Integrative multifunctional model of bilingual teacher education

N. Almazova¹, Y. Eremin², N. Kats ³*, A. Rubtsova⁴*

¹ Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russian Federation
² Herzen State Pedagogical University of Russia, St. Petersburg, Russian Federation
³ Herzen State Pedagogical University of Russia, St. Petersburg, Russian Federation
⁴ Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russian Federation

*E-mail: katsnora@gmail.com; annarub2011@yandex.ru

Abstract. Bilingual teacher education is a relatively new area of scientific research. Although different theories and models to language teacher education abound, they are quite fragmented, thus, their implementation in the academic context of pre-service language teachers’ education demands further analysis and research. Therefore, the aim of the present research is to develop an integrative multifunctional model and support it with sequenced steps of its implementation. The multifunctional model, developed by the authors, consists of core components, such as knowledge, context and level of management and demonstrates an integrative approach that enables the balanced combination of diverse teaching techniques at different levels of teacher training. To check the model validity, action research has been adopted as method to organize the course of experiment in collaboration with quantitative and qualitative methods to gather and analyze the data. The research resulted in the following findings: the theoretical and practical knowledge has improved by 28% and 14% respectively whereas the levels of performance achievement and significance have reached 72%, 72% and 60% accordingly. It can be interpreted as the development of theoretical and practical knowledge, reflective and analytical skills as well as confidence in teaching practice.

1. Introduction

Although teacher education has been in place for a long time, second language teacher education is a relatively new area of research. T.S.C. Farrell, points out that the core of teacher education has been attributed to the knowledge which future second language teachers should acquire, namely: 1) what L2 teachers need to know; 2) how they should teach; 3) how L2 teachers learn to teach. Each of distinguished areas is being considered from different theoretical perspectives [1]. J. Richards and T.S.C. Farrell noted several aspects that should be thoroughly considered in second language teacher education programs: the context awareness,
as a matter of understanding the norms of the context in which future teachers are supposed to work; reflection on their own practice; and the use of effective classroom language. However, the question of balanced incorporation of theoretical approaches into the practice of teacher education remains still undeveloped [1-4]. The academic pre-service courses of teacher preparation fail to address the challenges they face in the real classroom situation and, eventually, appear to set a gap that cannot be “bridged” by novice teachers (student-teachers).

In this line of discussion, the present research seeks to analyze existing approaches to pre-service language teachers’ education in academic setting, as well as to develop an integrative multifunctional model of bilingual teacher education that could be validated by experiment research. The research questions have been formulated as follows: 1) what is the initial level of motivation to teaching, theoretical and practical knowledge, language proficiency and classroom language usage; 2) is it possible to stimulate the acquisition of theoretical and practical knowledge by incorporating the integrative multifunctional model; 3) what teaching methods and techniques can be used to implement such model (implementation steps). It is assumed that the integrative multifunctional model, firstly, enables the implementation of varied teaching techniques in a balanced manner; secondly, encourages the acquisition of knowledge in a specific bilingual educational context.

1.1 Teacher Knowledge
Traditionally, there have been two strands taken into close consideration regarding second language teacher education (SLTE) [1,2]. One has been focused on teaching skills and pedagogical issues, and the other has emphasized the role of knowledge, namely the knowledge of language and language learning. L.S. Shulman suggests to distinguish among three categories of content knowledge: (a) subject matter content knowledge, (b) pedagogical content knowledge, and (c) curricular knowledge [5]. In this view, subject matter content knowledge reflects the ability of a teacher to understand why a given topic is particularly central to a discipline whereas another may be somewhat peripheral. Pedagogical content knowledge deals with the most effective forms of representation such as analogies, illustrations, examples, explanations, and demonstrations used to deliver the subject content-learnable manner. Curricular knowledge is described as “familiarity with the topics and issues” that have been or will be taught in the subject area as well as “the materials that embody them” [5] (p.10).

Describing the content knowledge, D.C. Berliner-identifies case knowledge, as a part of practical knowledge that teachers must acquire [6,7]. The author assumes that practical knowledge is gained slowly throughout a teacher’s career. The practical knowledge is considered as the “proximal guide” for teacher’s classroom behavior whereas theories or textbooks play a less significant role. D.C. Berliner defines several important features of practical knowledge. Firstly, it is action-oriented. Secondly, it is generally acquired without direct help from others, mostly, from teaching experiences that are both positive and negative. Thirdly, teachers’ practical knowledge is situated knowledge. It is person and context bound and provides teachers with the skills to succeed in their particular teaching contexts. Fourthly, it is often “implicit or tacit knowledge”, as in most of the cases teachers fail to clearly articulate their practical knowledge, that with use becomes “automatic” or “intuitive” (tacit) [6]. Tacit knowledge does not arise only from the implicit acquisition of knowledge but also from the implicit processing of knowledge. In this perspective, tacit knowledge refers to teacher’s cognition as the necessary patterns needs to be retrieved and processed regarding the specific context of teaching.
To draw the line between teaching skills and knowledge, J. Richards suggests to distinguish between “knowledge about” and “knowledge how”. “Knowledge about” is the content knowledge merely established by SLTE programs, whereas “knowledge how” are concepts such as pedagogical content knowledge and practical knowledge that enable the teachers to demonstrate their teaching practices [1].

