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Unpacking the Clinical and Participatory Dimensions of the Trump Math-Teacher-Residency-Program

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Abstract: The research presents a Residency Math teacher education program that has been developed in Israel in search of transforming initial teacher preparation on the Clinical-Participatory continuum. It is a 'multi-phase' mixed-method research aiming to present the clinical and participatory dimensions of the TMR: the way in which they are reflected in the curriculum planning program, how Student Teachers (STs) in the program perceive the program's clinical and participatory dimensions and the nature of the challenges that arise in the program. Tools include: Documents of the programs; observations of the practical school experiences; A closed clinical social-interactive Questionnaire and a semi-structured clinical participatory (CP) questionnaire. The findings reflect clinical-participatory concept in teacher education, both in the curricular and the socio-interactive aspects. The analysis of the clinical-participatory dimensions, including their different aspects and components can be a guiding framework for diagnosing, planning, investigating and evaluating teacher education programs.

Introduction

There is an ongoing debate about the optimal way to recruit, and prepare, place and induct teachers. The debate deals with issues such as traditional university and college-based programs versus alternative routes, the program location (school or academic institution), and the focus on the theory versus practical components of teaching.
However, there has been growing interest in the past two decades in practice-based programs with a clinical approach (Grossman, 2010) that seek to build partnerships between districts, universities, non-governmental organizations and communities (Teitel, 2003).

The research literature on teacher education usually discusses the clinical dimensions of teacher education from the perspective of the curriculum and examines how the teaching profession is *represented*, *decomposed* and *approximated* in a given teaching program.

The present article suggests that besides the curricular approach it may be important to examine the clinical dimension of teacher education from the social-interactive point of view as described in the research literature on medical education (Stalmeijer, Dolmans, Wolfhagen, Muijtjens, & Scherpbier, 2008). This view embraces modeling, coaching, articulating, exploring and establishing a positive learning climate.

Over the years, Beit Berl College in Israel has developed unique models of teacher preparation programs that address the clinical-participatory aspects of teacher education. The most recent program is the Trump Math Teacher Residency Program (TMR), which is

sponsored by the Trump Foundation. Established in 2011, the Trump Foundation dedicates its resources to enhancing educational achievement in Israel. The foundation focuses mainly on improving teaching quality in mathematics and the sciences in Israeli secondary schools.

This aim of the TMR program was to address the shortfall in math teachers capable of teaching advanced level mathematics in Israeli high schools. The program recruits and prepares teachers to adopt a nurturing approach to teaching math rather than the traditional classifying approach. A nurturing teaching approach is when high school math students receive constant support while diagnosing their strengths and weaknesses and increasing their sense of self-efficacy. The classifying approach is when teachers constantly mentally evaluate the students, in order to determine who can/cannot cope with the difficulty and scope of rapidly advancing learning material.

This article presents documentary accounts of the TMR. The study is part of a wider research effort to explore and compare the clinical-participatory approach to teacher preparation in practice-based teacher education programs in Israel. The study presents the clinical and participatory aspects of the TMR—how they manifest in curriculum planning, how student teachers (STs) in the program see the program's clinical and participatory dimensions and the challenges facing the program.

Theoretical Framework

The term "practice-based" teacher education (Forzani, 2014) has recently been used to describe the growing range of programs that depart from the traditional academic model of teacher education. These programs use a *clinically-based* approach (Grossman, Compton, Igra, Ronfeldt, Shahan, & Williamson., 2009; Grossman, 2010; Douglas, 2014), expand STs' field experiences and teaching placements, and build *partnerships* (Cochran-Smith, Villegas, Chavez-Moreno, Mills, Stern, & Abrams, 2014; Teitel, 2003, 2004; UTRU, 2010) between districts, universities, non-governmental organizations and communities. Stakeholders in these partnerships engage in participatory, non-hierarchal collaboration which benefits all participants and promotes students' success.

In terms of the curriculum, the *clinical* dimension of the teaching program includes three core elements (Douglas, 2014; Forzani, 2014; Grossman et al., 2009; Grossman, 2010): (a) Representation of practice—linking theory and research to enhance the coherence and alignment between academic course work and hands on teaching; (b) Decomposition of practice—ensures that STs' field experiences enhances their awareness of the constituent aspects of teaching; and (c) Approximation of practice—the program's ability to provide STs with opportunities to engage in practices that approximate real-life professional practices.

In social-interactive terms, the "clinical" dimension of teacher education is rooted in the cognitive apprenticeship model (Collins, Brown, & Holum, 1991), which is commonly used in medical education. This model ensures that medical experts' activities are made transparent to students while employing medical education strategies that help students observe, enact and engage in medical practice while receiving support from their teachers. The model addresses the elements of the students' clinical guided learning experiences, many of which appear in the Clinical Teachers Evaluation Questionnaire (Boerboom, Dolmans, Jaarsma, Muijtjens, Van Beukelen, & Scherpbier, 2011; Stalmeijer, et al, 2008). These components include: (a) *Modeling*: Students observe as their teachers demonstrate tasks, externalize thinking and explain judgment and reasoning; (b) *Coaching*: Teachers observe and help students to perform a task by offering feedback and scaffolding while supporting and stimulating students to move beyond their current level; (c) *Articulation*: Teachers ask students to articulate their knowledge and their reasoning / problem-solving processes; (d)

Exploration: Students are encouraged to engage in problem-solving / project-designing. (e) *Creation of positive learning climate* — achieved by respecting students and being interested in their learning (Beckman & Mandrekar, 2005).

