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## Contribution of Academia Colleague as a Clinical Model to the Professional Development of Pre-Service Teachers

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**Abstract.** The current study aimed to investigate the contribution of Academia Colleague as a clinical model to the professional development of pre-service teachers. An interview consisting of 8 questions, a questionnaire consisting of 24 paragraphs, as well as a measurement of teaching tendencies, which consisted of 4 domains and 35 paragraphs, were the major instruments used in the study. The qualitative research method was employed to address, analyze, and interpret the concerned phenomenon (domain of the research) within its natural context. This was done in tandem with the descriptive analytical approach of a sample of 13 pre-service teachers who constituted the study community. Results of the study showed that the incorporation of the proposed clinical model contributed to the professional development of the participants and promoted numerous positive aspects, including active participation, collaborative learning, personal and collective responsibility, procedural research (applied research), clinical-critical thinking, and socio-emotional learning (SEL). The program also promoted positive tendencies towards the teaching profession at large. The results also showed no statistically significant relationship between the teaching tendencies and the participants' grade point average (GPA).

**Keywords:** academia colleague model; clinical model; professional development; socio-emotional attitudes; teaching profession

### 1. Introduction

Teaching students, student-teachers, and pre-service teachers (used interchangeably from here on) are terms that refer to college or university students aspiring to become teachers and pursue teaching careers in the future. Pre-service teachers are not yet fully qualified teachers. Besides their academic studies, pre-service teachers are required during their third academic year to train as schoolteachers for a designated period under the guidance and supervision of professional teachers and pedagogists. In Israel, particularly, the clinical model has been adopted as a major domain for this purpose.

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Optimal clinical training is a necessary condition for the professional development of those qualified for teaching and practice in the field. The practical knowledge revealed in the training process and in evaluation and feedback conversations is focused on the event, based on the context, and aimed at researching the practice (Furlong, 2013). The goal of learning in the practice research approach is to improve teaching through the discussion of teaching problems, in an exploratory and representation-based manner. This learning approach is based on the assumption that teaching is a complex profession, a very challenging task that seems doable (Horn, 2010). The teacher must manage multiple interactions, address a variety of (sometimes conflicting) goals, react to complex and unexpected situations, and deal with complex matters and many challenges (Lefstein et al., 2020).

Therefore, good teaching requires a developed professional outlook. This includes sensitivity, which helps identify problems and opportunities that require attention. It also includes interpretation, which helps to analyze the causes of a problem or an opportunity, its consequences, etc. Good teaching also requires a repertoire of teaching techniques and strategies, meaning flexibility of choosing from a wide range of action options. Lastly, it requires discretion, through which one can evaluate the advantages and disadvantages of each alternative and based on that choose the most suitable alternative (Lefstein & Snell, 2014).

Strengthening clinical training with an emphasis on connection and simultaneity to the descriptive courses taught as part of teacher training is one of the important strategies for improving the abilities of new teachers and the entire teaching process (Burns et al., 2020). Other strategies that will be reflected in courses and experiences at the same time include creating a cohesive vision and curriculum, developing assignments and opportunities that connect theory to practice, and creating partnerships with schools to support exemplary teaching in classrooms characterized by diversity. Further strategies include integrating strategies to assess the ability of the beginning teacher to teach, and providing constant feedback to the training programs in order to improve them (Killian & Wilkins, 2009).

The research-based clinical training model exposes trainees to the practical wisdom of experts and involvement in research processes (Jaspers et al., 2018). Burn and Mutton (2015) mentioned that Great Britain, the United States, and Australia have training programs that give expression to research-based clinical experience. In Finland and the Netherlands, the training programs excel in cohesion and a shared vision of learning and teaching. From the analysis of the examples that emerged, we could recognize the deep value and limitations of research given from the context of the practice of trainees and beginners and understand the complexity and conceptuality of experienced teachers' knowledge. In addition, we could identify the efforts required to qualify teachers who are committed to lifelong learning and are able to generalize the new professional knowledge they need to adapt to different contexts and changing demands of the educational system.

In recent years, there has been a rising interest in pedagogical training to promote the professional development of those training to teach as part of a long-term relationship between expert teachers (Mena et al., 2016). The numerous studies available on pedagogical training have dealt with improving communication, supporting emotional and socio-psychological aspects in trainees, institutionalizing the professional and interpersonal relationship with the trainee, and defining the identity of that role (Mena et al., 2017). The newly introduced Academia Colleague program has not been studied broadly. The emphasis here is specific and centered. Despite the fact that improving communication and supporting emotional and socio-psychological aspects in trainees are of utmost importance, providing the pre-service teachers with unique real-life-based expertise is the priority.

The different models relating to the topic, which were mentioned in the introduction and are discussed in the literature review, can be distinctive in theory and practice alike. Even though numerous modern and classical schools of education have set up their models long ago, Academia Colleague deliberately and systematically follows up the professional development of teaching students and their tendencies towards the teaching profession practically and within the work field. The field also provides insights into the psychological and cognitive development of the participant involved.

The main research question of this study was: What is the contribution of the learning community and of Academia Colleague as a clinical model in the professional development of pre-service teachers? Based on this main question, numerous sub-questions could be derived to examine further details and more specific aspects of the clinical experiment. These are:

1. How effective is the clinical model from the point of view of the students participating in the study?
2. Are there statistically significant differences at the significance level  $\alpha = .05$  in the average responses of the study sample participants on the effectiveness of the clinical model from their point of view attributable to the specialization variable (English and mathematics)?
3. What is the relationship between teaching tendencies and the accumulative grade point average (GPA) of students participating in the study?
4. What is the impact of the GPA on the teaching tendencies of students participating in the study?