Based on the current views, we suggest differentiating between a) theoretical knowledge (subject matter content knowledge, pedagogical knowledge, curricular knowledge); b) practical knowledge when theoretical knowledge is melded with experience in different educational contexts (case knowledge); c) intuitive knowledge as a fact of teachers’ unconscious, “automatic” decisions in teaching practice based on personal beliefs, theoretical interpretations and relevant experiences.

1.2 Approaches to Developing Teacher Knowledge

In modern theory of teacher education there are several approaches to the development of teacher knowledge, categorized as traditional (transmission), constructivist, dynamic, sociocultural and productive. Approach, in this regard, represents a theoretical framework and justifies the model (modes and methods) of its implementation.

The traditional (transmission) approach focuses on transmission of the necessary knowledge with little opportunity for teachers to take control over their own learning. This approach is being criticized as it limits the opportunities for teachers to develop their own critical and reflective practice, as they are seen as “technicians”, applying externally imposed policies.

With the acknowledgment of the fact that teachers should be “included” into the learning process, the traditional practices have been re-considered, towards the conceptualization of constructivist approach. It postulates that 1) building of new knowledge occurs through reflection and abstraction; 2) new knowledge is dependent upon the context and “preconceptions” that a learner brings to the educational experience; 3) new experience has to interact with existing knowledge [8], as the learning process represents “the assimilation of existing information and its personalized enrichment with their own life experience” [9] (p.72); 4) all “personal theories” are to be tested in real life through actions. Teachers acquire new knowledge and skills by trying out some new forms of activities and reflecting on them accordingly. Thus, from this perspective, teachers are considered as learners, constructing their own understanding of their teacher practice.

The idea that teachers learn in a specific context, and the context significantly shapes teachers’ practice, has brought another assumption to teacher education, the core of which is focused on sociocultural activities as the essential processes through which human cognition is formed. Indeed, each person establishes connections with the external world, namely, the social environment, extensively using the resources of culture [10]. Based on L. Vygotsky’s theory, the sociocultural approach to teacher education assumes that learning is socially and culturally situated in contexts of everyday living and work. Dynamic interaction between individuals, other people, and culture contribute to the social development of the individual mind and lead to the realization of socially appreciated goals [11,12]. Through guided participation in a shared activity within a specific context, individuals acquire and personalize the knowledge, skills, and information needed to function in their particular sociocultural community.

Addressing the issue of context M. Eraut identifies three major contexts: 1) the academic context; 2) institutional discussion of policy and practice; and 3) practice itself. The academic
context, or “educational context” needs to be arranged in order to facilitate the learning process [13]. Based on the ideas of adult learning theory, the following minimum for effective educational context could be suggested: clarity of goals, adequate levels of challenge, capitalization on previous knowledge, sustainability over time, organizational support, alignment of achievement with the goals set and professional collaboration. The latter allows teachers to brainstorm problems, discuss teaching practices and build community atmosphere of trust, supervision, support and feedback [14].

The dynamic approach to teacher learning moves through researching of isolated factors influencing the educational effectiveness to the development of integrated models which consider these factors as operating at different levels of education [15]. It stands for several core ideas: identification of specific needs and priorities for improvement of each teacher / group of teachers; active involvement into learning process; utilization in a flexible manner the existing knowledge on effective teaching and development of own strategies and action plans for improvement; monitoring the implementation of teacher action plans in classroom settings; summative evaluation to identify the impact of the developmental program on the teachers’ teaching skills [15].

However, the change in teacher performance does not appear immediately, as teacher behavior is a complex mix of cognitive, affective and motivational sources in a teacher [16]. The depth of any kind of knowledge is personalized and consequently affects teachers’ behavior in the classroom. Thus, a teacher “may have a deep theoretical and practical understanding of teaching speaking, but have no awareness of assessment for learning and how to implement it”[17] (p.5). These variations at different levels of personal interpretation and implementation encourage to introduce an approach that focuses on productivity of a teacher, as a way to analyze, evaluate and improve teachers’ behavior in a classroom. S. Borg points out that the productive approach “will support teachers in identifying those specific areas of professional practice where development is required and work with teachers to identify and implement appropriate strategies for supporting such development” [17] (p. 5).