Regarding a teacher education program's *participatory* dimension, this is expressed through three key elements originally articulated by Teitel (2003) for Professional-Development-School (PDS) partnerships between schools and universities: (a) The level of all participants' responsibility and active engagement in executing, assessing and developing the partnership (RAR); (b) The partnership's response to the mutual needs (RMN) of all its participants and efforts to promote their professional development; and (c) The need to create effective frameworks (EF) aimed at developing mutual ownership. Teitel (2004) suggested that the school-academy (universities and colleges)-community level of the PDS partnership needs to be deepened by including the district, state, and even national levels

Teacher Residency Model

The Teacher Residency (TR) model of teacher education is classed as an 'intense' Clinical-Participatory model due to its focus on core principles, methods and achievements. Teacher residencies (TRs) are district-school-based teacher preparation programs designed to improve the effectiveness and retention of new teachers in hard-to-staff urban and rural districts. The programs offer master's level education content with a full-year classroom practicum supported by professional mentoring (UTRU, 2014). Urban teacher residency mentors are rigorously selected highly effective teachers with the skills needed to coach teaching residents. They gather data on resident teachers' performance in order to provide strategic intervention along with constructive feedback and opportunities for reflection to enhance residents' effectiveness. They also ensure that classroom instructional practice is in line with educational coursework theory and content and gradually release responsibility to residents by allowing them multiple ongoing experiences in leading the classroom (UTRU, 2013)

TRs resemble medical education in teaching hospitals where aspiring doctors are trained using intense clinical practice, expert instruction and supervision. A report commissioned by NCATE (Zimpher & Jones, 2010) stressed the TR model's capacity to make structured, supervised school-based experience the main component of teacher preparation, which is "fully grounded in clinical practice and interwoven with academic content and professional courses" (p. ii). TRs were also highlighted recently in a White House announcement regarding strengthening America's teacher preparation programs (The White House, 2014). Some examples of effective TR models are: the Boston Teacher Residency Program (BTR) (Papay West, Fullerton, & Kane, 2011; Solomon, 2009), Chicago's Academy for Urban School Leadership (AUSL) (Berry, Montgomery, & Snyder, 2008), the Aspire Teacher Residency in California (ATR) and the Denver Teacher Residency (DTR) (UTRU, 2014b). In Darling-Hammond's (2008) view, TR may be one of the most important reforms in teacher education.

Urban Teacher Residency United (UTRU) is a non-profit networking organization that develops supports and sustains TRs throughout the United States. Since 2007, it has guided school districts, non-profit organizations, universities and states in launching residency programs in nearly 30 high-needs rural and urban districts (UTRU, 2013, 2014, 2014a, 2014b).

Core Principles and Justification of the TR Model

UTRU (2014) has articulated several core policy principles and justifications for using the TR model. Some refer to the clinical dimensions of the teaching residency model:

a. Recognizing the need for intensive (rather than alternative) preparation programs and an intensive period of well-supervised clinical practice before becoming a teacher of record. Program graduates are more likely to support student learning (Baumgartner, Koerner, & Rust, 2002) and more likely to remain in education than those who enter teaching through a preparation program with just a few weeks of training (Darling-Hammond, 2003, 2006).

b. Closely and deliberately interweaving education theory and classroom practice: Residents receive while practicing teaching and handling routine teaching dilemmas; they also develop "knowledge-in-practice, of-practice and for-practice" (Cochran-Smith & Lyte, 1999) in the context of their apprenticeship classroom, school, and district. Veteran teachers serve as models of the effective pedagogy residents are expected to use (Lampert & Ball, 1999).

c. Engaging veteran teachers to support and supervise residents' learning using the cognitive apprenticeship model (Collins et al, 1991; Rogoff, 1995). This model is based on the sociocultural principles of learning and its focus is on the expert teachers' tacit cognitive processes when performing complex tasks. Cooperating teachers and residents discuss residents' teaching practice and issues while cultivating a mood of inquiry, focusing attention on student thinking and understanding, and encouraging discourse about practice-related problems. Dorman, Lowenstein & Brill (2005) also suggest that the mentoring process in TR improves the quality of teaching of the cooperating teachers and increases their awareness of their own pedagogical thinking and teaching performance.

Other principles relate directly to the participatory dimension and include:

d. Grouping student teachers in cohorts: Cohorts of residents should be assigned to the same school for their apprenticeship to encourage a professional learning community. The residency cohort model tries to create social support networks (Seifert & Mandzuk, 2006) and powerful synergetic learning through discourse and shared intellectual work (Rust & Orland, 2001).

e. Building partnerships between districts, universities, non-governmental organizations and communities: These local partnerships share the common goal of improving student achievement in their district (Solomon, 2009) and jointly working to solve the problem of training and retaining high-quality teachers for high-need urban schools (Hess, Rotherham & Walsh, 2005). Partnerships have synergetic value in providing expertise, knowledge, resources and support to enrich the residency program (UTRU, 2014).

f. Another advantage of the partnership is that during the apprenticeship year, residents' costs such as tuition and living expenses are subsidized by the residencies, as separate organizations, in exchange for a multi-year commitment to the district.

g. Serving school districts: Residencies prepare teachers to work in and for a given district, and a district's hiring objectives determine its residency goals and priorities. Matsko and Hammerness (2014) described the 'content-specific' approach of the University of Chicago's UTR preparation program. This program is consistent with the state policy context (e.g., its commitment to social justice and teaching for equity); the public school context (e.g., the urban, high-need public schools context); the local geographic context (segregation in the city of Chicago), and the local sociocultural context (by exposing students to the richness and traditions of communities in

Chicago with large African-American or Latino populations). Residencies take account of the district governance structure and reformed school policy; and residents' knowledge of local curricular expectations and practices is reflected in the classroom and student contexts so that pedagogy is culturally relevant. Thus, the knowledge, skills and beliefs that residents develop are situated in and linked to the schools and communities where they will later serve as teachers of record (Putnam & Borko, 2000; Solomon, 2009).

Another important core principle is the rigorous process for selecting teaching residents. Candidates are screened for qualities that can advance pupils' achievements in school, for perseverance and for the ability to accept constructive feedback and criticism. For example, in BTR the intensive selection process in a Boston public school involves input from teachers, cooperating teachers, principals, districts' representatives, BTR staff and community members. Applicants participate in activities including: working with other candidates to solve a group problem, a five-minute segment of teaching students, writing a math assessment, and a team interview (Berry, Curtis, Hernandez, Montgomery, Snyder, & Wurtzel, 2008).

Impact of TR Model

Evidence from 23 residencies in the United States (UTRU, 2014) suggested that the 2,078 residency graduates (up to 2014) have significantly impacted their schools and districts in four areas: (a) Enhanced teacher retention: more than 85 percent of graduates in Chicago, Boston and Denver were still teaching after four or more years (Berry, Montgomery, & Snyder, 2008); (b) Placement in key and hard-to-staff subject areas: more than half the graduates teach in secondary Science, Technology, Engineering and Mathematics (STEM) and linguistically diverse classrooms; (c) Increased diversity in teaching population: 34 percent of residents in 2013-2014 were people of color; (d) Improved teacher quality: 44 percent of residency graduates scored "highly effective" in 2012, compare to 6 percent of first-year teachers in the Aspire Teacher Residency network of 37 charter schools in California and Memphis, Tennessee.

