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Participation in the Assessment Processes in Problem-Based Learning: Experiences of the Students of Social Sciences in Lithuania

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Abstract: The article explores the idea of change in the higher educational process that is implemented via the problem-based learning strategy. Problem-based learning (PBL) is widely understood as an epistemological transformation in higher education. It is emphasized that the transformation should take place throughout the educational process, and assessment is an inseparable and very important part thereof. The study was aimed at revealing the experiences of participation in the assessment processes in PBL of students attending social science programmes in Lithuania. The empirical study, employing a semi-structured interview method, has shown that the students feel empowered when they have the opportunity to assess the entire educational process and (self-)assess the efforts related to the possibilities to become actively engaged in improvement of the assessment strategy. The study has also shown students' critical approach to the previous experience of assessment in the educational process. Difficulties of student participation in the assessment process in PBL were also identified. They were largely due to the change in the assessment system employed by the teacher and the manifestations of student bias when participating in (self-)assessment.

Keywords: learning; problem-based learning; assessment process; student experiences; higher education

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1. Introduction

1.1. Problem-based Learning Definitions and Assurance of Conditions for Response to Shifts in the Education Process

The educational sciences explore new educational strategies that help meet students' expectations towards their studies as they aspire to acquire life-long learning skills for successful adaptation to contemporary society and finding a place in it. The purpose is to promote student cooperation, teamwork, teaching and learning from each other by addressing issues in constantly changing situations [1,2]. Problem-based learning (PBL) is one of the strategies enabling students to develop the mindset of future professionals and gain problem analysis and solving skills. Two PBL analysis approaches could be identified. The first one is dedicated to the description of a specific PBL methodology [3,4]. The second is aimed at the exploration of the philosophical grounds of PBL that reflect the epistemological transformation in higher education [5,6]. If viewed as a clearly and comprehensively described teaching and learning method, PBL seeks to enable students to gain practical experience and enhance problem-solving and self-directed learning skills. PBL is emphasized as an educational strategy and philosophy that is important when responding to the contemporary needs of society. This means that, instead of being viewed in narrow terms, as a method, PBL is treated as a set of notions about teaching and learning by highlighting the broad and flexible opportunities offered by it [1,7,8]. The PBL notion that focuses on the philosophical grounds provides that a consistent student-centered and empowering educational environment needs to be designed. Key features of PBL not only

translate into elements of an innovative educational technique, but also create conditions for a new approach towards educational theory and the practice and emergence of new roles of the participants in the study process.

The curriculum launched at McMaster University Medical School in Canada is considered to be the origins of PBL [9]. This strategy has become widely spread across disciplines and varies in terms of its implementation models. Nonetheless, implementation of PBL is addressed by referring to the key principles identified in the early period of PBL application. The principles are as follows: learning should be constructive, self-directed, collaborative and contextual [10].

The researchers who analyze PBL stress that PBL "is an instructional (and curricular) learner-centered approach that empowers learners to conduct research, integrate theory and practice, and apply knowledge and skills to develop a viable solution to a defined problem" [11] (p. 9). When defining PBL, the focus is placed on the learners as the individuals who are actively involved in the educational process. PBL has been noted to positively affect learners' perceptions of their self-directedness in learning [12]. The learners become actively engaged in the entire PBL process and are important participants in PBL assessment, which is also a part of the process [2]. Certain features of empowerment didactics [13] could be traced to the PBL strategy. These features highlight the conditions which enable the students to become the parties that actively construct and assess their own knowledge. The instructor's role of an assistant in PBL enhances learner empowerment [14]. Empowerment builds on the ideas of learner emancipation and changing power relations in education. New power relations also emerge in teamwork, which is also an important notion in PBL. This suggests the possibilities of implementing the ideals of epistemic diversity and democracy. PBL has been noticed to be more attractive to minorities or other marginalized groups than traditional instruction [15]. PBL dynamics empowers and engages the learners who are usually denied the possibilities to express themselves within a traditional curriculum [16]. Implemented in diversified teams, PBL promotes pluralism of opinions, epistemic equality and solidarity.

The understanding of PBL as a philosophy stretches much further and deeper than the limits defined by the curriculum or subject. This transformation of paradigm has been drawing the attention of the experts for a long time [17]. It is only through transformation of the notion of the traditional curriculum that it may be possible to enable the transformation of the paradigm. In view of the differences within higher education, traditional learning is generally referred to as simulation [18]. The learners do not find the learned content to be personally important, and the "juggling" of formulas and rote knowledge does not guarantee that they will be able to deal with real-life problems. Learners often learn the way to meet teachers' expectations and preferences and receive good scores rather than the subject of instruction [18]. These learners aim to memorize and reproduce the information rather than change their own understanding. Memorization and reproduction at the right time (e.g., during the exam session) are also encouraged by the traditional organization of the educational process and assessment is focused on the amount of the material reproduced. The analysis of weaknesses of traditional teaching and learning shows the need to organize teaching/learning in a way so as to encourage conscious activeness in learners and constructive participation in the educational process as provided for in the PBL strategy.

The modern educational process is characterized by change [19]. The new learning often takes place in diverse, unconventional learning environments. The teacher acts as a facilitator who supports learning. It is important to ensure that the relations between the participants of the educational process meet the needs of the democratic society, and education is implemented as a learner empowering practice.

1.2. Assessment in the Problem-Based Learning Process

Assessment is considered to play a special part in the PBL, and it is important that it takes place regularly in order to assess the knowledge and competences gained throughout

the curriculum [20]. The assessment process in PBL is aimed at encouraging its participants to think critically about the ongoing process and the possibilities offered by its evolution. The assessment that includes the specifics of traditional education is obviously unsuitable for assessment of the PBL process and learning outcomes. It should be in line with the PBL philosophy and show the learning achievements and teaching/learning outcomes under the PBL strategy selected [21–25]. Learners gain a number of new skills in the PBL process [1,26]. The assessment should become and be part of the personalized PBL educational strategy that enables critical thinking in learners [27,28].