The productive approach is defined as a scientific and pedagogical system that covers issues not only of education but also of upbringing, personal development and the formation of practical skills of students [18]. It provides for balanced interrelation between the educational and practical activities in the context of professional education. The productive approach, in this perspective, enables: 1) to incorporate the conditions under which the learning process is internally motivated and addressed to the attitudes and needs of a pre-service teacher in a specific context; 2) to construct an “individual product” of teaching practice that is reflected in teachers’ behavior that could be described and assessed, 3) to evaluate teachers’ educational progress through analyzing teachers’ behavior and performance. Teachers’ performance might be assessed in terms of their effectiveness [19] or, being a facet of behavior, might be assayed through descriptive psychology analysis tool [20,21].

1.3 Models of Second Language teacher education

These theoretical approaches have provided for several models of teacher education. Being based on the idea of active learning, constructivist approach encourages the usage of case-based models, collaborative learning or active dialogue. Sociocultural approach may operate a greater number of instruments, as the theoretical framework is grounded on 4 components such as social interaction, internalization, mediation and psychological systems. Thus the
models might vary from mentoring, supervision and community learning to self-guided activities, based on self-reflection [12].

R. Day and G. Conklin, investigating the role of knowledge and its interrelation in second language teacher education, classified the models of second language teacher education in academic environment as the apprentice-expert model, rationalist model, case studies model and integrative model. A model, in their research, is regarded as the overall way in which a pre-service program presents or delivers the knowledge to its learners. The category of knowledge comprises such elements as content knowledge, pedagogic knowledge, pedagogic content knowledge and support knowledge [22]. The apprentice-expert model consists of the trainee or beginner working closely with the expert teacher. In this collaboration, knowledge is acquired as a result of observation, instruction, and practice. The rationalist model involves the teaching of scientific knowledge to students who are supposed to incorporate this knowledge into their teaching. The case studies model of professional education involves the discussion and analysis of actual cases in the classroom. The most efficient model, in R. Day’s opinion, is the one that successfully uses the positives of three other models. In this regard, the integrative model, being a systematic approach to second language teacher education, might ensure the gain of pedagogic, content and pedagogic content knowledge through a variety of experiences, activities and a reflective practice that must be included into the program.

Thus, we assume that a teacher education model is effective when it meets the following conditions: a) clear goals of the content delivered; b) adequate levels of challenge; c) accumulation and capitalization of the previous knowledge, critical engagement which leads to “theorizing”; d) effective support in the form of feedback; e) professional collaboration as a form of peer communication, observation, discussion; f) awareness of teachers’ motivation and attitudes; g) reinforcement of teachers’ achievements; h) contextual alignment (with reference to the institutional, educational, social and cultural milieu) [23,24]; i) evaluation of teachers’ progress. The learning environment should be personalized, and adapted to individual capabilities, for instance, by means of smart technologies that could enrich the educational environment and learning process [25-28]. The efficiency of education “depends largely on the development of students’ personal qualities, their ability to autonomous learning” [18] (p.2). In this regard, the model of second language teacher education should allow not only to reinforce the knowledge but also to construct own practically oriented knowledge that could be appropriated, personalized and used effectively in varied classroom scenarios.

The model of teacher education, presented below, accumulates several approaches: sociocultural, constructivist, productive, dynamic; each of which ensures the possibility to use diverse teaching practices in the course of pre-service teacher education. It demonstrates the cohesion of core educational components: knowledge, context and level of management that are acquired in a respective sequence. Being leveled, the model components are interrelated within one level (theoretical knowledge ↔ academic context ↔ institutional level of management) as well as they are dependent on up and down model components (theoretical knowledge → practical knowledge → intuitive knowledge).
This model can be implemented by means of “steps of implementation”, which are set in a sequence. The first step of productive theory analysis stipulates the usage of various modes of knowledge delivery, such as an active or “Socratic” dialogue or open theoretical discussion.
The next step of setting the context assumes the analysis of contexts in which this knowledge can be incorporated.

The model observation requires the presentation of a teaching fragment by facilitator (associate professor, leading this educational program) with its further reflective analysis. The stage of skills drilling involves the usage of “microteaching simulation” techniques demonstrated by the student-teachers (pre-service teachers) [29]. The microteaching is followed by first implementation when student-teachers deliver their first lesson based on knowledge and micro skills acquired. This stage is followed by theorizing, - “learning from experience” [30,31]. It stipulates the usage of reflective practices in order to evaluate personal performance. Having reflected on their first experience, theorized and acquired related theoretical and practical knowledge, the students move on to demonstration. At this stage, they are supposed to demonstrate “improved” teaching in comparison to their first implementation. As the last step student-teachers analyze their performance and discuss the results of their teaching with their peers in a collaborative manner.

