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DEVELOPING THE PRACTICE OF CLIL WHILE TEACHING BIOLOGY IN TRILINGUAL EDUCATIONAL CONTEXT

Abstract. The current study is focused on trilingual education through action research. To integrate foreign language into curriculum of another subject Content Language Integrating Learning (CLIL) approach will be used. Organization of CLIL lessons is demanding especially when two teachers cooperate because both have different methods, principles and objectives. The paper through involving action research will be appraising teacher cooperation method to investigate way of developing teaching content through English language to learners of biology in secondary school. As the participants of the research students of 8th grade (20-25) in Kaskelen in Almaty are selected. The purpose of involving action research is to test whether content teachers are ready to cooperate in such conditions and its effectiveness on students' learning.

Key words: Trilingual education; secondary school; English and biology; CLIL; action research

Аңдатпа. Бұл ғылыми зерттеу үш тілде білім беруді Іс-әрекеттегі зерттеу арқылы жүзеге асыруға бағытталған. Бұл зерттеудегі “Үш тілде оқыту” тақырыбы орыс, қазақ және ағылшын тілдерінде оқыту мағынасында беріледі. Үш тілде білім берудегі тиісті әдістердің бірі – елдер санына кеңінен қолданылатын Content Language Integrated Learning (CLIL) методы болып табылады. Зерттеу жұмысы орта мектеп оқушыларына биология пәнін ағылшын тілі арқылы мазмұнды оқыту әдістемесі мен техникасын, және де оқыту стратегиясын табу мақсатына бағытталған. Зерттеу қатысушылары ретінде Алматы, Қаскелен қалаларының 8 сынып оқушылары таңдалды. Іс-әрекеттегі зерттеудің мақсаты эксперименттің тиімділігін одан әрі зерделеу үшін пайдалы болатын әдістерді мақұлдау болып табылады.

Түйін сөздер: Үш-тілдік білім беру; орта мектеп; ағылшын тілі және биология; CLIL әдістемесі; Іс-әрекеттегі зерттеу.

Абстракт. Данное научное исследование сосредоточено на внедрении трёхязычного обучения посредством исследований в действии. «Трёхязычное образование» в данном контексте относится к обучению на трех языках, а именно: русском, казахском и

английском. Одним из подходящих методов трехязычного образования является «ContentLanguageIntegratingLearning» (CLIL), который широко используется в ряде стран. В статье делается попытка исследовать способ или технику, а также стратегию преподавания предмета биология через английский язык для учащихся в средней школе. В качестве участников исследования были отобраны учащиеся 8-го класса г. Каскелен, Алматы. Цель исследования действий заключается в том, чтобы апробировать методы, которые могут быть полезны для дальнейшего изучения эффективности эксперимента.

Ключевые слова: Трехязычное обучение, средняя школа, Английский язык и биология, CLIL, экспериментальное исследование

Introduction

The President of Kazakhstan has set a goal - to enter the 30 most developed countries the main task of which is to raise the quality of education. On behalf of president Kazakhstan must be in the number of qualified and highly educated countries. The majority of information, scientific works nowadays is provided in English language. And according to worldwide standards better knowledge of English guarantees you better living conditions. To establish multilingual education, the country made a reform in educational context by setting trilingual education in secondary schools.

For that reason, the need of CLIL approach was considered as the only and one of the most successful in the experience of developed countries by means of erudition of its students.

CLIL (Content and Language Integrated Learning) is a dual-focused educational approach in which non-native language is used to teach content and language. In this case it is English.

The research conducted by the NUGSE project in 2013 claimed that pilot schools where trilingual teaching was endeavored still face acute problems of shortage of teachers who manages both language and content. In our schools we don't have qualified teachers who are able to conduct natural sciences and alike in English language.

Objectives. As objectives of the study it is determined to show the development and implication of English into educational framework as a part of the general education which creates links and relationships in a paradigm of languages in and across the curriculum. To develop learner's competencies in linguistic and content area according to the defined grade and age-appropriate performance levels.

Research problem. The new situation in education requires schools to adopt trilingual education and fulfill these requirements: 1) possess skills and knowledge to develop individually. 2) make good use of them in intercultural environment. 3) work in teams and cooperate effectively

according to international standards. In society ability of knowing and using language is accepted as indicator of achieving success in life.

Novelty of the current study to the existing literature is provision of required materials for the promotion of language learning and teaching in the educational setting. The current work aims at developing approaches, tools and techniques to create meaningful language teaching and learning environment in the school by the help of Action research.