The TMR Model in the College

The TMR program "Mathematic Education Above and Beyond" started in August 2014 at Beit Berl College (BBC) in Israel, in cooperation with the Ministry of Education, supported by the Trump Foundation.

The program is modeled after the TRs with some adaptation to the Israeli context. It is a highly selective, practice-based training program for secondary school math teachers teaching advanced level math toward the matriculation examinations at the end of high school. It recruits high-quality academic candidates in math and engineering sciences. This postgraduate certification program (PGCT) aims to train math teachers who possess extensive math knowledge and content mastery in the use of innovative teaching strategies including Information and Communications Technology (ICT) in order to boost the number of high school students entering and succeeding in advanced math tracks.

Program Structure

The program consists of two stages:
Stage I—Is a preparatory stage with three semesters. In this stage, the first semester consists of a preparatory summer semester in which students undertake a supervised self-study program of advanced math study accompanied by intensive math courses. In the next two semesters, STs spend two days a week in two host partner schools selected for their staff quality and willingness to enter into partnership with the program. One of the two days in the partner school, called the School Practice Phase (SPP), focuses on teaching activities, such as: lesson observation and analysis; teaching advanced math classes as well as individual students; coaching students in school, a pedagogic and didactic math teaching workshop; undertaking a project with students (Project-Based Learning, PBL); team work with math teaching staff at the school, and finally, the college gives "Classroom Management" course, which is integrated in the activities. STs are supervised by the college pedagogical instructors (one instructor for each of the two groups) and by school-selected cooperating teachers (one cooperating teacher for every 2-3 STs). The other day is held at one of the hosting schools or at the college and all STs attend. On these days, theoretical education and teaching courses are organized into 'thematic modules' that tackle the issues faced by STs' in the course of their clinical experience. The courses utilize the STs' observation, documentation, interviews and analysis of the participating schools' culture, pupils and activities. This day is called the Thematic Modules Phase (TMP). In it a number of themes are examined: the psychology of learning math;, curriculum and evaluation in the context of math learning; student diversity; and philosophical issues relating to meaningful math learning and the construction of understanding and thinking. The second day adds two more modules: the first is an extra didactic workshop on mathematical discourse which uses case study learning methods such as simulations of teaching situations and discussions of filmed lessons; the second module consists of courses in advanced mathematics.
Stage II—At the end of the intensive residency year, STs receive a teaching certificate and are assigned to mathematics teaching positions in various schools, entering the education system as interns, and advancing to Stage II of the program. Stage II consists of a follow-up support program during the second and third years of the TR program. Here, the interns receive follow-up and ongoing support from the college's program staff. Both college instructors and school mentors participate in planning and executing the program and STs can influence the sequence of the program elements, along with its pace, and content.

Research Questions

1. What are the clinical and participatory components of the TMR and how are these expressed in the curriculum?
2. What do the program students think about the program's clinical and participatory components?
3. What are the challenges of the TMR's clinical and participatory components?

Methodology

Research Approach

The study used a 'multi-phase' mixed method approach (Creswell, 2011, 2014), which is the usual approach for intervention and evaluation research. The method was based on pragmatic knowledge claims which means that the researchers flexibly make quantitative and qualitative assumptions; have freedom to choose the research methods, techniques, and procedures that best meet their needs and purposes; consider many methodological approaches of collecting and analyzing data rather than subscribing to just one way; work pragmatically to achieve the best understanding of a research problem, and open the door to multiple methods, worldviews, and assumptions, as well as different forms of data collection and analysis. Collecting data in a 'multi-phase' mixed method research can involve different tools and different research stages, simultaneously or consecutively. According to Classen & Lopez (2006), a mixed method approach involves combining, comparing, contrasting, and synthesis, and leads to a fuller analysis than a data base.

Participants

Twenty-five student math teachers participated in the Trump Math Teacher Residency Program of Beit Berl College. Table 1 presents the participants' profiles.

Characteristic	Participants' Profiles
Gender (%)	Female 8% (n=2); Male 92% (n=23)
Average Age (%)	30-40 years 16% (n=4); 40-50 years 56% (n=14); around 50 years 28% (n=7)
Education	M.Sc. 56% (n=14); B.Sc. 40% (n=10); Ph.D. 4% (n=1), all degrees were in math or engineering.
Previous occupation	Security force veterans 66% (n=16); Engineering and high-tech management 44% (n=11).

Table 1: Participants' profiles

Study Layout and Research Tools

Data were collected from:

(1) *Documents* describing the program vision and curriculum; *Syllabi* of the thematic modules relating to field-based educational issues which are studied at college and in the two partner schools; *Documents* relating to eight PBL projects developed by eight groups of STs; Five *protocols and field notes* from meetings with math teaching staff, pedagogical instructors, math coordinators, principals at the two schools and program directors of Beit Berl College; *Protocol and field notes* of two meetings aimed at obtaining feedback from staff and STs during and at the end of the first semester; *Protocol* of the planning meeting with five representative students to design the induction and support plan for the next year; protocols of meetings with Israeli Trump Foundation coordinators and the heads of three other TRs in Israel;

(2) Twenty *observations* of practical school-based experiences, including lessons by STs in math classes, observation of didactic discourse between STs, pedagogical instructors and cooperating teachers following student lesson planning sessions and lesson teaching;