Learner-empowering assessment is associated with their active participation in the process, requiring the ability to critically reflect on personal knowledge and authority to perform certain actions in order to enhance their own learning practice. When empowered, the learners have the chance to put forward the assessment topic and its format according to their individual learning style. They may also seek agreement with the teacher about the criteria to be used when assessing and scoring the work. Here, the learners are empowered to take direct actions both individually and as team members when performing self-assessment, judging the assessment and negotiating different approaches than those practiced by the teachers. This means that the students are involved in main aspects of the learner experience, such as assessment strategies. Teachers, in turn, enable the students "to challenge and escape the confines of hegemony" [29] (p. 361). Assessment as empowerment is essentially a democratic process. It has an indisputable value, as it helps the learners develop their activity independently by using the self-assessment and experience reflection forms. This method requires systematic and consistent critical thinking and feedback from all participants of the educational process. Involvement of other participants in the educational process in the process is also a significant domain of the process of empowerment [30,31]. "Empowerment evaluation also requires sensitivity and adaptation to the local setting. It is not dependent upon a predetermined set of technologies. Empowerment evaluation is necessarily a collaborative group activity, not an individual pursuit" [32] (p. 9). Learners are the principal consumers of assessment and they should be enabled to benefit from this position. According to the majority of learners, as they were using diverse self-assessment measures, not only did they succeed in focusing all their efforts towards higher work quality, but they also managed to feel "less anxious" when performing various tasks. Moreover, timely assessment/self-assessment of learning also acts as a disciplinary measure and the possibility to realize whether the learner and the teacher are satisfied with the degree of achievement of the expected learning outcomes [33]. An external evaluator—the teacher—undertakes the role of an assistant or facilitator in case of any difficulties or a guide who helps find appropriate direction for the processes. The evaluator is on equal terms with the learners, a critical friend—not a master or servant [32].

Learners can make autonomous decisions regarding their own learning, including the way in which they would be assessed. Learner empowerment encourages the learners to undertake direct actions both individually and in groups in order to assess their own work, criticize the mode of assessment practiced by the academic world and negotiate on a practice other than the one proposed. To give voice to the learners who feel dissatisfied with the existing assessment processes, it is important to provide conditions for them to regularly participate in the dialog by making sure that their ideas and processes turn into the discourse that recognizes their participation [34]. Three fundamental challenges must be overcome in the entire assessment as an empowerment process [35]: (a) student participation in the assessment of their own learning; (b) feedforward, which focuses on the delivery of information about the results of assessment that can be used in a proactive way; (c) producing high quality assessment tasks. These three challenges can be broken down into individual principles that, when operationalized by university tutors, enable them to introduce innovative practice or procedures that influence the way that both staff and students experience assessment. The innovative proposals based on the three challenges mentioned above may be implemented by using appropriate technologies in a way so as to empower the learners' learning process in the academic setting. Simultaneously, the

technology and extension of the respective powers may help the learners to cultivate the skills and competences that determine strategic thinking beyond the academic context (personal and professional) as well.

The theorists and practitioners of PBL have been exploring specific and particular assessment strategies, techniques and instruments for the assessment to reflect the essence of PBL [21,24,25,36,37]. PBL offers a diversity of forms and instruments to be used in assessment. The majority of the authors who deal with the specifics of assessment in PBL emphasize the need to properly blend the summative and formative assessment [38–40]. Formative assessment is a part of developing or ongoing teaching/learning, where the participants in the educational process express their remarks and feedback to each other. It includes feedback to the participants of the educational process with the aim of enhancing teaching/learning and improving the curriculum and process. The main aim of the formative assessment is to develop future learning and encourage the students to reflect, thereby empowering them to review what they have already learned and understood, and receive feedback from the teacher on how to improve their achievements [40,41]. This kind of assessment enables the learners to track their own progress and take note of the competences and abilities that still need to be acquired, establish the link between learning and assessment and adjust the learning style where needed according to the curriculum.

Application of the strategies of assessment by other participants of the educational process, not just by the teacher, is proposed to ensure development of learners' competences and democratic distribution of the powers among the participants of the educational process [20]. It has also been noted that various assessment techniques and instruments [42,43], such as work folders, simulation, essay, reflection journals, reports, etc., could provide substantial input in PBL. Assessment based on specific instruments (e.g., learning journals) may be biased. The bias could be overcome by including groups of different evaluators [27]. A combination of assessment methods may help to compensate for the weaknesses of a single method and provide a better picture of the PBL situation. Various assessment strategies and instruments help the learners assess how well they learn rather than how much they have learned [23]. Assessment in PBL is focused on the entire educational process rather than just an outcome as a final achievement.

In general, assessment could be claimed to be one of the most popular forms of power demonstration and the act of demonstration of (non)compliance with a norm. The traditional assessment practice is often disempowering to the learners, and the learners remain passive objects of the assessment. PBL avoids demonstrating the hegemonic power via exams [44]. To the contrary, formative assessment promotes empowerment of the participants in the educational process. In PBL, assessment as a process involves various participants, assessment forms and methods to avoid the demonstration of hegemonic power relations.

In a number of scientific sources, PBL is construed as an innovative approach to learning medicine, where it has been applied and analyzed the most extensively [9,45–47]. The application of PBL to other science areas, e.g., social sciences, would provide a broader perspective and see the potential for construction of social knowledge in the educational process. In Lithuania, PBL has not yet established strong roots as a novel approach. Despite the potential possibilities for transformation in education offered by it, PBL also challenges the traditional (self-)education theory and practice. To highlight the benefits of PBL to learners and identify the aspects that require improvement, the learners' experiences in PBL need to be analyzed and explored. In view of the above, the research aim was to reveal the experiences of participation of the students of social science programmes in Lithuania in the assessment processes in PBL.

2. Research Methodology

2.1. Context

The research pursued the aim of analyzing the students' experiences of participation in the assessment processes in PBL. The problem question of the research was: how do

students' experiences manifest themselves in terms of participation in the assessment processes in PBL?

The study presented in the article was closely related to the PBL application project conducted at two universities in Lithuania. PBL assumes active student cooperation in teams when analyzing and solving problems. Assessment was considered to be an important part of the entire educational process as provided for by the methodological principles of PBL. The project was mainly aimed at developing the methodological and informational support for problem-based teaching and learning in order to assure specialists' competitiveness on the labour market. The universities were selected for the project (as well as the research presented in the article) according to the degree of their focus on social sciences. The goal behind the application of PBL on the institutional scale was to improve the educational process in social sciences and to encourage the students to become actively engaged in real-life, relevant problem solving, develop their social construction of knowledge and collaboration competences.