## **2. Literature Review**

Schools of education are ancient, numerous, and fundamentally heterogeneous in terms of the training models that pre-service teachers need to follow before being actively engaged in their future career. The clinical model remains a relatively modern approach that veers off from the classical patterns where pre-service teachers are not offered sufficient opportunity for realizing their weaknesses, fears, successes, and full potential.

## 2.1 Clinical Training Model

The concept of clinical practice is ambiguous. Yet, it could be simplified and briefly elaborated by referring to the fact that it is a model where field work and actual real-life situations are the domain and the main tool of measurement for development and progress. Practice can be understood as routine ways of working or as a process of systematic and directed repetition, the purpose of which is to refine unique skills related to the diagnosis of needs and their treatment. The emphasis in this sense is on an experiential process, in which students effectively develop their abilities for continuous professional learning and teaching (Kriewaldt & Turnidge, 2013).

In the clinical practice model, teaching students are integrated within the schools in the learning communities and are partners in all phases of teaching and its contents. The integrative planning and responsibilities of the team intertwined in the program are reflected in the development of clinical thinking skills among all partners: students, teachers, and academics. The environment that results from these types of teaching-learning models is indeed symbiotic and supportive; student-teachers will develop a sense of trust in their own abilities and in the expertise of those who monitor their progress.

The characteristics of professional learning in the framework of clinical practice (Alter & Coggshall, 2009) include placing the student at the center of the teacher's learning process, diagnosing specific needs of students, and adjusting differential pedagogical actions to evaluate the results (Darling-Hammond, 2006). Obviously, by granting greater emphasis on the student's role in the process and making the student the actual axis of the process at large, the student's cognitive facilities and capacities will be effectively, actively, and positively stimulated.

Pedagogical training enables a connection between knowledge drawn from the theories and research studied theoretically in the training programs and the clinical experience that occurs in the schools (Burn & Mutton, 2015). Burn and Mutton (2015) reiterated the constant difficulties and liabilities of professional training in numerous professional fields as well as in teaching. It is assumed that the clinical model invites deeper interpretation, inquiry, and reflection than the traditional one. These tools are required for the teacher and educator not only in training but throughout the entire process of their professional development, which is why the initial training phase is extremely important. In this context, we share the views and insights of Hammerness et al. (2012), who reiterated the benefits of the clinical experience and celebrated its emergence into the educational arena.

## 2.2 Research School (Academia Colleague)

For teaching students, schools are arenas for experience in clinical training and provide opportunity for collaboration with experts (Burn & Mutton, 2015; Willemse et al., 2016). The field of teachers' training allows the student to engage in research processes, such as searching, interpreting, and constructing the meaning of specific needs of students; designing and implementing pedagogical actions; and evaluating the results. The research processes allow engagement in deep processes of interpretation and in the design of the professional identity

(Taylor, 2017). The school in which a “student-teacher” is involved can indeed be a rich environment where the student’s theoretical framework can be thoroughly, practically, and tangibly construed.

Darling-Hammond et al. (2017) offered a rare glimpse into the systems that shape quality teaching around the world, spanning three continents and seven countries. They found that in high-performing countries, opportunities for teachers to learn sophisticated practices and continue improving are embedded in systematic education policy and practices. Certified educators have described how several forward-thinking education systems create a coherent set of policies designed to ensure quality teaching in all communities.

According to Willemse et al. (2016), among the most outstanding characteristics of the learning culture in a licensed training school are: engaging in students’ learning needs, analyzing learning outcomes, and building adapted programs with differential teaching methods. This also reflects discourse, peer observations, and unique and constructive feedback and control. Willemse et al. (2016) also reiterated the importance of the continuous learning of the students (the clinical experience) and the teachers (the professional development) with the academics in the common space. “Analyzing learning outcome” is a major domain. When student-teachers are present within an interactive, rich, supportive, and informative atmosphere, where their supervisors are physically present for guidance and assessment, the experience gains depth, momentum, and credibility.

### **2.3 Model of Partnership and Involvement in Clinical Experience**

In clinical training, which pays great attention to providing the involved participant with enriched and hands-on experience, a partnership is created at a systemic level, between the institution providing the training and the school where the experience takes place. This is based on the idea of creating a learning community and a learning organization. All those involved – managers, pedagogical and disciplinary instructors, lecturers, students, interns, and teachers – together will have access to continuous learning while interacting with each other within the collaborative space, promoting deep reflective learning (Kintz et al., 2015). What Kintz et al. (2015) suggested is fundamental. Within a clinical model, and even though the involved pre-service teachers are the domain and the basis, managers, pedagogical and disciplinary instructors, and lecturers are all vital catalysts that cannot be neglected and whose roles should not be ignored.