Research question: How effectively can action research be used while implementing CLIL in teaching biology to grade 9?

Theoretical framework

Literature review

Using CLIL in secondary school especially requires precautions because at this time number of subjects increases and become complicated. To successfully integrate any methodology teacher must have clear idea of what is going to be taught to the learners on each step, so that both content and English classes will benefit. CLIL has influence on the curriculum since another language apart from the one to which learners are used to, is integrated to teaching process. The interference of foreign language does not impact only curriculum but on the methodology of teaching content subject too. Teachers are expected to use more discovery, experimental, and hypothesizing approach to teaching rather than training memorization skills. According to Bloom's taxonomy learners in secondary school possess high order thinking skills, such as analyzing, evaluating and creating [2]. Mayer [3] claims that the ultimate goal of education is conservation and application of knowledge and to be able to transfer to others. Another meaningful technique of teaching method in CLIL classes is group/collaborative work. In this sense, learners will learn from each other and function efficiently. There are some specific steps teachers usually use while planning CLIL classes. Analysis of content and language classes is necessary to find coincidences: to define the areas for integration teachers need to analyze content of both subjects. This is explained by the factor that learners may not bear the difficulty of some areas of the content in foreign language. For this reason, learners will have to understand facts on their own in mother tongue and it grounds possibility for experimental and self-study. But the aim of CLIL teaching is not to overload learners with learning facts. After being clear about integration area next is choice of theme/topic. Sometimes to explain certain theme teachers may need more time than one lesson and therefore trainees need to organize the lesson in such way that time will be enough for it. The next step is analysis of content material. They will need to decide on the areas for integrative teaching and areas for content teaching. It requires careful selection of specific areas since not all terms may be important in integrated teaching and some can be left out. Moreover,

teachers must consider, whether materials correspond to the development of language skills and performance. Setting aims for each lesson both linguistic and content objectives is must. CLIL has dual aim- it is important to know what should be taught and achieved by the end of every lesson. Gondová [4] claims the lesson objectives must be interlinked with 4 “C” s: content, culture, cognition and communication. Selection of indispensable vocabulary and key words are important for identifying the outcomes and flow of the lesson.

Teachers need to be careful about choice of materials otherwise the level may not be appropriate for learners. The necessary materials can be adapted according to the needs of learners. However, there are plenty of them shared or published online on CLIL lessons. According to first CLIL teaching countries’ experience in the past schools and teachers had confronted problems with training sections and based on those facts Slovakian educating programs decided to put stress on the areas that must be developed, such as:

1. The first and most important is to define goals and objectives of education and improve teaching skills in the content language.
2. To shift teaching method to learner-centered approach and develop skills to manage CLIL lessons
3. Develop ways of using two (or more) languages appropriately in CLIL classes
4. Tutor on the choice of materials and its organization
5. Give enough examples of how classes and CLIL materials should be organized appropriate for the curriculum. [5]

Action research

[6] Action Research first was introduced by Kurt Lewin, a German-American social psychologist in 1940. The principle of action research is to find modus to solve the problem that initiated action research. It is also known as “process of progressive problem solving” under the supervision or guidance by group of people to improve the way they address the problem. Action research requires active participation while conducting the survey and action itself. As Denscombe states its purpose not only to solve problem but also to supply with efficient guidelines for practices. In this study the approach will be applied in academic sense to help educators to find an effective solution towards teaching and learning. To say it simple and clear it is result of improving results of learners in a short period of time whilst studying.

The process of action research takes place in order and repeatedly:
(*adapted from Glossary of Education Reform*)

Identifying a problem

Collecting data on the problem (observation, theoretical background)

Developing a plan

Implementation of a plan

Results and conclusion

If the researcher or organizer of the action is not satisfied with results, then it can be repeated by identifying the problem again and working on it. Usually Action Research is conducted at schools to refine goal or method of teaching/learning process. The purpose of action research is anything concerning school improvement and performance in education, starting from the effectiveness or weaknesses of a certain strategy till results received by academic strategy.