2. Methods

In this study we adopted action research to organize the course of experiment. Action research is as a process of investigation, reflection, and action that deliberately aim to improve or impact on the quality of the real situation. It involves self-assessment, peer-assessment, critical awareness that altogether contribute to the knowledge of a specific teaching community [32-34]. Action research could be incorporated in line with other research methods. It was quite beneficial over two major reasons: 1) being inquiry-based, it allowed the teacher-students to investigate their own “world”, enhancing the development of observational, reflective and self-assessment skills; 2) it aimed at improving learning and teaching.

The choice of instruments and materials was limited to the follows: firstly, not to interfere with the habitual study path of pre-service teachers; secondly, to follow the university curriculum, representing the core of educational content. “Narratives” were utilized as a research technique for observation and reflection and provided meaningful insights for interpreting the data (see fragments 1,2,3). Observation check lists were used by student-teachers to analyze and reflect their peers’ teaching as well as to self-assess their own practices. The supervisor, conducting the session, assessed each student and recorded the results in a supervisor check list (see fragment 4). The descriptors, used by supervisor aligned with parameters defined in a descriptive tool and formed 4 categories: knowledge, performance, context and cognition [20,21]. DP tool helps to assess and evaluate behavior of an individual demonstrated in a certain context. Behavior of each participant was described and analyzed by means of a model <B> = <W, K, KH, P, A, S>. Present descriptors correlate with the categories defined in a supervisor’s checklist (see. Table 1).

W: Want - the motivational parameter- was assessed as a matter of materials preparation (high- demonstrates a varied number of prepared materials, medium – demonstrates the set number of prepared materials, low- fails to demonstrate the prepared materials);

K: Know (the knowledge parameter): conscious usage of knowledge acquired, understands why it is being used;

KH: Know-How (the skill or competency parameter): the usage of techniques related to the topic (above standard – uses 3 and more different techniques over one topic, to the standard – uses 2 different techniques related to the topic, below standard – uses 1 technique or fails to use any);
P: Performance: the manner of delivering the topic, instructional language, ability to multiple explanations, ability to answer the questions; non-verbal aspects such as: intonation, posture, vocal, ability to use explanatory gestures, measured as used/not used;

A: Achievement (the outcome parameter): students’ involvement, reaction and ability to produce correct language units, measured as satisfied/dissatisfied;

S: Significance: the area of improvement, what is the main focus while delivering this topic; was measured as a fact of setting/failure to set a goal for the lesson delivered.

Adopted parameters were used as the descriptors to evaluate the progress of students and validate the effectiveness of the model implementation.

2.1 Participants
The research involved the participation of 50 student-teachers in their final year of study for Master degree in Pedagogics and Linguistics at Herzen State Pedagogical University of Russia and Peter the Great St. Petersburg Polytechnic University with a major in second language teaching. All participants volunteered to take part in the research, announced as an experiment aimed at improving and enhancing their practical skills and theoretical knowledge. Respondents were guaranteed the confidentiality in processing the provided data.

The pool of pre-service teachers (50 people) was divided into control and experiment groups, with 25 people in each. We studied the academic records of students, collected feedbacks from their professors to mix the groups so that the initial level of academic background in both groups was approximately the same.

2.2 Data collection and analysis
The research was held in three stages within 9 weeks. At the first stage, the initial data was collected in order to access the level of teacher-students’ knowledge (strong and weak fields of knowledge) and motivation. The survey to analyze the level of knowledge contained several modules on pedagogics, didactics, methods of teaching, and classroom language, presented in the form of a multiple choice. The questions were formulated as follows: the pedagogical system in the academic environment is called the system: a) students-students; b) students-individual; c) teachers-community; d) teachers-students; what would be a better instruction for listening for a gist: a) please listen to the text and answer the question; b) you will hear a text about an interesting topic, your task is to listen carefully; c) we will hear the text, please try to answer the question and give your opinion about the text; in communicative teaching approach, what is considered a better technique to check the understanding of grammar: a) give translation or Russian equivalent; b) to formulate the rule based on example; c) concept checking questions etc. To check the level of language proficiency we used the tests developed for certification in language (tests materials for CAE exam). At this stage it was clear that 1) students lacked practical knowledge; 2) they were not able to understand what type of knowledge was necessary for their teaching.