The research covered diverse experiences, as the schools of higher education were chosen in a way so as to make sure that there were certain differences between them. One of the purposes was to ensure diversity of the research data. The first university was the state school of higher education promoting change in the country and, in particular, one of Lithuania's regions. The second university was the Liberal Arts and Sciences school of higher education. The outreach of the second university was not specific to any particular region of Lithuania. The University rather emphasized the aspiration to build Lithuania's future and contribute to the development of global culture and science.

Eight study programmes in the social science area, comprising 70 study subjects under the programmes delivered by 60 teachers and attended by more than 800 students, were upgraded by integrating the PBL strategy during the project period. The teachers participated in 6 workshops (duration: 8 h each) dedicated to presentation of the rationale behind PBL and guidelines on its integration into the educational process. Previously, PBL had been employed in Lithuania on the institutional scale in medicine learning only, and project activities were largely centered on learning from the best foreign practice in PBL. Teams of teachers preparing to use PBL would visit Maastricht and Sheffield Universities to learn about the PBL application at those universities. Upon their return, they would share the practice with the colleagues who were preparing to apply PBL in Lithuania.

Following the first semester of PBL application, a questionnaire survey was conducted among the students and interviews with the teachers were held. They were aimed at providing information about the students and teachers' experience in relation to the PBL-upgraded subjects. All teachers were found to have selected a partial, hybrid PBL model for application. This implied the combining of conventional classes and PBL activity. The study subjects, during which the students would become engaged in PBL activities most actively, were identified. PBL was not fragmented, but was rather implemented in these subjects consistently throughout the semester (6 months), covering more than 50% of the educational process. During that period, the students were working in teams to analyze and address real-life, authentic, ill-structured problems, e.g., they conducted a study identifying and assessing the experience of school education and support received by the persons with special educational needs; developed projects on the improvement of the website of University faculties by implementing the knowledge gained during the public communication-related subjects. The educational process was centered on students' self-directed learning, and the teachers were acting as facilitators. Collaborative assessment where both the teacher and the students take active part was emphasized during PBL application. Following the approach towards PBL as a flexible strategy, the assessment process and participants' contribution into it were not subject to general regulations, and could therefore vary from subject to subject.

The students who had attended the study subjects involving the most active use of the PBL activities were invited to participate in a semi-structured interview for the purpose of the research presented in the article. The article presents the part of the research that

addresses the PBL process. Students' social construction of knowledge through cooperative learning in the PBL context was presented in the previous publication by the authors [48].

2.2. Participants

The interviewees were selected by mixed purposive sampling, which implies the use of two or more sampling methods in a single study [49]. The students selected using the criterion sampling method participated in the research. They had been attending the subjects with the most active use of PBL activities. The snowball sampling principles were also employed in the study. This technique refers to the approach where the research participants would recommend holding interviews with specific students who had unique and rich experience in the PBL process. The sampling of the research participants helped reveal the diverse assessment experience. The research involved 31 students from different PBL teams. The participants represented two cities of Lithuania that were homes to the universities which applied PBL in the area of social sciences.

The research participants attended the following Bachelor study programmes: Public Administration, Business Administration, Economics, Public Communication, Special Education, Primary Education and Education. The first university was represented by 15 students, the second—by 16 students. The gender distribution was the following: 3 males and 28 females. The unequal gender distribution of the respondents demonstrated that social science study programmes (in particular, in the area of education) were predominantly attended by females (the students under the Education and Primary Education and Pre-School Education were females only). Twelve respondents were second-year, sixteen—third-year and three—fourth-year students. The majority of the research participants fell under the age group of 20–22, and only two respondents were 24 years old.

2.3. Research Methods

The semi-structured interview method was used to learn the research participants' perceptions about the world, their construction of meanings and their interpretation of their own experience gained in the PBL process. The analysis was focused on the way of construction of the new knowledge as the horizons of meanings were merging. The way of blending of the research participants' previous understanding with new experiences and the meaning it acquired for the subjects of cognition were identified.

With a view towards the research aim, the following main questions of the semi-structured interview were developed: what was your experience of performing the assessment in the PBL process? How was this experience different from your previous assessment experience in the educational process? What is your evaluation of your experience in performing the assessment in the PBL process? Why?

The interpretative phenomenological analysis applied in the investigation of the interview texts was focused not only on the importance of the meanings emphasized by the interviewees, but also on the researchers' interpretations based on their experience and knowledge [50]. Phenomenology-based research largely focuses on the experience [51]. The conducted research, therefore, enabled the researchers to recognize the students' authentic "voices" as they were sharing their experience during the interviews.

Following the idea of "hermeneutic circle", the researcher was moving in the between part of the text and the whole of the text [51]. This showed the key meanings embedded in the text. The following stages of analysis were completed in order to perform the thematic analysis: attaining familiarity with the data through open-minded reading; search for meanings and themes; organization of the themes into a meaningful wholeness [52].

The internal validity [53] of the research results was pursued by the efforts of the researcher to participate in the research process directly and of the team of researchers who are the authors of the present article. The process of data analysis by collaboration helped reflect on the key experience presented by the research participants more accurately and clearly, and to reach common understanding and empirical and conceptual agreement. Confirmability of the qualitative research results was assured by providing the examples

of research participants' experience and ideas for illustrative purposes [54]. The results of the studies conducted by various authors were used for better understanding of the data of the presented research and preparation for the discussion.

2.4. Research Ethics

The research followed the fundamental principles of ethics: voluntary participation, confidentiality, respect, etc. [55,56]. Research participants' verbal consent to participate was obtained during planning for the qualitative research. A convenient time and place for the interviews were arranged with the research participants. All research participants were acquainted with the purpose of the research, its benefits, participants' rights and the possibility to refuse to participate in the research. Prior to the interview, research participants' verbal consent to record the interview was obtained.

The confidentiality of the information obtained was maintained by restricting access to the information provided by the research participants to the researchers only. To maintain the confidentiality of the respondents' identities, the researchers replaced the respondents' names with pseudonyms where the results were presented.