[7] Action research concentrates on application of results after survey has been made and perceived good results. The type of research deals with problems mostly that occur in school setting. Its goal is to solve problems in local school(s) where researcher or teacher is conducting survey and improve the situation. The main goal of action research is to engage educators to participate actively to resolve problems in their classroom. In a school environment participants of action research can be learners, teachers, parents and others. Action research occupies school for the reason of developing school teaching program, policy, professional development of teachers and for the improvement of curriculum. The research type contains of two terms such as ‘action’ and ‘research’ and it indicates its main features: testing concepts for enhancing and supplementing with knowledge necessary for teaching and learning along with curriculum. The other definition of Action Research by Hammersley [8] states this investigation type as research that is done by practitioners for practitioners and recognized as small scale and problem-based. Objectives of Action Research is to connect teacher and effective functions of research to correspond duties and set goals. It also includes establishment of positive atmosphere among colleagues, students and with the whole school to improve research skills of teachers. In some cases, many teachers cannot afford appropriate and good quality equipment for conducting research, but they can be involved for the same purpose of developing their teaching in the classroom. Action research has its definite features such as:

1. It is situational. The research is usually based on the situation in the classroom or school.
2. Reflective inquiry. Reflection means addressing to the source as reciprocal reaction. And inquiry means finding out answer by looking at the point and asking questions. If these two terms are to be combined, then it has following- though the terms have opposite meanings however they work for the same purpose in action research.
3. It has scientific background in research. This type of research demands to look at the problem from various aspects and thorough study of the literature concerning the problem may be found.

4. It involves study of the issue scientifically. In class many kinds of problems may arise but without being dependent on anything Action research investigates and tries to find a solution.
5. As known in educational environment Action research intervenes into whole school or class within the school. So, for this reason it is sometimes is recognized as Small Scale Intervention.
6. It is a process to discover ways or approaches to address the problem and solving it.
7. From other hand it is beneficial for teachers to be more creative by searching ways to increase effectiveness of their teaching.
8. The most positive feature of action research is that it transfers theory into practice and allows researchers and objects of study to understand theory in practice.
9. Some parents or students seek problems in teaching from teachers and this approach will help pedagogues to overcome them and build confidence.
10. In comparison with other research techniques Action Research allows teachers to assess their own teaching by active participation while investigation.

To conclude about issues that Action research is distinct from other types are followings: 1. It is action that is done for the sake of teachers and students and it involves collaborative data collection. 2. By its nature it seeks for the best solution that initiated action research and apply results to improve the situation. 3. This is study done not on people but for people. Action research is done by researchers or teachers to improve effectiveness of their work and taking into account other participants to take part in. Unlike other investigation studies the one considers participants as individuals who are responsible and autonomous in making improvements in their learning. In the journal dedicated for the study of different research types- “A Teachers trainer” it says about Action research as “It does not treat people as objects for research but encourages people to work together as knowing subjects and agents of change and improvement”. 4. And finally it is not scientific or hypothesis-testing approach that uses collected to come to one conclusion rather it aims at changing situation for the best and not interpreting and justifying theory. Both historical and natural sciences do not have aim of improving researcher and situations except Action Research. [9] The issue of trilingualism in education is still one of the “hot” topics to be discussed about. In favor of multilingual education Ministry of Education and Sciences as well as director of Daryn scientific-practical center KulpashSariyeva has supported the idea of implementing English language as medium of instruction in secondary schools as it has been tested and compiled positive feedback. Experts in the field of education discussed about introduction of trilingual education to public schools. Many suggestions, opinions were viewed supported their ideas with arguments

such as access to wider range of technologies and information. But there were some controversial opinions against the topic. ZhuldyzSmagulova [10] director of language center at KIMEP University opposed against the new paradigm. She believed “trilingual education will be successful only if there are qualified, competitive, and fluent in the target language teacher staff. Moreover, children first learn their mother language (Kazakh or Russian) firstly and then they go abroad to master a foreign language. It may result poor knowledge of all three languages”. Smagulova claimed scientific evidence and effective methodology together with educational policy must be collected not from individual experiment but on scientific database. International studies show that students studying in accordance with trilingual education have: higher motivation, attentive while studying and clearly see the advantages of learning several languages; the best learning outcomes for all subjects in all languages than the groups with one language. According to teachers participating in the studies, there are no negative consequences in the development of skills and student achievement.

