

Motivating Students: A Case Study of a Student English-Speaking Scientific Research Club in Ukraine

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Abstract

The present paper seeks to shed light on creating collaborative learning environment for students' critical thinking development in order to conduct scientific research. It represents a preliminary investigation of the students' perceptions and experience of doing research. A series of interviews with students and expert teachers' observations at a scientific research club sessions during two semesters revealed encouraging as well as frustrating factors impacting effectiveness of doing research. Analysis of motivational techniques applied at the club sessions allowed to suggest implications for teachers to involve students in conducting research work. Further investigation is needed to cover a larger scope of scientific and discussion clubs to collect more data on effective educational techniques in order to develop a proper methodology for fostering students' critical thinking and motivation to study.

Keywords: critical thinking, doing research, motivation, scientific project.

1. Introduction

The problem of motivation in education constitutes one of the most debatable and controversial topics in academics' discussions. As curiosity is considered to be an undoubtedly core element of students' intrinsic motivation to study, many disputes are still held to establish who or what can foster that motivation. Multiple studies dedicated to motivation issues support the idea of both teachers and students being responsible for creating the favorable educational environment (Doghonadze & Fedorchuk, 2016). One of suggestions on how to motivate students to study is to engage them in scientific research. Involving students in scientific research has always been a difficult task for teachers in higher educational establishments. The students usually associate science and scientific investigations with time-consuming and boring activities which are distant from real life requirements, a remote phenomenon (Robertson & Blackler, 2006). A lot of studies deal with the problem of evolution of the teaching and research roles of academic work (Breen & Lindsay, 1999; Elton, 2001; Lindsay et al., 2002; Neumann, 1994; Zamorski, 2002). As many educational programs include a research methodology component, a problem of creating a pedagogical culture and teaching methods has arisen today. Literature analysis has shown that little attention is given to general research methods teaching (Wagner et al, 2011).

Studies dedicated to teaching and research relationship in the context of higher education (Lindsay et al., 2002) revealed a list of arguments supporting positive, negative and null contrasting perspectives on the relationship. Negative arguments concerned mainly personal characteristics of academics and staff availability to students which may have a frustrating impact on teaching science to students (Jenkins et al., 1998). Nevertheless, recent results received in Jusoh and Abidin's (2012) research proved the need for students to be exposed to academic research projects. The authors argued that there were clear benefits for

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students' learning experience from their research activities at the university and staff involvement in doing research (Jusoh & Abidin, 2012).

Another important idea relating to creating favorable learning environment was to adjust the level of teaching material and the teacher's speech to the level of students as recipients of information (Elton, 2001). Scientific issues cannot be easy and entertaining, but in order to ignite the students' genuine interest appropriate topics for discussion should be thoroughly selected. Learning in a non-formal context (Thornbury, 2005; Mikeladze, 2018) and/or presenting scientific research results in the Science Slam format can trigger students' desire to participate and become part of a young scientists' community.

Critical thinking is considered to be one of the most important competences for a person needed for doing scientific research because it requires reflexivity, self-criticism, independence, self-discipline, and tolerance (Paul, 1993; Halpern, 1999; Klooster, 2001). The authors argue that finding a problem and expressing doubt are possible grounds for critical thinking. The main reasons of a person's insufficient level of critical thinking are the following: functional rigidity, stereotypes, conformity, attitudes, and lack of tolerance.

These ideas contributed to conducting the present research. The aim of the study was to identify the students' perceptions of doing science at university and research their experience of attending a scientific research club. A student English-speaking scientific research club was chosen to monitor the students' critical thinking development. The research questions were the following:

- What are students' expectations from attending a student English-speaking scientific research club at university?
- What techniques contribute to the development of students' critical thinking and motivation to do research?
- What are the implications for teachers relating to engaging students in doing research?

2. Methodology

In order to conduct a qualitative case study 9 sessions of a student English-speaking scientific research club were observed during the 2017-2018 academic year. The club was organized in a university in Ukraine. As the mission of the university is to promote personal sustainable development and leadership, the scientific research club also contributed to students' getting high quality education and professional qualifications by engaging them into research activities held in English. The sessions were aiming at developing analytical and critical thinking skills, presentation skills and communication in scientific surroundings, mastering English for academic mobility purposes. The research tools exploited in the research included three main stages: 1) the questionnaire on students' perceptions of doing research; 2) the observation of 9 club sessions to monitor the students' responses to motivational techniques involving them into the research activities; 3) formal interviews of the participants to the club sessions. The researcher built her communication with the participants to the club pursuing a constructivist paradigm. To exclude biased assessment during the observation stage three expert teachers were invited to attend the club sessions and take notes on the progress the students were making.