The questionnaire, aimed at evaluating the level of motivation to teaching, contained yes/no questions with 1 or 0 point awarded accordingly, for instance: Are you interested in teaching profession? Do you read professional literature? Do you prepare for your classes? Do you have any academic failures? The total score was calculated and allowed to set up the scale of 50% and less as low, 51 - 75% - average, 76 - 100% - high. This questionnaire contained two open-ended questions formulated as follows: What are your strengths as a teacher (name 3), and What are your weaknesses as a teacher (name 3). At this point, it was observed that the majority of students (72%) named personal traits of character as positives.
and negatives of their teaching practices (enthusiasm, friendliness, confidence, laziness etc.). Some students (60%) reported their weaknesses as a lack of some practical skills and knowledge, for instance, classroom management and organization skills, knowledge on lesson planning etc. This data supported the speculative assumption that practical skills and knowledge should be strengthened by means of a more effective model of teacher education.

At the second stage the participants were introduced to the model of second language teacher education. At this stage of experiment, the pre-service teachers worked with questionnaires to develop their observational, analytical and self-assessment skills. In course of each observation session the participants were suggested to speculate upon the practices and record their findings in relevant forms (peer observation, self-evaluation forms). Each observation session had a special focus. The context for teaching practice was set to a certain age group and organizational form (high school, pre-school, language courses e.t.c.). The supervisor assessed each student towards defined descriptors and recorded the data observed. Supervisor’s checklist contained the question for the assessment of 4 major categories: The data obtained by the supervisor was further processed to track the dynamics of the group.

The third stage comprised the correlation analysis of the results acquired in Stage 1 and 2 which allowed to compare the findings and estimate the effectiveness of the suggested model.

Fragment 1. Extract from observation narrative form

Observer: X
Observed teacher: X
Observation focus: Teacher’s use of techniques to present the grammar material
Date / time: X
Class: 6th grade
Lesson material / subject: Grammar/ materials developed by the teacher.
Pre-observation / background. At the previous session, we discussed the topic of grammar skills development. We set a certain procedure of content delivery as well as we discussed the types of exercises to be used in order to build up the grammar skill. We also discussed the necessity to consider the age of students to specifically address the needs of students. We talked about specific techniques to be used in order to deliver the content and check its understanding.

Lesson focus: teachers use of techniques to present the grammar material.
During the observation. I have noticed that the teacher is well-prepared for the class. She has developed all the materials for the class herself. All the materials contain colorful pictures and clear tasks, so they have addressed the age group precisely. The teacher looks a bit unconfident and sometimes gives too vague explanations to the task, so that it would be quite hard for students of this age to understand the instructions.

Techniques used:
Eliciting – 2 times
CCQs – 3 times
Grammar games – 1 time
She also has set the time for tasks completion, and performed a close monitoring technique while the students were doing the tasks.
Post –observation. As a post observation topic, we discussed a teachers’ ability to manage the class. We both noticed that she was a bit unconfident and talked too much during the lesson. She also noticed that she was talking quietly and her explanations were too long. She would be happier to use more grammar games with her students.

Fragment 2. Questions for open-ended peer comments
1) Was the lesson successful? Why? / Why not? 2) What did you like/dislike? 3) What were the main strengths/weaknesses? 4) If you had the opportunity to teach the lesson, what would you do differently?

Fragment 3. Self-evaluation form
1) Was the lesson successful? Why? / Why not? 2) What did you like/dislike? 3) What were the main strengths/weaknesses? 4) Did you do what you had planned to do? 5) If you had the opportunity to teach the lesson again, what would you do differently?
Table 1. (fragment). Extract from supervisor’s checklist for lesson observation

| Teacher Knowledge                          | Assessment | Comment |
|-------------------------------------------|------------|---------|
| Teaches appropriate material             | much       |         |
| Presents clear instructions              | moderately |         |
| Upgrades the language level in accordance with the language level of students | |         |
| Uses the language accurately             | very little|         |
| Uses appropriate activities etc.         |            |         |

| Performance                               | Comment |
|-------------------------------------------|---------|
| Uses different techniques to deliver the content | |         |
| Uses different organizational forms        |         |
| Demonstrates the ability to clearly instruct the students | |         |
| Demonstrates the ability to monitor the class etc. | |         |

| Context                                   | Comment |
|-------------------------------------------|---------|
| Develop the materials according to the age group | Yes- 3; no 0. |
| Organizes the lesson according to the institutional form (language courses, school) | |         |
| Delivers the lesson according to the organizational form (duration of the lesson 45, 60, 90 minutes, project work etc.) | |         |

| Cognition                                 | Comment |
|-------------------------------------------|---------|
| Sets the goals for the lesson             |         |
| Praises and encourages students appropriately |         |
| Shows enthusiasm                          |         |
| Establishes good eye contact etc.         |         |