The research followed the principle of respect to the participants. Their opinions and experiences were deemed to be meaningful and respectable and were accepted as such. The benefits of the research were sought to outweigh any potential damage to its participants. Given that the research participants shared a fairly new experience, and this occasionally resulted in tensions and ambiguities, the aim was to listen to the research participants and give them informal feedback.

3. Results

3.1. Student Empowering Assessment Experiences

Students' opinion about and experience in the educational process reflect their authentic knowledge about the problem analyzed. The analysis of the respondents' opinions on the specifics of assessment in PBL has shown change in the power relations among all the participants of the educational process. This included the diminishing role of the teacher and, in particular, students' active participation in the assessment process. The experiences of the teacher–student collaboration and students' active involvement in construction of the assessment process in PBL became a form of student empowerment.

Analysis of assessment as an expression of democratic relations that enables avoiding the power of hegemonic authority primarily focuses on the learners' ability to reflect on their own knowledge, efforts and learning experiences critically and openly. In PBL, teachers usually do not have the possibility to monitor the entire educational process and can see only the final result. This means that the students have positive views towards the opportunity to assess themselves:

> Of course, the teacher can assess objectively, but he doesn't know how much input I made by myself. What if I have the stage fright or something like that, or I might not be able to express myself in the way that I have expressed myself when collecting the materials and so on. So, it's really good that we could perform the assessment ourselves. (Vaiva)

The students have noted that self-assessment empowers them to reflect on their own strengths that are not necessarily evident during the final exam. At the same time, other unnoticed abilities that the students believe may play an important role in the assessment become more prominent. The research results also show a change in the teacher's role and power in the processes. The teacher is no longer and cannot be any longer the only and main evaluator, because his/her participation in the educational process is not active enough to be able to assess the students objectively. In the assessment by the teacher, objectivity is more related to unified assessment criteria applicable to all students. These criteria may not cover students', as different and special individuals, successful activity. Hence, the students gain greater confidence, develop a more positive attitude and are motivated to be more active when they have the possibility to perform the self-assessment.

Another important aspect of the assessment is the opportunity to self-assess their own efforts. The analyzed research results have suggested the popular opinion among the students that the opportunity to perform self-assessment of the efforts was empowering:

> In fact, we gave ourselves the assessment score of 10 just for the efforts <...> There were errors, but it's good. Because the most annoying is when you see that others have not even tried at all. But you try very hard, and you failed, and your assessment score is even lower. (Morta)

The opportunity to be evaluated for the efforts empowers the students to give more effort and assess the errors from a positive perspective, as a path of improvement. *However, the student experienced negative emotions as she was observing the situations where high assessment scores were the result of random success rather than individual's efforts.* The empowering assessment during PBL prevents this kind of manifestation of failure.

The research results have also shown the perspective of adequate assessment. It is associated with each team member's efforts that depend on individual capacities rather than with equal contribution by each team member into the knowledge construction process:

> Someone might have found this a very hard task. Given his capacities, this may have been a rocket science to him, and it would be hard to think of anything he could have done there. For me, it's a different story. In general, I think it's difficult to tell who did more and who did less, in particular, in team work. Because when you are in a team, you are responsible for the entire team. I don't think that it would count as team work, if they started estimating who did more and who did less. I think this is up to the team members on how they are going to coordinate this and what they feel their responsibility is. (Rasa)

The students emphasize that it is necessary to associate assessment with the team members' heterogeneity rather than their equality or benchmarking of individual traits. It also substantiates the opinion that assessment is largely determined or should be determined by the joint team effort and perceived personal responsibility for one's own contribution to the team work.

The students also note that PBL and its assessment specifics empowers and motivates the students to participate throughout the educational process, as it is not a single success or failure during final assessment that secures a positive assessment score:

> I could personally claim that I like this method, because you'll definitely have a passing score if you attend classes and perform the tasks. If this is not PBL, then you may not have success. Because then the student needs to attend class, he is forced to do that, and when not forced, he is then motivated. (Tomas)

The analysis of the research results has revealed that the students have more favorable views towards the PBL processes than the traditional educational process. PBL motivates the learners to give effort throughout the process. In PBL, the students feel that they have the power and control the situation. Positive assessment of students' achievements depends on their actions rather than external circumstances that they have little control over.

The students had favorable views towards the qualitative aspect of PBL, where the quality of their learning path is emphasized. This kind of assessment is set against the exam, an assessment method widely used in traditional educational processes. Although exams follow clearly defined assessment criteria, the students still consider the exam results to also be determined by unexpected circumstances, one of them being either good or bad luck:

> It shows very clearly who and how studied genuinely. Because an exam, well, it sometimes is a lottery. You are other lucky or not. You might know a lot, but no one can see it. (Morta)

The research results show that, due to its specifics, PBL assessment enables the students to express themselves better, be visible and measure each team member's contribution. The student who associated the exam with the lottery shared that she had negative experience during the exam.

Receiving feedback from all participants of the educational process is another important aspect of assessment in PBL. This refers to each student's personal reflections not only on their own activity, but also on other learners' activity and their individual contribution into the joint work during PBL. According to the students, the reflective assessment by other team members served as a formative component that helped each team member improve and become constructively involved in the activity, pursuing the shared goal:

> You are not angry saying this, but rather say it kindly: "You virtually did not bring anything on the table today, and we had to do everything for you. I even cannot be sure whether I should give you any task or not, because you might be incapable of doing it." And I think that this is the push to that person: "I should probably try harder and do it" <...> We communicated a lot, worked together a lot, and the shared approach to the work actually developed. And the assessment and everything else were highly related to this. (Vilma)

The analyzed research results have revealed the students' abilities to assess insufficient efforts by another member of the team and his/her irresponsible approach to the joint work in a polite, but also open and critical manner. According to the students, constructive assessment of other person's efforts pushes the person to try harder and to undertake the assigned tasks with greater responsibility, which gradually leads to unity within the team and promotes team spirit. The students have emphasized that the assessment that empowers improvement is an inseparable part of the PBL process.