In this model, the activity focuses on the joint construction of “emerging knowledge” through a dialogue between the students, the schoolteachers, and the pedagogical instructors from the host institution (Avidov-Ungar, 2017). Again, while the participants unconsciously believe that they are educators at this phase, they are in fact a cogwheel in a very complex machine of continuous learning and teaching, “emerging knowledge,” first-hand development of skills and expertise, and future-teacher building. The professional development schools (PDS) model allows students a long and continuous stay at the school, getting to know the way an educational institution operates. The core with the partnerships is focused on

improving the teaching-training processes and adapting them to the school reality, exposing the teaching student to school life with its various activities, demands, challenges, and advantages.

#### **2.4 Clinical Thinking**

Clinical thinking is a cognitive process used by students and teacher trainers to collect and analyze data to diagnose learning needs and make decisions for intervention accordingly (Hattie, 2009). The experience of visibility and open thinking encourages the use of evidence and the study of their practice instead of just drawing conclusions (Ritchhart & Perkins, 2008). Clinical thinking is characterized by logical thinking and discourse, in which evidence from individual cases and different types of knowledge are evaluated in an integrated manner. In this domain, we could draw a solid line between clinical thinking, on one hand, and critical thinking, on the other hand. Clinical thinking evokes critical thinking, as the real-life situations that the participant will be part of will raise their level of conception, perception, and awareness.

Kriewaldt and Turnidge (2013) offered an approach to promoting clinical thinking based on four foundations: respectful and reciprocal dialogue, use of data and evidence in context, examination of personal assumptions and theories, and formulating reasons (open thinking) and holding guided conversations designed to stimulate critical thinking and analysis skills (Golding, 2011).

#### **2.5 Action Research (Practice Research)**

Gaudelli and Ousley (2009) and Ifenthaler and Gosper (2014) reiterated that one of the possible ways to strengthen the relationship between academy and the field is through action research. Action research in the field of education is usually defined as professional research, where the researcher is involved in the researched activity with the aim of understanding and improving it (Cochran-Smith & Lytle, 2009). A circular process of collecting data is used to determine goals and activities to carry out the goals, evaluate the results of the intervention, and provide feedback (Bradbury, 2015). In the same respect, the Academia Colleague model is fertile soil for such approach. In this model, a student is in fact a teacher-in-action, and the wide gap between the theoretical knowledge and the actual fieldwork is bridged with potency, efficacy, and quality.

The process of learning about teaching to develop a professional outlook includes discussion of pedagogical justifications – an expression of the thought processes and judgments underlying the teaching. This process makes it possible to recognize the complexity and challenges faced by teachers to understand the source of these challenges and to deal with them (Loughran, 2019). The process is anchored in rich representations from the classroom that allow examining the ways of thinking of the learners, the challenges they experience, and the connection between the planning of teaching and learning (Horn, 2010; Lefstein et al., 2020).

Conceptualization in this context involves the use of professional concepts to describe teaching and learning processes and the connection between theoretical and practical concepts. This framework calls for action – adopting a productive

approach and thinking about future implementation (Vedder-Weiss et al., 2018). It also calls for multiplicity of opinions and productive tension between them – having a discourse that allows for the exposure of differences between perceptions, the expression of opposing opinions, appeals to ideas and methods of action, etc. (Grossman et al., 2001).

Moreover, conducting action research in the training may equip the student with tools suitable for the teacher as a future researcher and to use to create links between theory and practice (Brownhill et al., 2017). Action research focuses on the researcher's personal actions, their personal assumptions, the change they want to make, and the results that affect the day-to-day work (Lefstein et al., 2020). The researcher is personally involved in both research and action. Klein et al. (2015) pointed out that those who are trained to teach as teachers face a new role for them and are engaged in the development of teaching skills.

Eriksson et al. (2017) claimed that for the questions in action research to be “good” questions, it is desirable to create a structure for the question, a structure that experts in the field will construct. Brownhill et al. (2017) believed that such an approach reduces and limits the research of the teachers. These researchers believed that teachers should address their research questions with what interests them professionally and with topics and issues that inspire them. In any case, to facilitate the formulation of a research question, they suggested building a framework for writing a research question.

## **2.6 Socio-Emotional Learning**

According to Reeve et al. (2014), socio-emotional learning (SEL) is an integral part of education and human development. It is a process through which knowledge is developed and applied to develop healthy identities, manage emotions to achieve personal and collective goals, and demonstrate empathy towards the other, thereby creating supportive relationships and decision-making capacities. SEL refers to the process through which people learn and apply an array of emotional, social, and behavioral skills and competencies required for success in schoolwork. Accordingly, it also provides a sense of personal resilience and protection and thereby helps to realize the personal potential of the learners. SEL sees the learning process in the social group and the relationship between the educational institution and the family as spaces for personal development.

Participants involved in such teaching-learning environment have experienced positive emotions of vigor and optimism and developed autonomous motivation to invest in challenging and positive actions and goals (Vansteenkiste & Ryan, 2013). As a result, they experience a feeling of significance and their basic psychological needs are further satisfied, which further strengthens self-perceptions and motivation, and so on. That is, it is a spiraling process in which experiences of satisfying needs, motivation, and constructive actions reinforce each other (Martella et al., 2021). Numerous studies have shown that there are several ways of working and treating teachers and educators that directly support the students' needs and their positive self-perceptions (Reeve et al., 2014; Ruzek et al., 2016).

### **3. Methodology**

Based on the research hypothesis, and considering the research questions of the study and the data to be obtained, the qualitative research method, within which the concerned phenomenon (domain of the research) was tackled, analyzed, and interpreted within its natural context, was employed. This was done in tandem with the descriptive analytical approach of a sample of 13 out of a total of 102 pre-service teachers enrolled during the same academic year when the research was conducted.