Total score:

a. Much- fully corresponds to the goal of the lesson (3); moderately – demonstrates strong skills, however has certain difficulties regarding specific areas of knowledge (2); very little – has difficulties or misunderstanding the key concepts (1)
b. Above standard - more than 3; to the standard - 2; below standard - 1 (corresponds to the score)
c. Yes - demonstrates a comprehensive manner, able to explain his/her own performance (3); sometimes – has certain difficulties, doesn’t show persistence (2); no - 0

3. Results and Discussion

3.1 Initial results

At the first stage we conducted the survey to access the practical and theoretical knowledge and the language command. The survey contained several modules with the questions organized in a form of a multiple choice.
The data collected demonstrates that the level of theoretical knowledge, namely pedagogics, didactics was rather high in both groups at the initial stage, with 70% of accomplishment in control and 65% in experiment group. The students demonstrated a good level of language proficiency. Thus, 80% of students in the control group students and 83% of participants in the experiment group accomplished the tasks to the standard and above. However, the results of “practical knowledge” awareness, namely, methods of teaching and the usage of classroom language were quite weak in both of the groups. Only 40% of the control group and 42 % of the experiment group were able to demonstrate appropriate usage of teaching methods and techniques. Students in both groups achieved only 50 % of the tasks on classroom language usage. Generally, the students possessed a good level of language proficiency, though demonstrated a lower level of theoretical knowledge for teaching practice. The questions assessing the level of motivation revealed that 68% of the control group and 64 % of the experiment group were engaged in learning to teach.

3.2 Intermediate results

Peer comments and supervisor’s checklists comprised the data for intermediate results analysis. The supervisor attended sessions in control and experiment groups and recorded all observations. The table below presents the cumulative data in percentage of N=50, based on reviews of each educational teaching sessions.

| Parameter        | Group 1 (control) | Group 2 (experiment) |
|------------------|-------------------|----------------------|
| Motivation       | high              | high                 |
|                  | medium            | medium               |
|                  | low               | low                  |
|                  | 44%               | 52%                  |
|                  | 32%               | 36%                  |
|                  | 24%               | 12%                  |
| Know             | conscious         | conscious            |
|                  | can’t explain     | can’t explain        |
|                  | 48%               | 56%                  |
|                  | 28%               | 20%                  |
| Know-how         | above standard    | above standard       |
|                  | to the standard   | to the standard      |
|                  | below standard    | below standard       |
|                  | 40%               | 48%                  |
|                  | 28%               | 32%                  |
|                  | 32%               | 32%                  |
|                  | 20%               | 20%                  |
| Performance:     | instructional     | instructional         |
|                  | language          | language             |
|                  | explanatory       | explanatory          |
|                  | gestures          | gestures             |

Table 2. DP parameter analysis at intermediate stage of research
Although the model was implemented rather successfully, the data revealed several “weak” areas: a) the failure to explain the usage of knowledge applied to the teaching situation, namely, only 56% of students in experiment group were able to clearly state the area of theoretical knowledge and justify their choice of teaching techniques used to deliver the lesson whereas 20% of the students could not explain their choices of activities and draw any parallels with theoretical knowledge; b) poor demonstration of teaching techniques, only 48% of experiment group students were able to demonstrate the result “above standard.; c) inability to set developmental goals for the lesson.

### 3.3 Final results

At the third stage we gathered the data processed at first and second stages in experiment group and compared the received results. Some positive dynamics could be tracked.

#### Table 3. Comparative results of experiment group

| Parameter/stage | Initial | Intermediate | final |
|-----------------|---------|--------------|-------|
| Motivation      | 34%     | 44%          | 46%   |
| Knowledge       | 32%     | 56%          | 60%   |
| Know how        | 30%     | 40%          | 44%   |
| Performance     | 50%     | 60%          | 72%   |
| Achievement     | 48%     | 60%          | 72%   |
| Significance    | 35%     | 44%          | 60%   |

At the third stage it was possible to note a significant increase in the level of knowledge, ability to demonstrate varied teaching techniques, involvement in the lesson course, and overall motivation. The integrative multifunctional model is effective when the conditions to teacher education are appropriately complied in the practice of its delivery. These conditions represent the core principles that facilitate and encourage the cooperative, open and productive atmosphere needed for pre-service teachers’ education.

It is worth highlighting that such techniques as “Socratic” dialogue, reflective teaching, observation and discussion have proved their efficiency. They significantly advanced the strategies of professional self-development and professional self-realization, that are multifarious challenges of modern higher education [35-37]. However, adopting this integrative model as an mode of teacher education, it might be reasonable to develop the
system, evaluating the quality of methodological support given to pre-service teachers within the framework of university education as well as further professional training [38,39].