3. Results

3.1. Questionnaire results

58 students of the first and second years of university took part in the questionnaire on their perceptions of doing scientific research. Their age mean was 18. The questions were aiming at defining the students' experience in doing research projects (while at school or during their first year of studies) and their expectations from attending a student English-speaking scientific research club at university. The students gave their responses in writing describing the projects they did at school/university or explaining why they have never tried doing research. According to the questionnaire results, 28 students did at least one research project and admitted such benefits as expanding their knowledge and overcoming the fear of speaking to the audience when they were giving presentations. 7 students wrote they did not like the subject of the research they were conducting. Nevertheless, they admitted that the topic of their research was rather important. 30 students had never done any research. The commonest reasons were the following: 'nobody invited to participate', 'couldn't find any interesting projects to join', 'was busy with other activities', and 'was not interested'. Surprisingly enough, 27 of them expressed the desire to get new experience of doing some scientific project and hoped to be invited. Among those students who had some experience of doing research 24 were willing to become a part of a student scientific community. The students' expectations from attending a scientific research club included the opportunity to participate in discussions, discover new information, learn how to find and analyze data, master their English speaking skills, and apply the experience in future. At the same time, most students (42) wanted to join a club which would focus on some professional area where they would acquire necessary for their careers skills. The commonest requirements the students set to the research club sessions were 'to be interesting' and 'to contain lively discussions'.

As the student English-speaking scientific research club was specializing in forming general academic skills for conducting a scientific research and did not focus on any specific area of study, only 35 students enrolled in September.

The sessions took place twice a month from September to December and from February to May. The average number of participants present at sessions was 12. The initial number of those who enrolled dropped within the first three sessions with the maximum number of 16 participants and the minimum – 9. Most of them were females.

The teacher prepared material for each session including videos, articles, documents and questions to foster discussions and practice critical thinking. The program of the student English-speaking scientific research club included the following activities:

- Analysis of formal and informal formats of delivering research
- Literature analysis
- Introduction of collecting information methods
- Conducting scientific discussions
- Writing annotations
- Writing articles
- Peer-reviewing
- Delivering scientific research results

At the first session the teacher showed videos of different formats of delivering scientific results both formal and informal. The aim of that session was to help the students overcome the fear and barrier of speaking to the public. The participants discussed the speakers' behavior, their presentations and the audience response.

During the following sessions, the constructive critical attitude to information reception was explained and introduced in the club activities. The teacher tried to shift the students' mainly negative attitude to criticism to its dialogical and educational essence. The students learned to be more tolerant to standpoints different from their own ones, to be responsible for their research results and independent in their deliberations. Scientific discussions were found to be the most popular and efficient activities to pursue those tasks. Bearing in mind that only interesting and close to real life discussions could ignite the students' active participation, the teacher offered such topics as 'Prenuptial agreements: pros and cons', 'The power of mind', 'Procrastination', 'Working while studying' and many other ideas. The discussions were conducted in pairs, small groups (3-5 students) and as a whole group. The participants practiced asking relevant and irrelevant to the topic questions, responded to them, learned to interrupt and break into the conversation, deal with interruptions, agree and disagree with someone's opinion, persuade and correct themselves, give arguments and counter-arguments. As the level of English skills of the participants was ranging from intermediate to upper-intermediate, the problem of some students dominating in discussions was also rather frequent. So the teacher's task was to manage the conversation so that all students willing to express their opinions were able to take part. It was reached by making students interested in their peers' points of view assuming that the problem under the discussion needed collecting as many different and sometimes non-conventional solutions as possible. Another technique implied looking at the problem from different angles, for example, different participants of some event. That allowed many more students to speak and offer suggestions while during a traditional discussion only several participants would speak and express the opinion of the whole group. The need to respond the opponent let students not only express their own ideas but also listen to others which kept them interested during the whole course of the discussion.

In order to develop the students' analytical thinking skills the teacher demonstrated the ways scientific data could be collected. Primary and secondary research methods were analyzed and exploited in the students' further research attempts.