(3) *Two questionnaires* completed by all STs at the end of the first semester, consisting of: (a) A closed clinical social-interactive questionnaire, and (b) A semi-structured clinical participatory (CP) questionnaire. The clinical social-interactive questionnaire is based on a questionnaire for evaluating clinical teachers in the field of medicine (Boerboom et al., 2011) developed and validated based on the Maastricht Clinical Teaching Questionnaire (Stalmeijer et al., 2008). The questionnaire has 15 statements, using a 5 category Likert scale (1 = fully disagree, 5 = fully agree) and was adapted for the teacher education program. The items concerned the five teaching components of the cognitive apprenticeship model (Collins et al., 1989). There are three items for each component: *Modeling*—e.g., "In the program, the teachers demonstrate different teaching skills"; *Coaching*—for example: "In the program, the teachers allow me to carry out tasks independently"; *Articulation*— e.g., "In the program, teachers ask me to explain my reasoning and actions"; *Exploration*— e.g., "In the program, the teachers stimulate me to formulate my own goals"; *Creating a positive learning climate*—e.g., "In the program, the teachers create an environment where I can feel free to ask questions and make comments". For each item, the STs were required to refer to and score both phases of the program independently, namely: the School Practice Phase (SPP) (activities in school classes, personal teacher-student meetings, mentoring meetings, etc.,) and the Thematic Module Phase (TMP) (activities associated with the thematic modules, some of which take place on the college campus). Total Cronbach's alpha reliability coefficient for the questionnaire was 0.87 (Mean=4.03; SD=0.60). Further validation of the questionnaire is in process with an enlarged population. The semi-structured clinical participatory (CP) questionnaire consisted of two parts: The first part comprised six open questions: three on the core issues of the program's curricular clinical dimensions (representation, decomposition, and approximation), and three on the core issues of the program's participatory dimensions (RAR, RMN and EF). For each question, STs were asked to support their opinions with evidence from the program. An example of a question relating to the *representation* component was: "Is/isn't there a link between the theoretical issues studied as part of the 'thematic modules' and the issues arising at school? Support your answer with examples"; A question that examined the *approximation* component was: Does/Doesn't the program demonstrate the complexity of effective teaching? Support your answer with examples; A question that examined the RAR participatory component was: "Does/doesn't the program enable team-work and sharing ideas and suggestions among the participants? Support your answer with examples". Part two of the CP questionnaire contained two open questions: (A) Describe the strengths and weaknesses of the linkage between the practical and theoretical dimensions of the program, and (B) What is your opinion about the participatory processes that exist/do not exist among all program participants (STs, academic staff, cooperating teachers etc.). The questionnaire passed expert validation by the researchers and two independent experts on curriculum and teacher education;

(4) *Two focus group interviews* (Williams & Katz, 2001): STs were divided into two focus groups and interviewed at the end of the first semester by a program evaluation moderator. The opening question for the group was: "Please share with the group any meaningful or frustrating moments that you experienced during the program. Please describe how you see yourself as a student teacher (ST) in the program and as a teacher in the near future?

Data Processing

Quantitative data were examined using a paired t-test (two tailed) for the dependent variables which tested the difference between the clinical social-interactive dimensions of the School Practice Phase (SPP) and the Thematic Modules Phase (TMP).

Qualitative content analyses were performed on the database compiled using the interview data. Content analyses were both based on the research literature and anchored in the database built from the program documents, observations, focus group interviews and the open part of the questionnaire.

The analysis units of the qualitative database included contextually independent statements and episodes referring to the CP dimensions as categories.
The categorical database obtained from the content analyses was compiled with complete consensus between the two researchers.

Results

Analysis of the program documents supported the existence of three curricular clinical components: Representation, Decomposition and Approximation, which form a leitmotif in the program. These are the rationale, objectives, contents and learning assignments that were developed during the program.

Representation of Practice

On examining the program's curriculum documents (the planning documents and the Syllabi of the thematic modules) to determine the program's rationale we discovered the following ideas and emphases, which we formulated thus: Mathematical discourse as a logical-symbolic way of thinking is a key part of mathematics. Mathematical discourse should be a dialogical axis for fostering an understanding of high-level problem-solving through discourse between teachers and STs and between STs and their students. This rationale reflects the program developers' aim of expressing an important syntactic component of mathematics as a disciplinary subject—mathematical discourse. The program wishes its student teachers to experience, during their training, the form of the knowledge that they are expected to develop in their own classrooms.

The rationale analysis also showed the program's emphasis on a nurturing approach to math teaching, which contrasts with the traditional classifying approach. The nurturing component seems to be central to the developers who explained their vision thus:

> *A high percentage of mathematics teachers use a 'classifying' approach when teaching (at a very fast pace). Namely, they keep estimating which students can / cannot cope with the difficulty and scope of the material…Our aim is to train teachers…to nurture students, to believe that the teacher's role is to help students and make them feel that the teacher is there for them, to support and diagnose their strengths and weaknesses, challenge them with high standards and increase their sense of self-efficacy so they can reach that standard.*

The perception of the program's designers, regarding the domain as a way of fostering a mathematical discourse and regarding teachers as nurturing teachers, are critical aspects of the math teacher's work. The accessibility of this vision to the STs illustrates the reality of the classrooms they will be exposed to in their careers.

Practice is also represented in the modular themes which replace the old traditional introductory course structure previously found in teacher education. These modular themes

are field-based and are generated by the teachers' practical work. For instance, the Psychology Module focuses on themes which are relevant to education in general and mathematics teaching in particular. They include: 'The development of mathematical thinking: Addressing the fear of mathematics and enhancing self-efficacy'. In the Diversity Module, aide from cultural diversity and socioeconomic differences, the themes include: 'Diversity which specifically affects the study of mathematics. This relates to thinking style, gender differences (regarding boys' achievements and the fact that they pursue mathematics more than girls), and learning disabilities in general and in mathematics in particular. In these modules, STs are given research tasks in schools, whose findings are analyzed by the plenary. For instance, in the psychology module the final assignment is to imagine what a student thinks who is receiving help with a trigonometry problem. The ST must present a psychological analysis of the student's thoughts, referring to the development of mathematical thinking, fear of mathematics and the development of mathematics self-efficacy.

Decomposition of Practice

Our analysis of the program syllabus identified those elements which expose student teachers to the complexities of teaching: intensive school practice, a classroom management workshop, the didactic seminar. There was also a general workshop in the TMP (Thematic Module Phase), which was called 'Adasha' (Hebrew: lens). It included the VIDEO-LM video, which stands for Viewing, Investigating and Discussing Elements of Learning Mathematics, and was designed by the Weitzman Institute. Here, program participants watched video-taped lessons and cases showing the complexity of the teacher's work. STs discussed the teacher's roles, including: organization and classroom management, subject expertise, leading a style of mathematical discourse which promotes understanding and thinking, diagnostics, evaluation and feedback, and being an educator who develops a learning climate free from fear and threat.

