

( ) Doctoral Academic Studies (480 ECTS) or equivalent

( ) Other – *please type in* ............................................. ..............

**8) Please note how much ECTS you gained during higher education in the subject that prepares you for teaching (pedagogical and didactic knowledge):**

Less than 20 ECTS

Between 20 and 25 ECTS

Between 25 and 30 ECTS

Between 30 and 35 E ECTS

Other:

**9) Have you acquired some pedagogical and didactic knowledge and skills within higher education as part of your preparation to be a teacher and to develop key competencies in students?**

*Please indicate whether it was part of your formal higher education programme or if it was acquired through some other type of education*

( ) As part of my studies, I acquired pedagogical and didactic knowledge and skills on the development of key competences in students (higher education)

( ) I have acquired pedagogical and didactic knowledge and skills about the development of key competences in students within other forms of education that were not part of the studies

( ) I have not acquired pedagogical and didactic knowledge and skills on the development of key competences in students

**10) Were the following elements part of your formal college education ?**

*This question is about your formal education, not continuous professional development.*

*Tick one answer in each row.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Yes, for all the subjects I teach | Yes, for some of the subjects I teach | If yes, enter the number of ECTS credits you have acquired | No |
| Contents of the course I teach |  |  |  |  |
| Pedagogy or teaching methods of the subject I teach |  |  |  |  |
| Within the methodology and pedagogy, knowledge and skills of developing key competencies in students |  |  |  |  |

**11)This question explores your formal and non-formal education within the CPD. Please indicate how many hours of continuous professional development you have acquired in the above forms in the last 24 months. If you have not gained one hour, write 0.**

|  |  |
| --- | --- |
|  | *Hours - If you have not earned any hours, write 0.* |
| How many hours have you gained as part of organized professional development at school (professional development at school level) in the last 24 months? |  |
| How many hours have you spent in the last 24 months in joint planning and preparation with your fellow teachers? |  |
| How many hours have you spent the last 24 months working together to plan and prepare project activities with fellow teachers and / or community representatives? |  |
| How many hours of training have you spent in the last 24 months through accredited licensing seminars? |  |

**12) Have the professional development activities you participated in in the last 24 months covered the topics listed below?**  
*Tick the appropriate field for each training topic listed and give the full title of the training within which you had the topic. If the same training covered more than one of the topics listed in the table, also mark them and repeat the title of the training (e.g. the topics "Integrative Approach to Achieve Learning Outcomes" and "Formative Assessment as Part of Student Evaluation and Assessment" training entitled "Cross-curricular Approach".*

|  |  |  |  |
| --- | --- | --- | --- |
| Topics | I did not attend any training on this topic | I attended any training on this topic | The full name of the training within which you had the topic specified |
| Knowledge and understanding of the areas of the subject(s) I am teaching (subject matter and improvement) |  |  |  |
| Teaching, pedagogical competences (methods and forms of work) for teaching the subjects I teach |  |  |  |
| Knowledge of the curriculum of the coursework / training for the outcome-based teaching programme |  |  |  |
| Building knowledge that transcends subject lines: An integrative approach to learning outcomes / Interdisciplinarity and thematic integration |  |  |  |
| Creating an Incentive Learning Environment / Learning Environment |  |  |  |
| Collaborative teaching (referring to the collaboration of teachers in joint planning and delivery of teaching and / or projects) |  |  |  |
| Formative assessment as part of student evaluation and assessment |  |  |  |
| Project methods in teaching and extracurricular activities |  |  |  |
| Partnerships of schools with the community (cooperation of the school with other community institutions - cultural, sports, business and other institutions) |  |  |  |
| Developing key competencies in students (e.g. entrepreneurial learning, learning how to learn) |  |  |  |
| Approaches for developing cross-curricular topics (e.g. cultural awareness, sustainable development) |  |  |  |

**PART 3 - LEARNING APPROACHES AND TEACHING RELATED TO THE DEVELOPMENT OF KEY COMPETENCES**

**13) Concept of key competences:**

*Please answer the following questions by marking up to a maximum of two choices that best suits your attitude:*

( ) I do not know the concept of key competencies

( ) I do not know the concept of key competencies but I have heard about it

( ) I develop competencies in my teaching work but I am not sure if they are called key

( ) I develop subject competencies and thus key ones

( ) We plan to develop key competences at school

( ) I know the concept of key competences and partially apply them in teaching

( ) I am very familiar with the concept of key competences, and I regularly include this approach in my work

( ) Other:

**14) On a four-step scale (1 - never, 2 - sometimes, 3 - often and 4 - always), mark how the following statements describe your teaching activities.**

*Mark for each statement by selecting one number on the scale*

Students in my classes work in groups to solve a task 1 2 3 4

Students in my classes make projects mostly through teamwork 1 2 3 4

I organize out-of-school student visits with a subject that I relate to the material and their learning 1 2 3 4

Students in my classes interact with community representatives e.g. local entrepreneur, writer, traffic workers, etc. who come to school to talk to them 1 2 3 4

I make preparations for the class in collaboration with teachers from my school so that students in different subjects learn about related topics and phenomena 1 2 3 4

The students in my classes learn from a variety of sources: they gather information from the internet, from the media, make PPT presentations, conduct their own research on the topic I give them 1 2 3 4

Before designing a project, researching, working independently or in a team work with students, I establish criteria and associated indicators for assessing the quality of completed tasks 1 2 3 4

I provide written feedback to students along with giving a grade 1 2 3 4

I organize students into pairs or small groups so that they give each other affirmative and critical feedback on their individual or group assignment, assess how much they have learned about a given topic or solution to a problem 1 2 3 4

**15) For each of the topics below that make up the key elements of key competency development training, evaluate how much you would need in order to achieve student key competency development**

*Check one box in each row.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Currently not necessary | Low level of need | Moderate level of need | High level of need |
| Understanding the concept and framework of key competences as a basis for lifelong learning |  |  |  |  |
| Teachers' competences for the development of key competences of students: planning, palette of approaches, methods and forms of work in the service of competence development in students |  |  |  |  |
| Developing teachers' competencies to develop tools to monitor development and evaluate the achievement of key competences |  |  |  |  |

**Thank you for participating in this research. Your feedback is very important to us!**