In the second half of the academic year the teacher dedicated several sessions to writing annotations and articles. A series of grammar and vocabulary exercises helped students to feel the style of scientific papers. The teacher informed the participants of the structure and the main elements of a scientific paper, requirements of the majority of journals to the authors and peer-review process. The students practiced expressing their ideas in a concise, explicit and comprehensive way. They got used to scientific research vocabulary and started using it largely in their oral reports. They peer-reviewed their colleagues and gave their own suggestions on how to improve the manuscripts. It was observed that peer-reviewing caused most difficulties connected with personal relationships which interfered with giving an unbiased judgement. Students' discouragement from receiving a negative feedback also required a special attention to develop their 'growth mindset' (Dweck, 2010) and 'grit' (Duckworth, 2016), to overcome difficulties and treat criticism as an opportunity for self-improvement.

Each session usually started with a problem question which incited the students' interest and ended with a home task to complete, for example: to read at least 10 different sources of information on a problem given and find different standpoints to compare; to conduct a questionnaire among their peers, to collect results and report on them at the next session; to find as many advantages or disadvantages of some action as possible to prepare for the discussion and persuade the opponents. Such tasks aimed at developing the students' critical attitude to the problem and enriching their searching experience.

At the end of each session the teacher would ask two or three students to name the key points of the session which they found important for their research activities, the skills they got good at and the skills they needed to pay more attention to.

As a conclusion to practical sessions, a student scientific conference was held where 11 participants presented their research projects followed by questions from the audience and discussions. The topics for research were chosen by the students themselves and covered various areas of our life: advertising and ethics, law and society, art, psychology, youth and politics. The reporters prepared bright and entertaining presentations with a strong start, applied to the audience's experience and demonstrated significant involvement into the research topic. The audience asked questions concerning the reasons for the theme choice, the author's attitude to the problem, the difficulties the authors experienced while collecting or analyzing the data, the reliability of the data received, possible solutions to the problems, thus showing their understanding of the research process particularities.

3.2. Expert teachers' observations

Three expert teachers were asked to observe the progress of the students and write their comments during 9 club sessions. They had to monitor the students' discussion skills development, their critical thinking progress, research vocabulary enrichment, advantages and disadvantages of motivational techniques for doing research which were used at sessions, as well as the suggestions for improvement. The expert teachers' notes were collected and analyzed immediately after each session and suggestions were taken into account for the following session.

At the first session, which was organized as a whole group discussion, the expert teachers noticed the general trend of higher-level of English students dominating the discussion and the other participants listening to them. The experts noticed the lack of students' interpersonal communication skills, certain intolerance in accepting other participants' opinions and insufficient amount or absence of supporting the speaker's standpoint reasons. Obviously, the students got used to expressing their opinions on the problem without appealing to reliable sources, thus showing immature critical thinking. In the course of the session scientific vocabulary was introduced and most students took notes of it to use in their further talks. As many participants had no previous experience in conducting research, it was difficult for them to switch into the conversation. The tasks aiming at critical thinking development revealed certain rigidity and conventional thinking in students' deliberations. Meanwhile the videos of Science Slam winners shown by the teacher and discussed in a group were found quite challenging and motivating, as they demonstrated enthusiasm of young researchers all over the world and modern trends in sharing their research results with others. The students seemed very encouraged and offered ideas on what areas they could conduct their exploratory research. As a suggestion, the experts agreed on the necessity to continue the practice of developing the students' critical thinking and instill tolerant attitude to different standpoints and arguments.

The following comments upon the sessions referred to a noticeable growth of the students' scientific research vocabulary. The participants started to appeal to different sources of information, compare and analyze the data, chose reliable sources, find problems and conflicting views, as well as offered possible solutions. That demonstrated the development of their independent thinking, which was significant to the critical thinking progress. At the same time, the expert teachers mentioned some drawbacks regarding the language accuracy due to the fact that many students tried to use too much scientific vocabulary and often made spelling, vocabulary and grammar mistakes. So it was suggested to pay more attention to correcting mistakes. As the number of the participants to the club sessions decreased by half, because those, who were looking for just speaking practice, showed no particular interest to conducting research, the quality of research by the deeply interested students increased. The experts appreciated the teacher's efforts to integrate ideas from the participants' spheres of interest into the sessions' topics and introduce some common vocabulary to ease the students' ability to perceive and respond to the information under the discussion. The

students were encouraged to see the problem from different points of view and find implications for their own research. The experts also acknowledged the collaborative role of the teacher who acted as a facilitator in an educational environment.