The program also examined the complexity of the dilemmas and problems facing teachers. Its designers' premised that teachers not only need multiple competencies, they must also deal with different levels of student mathematical understanding, choose between opposing values, and use creative teaching strategies in functional relationships. For instance, in one of the video lessons, the question of quiet students who keep out of class discussions arose. The discussion considered the possible reasons for student passivity and how to include passive students in the activity. In the focused interview, ST1spoke about that discussion:

> *There are things that happen in classroom discussions that are incomparable to anything else, like when you get the girl at the back of the class to speak by telling her she can contribute an original idea, or when you listen to someone explaining his hypothesis and try to understand his way of thinking and then asking him a question that could move him onto the next level, towards the solution.*

A suggested strategy for encouraging student engagement was to pause a bit longer for an answer despite the teacher's concern about slowing the pace of the lesson and losing control. This was suggested at an 'Adasha' workshop meeting by one of the STs, ST7:

> *You ask questions, encourage them to express their thoughts, ask a pile of questions and then a frightening thing happens: the right answer comes out and stops the thinking process. Then you can ask a different question, 'Does anyone else think the same?' and you make learning significant for several more students.*

These examples supply supporting evidence of the opportunities the program gives to STs to learn about the complexity of their role, teacher decision making, shaping their professional identity and honing their classroom performance.

Approximation of Practice

Teaching practice is approximated through group Project Based Learning (PBL) assignments. The STs' project goal was to encourage math students to enter the higher mathematics track, help them avoid failure in this track, and facilitate their success. The STs were divided into eight groups and told to study a practical issue encountered theoretically in the thematic modules. The STs chose the strategies themselves, which were: Cooperative Learning, Flipped Classroom, using software like "Geogebra", filming clips of foundation classes, learning from error analysis, constructing a "support umbrella" to systematically support students, etc. One project was titled, "We Build on Strong Foundations" and the students' needed to diagnose challenges in teaching / learning geometry to 10^{th} graders (studying advanced track math). The STs interviewed teachers, observed students, developed mentoring strategies, adapted learning material, taught two extra hours a day at the end of each day for six school days (12 hours in all), made short clips of themselves teaching and posted films on WhatsApp. Later, the projects were processed and analyzed together with the STs. This example illustrates how the program demonstrated the benefits of identifying problems and solutions cooperatively in response to real needs in real teaching situations.

However, the focus group raised two problems experienced by STs: Many had difficulties completing their project because school staff was unable to arrange a mutually a convenient time to work. Others noted the gap between the sophisticated education enhancing approaches proposed by the projects and the modest resources of the schools they worked in.

STs' Perceptions of the Social-Interactive Clinical Dimension

The STs' perceptions of the five components of the social-interactive clinical dimension were examined with several tools: Structured questionnaire, Analysis of researchers' notes of feedback meetings with STs, oral feedback from STs, and discussions with STs. ST perceptions were examined for the School Practice Phase (SPP) and Thematic Module Phase (TMP) which was mostly taught on campus. Table 2 presents the mean scores (5-point scale), standard deviations and paired t-test (two tailed) values showing the differences between the SP and TMP for the dependent variables of the clinical components.

Clinical Interactive Component	School Practice Phase (SPP)		Thematic Modules Phase (TMP)		df	T
	Mean	SD	Mean	SD		
Modeling	3.82	0.75	4.03	0.75	24	-1.21
Coaching	4.05	0.84	3.96	0.75	24	0.45
Articulation	3.11	1.02	3.65	0.84	24	-2.92**
Exploration	3.29	1.03	3.83	0.88	24	-3.37**
Positive Learning Climate (PLC)	3.98	1.00	4.58	0.61	24	-2.86**

*p<.05. **p<.01. ***p<.001

Table 2: Mean scores (5-point scale), standard deviations and paired t-test, (two tailed) demonstrate the differences between the dependent variables of the clinical interactive components in the School Practice Phase (SPP) and Thematic Modules Phase (TMP) (N=25)

The table reveals average to high scores for the social-interactive aspect of the clinical dimension, although there were differences between the SPP and the TMP components.

The positive learning climate component (PLC) which examined whether the ST created a conductive learning environment for asking questions and commenting, the children's level of interest in the ST's teaching, and the amount of self-perceived respect which he received, achieved high scores in the SPP (3.98) and highest score in the TMP (4.58). Differences between the SPP and the TMP for the PLC component were highly statistically significant ($t(24)=-2.86$, $p<0.01$).

The Modeling component, which examined how program staff demonstrate, explain and offer an example of best teaching practices, was rated relatively high for both the SPP ($M=3.82$, $SD=0.75$) and the TMP ($M=4.03$, $SD=0.75$).

The Coaching component, which examined reinforcement from program staff, support with difficulties, progress in encouraging student teachers to act autonomously, was relatively highly for both SPP and TMP. No significant differences were found between the SP and the TMP for the Modeling and Coaching components.

The Articulation component gained average scores in the SPP ($M=3.11$, $SD=0.84$) and average to high scores in the TMP ($M=3.65$, $SD=0.84$) and the differences between the two contexts were also significant ($t(24)=-2.92$, $p<0.01$).

The Exploration component which examined how STs are encouraged to define the aims of their teaching and use self-investigation processes while coping with personal weaknesses and increasing personal strengths, received average to high scores in both the SPP and TMP. Significant differences were found between the SP and the TMP in this component ($t(24)=-3.37$, $p<0.01$).

To summarize the quantitative analysis: the STs' evaluation of the social-interactive component of the clinical dimension was average to high. However, there were differences between the SP and the TMP. STs scored the articulation, exploration and PLC components higher in the TMP than in the SP. This means that the STs saw the school-based learning climate as less clinical than the college-based learning climate.

The qualitative analyses reinforced the quantitative findings. Regarding the positive learning climate component, one ST (ST_{23}) from the focus group said, "I could ask people in the program (staff) questions and get answers…the staff tried very hard to make the course a success". The same ST also commented: "I feel good here and I want my students to feel the same." Others (ST_{18} and ST_{8}) described the learning environment as "fertile ground". Many STs mentioned the empowerment the STs received and one, ST_{7} said, 'There is good interaction between students and staff and among the students which is stronger than you usual find.' Nevertheless, he added the following: 'The relationship between the STs and the school staff—cooperating teachers (which were not all math teachers) and math teachers—was serious and to the point, but unfortunately some staff were indifferent to the STs' requests.' This may account for differences in the SP and TMP and relates to the fact that it takes longer to establish productive trusting relationships with uninvolved math teachers in the schools who were not direct cooperating teachers of the STs.

The high score in the Coaching and Modeling components for both the SPP and the TMP is echoed in the words of ST_{19}: 'The coaching in the program is extremely important. The nurturing approach that the program fosters fits me like a glove and my expectations from it are fulfilled daily.'