The students have acknowledged that self-assessment and assessment of other team members was very hard, but inevitable in order to reflect on their abilities. The pre-established rules and terms related to assessment helped maintain the unbiasedness:

> At each meeting, we had to assess ourselves and another team member by giving a certain score <...> This was the idea, and if you did not prepare or do anything at all, your score would be very low <...> That kind of assessment was very, very hard. Moreover, you need to assess yourself as well, because sometimes you need to distance yourself a lot to be able to see how much and what you can do. (Vilma)

The students' experiences show the importance of objective and responsible (self-) assessment of oneself and other team members. The empowering assessment places particular importance on deep self-cognition, assessment of own powers and capacities that ensure a person's further growth and development perspective.

The research results have revealed students' contemplations that emerge during assessment of the peers and shown their expanding understanding of the assessment:

> A positive score means that there is a certain amount of work that has been done. If none, then why should it be five? (Gvidas).

> ...We came to the point where we decided that giving good scores to the ones who were not doing anything was not an option. (Augustė)

Students' active participation in construction of the assessment principles becomes evident. At the same time, new power relations that the students attempt to justify by reasoning could be observed to emerge in the educational process. To ensure objectivity of the assessment of the contribution, the students are inclined to eliminate the perspective of the closeness of relations. This helps to promote the components that are important for openness and honesty of those who genuinely study rather than those who simply pretend to study.

Empowerment of students as active subjects of assessment is also evident when addressing the manifestation of collaboration with the teachers in the process of assessment. In most of the PBL cases, assessment was performed both by the teacher and by the students in order to avoid any problems that could emerge, if the right of assessment had been put into the hands of a single person in advance. The research results have revealed positive aspects of the collaborative assessment:

> It is also good for the teacher, because he can make more adequate assessment without participating fully in the learning, work process. I think that he looks not only at the work done, but also at the process itself. So, I believe it's the benefit for the teacher as well. (Monika)

The students have noticed that, in order to assure openness, clarity and transparency of the assessment, they were the ones to have initiated collaboration with the teachers in terms of assessment of the team members. The students shared a situation where the teacher gave the highest score for the team work, but the students reduced the score to the minimum for one of the team members after they had reviewed the PBL process and the team members' contribution and provided their reasoning to the teacher:

> The teacher may naturally have the question: why not give the score of ten to everyone? And it turns out that although the joint work was given the maximum score of ten, it does not go to everyone individually. It was probably for this reason that we approached the teacher and told him that we would not be willing to give the maximum score to one person. (Gvidas)

The research results revealed a situation where the student authority in the educational process was legitimate and reasonable as they were reconstructing the assessment mechanism proposed by the teacher in view of the insufficient contribution by the specific team member. This principled but reasonable and weighed decision by the students about another student is important from the perspective of empowering assessment. It emphasizes that the pre-established set of assessment techniques is adapted according to the circumstances by collaboration of the subjects participating in the assessment rather than followed blindly and without any change.

3.2. Difficulties of Student Participation in the Assessment Process

The research has revealed that the students place particular emphasis on assessment as a certain form of manifestation of the student–teacher relationship. This is common in the discussion of the previous experience of the educational process, the unwanted aspects of which are sought to be eliminated by using the PBL strategy. The exam becomes an important tool of assessment and often enables the teacher to take a convenient position by controlling the student's learning process. The students have noted that, where the teacher holds the assessment in his hands, the students learn for the sake of satisfying the teacher and gaining a passing score rather than in order to develop own knowledge:

> The teacher, as he put it, has own little system, and the students master this system. Each teacher has his own system. So, we master that system and then work according to it. (Gvidas)

The excerpt from the interview reflects another problematic situation, where the teacher's power of assessment becomes more imagined rather than real, if the assessment system remains unchanged for some time. The authentic reports by the students provide evidence that students make use of this situation and adapt to the assessment system used by the teacher, leading to partial abandonment of other important parts of the educational process that might have less influence on the final assessment result. Hence, the teacher's position promotes cursory learning.

Nonetheless, there are diverse issues emerging from the situation in PBL where assessment is not only the teacher's prerogative. Construction of individual knowledge of the participants of the educational process is limited by the factor of bias or subjectivity. This means that, in the educational process, the focus is placed on the empowerment of students to assess their own learning achievements or peers' contribution into the joint work. The students have noticed that assessment was complicated in that it was not easy to maintain unbiasedness in assessment of the contribution by other students in the group or by the student who did not participate actively or at all. Focusing on only the work actually performed is almost impossible in the assessment process, as strong orientation towards personal relations could be observed among the students:

> Problems arise due to the friendships. God save me from showing anger or becoming the one frowned upon. Everything is because of that. If the group, for example, is girls-only or boys-only, and the group members do not have much in common in regular life, but have become familiar because of the project and have started working together, then they would actually assess the work itself rather than the friendship. (Goda)

The research participants have emphasized that close personal relations between the group students become a real obstacle to unbiased (objective) assessment of the contribution by the friends in the group. It has been noted that the teams should be formed for group work so as to include diversity of personal relations. In this case, not only the group work, but also the process of assessment of the contribution, would be more constructive. Hence, the analyzed factor of bias becomes the obstacle that limits both the development of PBL strategy and the assurance of real, rather than simulated, formative assessment.

Students' inclination to communicate with their peers in a closer way than with the teachers is another problematic perspective of the assessment which has become evident in the research. Students start negotiating with their own team members to make sure they receive passing scores for the work they have not done:

> There was a student, she did not attend classes. We still had to assess her. When she saw us, she still asked for a passing score, although she had not done anything. I am not a greedy person, so I gave her five, it was not difficult for me. But in this case there may be problems. (Rokas)

> But she asked to give her a passing score just out of solidarity. Of course, we threatened to give her the score of zero at first <....> Then we decided to give her the score of five. (Gvidas)

The research results have revealed that the peer student was asking the team for a passing score by appealing to the principle of solidarity that is important in a democratic society. However, in this case, solidarity is understood not as a precondition for successful social construction of, but rather as an essentialist concept associated with, a certain status (all of us are students, and we can reach an agreement on the score). It may be noted that the assessment was not formative in that team, while PBL principles emphasize the role of formative assessment. The decision to give a positive score to the peer student who had not contributed to the joint work did not originate from the essence of activity in the PBL team, but was more determined by the mere authority of (self-)assessment granted to students. An assumption could be made, namely, that the students were not prepared sufficiently for objective assessment.