The peer-reviewing practice acquired most of approval from the experts. They admitted the value of such activities for the students' professional growth and interpersonal communication skills improvement. However, the students' readiness to face challenges and negative feedback from peers in the beginning sessions as well as their readiness to assess their peers was estimated as low and demanding more attention and professional assistance. The friendly relationships between students and their compassion made it difficult for them to give unbiased assessments. So, the teacher had to introduce a feedback practice step by step from commenting upon the students' oral presentations and acknowledging their achievements to offering suggestions for improvement. All experts mentioned that from session to session, some students were becoming more critical and fair in their assessments, while others still felt frustrated by those comments. The teacher had to trigger the students to think of failures as stimuli to succeed in raising their confidence and that practice was found rather efficient by the experts.

The final session of the club was conducted as a conference, where the students presented their research results and the audience responded by asking questions and discussing the problem. The experts were present at the conference and admitted a significant change in the students' behavior. The speakers at the conference showed their genuine interest in the subject of their research and managed to involve most of the audience into the discussion. The conference was open for everyone and many volunteers who had not attended the club sessions or dropped out in the very beginning were also invited. The expert teachers stated that the speakers looked more confident and enthusiastic about their research projects. They demonstrated good communication and management skills, as they had to deal with a large audience. Their language was rich in relevant terminology which they could easily explain and get across to the listeners. The conference results proved the importance of involvement of students into the scientific research activities, as they acquired skills, critical thinking skills in particular, necessary for their further academic and professional work.

3.3. Students' interviews

After the final conference in May the students were asked to assess their experience in attending the club scientific research sessions. 11 students agreed to give their feedback. The questions concerned the participants' opinion on their expectations from attending the sessions being met, their own scientific achievements and some disadvantages of the club activities. The data were collected and recorded by three teachers of English other than those who attended the sessions.

All students agreed that their needs and expectations from the sessions were met. They received basic knowledge of the research work which they could apply in their future professional and academic work. They also expected to improve their English speaking skills and confirmed to have had good practice. The topics for discussion and conducting research were interesting and relevant. As their own scientific research achievements nine students stated having overcome the fear of talking to the audience, five students mentioned having a desire to continue their research work on the topic they had chosen for a final conference, seven students admitted having more developed skills for holding discussions, nine students acquired good knowledge of analyzing information, all students expressed the desire to attend the club in the following year and to recommend it to other students. The most remarkable event, to their mind, was the conference in which they took part and presented their research results. The emotions and acknowledgement from other students were encouraging and rewarding, adding to the participants' confidence. Seven students expressed their desire to participate in an event of an international level.

However, there were some disadvantages mentioned in the students' responses. One of them was too much work to be done to prepare for the sessions, such as conducting questionnaires, collecting data and reading and analyzing a lot of literature. Another disadvantage or just a challenge for students with lower-level language skills was the need to compete with upper-intermediate students in discussions, because it took them a longer time to express their thoughts. The most difficult activity all students mentioned was peer-reviewing others and receiving negative reviews of their works. The emotional stress the students had to overcome sometimes bothered them, decreased their feeling of being confident and made them willing to give up. In such a situation the students admitted the particular use of encouraging videos and stories about failures and success of many celebrities which they watched and read about at the sessions.

All in all, doing scientific research acquired new associations such as 'interesting' and 'challenging' rather than 'boring' and 'hard' in the students' minds.

4. Discussion

The idea of the importance of involvement of students into scientific research activities by creating a favorable learning environment supported by Jusoh and Abidin (2012) investigation was implemented in the form of a student scientific research club where students could conduct their own research projects and share their results with others. The English language was a working language of the sessions, thus letting the participants to practice their language skills and enrich a foreign language academic vocabulary.