#### **3.1 Research Design**

The current study adopted a multidisciplinary design that follows several approaches in order to ultimately achieve the research objectives. An exploratory approach was the evident choice by the fact that the program that the research investigates is a modern educational scheme that aims to improve the quality of pre-service teachers.

The descriptive route of the research is also notable in the statistical analysis of the results that emerged because of a close and thorough follow-up to the participants' progress and development. Finally, nuances of an explanatory approach to the research design could be observed as the study introduced a new pedagogical school to the educational arena at large.

#### **3.2 Objectives of the Study**

The study aimed to identify the contribution of the Academia Colleague clinical model to a licensed-school experiment in the professional development of teaching students and their tendencies towards the teaching profession by examining a variety of dimensions. These include active participation and collaborative learning, personal and collective responsibility, active research (applied research), and clinical thinking and SEL.

#### **3.3 Significance of the Study**

The significance of this study lies in the fact that it used the clinical model that supports the teaching profession and actively nourishes the teachers' experience of it. In addition, the study adopted a new model that offers teaching students actual training during their studies. The importance of this study is evident in the fact that it deals with the tendencies towards the teaching profession and their relationship to the teaching performance of the students participating in the study.

#### **3.4 Context of the Study**

The Academia Colleague clinical model in teacher training was implemented in a limited way (in a pilot format) in Israel in 2015. Sakhnin Academic College for Teacher Education in Northern Israel chose to participate in this model. The leading principle of the model is the transfer of the center of gravity of the training from the academic institution to schools that have been defined as Academia Colleague model schools chosen for training teacher students. The choice of the school was made by the Ministry of Education after conducting tests in the field of the educational institution and its staff.

The community meetings were attended by teachers from the school staff with a supervisor from the college. The community's areas of practice were related to the educational/pedagogical work at the school, which involved the "practice research" method, namely researching representations, collaborative learning, critical thinking, interpretation, experimentation, and improvement. The community meetings were held regularly throughout the school year.

To achieve the objectives of the study, a mixed-method approach was employed. First, this study was based on the qualitative research method. This method involves studying the phenomenon in its natural context, relying on it as a source of data, and collecting data directly from the community involved in the study. Then, analysis and interpretation of the data are carried out thoroughly. For data collection in this study, interviews were conducted, in which we asked the participants specific questions. Their responses were recorded and analyzed. The participants were interviewed individually by the first author, with each interview lasting between 40 and 60 minutes, depending on the answers provided by the participant. The interviews were conducted over a one-month period during selected days that were agreed upon with the participants.

Second, we used the descriptive and analytical approach, which is defined as a method that deals with the study of existing events, phenomena, and practices that are readily available for more analysis, experimentation, and scrutiny. In this context, we had no direct intervention, yet solely observed, interacted, described, and analyzed existing events, phenomena, and practices.

### 3.5 Participants

Thirteen third year students affiliated with Sakhnin Academic College for Teacher Education in Northern Israel participated in the study. All participants exhibited a desire to take part in the study. The data collection was carried out throughout the 2021/2022 academic year, where the interviews were conducted individually. Table 1 shows the distribution of the sample members according to their specialization.

**Table 1: Distribution of sample members by specialization variable**

Specialization	n	Percentage (%)
English language	8	61.5%
Mathematics	3	23.1%
Science	1	7.7%
Arabic language	1	7.7%
Total	13	100%

### 3.6 Research Instrument

Multiple instruments were actively employed to serve the purpose that the study aspired to achieve. We identified a specific number of personal traits and qualities within the participants' personalities on which we desired insights, and for that a qualitative approach was necessary. Besides, and in addition to the necessary observability, direct feedback from the participants in written form was obtained

through the employment of a quantitative part to serve in tandem with the qualitative part.

### 3.7 The Qualitative Part

The participants were asked to share feedback and record their thoughts and opinions, as well as the contributions they make by being involved in the Academia Colleague clinical model. The following seven themes were considered: active involvement, collaborative learning, personal and collective responsibility, research of practice, clinical thinking, and SEL.

### 3.8 The Quantitative Part

Two questionnaire instruments were developed for the purposes of the study. The answers to the questions were based on a five-point Likert scale: 1 expresses a low degree of agreement to the presented option, while 5 expresses a high degree of agreement.

First, a multiple-choice questionnaire was developed to examine the perceptions and attitudes of faculty members regarding their professional development in the clinical model of Academia Colleague at the research site, a licensed school. The number of paragraphs of the scale were 24.

Second, a multiple-question questionnaire was developed to examine the tendencies of female students towards the teaching profession when the clinical model was used during the training period. The number of paragraphs of the scale were 35, distributed over four domains, namely:

- Personal attitude towards the teaching profession.
- Personal characteristics of the teacher.
- Self-assessment of the professional abilities, skills, and capacities of the future teacher.
- Looking forward to the future of the teaching profession and society's perception of it.

All paragraphs of both questionnaires were given a gradual weight according to the Likert scale. The responses were divided into *strongly agree*, *agree*, *neutral*, *disagree*, and *strongly disagree*. The statements are characterized by clarity and gave the participants the opportunity to choose the response that was compatible with their own views and attitudes. The results obtained from this scale can be easily analyzed and interpreted.