The situation where it was attempted to use assessment as a tool of revenge was also observed in the assessment process in PBL:

> This girl who really did not contribute to our work whatsoever, she was assessed respectively. She was very angry at us and said: "Just wait and see. The next time I will be assessing you all like that". (Saulė)

The assessment manifested itself as power used for destructive purposes rather than following the original purpose of the assessment, i.e., to allow the ones who have become closely familiar with the undergone educational process to perform the assessment, as the assessment may be the most adequate if performed by them.

Unbiased (objective) assessment of other team members and oneself is a very difficult and task which comes with responsibilities. An opinion was expressed, namely, that assessment in PBL should be performed by the teacher, as certain students were misusing the assessment:

> It would be better if the teacher performed the assessment herself during the PBL. Because, for example, the leader wanted to get the score of ten, but he had not deserved it, and there were huge discussions on that that even led to conflicts. It was not right that we had to assess ourselves, the leader had to assess himself. (Tomas)

The students have clearly contextualized the perspective of importance of the teacher's role that may help prevent an inadequate assessment. This may happen when a student—a team leader—demonstrates the authority regardless of his/her actual contribution to the final result, thereby seeking favorable assessment for himself/herself. In this case, the students view the assessment performed by the teacher as the possibility to avoid the necessity to assess others and oneself by reflection, by assuming the responsibility, and to avoid unpleasant discussions or conflicts with the group peers and, in particular, leaders.

However, there were the cases of disappointment even in the assessment performed by collaboration between the students and teachers. For example, the participants were assessed using different weights:

> We expressed and assessed everything by reflecting after each class. However, this was not taken into account in the final version. <...> So, the last time that we saw all our scores, it turned out that they were the same for everyone. (Mantė)

Considerable disappointment among the students was caused by inadequacy of the assessment in PBL and insufficient appreciation of the students' contribution:

> I personally believed that I had put a lot of work into this, much more than the final assessment. I think that the teacher did not consider that. I was a bit dissatisfied. <...> No, the teacher knew that it was only me who had conducted the interview. She could have forgotten about it by the time of that class. I did not try to find out. (Skaistė)

The research results have revealed that the dissatisfaction and problems emerging in the learning process under the new mode were not verbalized or discussed, which could otherwise take the PBL to the ultimate goal of a constructive and empowering dialog among all the participants of the educational process. The context of students' passive position has also been revealed. In that situation, inadequate assessment became the tool of the teacher's authority that caused disappointment in the student and, as a result, the student's passive role in the assessment process.

Another case that caused dissatisfaction with the assessment in PBL in a large group of students was related to changes in the pre-established assessment rules initiated by the teacher without consulting the students. The teacher performed the assessment himself on the basis of the students' answers during the defense of the work prepared in line with problem analysis and solution:

> The defense of the work initially had to account for somewhat ten per cent as promised, but then it turned out that the score given for the defense reflected the entire work. So this made one hundred percent. (Sigita)

The student has noted that the assessment method did not necessarily reflect each student's contribution to the work. Assessment by the teacher that became similar to the traditional exam caused stress to the students. It was more related to reflection of the ability to act in a certain situation of defense of work than reflection of the cognitive and social skills that were expected to manifest themselves during the PBL:

> Some of the people might have been displeased with that, because that public defense could have caused them to trip and added the pressure. The person might have worked a lot, but simply did not know how to defend the work at that moment, express his thoughts immediately. And the score was probably lower than it could have been. (Sigita)

This was a situation where, in an attempt to build the educational process on the PBL principles, the teacher still had the dominant role at the stage of assessment of the learning outcomes. Not only did this return full authority to the teacher, but also made the students doubt the possibilities for their active participation in the educational process. They felt as if they had been deceived, because their empowerment in the assessment of the educational process was only superficial.

The teacher's role was not considered to be as that of an empowering facilitator—a feature essential to the PBL process. According to the research findings, the teacher was also

performing the function of an observer that was linked by the students to the assessment; hence, the teacher's role caused anxiety:

> The teacher's role was more related to observing what we were doing. In fact, the teacher would come closer and listen to us discussing. And, suddenly, all the thoughts would freeze, because everyone knew there was someone coming to assess you. (Diana)

The student's experience was related to the teacher's traditional function to observe and assess the students' work. The students shared an experience that was the opposite of an empowering assessment, when the students were observed and any action on the student's part could have a negative effect on the assessment results. Hence, the students had a mental block which prevented them from thinking freely. In that case, collaboration between the teachers and students did not take place, and assessment was viewed as an obstacle rather than an opportunity to improve their own learning outcomes. The contradiction to the PBL practice and, in this case, the assessment principles applied in PBL has become evident.

There were cases where the students strongly lacked the characteristics of formative assessment and feedback upon completion of the PBL activities. The assessment results would often be provided by the teacher without any discussion, even though the student wanted to have the discussion:

> There was no summary that would have enabled us to realize what we had done wrong and what we should be doing the following time<...> You really want the feedback, if you put so much effort. I'm not talking about appraisal, but some healthy criticism. (Mantė)

The importance of feedback as an important component of enhancement of the educational process is revealed.

Manifestations of passive collaboration between the teachers and students in the assessment process have been noticed:

> Then the teacher writes down everything, the final score, scores for the project works, emails it to us. Then the teacher appoints the time for consultation prior to the exam. And then it's up to us whether we want to come or not, discuss on the assessment, result, and so on. But after that the desire goes away, and you just do not come.

The research findings have shown that the participants of the educational process supported the idea of collaborative assessment. This idea, however, was not implemented in practice sufficiently enough to become an important aspect for PBL improvement in the future.