The present research might possess some limitations: a) the restricted number of participants allowed to draw the preliminary conclusions; b) the implementation of this model might require more academic hours than a scheduled duration of a course under curriculum.

Incorporation of e-components into training practice might help the allocation of academic hours within the educational program. The research has revealed that “the modern online environment allows practicing direct practical skills in the form of modeling various professional activities” [40] (p.4). It might enrich the teachers’ repertoire with up-to-date language teaching techniques [41,42], develop the e-culture of teachers and grant an opportunity to build a community of teachers, able to practice not only in a traditional manner, but also in modern digital educational settings.

4. Conclusions

The present research sought to resolve the issue of developing an integrative model of bilingual teacher education that ensures productive acquisition of practical and theoretical knowledge. The following results have been achieved.

1) We have defined the conditions for effective teacher education: a) clear goals of the content delivered; b) adequate levels of challenge; c) accumulation and capitalization of the previous knowledge, critical engagement which leads to “theorizing”; d) effective support in the form of feedback; e) professional collaboration as a form of peer communication, observation, discussion; f) awareness of teachers’ motivation and attitudes; g) reinforcement of teachers’ achievements; h) contextual alignment (with reference to the institutional, educational, social and cultural milieu); i) evaluation of teachers’ progress as a subject to the classroom behavior analysis.

2) Model components have been developed as levelled, interrelated and sequenced.

3) We have identified model implementation steps: productive theory analysis → setting the context → model observation → model reflective analysis → drilling related skills → first implementation → theorizing → demonstration → reflective self-peer analysis;

4) We have received the results, supporting the model efficiency: the level of motivation increased by 12%; the theoretical knowledge improved by 28%; the practical knowledge leveled at 44%; the levels of performance, achievement and significance reached 72%, 72% and 60% respectively.

The given model provides connection between theoretical knowledge and practical skills boosting the student-teachers’ motivation and assisting the theoretical and practical knowledge acquisition.

References

[1] Richards J and Farrell T S C 2005 Professional Development for Language Teachers: Strategies for Teacher Learning (New York: Cambridge University Press)
[2] Farrell T S C 2018 Second Language Teacher Education and Future Directions TESOL Encycl. English Lang. Teach. 1–7
[3] Korthagen F 2017 Inconvenient truths about teacher learning: towards professional development 3.0 Teach. Teach. Theory Pract. 23 387–405
[4] Johnson K E and Freeman D 2001 Teacher learning in second language teacher education: a socially-situated perspective Rev. Bras. Linguistica Apl. 1 53–69
[5] Shulman L S 1986 Those who understand: Knowledge growth in teaching 15 4–14
[6] Berliner D C 2004 Describing the behavior and documenting the accomplishments of expert teachers Bull. Sci. Technol. Soc. 24 200–12
[7] Berliner D C 2001 Learning about and learning from expert teachers Int. J. Educ. Res. 35 463–82
[8] Carr E G, Dunlap G, Horner R H, Koegel R L, Turnbull A P, Sailor W, Anderson J L, Koegel L K and Fox L 2002 Carr et all 2002 Positive Behavior Support Evolution of an applied science.asp.pdf J. Posit. Behav. Interv. 4 2–16
[9] Kostin G A, Pokrovskaya N N and Ababkova M U 2017 Master-chain as an intellectual governing system for producing and transfer of knowledge Proc. 2017 IEEE II Int. Conf. Control Tech. Syst. (CTS). Oct. 25-27, 2017, Saint-Petersburg, Russ.
[10] Shipunova O D, Mureyko L V, Berezovskaya I P, Kolomeyzev I V and Serkova V A 2017 Cultural code in controlling stereotypes of mass consciousness Eur. Res. Stud. J. 20 694–705
[11] Daniels H, Cole M and Wertsch J V. 2007 The Cambridge Companion to VYGOTSKY (New York: Cambridge University Press)
[12] Shabani K 2016 Applications of Vygotsky’s sociocultural approach for teachers’ professional development Cogent Educ. 3 1–10
[13] Eraut M 2009 Transfer of knowledge between education and the workplace Knowledge, values Educ. Policy A Crit. Perspect. 52–73
[14] Ball D L and Forzani F M 2009 The work of teaching and the challenge for teacher education J. Teach. Educ. 60 497–511
[15] Antoniou P, Kyriakides Leonidas and Creemers B M P 2015 The Dynamic Integrated Approach to teacher professional development: Rationale and main characteristics Teach. Dev. 19 535–52
[16] Hoekstra A and Korthagen F 2011 Teacher learning in a context of educational change: Informal learning versus systematically supported learning J. Teach. Educ. 62 76–92
[17] Borg S 2015 Teaching for Success Contemporary perspectives on continuing professional development (London: British Council)
[18] Rubtsova A 2019 Socio-linguistic innovations in education: Productive implementation of intercultural communication IOP Conf. Ser. Mater. Sci. Eng. 497
[19] Park G P and Lee H W 2006 The characteristics of effective English teachers as perceived by high school teachers and students in Korea Asia Pacific Educ. Rev. 7 236–48
[20] Bergner R M 2011 What is behavior? And so what? New Ideas Psychol. 29 147–55
[21] Bergner R M 2016 What is Descriptive Psychology? An Introduction Adv. Descr. Psychol. 9 325–58
[22] Day R 1993 Models and the Knowledge Base of Second Language Teacher Education Work. Pap. Second Lang. Stud. 11 1–13
[23] Borg S 2015 Professional development for English language teachers: perspectives from higher education in Turkey (London: British Council)
[24] Borg S 2003 Teacher cognition in language teaching: A review of research on what language teachers think, know, believe, and do. Lang. Teach. 36 81–109
[25] Glukhov V V and Vasetskaya N O 2017 Improving the teaching quality with a smart-education system Proc. 2017 IEEE VI Forum Strateg. Partnersh. Univ. Enterp. Hi-Tech Branches (Science. Educ. Innov. (SPUE),15-17 November, 2017, St. Petersburg,
[26] Shipunova O D, Berezovskaya I P, Mureyko L M, Evseev V V, and Evseeva L I 2018 Personal intellectual potential in the e-culture conditions Espacios 39