### 3.9 Credibility of the Research Instruments (Interview Schedule and Questionnaires)

After reviewing the theoretical literature and consulting some experts in the field of curriculum development and teaching strategies, the interview questions and questionnaire paragraphs were designed to identify the perceptions and attitudes of teaching students regarding their professional development in the clinical model. The participants' tendency towards the teaching profession was also probed. The questions were first presented to a group of specialists who worked as teachers and faculty members at Sakhnin Academic College for Teacher Education to ensure that the questions measured the depth of what they were set

for. In turn, these specialists made some suggestions, asking for amendments as well as a reformulation of some questions until the final version that was presented to the students participating in the study was reached.

### 3.10 Stability of the Research Instruments

To verify the stability of the research instruments, the following measures were adopted. As for the stability of the interview questions, we experimented twice with interview questions on three pre-service teachers who did not belong to the study sample, with an interval of two weeks between the first and second time. The answers of the first survey sample and that of the second did not show significant differences.

For the identification of students' teaching perceptions and attitudes towards their professional development in the clinical model, the stability of the interview questions and questionnaire paragraphs was determined by calculating the stability of internal consistency. Internal consistency indicates the strength of the correlation between the paragraphs in the research instrument. To determine the coefficient of consistency, we employed the Cronbach alpha method. Table 2 shows the results of the test of the stability coefficient using the Cronbach alpha method.

**Table 2: Results of the coefficient of stability test using Cronbach's alpha**

Cronbach alpha	Number of items
.931	24

Table 2 shows that the coefficient of stability of the questionnaire was .931, which is a strong coefficient; that is, the research instrument was appropriate for the domains of this study because the correlation between the paragraphs of the questionnaire was very strong. To determine the participants' attitudes towards the teaching profession, the stability of the research instrument was verified also by employing Cronbach's alpha. Table 3 shows the coefficients of the stability of the questionnaire in each of its fields.

**Table 3. Results of the Cronbach alpha test to measure the stability of the scale**

Domain	Number of paragraphs	Cronbach's alpha coefficient
Personal attitude towards the teaching profession	7	.854
Personal characteristics of the teacher	8	.678
Self-assessment of the professional abilities, skills, and capacities of the future teacher	11	.759
Looking forward to the future of the teaching profession and society's perception of it	9	.712
Overall degree	35	.901

Table 3 shows that the stability coefficients ranged between .678 and .854, while the value of the alpha coefficient of total stability was .901. All coefficients were educationally acceptable stability coefficients and suitable for the study purposes.

### 3.11 Study Procedures

This study comprised a set of arranged steps and procedures, the most prominent of which are:

1. Thoroughly revising the literature pertaining to the clinical model.
2. Scientifically constructing the research instruments and conducting the necessary measures of credibility and stability.
3. Obtaining official approval from individuals and official institutions who were involved in the study before conducting the interviews.
4. Clarifying the nature of the research and showing its significance in terms of results and findings and their relevance to teachers in all disciplines, educational supervisors, and faculty members in the colleges of teacher education.
5. Making appropriate recommendations related to the results of the study.

### 3.12 Data Processing

The following methods of data analysis were followed in this study. First, the study relied on the existing literature and previous studies related to the analysis of the results of interviews, and on observing the ideas of the participants. Each paragraph, sentence, or idea indicated the reality of scientific research as a unit of analysis. The purpose was to classify the ideas put forward by the faculty members of Sakhnin Academic College for Teacher Education concerning the realities and contributions of Academia Colleague as a clinical model to a licensed pre-service teacher education program.

Second, the study analyzed the results of the questionnaire of the perceptions and attitudes of teaching students in relation to their professional development in the clinical model. SPSS software was used for the statistical analyses. This included measuring Cronbach's alpha to verify the stability of the research instrument, and means and standard deviations of the responses of the study sample to the proposed questions. In addition, Shapiro (1965) and Kolmogorov (1939) tests were used to examine the normalcy of the distribution. Finally, the Mann-Whitney U (1947) test was used to measure the averages of participants' answers for the specialization variable (English and mathematics).

Lastly, the following statistical methods were employed to analyze the results of the questionnaire on participants' attitudes towards the teaching profession: Pearson coefficient, Cronbach's alpha coefficient, and Monovariance analysis.

## 4. Results and Discussion

The **main research question** of the study was: What is the contribution of the learning community and of Academia Colleague as a clinical model in the professional development of pre-service teachers? This question was answered by examining a variety of dimensions. These are: active participation and collaborative learning, personal and collective responsibility, active research

(applied research), and clinical thinking and SEL. The data obtained from interviewing the 13 female students participating in the study were analyzed and are presented in Table 4. We classified and arranged the collected data logically.

The first and second interview questions related to the dimension of active participation and collaborative learning and point to an agreement and convergence in the ideas put forward by the students participating in the study. In response to question 1, all participants indicated that they had participated in educational and cultural activities or initiatives in school, regardless of their specialization. Most of the participants stressed that participation in such activities helped them to hone their personality. They also agreed on their satisfaction and shared sense of pleasure. This is compatible with the second question, which suggests a partnership between the student, the academic leader, and the training teacher in the school. All participants, except for one English major, reiterated the sense of cooperation and partnership. The participants also stressed within their given responses that partnership contributed to improving their self-confidence, sense of achievement, and attitude towards the teaching profession. These findings are in line with those of Vidergor and Sisk (2013) and Avidov-Ungar (2017).