Regarding the Exploration and Articulation components the higher scores for the TMP are reflected in the STs' comments:

ST_{1} referred to the Exploration aspect of the TMP thus:

'I often discuss it with my family and my wife and friends. The other day I demonstrated an application of Geogebra (a graphic application for learning

math) to my mother-in-law. When I talk to my colleagues, I feel that the level of professional conversation has risen due to the program.'

ST_{11} referred to the Articulation component thus:
'On the campus and at school, we need to show understanding skills. We tutor students and must able to reformulate an explanation in order to help them understand. We are also expected to explain the rationale of our approach.'

Also regarding this component, ST_2 said:
'I demonstrate my skills during discussions in class at college more than at school'

Based on the testimonies, and contrary to expectations, we concluded that the staff in the thematic modules was more attuned to the students, more open to discussion, more willing to help students fully realize their potential and better listeners than the school staff.

Participatory Dimension of the TMR

The participatory dimension analysis examined three key characteristics of the Trump Math-Teacher-Residency-Program: Responsibility and Active Role of participants (RAR); Responsiveness to Mutual Needs of all participants and to their professional development (RMN), and the establishment and consolidation of Efficient Frameworks for the partnership, its goals and its continuation (EF).

Upon on analyzing the meetings relating to different aspects of the program and the open questionnaires we concluded that all the participants had a common meta-goal, which could be seen from the various discussions. Based on the met-goal, we formulated the following program rationale: "The program seeks to promote quality mathematical teaching and education for math teachers in the practical school context. In order to achieve this, partnership is required as a guiding value which will bring together partners from academia and the school system in a joint commitment to encourage students to enter the advanced mathematics track and help them do well."

The results highlighted five partnership spaces which have responsibility for and engagement in the partnership. In these spaces, the partners listed below try to realize agreed goals, establish trust and solve problems regarding the program: (1) The Trump partnership network in cooperation with the Ministry of Education; (2) A forum of program leaders (the academic head of the program and the pedagogical head), participating school principals and school math coordinators; (3) STs, pedagogical instructors and cooperating teachers (teacher training and mentoring take place in this space); (4) The learning community space of the STs, and (5) The space of the team of STs with their math class students whose joint aim is to increase student engagement in learning math. We now turn to examine these spaces in more detail.

Space of the Trump Foundation—Ministry of Education Network

In this space there are four academic institutions with programs like Beit Berl College. The space includes program heads and college presidents who meet every two months with Trump Foundation and Education Ministry representatives in order to cooperate, share ideas, discuss issues, solve problems, and establish policies and evaluation methods. Key issues arising from the minutes of these meetings include: planning a clinical program, nurturing cooperating teachers as Master-Teachers, methods of recruiting suitable candidates,

processes of placement of graduates in schools, and principles of sharing of knowledge and experience accumulated within and outside the network. This 'network' serves as a supportive envelope for leaders and programs, allowing them to become a cooperative engine driving large-scale change beyond the school and college.

Space of the Forum of the Leaders of the Program, School Principals and Math Coordinators

Initially, this space focused on program leadership and planning. It consisted of two academic managers from the college who began by locating and recruiting residency candidates and schools. After the schools' selecting, the principals, their deputies and the math coordinators became involved and influential in the cooperative system. Most meetings were held at the schools and attempted to promote the school's needs and general quality of teacher education. But, the minutes of the meetings show that in the first year, most of the meetings were spent on trivial issues and ad hoc problem solving such as whether to invite STs in parents' days, assigning STs responsibility for various activities, and establishing boundaries on cooperating teachers' input in order to prevent burnout. In one meeting, the school principal said, 'I'm afraid my teachers are collapsing…They feel they are being forced to redesign their lessons and make them more appealing to the STs and they have no time to do it.' This comment exposed a dilemma for the school principals: on the one hand they expected their teachers' full cooperation, on the other hand they felt that if the teachers cooperated fully it would reduce the time they had for their students.

The complete frankness between the program managers and the school principal yielded a solution. The school rearranged the cooperating teachers' schedule so they could mentor their STs in special time slots, while the STs shouldered some of the cooperating teachers' responsibilities, mainly tutoring.

Space of the STs, Pedagogical Instructors and Cooperating Teachers

The minutes of different meetings show that this triangular space was very central to cooperation. The three parties involved in this space also had separate and growing needs and areas of responsibility. For instance, in the relationship between the STs and cooperating teachers, the STs wanted to become involved as soon as possible and apply their experience in tutoring and guiding from previous careers. ST13 said: 'I have a wealth of experience from different places and communities, in teaching and tutoring students and activating people and initiating and triggering processes in these places'. Because of this type of community background, which is common among the STs, the STs ask lots of questions, expect feedback from cooperating teachers, ask to teach as many lessons as possible in a short period of time and propose projects for the school based on their PBL experience. But, the cooperating teachers were concerned about having less teaching time in classes they needed to prepare for important matriculation examinations. S said: 'I cannot afford to give up ten lessons with my eleventh and twelfth graders—five lesson for each of my (TMR) students—because there is a matriculation exam coming up.' She added,

> *My whole day on Saturday is spent planning my Sunday lesson just to make it interesting for the STs, and I have stopped giving (my students) quizzes on Sundays because the STs are not interested in that. I spend hours planning just like when I was a new teacher.*

This teacher highlights the tension between her responsibility for the students in her math class and the extra responsibility of cooperating with the STs. As she explained,

> *'Your STs are high quality and wonderful and they wait for me at seven o'clock in the morning with loads of questions, requests for feedback and suggestions for improvement… I can't handle the pressure.'*

The cooperating teachers felt they were expected to present a portrait of the ideal teacher who is always available, updated and interesting and they are not up to it. However, gradually the STs learn to understand what their cooperating teachers' work involves and empathy and appreciation for their effort evolves, accompanied by new patterns of communication marked by increasing patience, decreasing assertiveness and less critique. ST13 said:

> *'We need to behave sensibly and compromise. For example, I volunteered to fill in for my cooperating teacher for three weeks. I prepared individual students for a test that I hadn't seen but I was still grateful for a chance to teach.'*

Substituting for a teacher expresses this ST's commitment to the pupils of the school and the school itself in the strongest way. The ST regarded the hours that he taught as an opportunity to practice teaching and teach more independently.

In the final discussion of the semester, one of the cooperating teachers—S— said, Initially, I would only let the STs watch me. Now, in the middle of a lesson I tell A.: Up you get, you take it from here.'

These examples illustrate the trust and feelings of mutual responsibility that developed between the STs and their cooperating teachers.