Having experienced dissatisfaction with the fact that the assessment was not formative or empowering, the students made proposals on possible improvements in the assessment procedure for it to become useful for their learning. It is proposed to make assessment more transparent by enabling the students to reflect on their learning process, and to include the peers in the group for them to participate in the reflection. This would enable the learners to formulate their respective conclusions and learn from the experience:

> And, for example, write the reflections down on sticky notes or something like that, so that the reflections are publicly accessible to everyone. You just don't need to write your name: "I believe that everything was fine in this regard because... I didn't like that because..." And it's important that everyone could see them. I think this would be more useful. Because they are not afraid that they might be identified by others who read their notes. There could be an opinion that may be useful for me, for example. It would be more useful than the way it's done currently, when everything is highly concealed. No one knows what, how, or for what purpose. This could be the reason why the ideas are not considered, the conclusions are not made. (Goda)

Publicity of the assessment could level out the dominant position of the teacher, so that it is closer to that of the students. This would enhance the assessment based on the PBL principles in the educational process where learning takes place by observing peers' works and taking into account their constructive, objective remarks.

4. Discussion and Conclusions

Active and diverse discussions on PBL among the researchers [1,3,4,7,8] reflect the relevance of this educational strategy. The article supports the idea that PBL reflects an epistemological transformation in higher education and enables development of the general view of the new understanding about teaching and learning. This kind of approach suggests that a consistent, student-centered and student-empowering system needs to be designed when organizing a PBL curriculum. PBL principle-based assessment is considered to be an inseparable part of PBL as an innovative educational strategy.

The transition from traditional learning to PBL should be gradual and moderate in terms of pace, as the discourse that supports the traditional educational process is deeply rooted and often develops concealed forms, having a subtle, unnoticeable effect. As soon as the PBL was launched, the coexistence of different discourses could be observed: the efforts to attain innovativeness and collaboration were accompanied by the frequently observed tendency to return to the traditional educational practice. When preparing for the application of PBL, it is important to realize that there may be a strong fear of change at the beginning of implementation. The participants in the educational process had new questions about the organization of regular work. It may be difficult for them to understand and accept the new roles and commitments. They were concerned whether the learning outcomes would be clearly measured and properly assessed [57,58]. It would therefore be reasonable to inquire into the experiences of the participants in the educational process that they have had at the beginning of PBL implementation and assessment in line with its principles. The experiences help reflect on the perspective of implementation of PBL.

For the assessment to comply with the PBL principles, the researchers [15,23,42] have proposed taking into account different aspects related to assessment. Students gain a wealth of skills, in particular, transferable skills. The former enables them to be confident in unconventional situations, realize the importance of life-long learning and gain advantages in the post-modern and constantly changing world [59]. For assessment to be focused on the students' skills that are important at present, to be applied to PBL, the very goal of assessment should be put into scrutiny [23]. In PBL, it becomes more distant from the goal of traditional assessment. The goal of assessment in a PBL process is the empowerment of the students to actively study and provide feedback, assess learning in view of the expected learning outcomes and verify the criteria of assessment and standards. The research results have revealed the manifestation of student-empowering assessment. This means that they participate actively in (re)constructing the assessment aspects that do not satisfy them rather than passively accepting the pre-established assessment criteria. Further, to the contrary, the students find themselves in a confusing situation and imply that it would be safer to stay with the traditional assessment in case of the absence of a constructive dialog among the participants of the educational process, obscurity of the assessment criteria or changes to the assessment criteria after the educational process has started.

In PBL, positive assessment is aimed at contribution to the growth of the participants of the educational process and promotion of construction of their knowledge. Hence, it is important to raise the question of whether the assessment is reasonable and meaningful. Student-empowering assessment that promotes their growth is desired in PBL. During summative assessment, the learners try to emphasize what they know and are able to do. They also try to hide what they do not know and cannot do as much as possible [23]. In the traditional assessment, the errors noticed and corrected by the experts bring the learner back into the defined boundaries of what is normal. In PBL, the errors are, to the contrary, viewed as a positive impetus for learning. The students become used to reflecting on their own experience in the learning process and improve professionally by learning from their

mistakes. Hence, the knowledge is expanded as the students learn from other people's and their own mistakes and experience [60]. The traditional assessment system does not provide a sufficient impetus for students' progress. According to the research findings, in their reflections on their own experience of traditional teaching and learning, the students noted that they would learn by taking into account the teacher's system which they had managed to identify. Traditional learning often makes assessment a fearful experience for the students, and a controlling process [61,62]. The research findings have also revealed students' anxiety, as well as their experience of mind blocks when the teacher was watching them or listening to their discussions, as this could influence the assessment. This kind of reaction experienced by the students probably originates from the experience of traditional assessment that is present in students during PBL as well.

Assessment in PBL is characterized by the diversity of shapes and methods, and special and particular assessment strategies, methods and instruments are explored [21,24,25]. The results of studies on the effectiveness of PBL conducted by various researchers have revealed that the students who learn in a traditional way demonstrate better results from standardized tests, and their results are also better in basic knowledge [63–66]. PBL, on the other hand, guarantees learners better problem-solving skills, skills of acting in practical situations, performing self-directed learning, collecting information and performing self-assessment; it encourages them to focus more on the understanding rather than reproduction of information [67–69]. When analyzing the effectiveness of PBL, the researchers [70] have determined that the more appropriate the assessment method which is selected for assessment of the students' skills, rather than knowledge, the more effective is PBL. While traditional assessment seeks to assess students' knowledge by measurement, this strategy is ineffective and loses its sense in PBL. The skills cultivated during PBL are often aimed at students' life-long learning, and it is not easy to measure and assess them. The research participants have revealed that the new forms of assessment, e.g., self-assessment and assessment of other team members, caused a lot of difficulties; however, they were inevitable for reflection on the skills.