The third interview question fell under the dimension of personal and collective responsibility. There was agreement and convergence in the ideas put forward by the students participating in the study. All participants reported that the training experience to practice the profession of teaching in the school increased the personal and collective responsibility for learning, regardless of the specialization of each student. This experience had an impact by increasing motivation in the trainee students by supporting their sense of belonging to the school, which led to their sense of leadership spirit, positive personality traits, and spirit of discovery.

The fourth interview question related to the dimension of active research (applied research). Responses to this question indicated agreement and convergence in the ideas put forward by the students participating in the study. All participants, except for one English major, reiterated that the training program was better than learning from the curriculum textbook. This was because the training period enhanced the students' overall performance, created the opportunity to apply what was learned in the course, and helped students to solve problems through the actual practice. This finding is consistent with the findings of Loughran (2019).

The fifth, sixth, and seventh interview questions pertained to the dimension of clinical thinking and SEL. Responses to these questions showed agreement and convergence in the ideas put forward by the participants. Notably, numerous examples were provided in the answers to the fifth question. These included discussion with students and getting closer to students to build an understanding of some of the problems that they might be going through, which will ultimately create a sense of reassurance and mutual trust. Additionally, in some cases, a teacher must be a good listener rather than practice their traditional law as a speaker. Regarding the sixth question, notably, the provided answers were not

affected by the specialization of participants. The same notion applies to the seventh question as well, where two English major participants did not provide examples on the domain. These findings are compatible with the findings of Reeve et al. (2014).

The eighth interview question pertained to the dimension of the role of the training teacher. There was a lack of agreement and convergence in the ideas put forward by the students participating in the study. In this segment, five of the eight English major participants (62.5%), one of the three mathematics major participants (33.34%), the Arabic language major participant, and the science major participant agreed on the importance of the training teacher in the development of clinical thinking. The rest of the participants did not feel that this role actually existed, and we noted here that the opinions of the participants changed according to the variable of specialization.

**Table 4. Classification of participants' answers to the interview questions**

Dimension	No.	Question	Number of positive answers	Percentage
Active participation and collaborative learning	1	Have you participated or been a partner in educational and cultural activities or initiatives at school? Give an example and state your experience.	13	100%
	2	Is there a partnership between the student, the academic leader, and the training teacher at school? How did you contribute to your development in the experience?	12	92%
Personal and collective responsibility	3	The experiment at school increased my personal and collective responsibility towards learning. Explain.	13	100%
Action research (applied research)	4	Training research is a process of observation of the procedure that allows the teacher to solve problems and learn and develop during the work processes. How is this reflected in the action research I led during the course? Explain.	12	92%
Clinical thinking and SEL	5	Provide an example of the contribution of socio-emotional learning (during the course) to your self-awareness abilities.	12	92%
	6	Provide an example of the contribution of socio-emotional learning (through the course) to your relationship management skills.	10	77%
	7	Provide an example of the contribution of socio-emotional learning (during the	12	92%

		course) to your decision-making abilities.		
The role of the training teacher	8	Did the training teacher contribute to the development of your logical clinical thinking during the experiment? Explain how.	8	61%

As observed in Table 4, the percentages of answers to the questions of each dimension were all high, except for the dimension of role of the training teacher, which was the lowest percentage recorded, at 61%. These high percentages indicate that the contribution of the clinical model to the professional development of teaching students is effective in the dimensions active participation and collaborative learning, personal and collective responsibility, active research (applied research), clinical thinking and SEL, and the role of the training teacher. These findings are consistent with those reached by Murad et al. (2022), who concluded that the learning community of the clinical model of teacher education contributed significantly to the professional development of all participants regardless of their field of knowledge, the role in the training process, and the methodological activities offered by colleges and schools.

The **first sub-question** of the study was: How effective is the clinical model from the point of view of the students participating in the study? To answer this question, means and standard deviations were extracted for all the questionnaire questions which measure the effectiveness of the clinical model from the point of view of the students participating in the study (Table 5).

**Table 5: Mean and standard deviation scores on the effectiveness of the clinical model from the perspective of the students participating in the study**

No.	Question	Number of responses	Mean	Standard deviation	Level
1	The Academia Colleague clinical model in which I am a participant allows my active personal involvement	13	4.69	0.48	High
2	The model enables dialogue and joint discussions to improve the overall processes	13	4.69	0.48	High
3	The model allows each of the involved individuals to contribute effectively	13	4.85	0.38	High
4	In my opinion, the model allows me to be involved in the educational and cultural activities of the school	13	4.69	0.48	High
5	The model contributes greatly to the teamwork capacity of all its participants	13	4.46	1.39	High
6	The model allows me to engage in the students' learning process	13	4.77	0.44	High