Compared to the complex relations between the STs and the cooperating teachers, relations between the STs and the college pedagogical instructors during the school phase program and thematic modules program were smoother. The academic staff now has considerable experience with second career STs. Communication and cooperation are clearer and encourage greater involvement and responsibility from STs. In one feedback session, the head of the program told the STs, 'From the selection stage we know we are not dealing with regular students…You are experienced so we need to offer a different approach to help you become teachers. So, besides the projects (PBL), cross-functional teams were established with the STs to plan study days in the current year and accompanying program and other formal and informal activities for the following year. The special relationship between the college teaching staff and the STs positions the academic staff as a sharing and attentive entity, open to the STs' needs. As ST11 commented:

> *The staff give us a lot of attention and try hard effort to do what we ask, even changing our teaching material, and supplying articles, teaching materials, and other things relating to issues in class ("class" both at school and in the college).*

There was also a professional development course for cooperating teachers in the partner schools. This was planned jointly with cooperating teachers and included videotaping lessons to help develop cooperating teachers' skills in providing feedback to STs and the students in their classes.

Space of the STs' Learning Community

The STs' learning community space is a powerful space in terms of activity and scope and reflects the STs' sense of responsibility towards their program colleagues (both in the practice school and at college). As one ST wrote in the open questionnaire: 'There is significant cooperation among students. The fact that we all want to improve mathematics standards means that we are all speaking the same language.' The residency students thought that the group had the same goal and background since everyone was from the military and/or

hi-tech / industry. As one ST remarked, 'We work as a team towards the same goal and support each other.' The ST community cooperates closely via different communication channels including social networks. As ST14 explained:

> *We are not only in contact in our PBL groups but also during the twelfth grade students remedial teaching for the winter matriculation test in math. We often chat on social networks like WhatsApp to share ideas and discuss problems.'*

The members of the ST community feel that their colleagues are supportive as they provide a lot of non-threatening feedback. Group members also trust each other's positive intentions. ST9 explained, 'The students are a cohesive group and work together because we feel that we wish each other well.' An example of supportive cooperation arose during a didactic discussion while viewing a video of a colleague (ST9) confronting discipline problems. Feedback: 'The lesson structure was good but did you notice that a whole group of students in the back of the class was not taking part and started to disrupt the others?' to which ST9 responded, 'I don't force students to participate. I respect them and they are entitled not to participate.' To which ST21 answered: 'It is not a matter of respect…our obligation to students is to involve them and protect them from problems due to lack of discipline.' And ST9 answered, 'You've got a point. Maybe I should have reacted differently.' This example demonstrates non-threatening feedback and increased student reflectivity.

Space of STs with the Students in their Classes

This space includes the STs' and commitment and efforts to teach and tutor students during their school practice. Almost all STs established personal connections with at least one student in the practice school. ST1 said that tutoring enabled him to reach beyond teaching mathematics and 'touch the soul of the student.' While ST13 reported, 'I had the opportunity to tutor individual students which allowed me to adapt different methods to them and not just use traditional methods'. Dealing with student differences shows the importance of this issue and develops solutions through original teaching approaches that help students learn and understand. STs discussed their experiences of tutoring from their pedagogical instructor and the challenge of establishing a relationship with a student as an individual. They spoke of these difficulties in the open part of the questionnaire, 'During the lessons (with the pedagogical instructor) I discussed the difficulty of motivating some students to continue in the advanced '5-Unit Math Track' for matriculation'. Several STs told their instructor that they felt responsible for helping individual students and diagnosing their needs to find a personally tailored solution and increase his / her self-efficacy and sense of achievement. ST13, who stepped in and substituted for his cooperating teacher for 6 weeks, described one girl in his class, who was quiet and never participated. ST13 gave this girl special support, diagnosed her problems by trying to understand them, tried to tailor suitable explanations to her and created an atmosphere in class which encouraged her to speak. Thus, when the teacher returned from sick leave she was amazed to find that the girl eagerly participated and had become the new star of the class.

Sometimes students in participating schools gave STs positive feedback about their effect on them and for helping them find a way to understand math. STs found such feedback very empowering. Having a sense of commitment toward a student is very rewarding—it is a sense that you have found your way to the student's heart.

To summarize the *participatory* component: According to the above findings the strongest spaces are: the spaces of receiving training and tutoring from the cooperating teaching staff; the space of the STs' learning community and the space of STs' individual teaching and tutoring in their participating school.

Discussion

The Clinical and Participatory Dimensions of the TMR and how they are linked

The TMR program has undertaken the ambitious goal of developing a cadre of supportive professional math teachers around the country who are equipped to teach advanced level math. It achieves this by training high caliber teachers whose aim is also to boost the number of students entering and succeeding in the advanced math matriculation examination. To this end, Beit Berl College developed a practice-based teacher education program which is designed to increase the efficacy of the clinical and cooperative aspects of math teaching. The program's underlying premise is that linking theory and practice closely increases the relevance and efficacy of teachers' strategies (Grossman et al., 2009). The study examined the clinical dimensions of teaching mathematics from a curriculum standpoint (Grossman, 2010) as well as a socioeconomic-interactive standpoint (Collins et al., 1991; Stalmeijer, et al, 2008). It also examined the program's participatory dimension, which includes the program's contribution to meeting the needs of the various partners; partner accountability and partner involvement in the partnership spaces (Teitel, 2003).

When they planned the two programs—SPP and TMP—the program developers covered most of the program's clinical, curricular, social-interactive and participatory needs. The model use shows that they took pains to choose suitable schools as partners and recruit very professional cooperating math teachers. They also took pains to recruit high-aiming candidates. The college saw these factors as crucial for developing a unique, effective clinical-cooperative training model. From the program components analysis we can see how complex it is to plan an effective and meaningful teacher education program. It is now necessary to develop a program 'package' with the same goal and spirit for the partnership.

The analysis of the clinical-curricular dimension of the program based on the program's documents revealed the program's vision, goals, syllabi and structure. It seems that the program stresses mathematical discourse as a syntactic element in mathematics teaching and encourages a nurturing approach not a traditional classifying one. These stresses are fundamental to the nature of the program and they are expressed in both the Thematic Modules Phase (TMP) and the intensive School Practice Phase (SPP). We also found evidence of the decomposition and approximation elements of teacher training in both the TMP and the SPP. The TMP contents decompose to give the sum total of the domains of the teacher's functioning and are based on value-based issues and dilemmas in school life. In addition, the module tasks, such as observation, school-based case studies, together with the PBL, approximate the ST to the practical realities of the teacher's work.