[27] Almazova N, Rubtsova A, Krylova E and Almazova-Ilyana A 2019 A Blended Learning as the Basis for Software Design Proc. 30th DAAAM Int. Symp. Zadar, Croat. EU, Oct. 23-26, 2019

[28] Necheukhina N S, Matveeva V S, Babkin I A and Makarova E N 2017 Modern approaches to the educational process aimed at improving the quality of highly qualified personnel training Proc. 2017 IEEE VI Forum Strateg. Partnersh. Univ. Enterp. Hi-Tech Branches (Science. Educ. Innov. (SPUE),15-17 November, 2017, St. Petersburg, Russ.

[29] Johnson K E and Golombek P R 2011 Research on Second Language Teacher Education A Sociocultural Perspective on Professional Development (Routledge)

[30] Widdowson H G 2003 “Expert beyond experience”: Notes on the appropriate use of theory in practice. In. D. Newby (ed.) Mediating between Theory and Practice in the Context of Different Learning Cultures and Languages . Strasbourg/Graz: Council of Eur

[31] Widdowson H G 1990 Aspects of language teaching (Oxford: Oxford University Press)

[32] Wallace M J 1998 Action Research for Language Teachers (New York: Cambridge University Press)

[33] Crookes G 1993 Action Research for Second Language Teachers- It’S Not Just Teacher Research Appl. Linguist. 10 73–90

[34] Richards J C and Lockhart C 2007 Reflective Teaching in Second Language Classrooms (New York: Cambridge University Press)

[35] Odinokaya M, Krepkaia T, Karpovich I and Ivanova T 2019 Self-Regulation as a Basic Element of the Professional Culture of Engineers Educ. Sci. 9 200

[36] Odinokaya M, Krepkaia T, Sheredekina O and Bernavskaya M 2019 The Culture of Professional Self-Realization as a Fundamental Factor of Students’ Internet Communication in the Modern Educational Environment of Higher Education Educ. Sci. 9 187

[37] Cubero-Pérez R, Cubero M and Bascón M J 2019 The Reflective Practicum in the Process of Becoming a Teacher: The Tutor’s Discursive Support Educ. Sci. 9 96

[38] Akhmetshin E, Mueller J, Yumashev A, Kozachek A, Prikhodko A and Safonova E 2019 Acquisition of entrepreneurial skills and competences: Curriculum development and evaluation for higher education J. Entrep. Educ. 22

[39] Lavonen J 2016 Educating professional teachers through the master’s level teacher education programme in Finland Bordón 68

[40] Bylieva D, Lobatyuk V, Safonova A and Rubtsova A 2019 Correlation between the Practical Aspect of the Course and the E-Learning Progress Educ. Sci. 9 167

[41] Jeffrey L M, Milne J, Suddaby G and Higgins A 2014 Blended Learning: How Teachers Balance the Blend of Online and Classroom Components J. Inf. Technol. Educ. Res. 13 121–40

[42] Moore M, Robinson H A and Phillips A S 2017 Mastering the Blend: A Professional Development Program for K-12 Teachers J. Online Learn. Res. 3 145–73