7	The model enables constant improvement in my interdisciplinary skills	13	4.69	0.48	High
8	Pedagogical tools and products that improve the quality of the teaching, learning, and assessment processes have been developed within the model	13	4.46	0.52	High
9	In my opinion, the model enables all its participants to develop the necessary skills to adapt to the various teaching processes and to deal with the special challenges present at schools	13	4.46	0.52	High
10	In my opinion, the model promotes to a large extent the openness of its partners to new and flexible experiences	13	4.62	0.51	High
11	The model allows to actively connect theory with practice	13	4.54	0.52	High
12	I believe that the learning, planning, and evaluation done jointly with the model allow for an improvement in my sense of self-esteem	13	4.23	1.30	High
13	In my opinion, the model increases my personal responsibility towards what is done at school	13	4.62	0.51	High
14	In my opinion, the model significantly improves the personal responsibility of the partners in the subjects of the study	13	4.54	0.52	High
15	The model increases the collective responsibility towards the activities in a school	13	4.54	0.52	High
16	The model increases the collective responsibility towards the students' learning process	13	4.46	0.52	High
17	The model improves the sense of individual responsibility by reducing the personal tendency of all partners in it to attribute the students' difficulties and challenges to the home environment, the society, and/or the Ministry of Education and other factors	13	4.15	1.14	High
18	The model allows all partners in it to carry out an action research process on pedagogical processes within the school environment	13	4.46	0.78	High

19	The model allows all partners in it to have a critical reflection to improve the learning processes	13	4.54	0.52	High
20	Within this model, I am enabled to accurately recognize thoughts, feelings, and values about myself	13	4.62	0.51	High
21	Within this model, I am allowed to create supportive relationships	13	4.54	0.52	High
22	Within this model, I am allowed to make decisions in a responsible and caring manner	13	4.69	0.48	High
23	Within this model, I am allowed to feel and show empathy towards the other	13	4.62	0.51	High
24	In my opinion, within this model, it is possible for me to integrate social and emotional learning content in the fields of knowledge and practice	13	4.62	0.65	High
<b>Overall degree</b>		13	4.56	0.413	<b>High</b>

Table 4 indicates that the effectiveness of the clinical model from the point of view of the students participating in the study was high, where the total average was 4.56, with a standard deviation of 0.413. With regard to the questionnaire questions as a whole, the mean and standard deviation scores of the participants' answers were limited between means of 4.15 and 4.85, where paragraph 3 came in first place with a mean of 4.85, a standard deviation of 0.38, and within the high level. Paragraph 6 came in second place with a mean of 4.77, a standard deviation of 0.44, and within the high level as well. Paragraph 17 attained last place with a mean of 4.15, a standard deviation of 1.14, and within the high level.

These results can be explained in relation to the fact that, through the study procedure, employment of the clinical model was found to contribute to a tangible change in the training practices of students who were actively involved in the program. During the training, an intellectual change was observed in some of the students' convictions and behaviors as well. This was seen through the enhancement of the skill of communication, the skill of active participation and cooperative learning, the ability to take personal and collective responsibility, and the SEL capacities. All these cognitive and behavioral alterations and enhancements were also observed by Darling-Hammond (2006) and Hammerness et al. (2012).

Table 6 shows an estimated scale according to the five-point Likert scale to identify the results displayed in Table 5.

**Table 6: Estimated scale according to the five-point Likert scale**

Response	Weighted average	Level
Strongly disagree (SD)	1 - 1.79	Low
Disagree (D)	1.80 - 2.59	

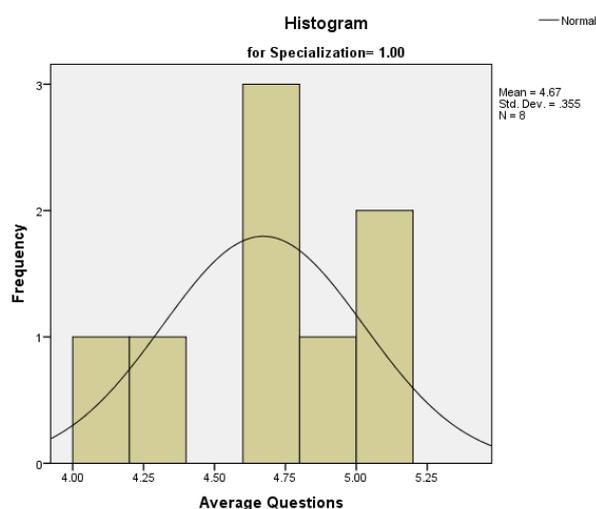
Neutral (N)	2.60 - 3.39	Average
Agree (A)	3.40 - 4.19	High
Strongly agree (SA)	4.20 - 5	

The **second sub-question** of the study was: Are there statistically significant differences at the significance level  $\alpha = .05$  in the average responses of the study sample participants on the effectiveness of the clinical model from their point of view attributable to the specialization variable (English and mathematics)? The Shapiro and Kolmogorov tests were used for checking the distribution (Table 7).

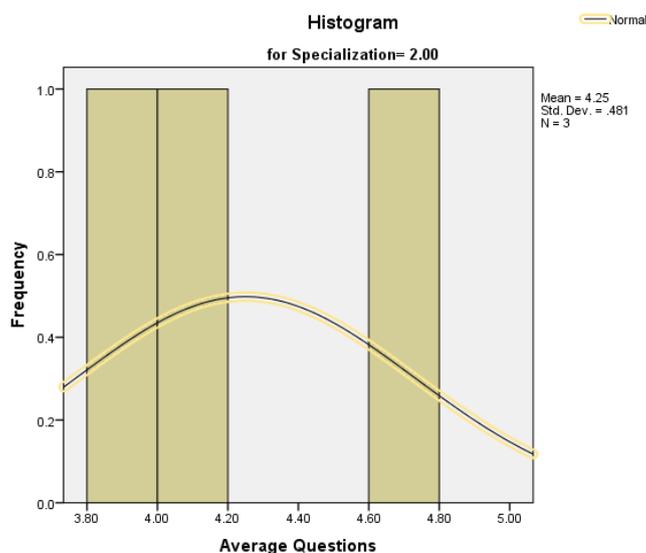
**Table 7: Shapiro and Kolmogorov test results for checking the distribution**