Regarding approximation, there was a gap between the teaching-learning culture presented to the STs in the thematic modules phase and the teaching-learning culture they saw in the school practice phase. It seems that school practice was approximated more in the TMP than in the SPP. Trust was established in these modules by encouraging college staff to propose innovations for the program. In the school component of the program, however, it was hard to get some of the cooperating teachers to trust the students' ability to take full responsibility for teaching in their classes. Pockets of conservatism among the cooperating teachers and lack of variety in teaching can account for this.

Differences were also found between the thematic modules phase and the school practice phase on the social-interactive clinical level and in the modeling, coaching, articulation, exploration and PLC components. In both phases the modeling and coaching scores for the social-interactive component were average to high, but in the TMP only for articulation, exploration and PLC, scores were average to high. The STs thus saw the thematic modules program as more clinical than the school practice program. They expected the school climate to be more supportive and wanted to be seen as colleagues rather than

assistants, as this would allow more opportunities to develop their professional identity, challenge them to articulate their decisions and considerations, and encourage them to explore themselves and the changes they experienced.

The differences in the two phases point to a dilemma regarding the reality that the STs should be encouraged to aspire to and the reality approximated by the training process. The dilemma is: Should we be preparing STs for the actual school reality or should we direct them to aim for a better reality based on high clinical standards?

This dilemma is even greater in a program such as the Trump residency program for math teachers, which is interested in changing the whole national approach to math education. The STs in the program get involved in the reality they expect to change by using innovative and creative clinical methods in order to improve high school students' performance. Both the program leaders and college teachers want the STs to realize that in order to change and impact the system, they need partnerships. And you cannot establish partnerships with school staff, colleagues in and out of school and students, with a patronizing attitude of being there to 'repair the system'. Partnership arises when others believe you want to understand and change the system by harnessing its strengths, not by criticizing its weakness. Teitel (2003) captured this in his phrase, "Skip the SIP (School Improvement Program). So, besides the ambivalent attitude towards the school staff on the social-interactive level, it is important to consider partnerships as a basis for advancing and organizing the partners' ideas (Teitel, 2003).

Working in partnership, allows the gaps that separate teaching colleges, teaching students and school teaching staff to be gradually reduced. The findings revealed five spaces in which formal and informal partnerships marked by mutual involvement and responsibility gradually emerged in the two phases of the TMR. These spaces were: the space of the national partnership network; the space of the program leaders, school management and mathematics coordinators; the space of the college staff (including pedagogical instructors) and cooperating teachers; the space of the ST learning community, and the learning-teaching space created by the STs in their classrooms. Two of the spaces identified in the study were remarkably powerful in partnership terms: the college staff (including pedagogical instructors) and cooperating teachers' space, and the space of the student learning community. In both spaces, mutual needs were met and a deep commitment could be seen, and clinical relations between STs and staff and between STs and their peers were at their best. Both these partnerships modeled high standards of teaching, feedback on weaknesses and strengths, awareness, self-exploration and a positive climate for learning.

Research Contribution

The study demonstrates the efficacy of the clinical-participatory approach to teacher education from the curriculum and social-interactive standpoint. Regarding curriculum, it examined three clinical components: Representation, Decomposition and Approximation and how these were addressed theoretically and practically in the college and at school.

Regarding the clinical-curricular standpoint, the study further showed the importance of the social-interactive clinical aspect of the program. The clinical components of the program give dynamic meaning to the program in action. The clinical aspect of the program explains 'from the inside' the nature of the relationships formed through modeling and coaching, exploration of the self, and the relationships reflecting appreciation and respect between the partners. We believe that one cannot understand the clinical side of teacher education without considering its social-interactive side and this must be taken into account when developing a clinical-participatory program.

There seems to be a correlation between the clinical and participatory sides of teacher training in that trust in the partnership leads to more clinical experience and clinical experience leads to more trust. Therefore, the participatory dimension contributes to clinical depth and should be examined for all partnership spaces. In these spaces, feelings of responsibility lead to commitment and trust, which in turn leads to expanded clinical teaching opportunities. The commitment to harness partnerships between districts, universities, non-governmental organizations and communities etc. in order to improve learning, assist learners in schools and enhance the quality of student teacher training, is a 'super need' in the various partnership spaces. Even if the organizational gaps between the school and college still exist, this commitment has a unifying force. On the other hand, increasing clinical experiences creates closer relations between and among partners and greater responsibility and more opportunities to respond to mutual needs.

Analyzing the clinical and participatory dimensions of a teacher training program in all their different aspects and components can be useful for guiding our diagnosis, planning, investigation and evaluation of these programs. The analysis can improve programs by enhancing efficiency and meaningfulness and by adapting programs to the partners' needs.

Challenges and Conclusions

The study highlights a well-documented challenge in the PDS literature—the need to deal with gaps between college and school organizational cultures and already from the early steps of the program, channel deliberate efforts into preparing and creating a climate of acceptance among school staff. This study also showed another challenge in this sphere: The teaching college was the dominant partner in the partnership with schools in terms of developing and promoting the program and its policy and in establishing a social network with residency programs in three colleges. For the schools, the main function of school staff and management was solving problems rather than long term planning. We recommend giving school staff more responsibility for planning and policy because otherwise the academic staff may seem patronizing and endanger the future of a project altogether.

Further Research

(1) Further research should study and validate the intensity of relationships in the social-interactive component of the program. We found a lot of evidence highlighting the importance of this part of teacher education programs. Emotions are very important in relations between STs and college staff and especially in relations among the STs. We therefore recommend that the emotional aspect of the social-interactive component of teacher training programs should be studied in future and its link to the STs' chances of integration and perseverance in the program;

(2) The space of the partnership between the STs and the school students was only partially studied and further research is needed. In this space that the student teacher receives advice from colleagues, cooperating teachers and college staff. And, in this space the student also tests his self-efficacy and develops his professional identity. So it deserves further attention. We recommend focusing on relations between STs and their students in school and analyzing their partnership as a possible indicator of the efficacy of a teacher education program and its contribution to its student teachers' success;

(3) We also recommend delving more deeply into the facets and components of the clinical-participatory dimensions. This would include widening the research

population, comparing several teacher education programs and developing a multidimensional instrument for analyzing, mapping and developing effective teacher education programs.

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