Public aspect becomes very important in PBL in relation to the entire educational process, and not just for its completion, i.e., aggregation of the results. Traditional assessment sets the teaching and learning process apart from its result [1]. Contrary to the traditional educational process, the result of PBL cannot be separated from the process. The research results have shown that the students identified a lot of advantages of the PBL assessment as opposed to their traditional assessment. The students were highly discouraged by exam experience, where luck rather than students' efforts was allegedly an important factor of success or failure. For the researchers, these student experiences of assessment in PBL point to certain possible causes behind this situation. One of them is the teachers' insufficient preparedness for assessment in PBL, when theoretical knowledge does not translate into the educational practice in a fully appropriate manner. At the same time, the researchers have new problem questions emerging from the research findings, namely, why the assessment process has become more distant from the principles of the PBL concept in implementation of PBL. One of the possible explanations is a fairly difficult path from the theory of PBL to its practice [71]. The educational process in PBL motivates the learners to exert effort throughout the process. The students feel empowered, as their assessment score usually depends on their efforts rather than the external circumstances that they have little control of. As well, to the contrary, the students become disappointed by the cases in the PBL where not the entire educational process, but, e.g., defense of the work, was assessed, which reminded them of a traditional exam at the end of the course. The researchers also acknowledge that assessment causes certain signs of disappointment both generally and in PBL. On one hand, this could be related to the ambiguity of student's situation when he/she has to assess peer's and their own work. On the other hand, disappointments may also be related to insufficient effectiveness of collaboration in a group [72].

When analyzing assessment in the educational process, it is also important to consider the question of "Who performs the assessment?". The answer is obvious for the traditional

assessment—assessment is the teacher's prerogative. PBL has a strong effect of increasing students' autonomy. When granting greater responsibility for learning, it is reasonable to grant more responsibility for the assessment of achievement of the expected learning outcomes as well. Whereas PBL activities take place in various settings and students work in small teams, assessment where the teacher has the main role becomes inappropriate. The teacher does not have the capacity to observe and assess the entire PBL process. The teacher acts as an assistant in the assessment process [32]. The research results have also revealed the transformation of the teacher's role in the assessment processes of PBL. It has been observed that, due to the PBL specifics, the teacher no longer is and cannot be the only and main evaluator, and this is considered to be a positive aspect.

The research results have revealed that the students often assessed their own work in the PBL process. Assessment of the team members was also common. Self-assessment and activeness of other participants in the educational process are important attributes of the transformation of education that is characteristic of PBL [30,31,73–77]. The students were happy to be able to (self-)assess not only their knowledge, but also the efforts that depended on personal traits. Other studies have also revealed the advantages of peer assessment, as it enabled the development of such skills as active listening, cooperation, tolerance, self-discipline, self-control, collaboration, negotiation skills, openness, empathy, confidence, teamwork skills, skills of sharing the work load, persistence, creativity, civic consciousness and others [20,78]. The research participants could still trace the complexity of assessment of other team members, because it was not easy for them to distance themselves from the bias (subjectivity) when the students would seek to use the assessment as a tool of revenge or ask other students to assess them for the works they had not actually done.

When considering the question of the participants performing the assessment, it would be reasonable to look deeper into the importance of collaboration between them in the PBL process. Empowering assessment emphasizes the importance of collaboration between the teachers and students, as well as students' active engagement by involving them into development of the assessment strategies [34]. The research findings have revealed that the assessment criteria were occasionally adapted to the circumstances as the participants of the assessment were collaborating. However, the study has revealed certain cases of students' disappointment in PBL: insufficient collaboration with the teachers became evident during the assessment, the assessment scores were not discussed and not all assessment scores provided by all the participants were considered. The issues emerging in the assessment process were emphasized by the students as one of the factors pushing them to return to the traditional educational process. This implies hierarchical relations and is clearly considered to be unchanging from the beginning and does not provide the students with unfounded hopes that they might also be holding the authority in assessment.

The research findings have revealed that the participants in the educational process support the idea of collaborative assessment. Nonetheless, it was implemented insufficiently in practice. The students who participated in the study formulated certain recommendations as they recognized the benefits of PBL and reflected on their experiences in the process. The recommendations were focused on the possibility of changing the behavior of the participants in the educational process for the behavior to be more in line with the PBL principles. The students expressed the desire to make the assessment process more open and transparent, and to receive timely feedback that would lead to improvement.

It is acknowledged that various difficulties are encountered in the implementation of PBL in the educational practice. Teacher's directedness and inappropriate organization of the learning process are common issues [79]. On the other hand, the manifestation of teacher and student's roles becomes the challenge or difficulty in PBL [80]. According to the findings of the conducted research, the teacher is inclined to take the dominant position in the assessment process. Meanwhile, the student makes decisions that may be inadequate in certain situations (for example, the student misjudges or makes unreasonable judgements of peers' work) as he/she fails to realize the importance of their own role. Nonetheless, there are other perspectives as well, when assessment or the assessment score reflects the

actual level of competences attained by the students. Moreover, the assessment result is associated with the possibility to continue improving the existing competences, facilitates assessment of the competence level, etc. [81].

The results of the conducted research help us to better understand the conditions that the PBL is implemented in, the roles performed by the teacher and the student and the PBL concepts related to the assessment process that influence PBL from the students' perspective [79]. In terms of novelty, the research findings have demonstrated various assessment practices in PBL. They, in turn, show new possibilities for student engagement in the assessment processes and for improvement of the teachers and students' competences of assessment [82]. This is a fairly new research area in Lithuania.

Given that the study was conducted at two universities in Lithuania and included the students of social science programmes, it would be reasonable to compare their experiences with the experiences of participation in the assessment processes in PBL of students of study programmes that belong to other science areas. Analysis of diverse experiences would be valuable for improvement of PBL processes and dissemination of the results.

When analyzing the problematics of PBL application at schools of higher education, it is important to note that similar studies place greater focus on and analyze the issues related to problem structure and problem-solving algorithms (the way problems are solved, what decisions are made and why, etc.), as well as the way that the teacher and student's roles are changing during problem solving [79,83,84]. The findings of the conducted study have revealed students' experiences of participation in the assessment process that characterize the situation of PBL learning by the students of social sciences.

The conducted study and the discussion of its results showed the necessity to continue analyzing assessment processes in PBL by identifying the difficulties of implementation of PBL in university studies and the possibilities of improvement. It would be reasonable to develop the research and expand its sample by holding interviews with the teachers. This would provide more comprehensive data about the analyzed problem and not only show the student's position and role in the assessment process, but also enable comparison of the students and teachers' understandings about organization of the assessment in the PBL context. It would be reasonable to perform the comparative analysis of the student and teachers' opinion. The collected results could be used for improvement of the assessment process in PBL. Afterwards, it would be reasonable to resume the study of experiences of the participants of the educational process by identifying the lessons learned in the assessment process in PBL and the new perspective of its improvement.

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