Limitations

In the practice of CLIL there are 2 types of schools according to language of teaching. First is mainstream where the main tendency in education is conducted in one language. The other one is bilingual education. In the second case, school subjects such as geography, biology, mathematics are taught merely in foreign language. Mainstream schools provide only some lessons or topics in the target language. In this sense, the only responsible body for choice of topics, activities and continuance of the lesson is teacher. This manner of approaching to CLIL method is considered as more friendly and attainable. The method requires only medium level of language knowledge and less stressful for students. However, according to statistics there isn't precise number of primary or secondary schools applying CLIL. But there is approximate evidence of schools according to school projects and research works that the number of primary school students outstand the number of secondary school learners in classes with CLIL approach. The database is taken from the study of Slovakian research studies. Nevertheless, everything has its positive and negative aspects. So, does CLIL even though it has positive feedbacks mostly it is discovered to have weaknesses and limitations too.

Table 2: Selected CLIL advantages and limits by I. Šimonová, 2015.

Advantages	Disadvantages
CLIL lessons require high order thinking skills and processes of cognition which cannot be found in regular foreign language textbooks	Even though lessons are conducted in foreign language it does not guarantee the proficiency in professional environment. Lexicon may not be rich and competent in

	language to have discussion in a definite setting
CLIL trains communication skills and support for efficient strategies to be used within classroom	Deficiency of appropriate manuals and textbooks. Materials for preparing and conducting lessons may be difficult to find or impossible. Evaluation policy is complicated since both content and language are being assessed.
CLIL in comparison with other approaches is authentic and maintain information true to life	CLIL is relatively young approach to education in the field of teaching and for this reason not accurate application of it
CLIL has positive influence out of school doors granting successful job places in the future	The novelty is not always welcomed by all. There are cases of unwilling or no collaboration of teachers within the team
CLIL allows to develop ground knowledge of inter- and cross-cultural awareness	Too much time consuming. So, it takes more time and difficult to prepare for CLIL classes
CLIL impacts on teacher from positive aspect in terms of professional growth	Lack of proficient teachers of the field and languages

Shift in teaching languages has changed the methodology of teaching overall making it more learner-centered. In CLIL teacher do not just transmit information in other language but train them didactically and inform them that they are responsible for their learning. The teacher becomes a mediator, facilitator who:

- Motivates and encourages learners;
- Chooses learning materials and how to apply methods;
- Establishes the level of language to learners' prior knowledge;
- Organizes the lesson in such way that everybody will be involved with pleasure on the lesson (different activities, pair-work/groupwork tasks and communicative assignments);
- Adjusts learning strategies individually to all students depending on their interests and preferences;
- Reveals learners' educational background, experience and based on this fact tries to connect with present;
- Sees mistakes as a way of improvement
- Invites learners to be informed of their own development and achievements and reflect on methodology that has been used in teaching;

- Centers development of one of the components into consideration either language or subject [24]

To prepare for the lesson teacher should consider “4 Cs” that stand for: Content, Culture, Communication and Cognition. It is a framework that determines how the content, knowledge, skills and comprehension will be granted for learners as well as how the language will operate, the process of cognitive functioning and the influence of cultural education.

Ball [10] proposes four types of classroom activities to help students thrive despite of lack of knowledge in the target language:

- 1) Activities to strengthen peer communication (role plays, question-answer sections, information gap activities, etc.)
- 2) Activities to improve reading (mind-mapping, putting paragraphs in order, outlining, etc.)
- 3) Guiding of student oral and written production (movie making, commenting on partners’ essays, ppt presentations, etc.)
- 4) Activities that engage higher cognitive skills (simulations, project works, interviews, etc.)

Methodology

Research Design

In this research work the quantitative approach will be used as soon as it requires experiment. As for research strategy there will be conducted experiment whether CLIL approach is working properly in accordance with the requirements of the state program. Experiment along with observation is considered as data collection tools. Also, there will be conducted observation in the controlled and experimental classrooms. Likewise, research journal will be used to record thoughts and observations related to all parts of the research.

Data collection

Interviews; In-Person Interviews; Video/ Audio Recordings are to be used for the better explanation and revise of collected materials during observational and pre- action and after-action periods.

Participants:

9th grade school students (20-25) in Kaskelen with trilingual education were selected as participants of the research. Variables will be tested before carrying out experiment to check level of English according to the content of biology. The next testing will be conducted after the experiment.

Hypothesis

1. Students in experimental group will benefit from experiment and increase their English language
 2. Trilingual education will not affect negatively on students’ performance
- Since there hasn’t been done many works concerning multilingual education through action research this document might be useful in approbating the

CLIL method as approach to the study. While conducting the research there may appear problems of organizing the process of action research. Negative attitude from the school's administration and parents of students may arise but for this reason researcher will explain the significance of the study and the study is beneficial in the first place for students.

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