Curiosity proved to be essential for students' motivation. Helping to develop and maintain the participants' interest during the club sessions was assumed to be not only the teacher's responsibility, but also the students'. It became possible through the following ways: 1) raising the students' awareness of young scientists' activities all over the world, 2) offering interesting and relevant topics for discussion, 3) maintaining a discussion-type atmosphere at sessions, 4) offering the participants freedom in choosing the area and subject for their scientific research, 5) teaching students to involve other participants in discussions, thus making them more industrious and creative, 6) developing their critical thinking skills to find new and non-conventional vision of a problem and its solution, 7) applying a peer-review system to make students more observant and tolerant to each other in their research activities, 8) offering an opportunity to feel significant by presenting their scientific research results in public. Such strategies aimed at fostering the students' intrinsic motivation comply with Reeves's ideas (2009) about motivating learners in the classroom.

Even though the initial number of those who enrolled to the student English-speaking scientific research club was much bigger than those who completed the course and presented their research results, the evident positive impact can be noticed. The students became more confident and attentive to details in their statements. The expert teachers mentioned an increased number of creative ideas and arguments given by students during the discussions at the end of the course in comparison to the first sessions. They learned to apply ideas from different fields of study to their research, thus demonstrating analytical thinking skills. Frequent references to different sources of information in support of the students' arguments added to the maturity of their statements. Their genuine interest to the subject of the research, which they chose by themselves, contributed to their enthusiasm shown at the conference. Interactive presentations made the listeners a responsive and grateful audience, thus helping to create a natural communication environment.

However, there is much to be reconsidered in the organization of the scientific research club sessions. Motivation depends on clear vision of the perspectives and future results as well as challenging tasks and high expectations (Reeves, 2009). It seems to be more challenging and interesting for students to set a goal of their participation in an international conference rather than that of a university level. Such a goal would trigger the students' responsibility for their project, their language level and their country representation.

Another important issue for increasing the students' motivation was a variety of topics for research and discussion. Instead of giving the students prepared topics to dwell on, it would be beneficial to encourage them to propose the topics they could find relevant to discuss. The students would appreciate the opportunity to be co-authors of the course. This initiative may encounter certain difficulties, as the students might not know what to offer for discussions. The teacher should coordinate their ideas and help them with relevance and looking for problems, controversial aspects and possible solutions.

Teaching English vocabulary and pronunciation also constituted a problem, as most effort at the club sessions was given to raising interest in students' involvement. The experts noticed that the teacher would let students make minor mistakes during their talks. Even though she corrected the most significant ones and gave feedback after the student's speech, many participants kept on making the same mistakes, especially in pronunciation. Probably, the participants needed more listening practice. One of the suggestions was to show brief videos of researchers talking about their work, using the key vocabulary on the topic for the following session, so that the students notice the pronunciation of the terms before they receive their home task to start their own research. Another suggestion was to teach students the key vocabulary before giving them the task to do the literature analysis.

Referring to the most stressful activity for students – peer-review – the experts noted the positive effect of the students' assessment of their peers' presentations as a preparatory stage for peer-reviewing. The students had to give positive remarks on the presenter's speech and behavior as well as suggest ideas for improvement. That practice made students more attentive and able to face criticism. However, during the period of peer-reviewing scientific research projects, some students admitted the feeling of being underestimated, which bothered them from appropriate response. This problem needed particular attention because the teacher had to control the students' emotional state, trying to balance between not overpraising and encouraging them. Praising too much for the students' efforts can make them stop trying hard which would affect their performance (Dweck, 2006). At the same time, the students lacking grit and persistence can get easily discouraged. They can perceive criticism of their performance as criticism of their personality and get unmotivated to continue work. Thus, teachers should pay a special attention to developing a positive attitude towards the received, especially constructive, criticism during the whole period of club activities.

5. Conclusion

The results of the study revealed the necessity of involving the students into research activities at university caused by their growing interest for joining international community. The analysis of the student English-speaking scientific research club activities revealed positive results for the development of the students' motivation to study. The members of the club had an opportunity to conduct research in the area of their interest and demonstrated their knowledge at scientific discussions during the sessions. The motivating techniques applied at the club sessions led to the students delivering successful presentations at the final conference. The interviews result confirmed their engagement in the research activities. The main implications for teachers who want to engage students in scientific research activities are the following: 1) more attention should be paid to the students'

responsibility for their research activities, 2) the level of student expectations should be high, 3) tasks should be challenging and creative, 4) teachers should develop their students' persistence and positive attitude to criticism.

As the number of participants observed was limited, further research in the sphere of students' engagement and motivation to study is needed. Comparison of motivation techniques applied in an educational process in other countries in the light of cultural differences is considered as perspective.

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