	Specialization	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Average questions	English	.257	8	.028	.862	8	.027
	Math	.302	3	.02	.910	3	.017

As seen in Table 7, the Shapiro and Kolmogorov tests revealed a statistical significance of less than .05, meaning that participant responses regarding the English language and mathematics subjects were not statistically significant. This indicates that the distribution does not follow the normal distribution patterns. This is confirmed by Figure 1, which shows that English did not have a normal distribution pattern that is consistent with the averages of participants' responses to questions. Figure 2 also shows the same result for mathematics.



**Figure1: Abnormal distribution pattern for English that is consistent with the averages of participants' answers to the questions**



**Figure2: Abnormal distribution pattern for mathematics that is consistent with the averages of participants' answers to the questions**

The Mann-Whitney U test (1947) was used to calculate the averages of participants' responses in regard of the specialization variable, that is English and mathematics (Table 8), given the fact that the distribution of the two subjects does not follow the normal distribution.

Table 8 shows that there were no statistically significant differences at the level of significance ( $\alpha = .05$ ) of the average response of participating female students attributable to the specialization variable.

**Table 8: Mann-Whitney U test results for the average of participants' responses for the specialization variable (English and mathematics)**

	Average questions
Mann-Whitney U	5.000
Wilcoxon W	11.000
Z	-1.445
Asymp. sig. (2-tailed)	.148
Exact sig. [2*(1-tailed sig.)]	.194 <sup>b</sup>

The **third sub-question** of the study was: What is the relationship between teaching tendencies and the accumulative GPA of students participating in the study? The correlation coefficient between teaching tendencies, on one hand, and accumulative averages, on the other hand, was calculated and is presented in Table 9.

**Table 9: Correlation coefficient between teaching tendencies and accumulative average**

Domain	Correlation coefficient	Sig.
Relationship between teaching tendencies and accumulative average	0.119	0.155

Table 9 shows that the level of significance was greater than .05, which indicates that there were no statistically significant relationships between the participants' tendencies and the accumulative average, limiting the statistically significant relationship role to participants' personal preference and passion towards the subject. In addition, and based on the observations of the professional teachers who were part of the physical environment of the study, the supervisors who were responsible for constant assessment, and the authors of the paper, the GPA had little or no impact on motivation. Surprisingly, it was noted that some participants with lower GPAs were more motivated and showed more commitment to the tasks and responsibilities that were assigned to them.

The **fourth sub-question** of the study was: What is the impact of the GPA on the teaching tendencies of the students participating in the study? One-way analysis of variance (ANOVA) of the sample members' estimates was used to answer the question, with the results illustrated in Table 10.

**Table 10: One-way ANOVA results of sample members' estimates**

	Sum of squares	df	Mean square	F	Sig.
Between groups	0.001	1	0.001	0.004	.950
Within groups	2.701	11	0.246		
<b>Total</b>	2.702	12			

Table 10 illustrates that the value of the calculated statistical significance level was .950, which is greater than the value of the significance level of .05. This indicates that there were no statistically significant differences between the average scores of the participants to the questionnaire questions relating to the specialization variable.

## 5. Conclusion

Based on the findings of the study, which were based on the scientific analysis of the data acquired, we may conclude that the clinical model Academia Colleague in a licensed-school experiment contributed in a notable and significant way to the professional development of teaching students and their tendencies towards the teaching profession. The model offered new options for the teaching students, introduced diversification to the already existing traditional models, put forward new skills, and altered the classical atmosphere surrounding the educational process at large. The introduction of such model contributed greatly to the professional development of the involved participants, and notably motivated cooperative and collaborative learning, personal and collective responsibility, and clinical and critical thinking, and profoundly promoted SEL.

## 6. Study Recommendations and Limitations

In light of the results of the study, its discussion and interpretation, we came up with the following recommendations:

1. To develop the teaching performance of students of educational disciplines, emphasis should be placed on the nature of the practical

education program offered to these student-teachers in terms of quality and quantity.

2. Comprehensive quality standards for the practical education program should be developed in cooperation between the Department of Educational Supervision and the departments of the educational colleges to improve the teaching performance of the student-teachers.
3. Constant follow-ups should be done of student-teachers in the educational field and multifaceted workshops held on the aspects of practical education by various experts in the faculties of education and directorates of education to reach the required level.
4. To enhance student-teachers' abilities and skills during the actual training, colleges of education must accelerate the development of the teacher preparation program, especially in the field of training, by introducing micro-teaching into their study programs before assigning student-teachers to schools.

The research was conducted at two government schools in Northern Israel. All participants of the study (13 female, Arab minority teaching-students) were involved in the study along with supervisors, educational experts, college professors, and in-service teachers of the same background.

It was more challenging to access a larger number of participants due to the qualitative nature of the study and the fact that individual interviews were the main source for the acquisition of data. The study was mainly based on extensive fieldwork, with interviews and questionnaires conducted individually throughout the duration of the study (the first semester of the 2021/2022 academic year).

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