

MODEL OF THE MEDIATING TEACHER IN DISTANCE LEARNING ENVIRONMENTS: CLASSES THAT COMBINE ASYNCHRONOUS DISTANCE LEARNING VIA VIDEOTAPED LECTURES

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ABSTRACT

The study was based on Observing Mediation Interactions (OMI), Klein's method for analyzing mediating interactions between teachers and students (Klein, 1988; Klein, Raziell, Brish, & Birenbaum, 1987; Klein, Weider, & Greenspan, 1987). The aim of this study was to propose a change in the distance learning method and the function of the teachers and to examine a model of a Mediating Teacher in the classroom in addition to the teacher teaching from a distance. The study included two groups of teachers, teachers who received training for mediated teaching and teachers who did not receive such training. The study compared the characteristics of the mediating interaction between teachers and students in high school classes (tenth to twelfth grade) that include asynchronous distance learning, in which a mediating teacher is present in the classroom in addition to an expert teacher who teaches from a distance via videotaped lectures. The findings indicate that teachers who had training for mediated teaching in the classroom in an asynchronous distance learning environment were better mediators than teachers who did not receive such training. The students' evaluation of the mediating teaching was higher, the dialog between teachers and students was longer, and of a higher quality and the students internalized some of the principles of mediating.

INTRODUCTION

The aim of the present study was to propose a change in the distance teaching and learning method and a change in the role of the teacher in a distance learning environment through the Mediating Teacher model. The specific aim was to test the role of the mediating teacher in a class that learns via asynchronous distance learning with videotaped lectures of an expert teacher. The theoretical background refers to the theoretical rationale of the Mediating Teacher for teaching and learning in distance learning environments. Based on the Mediated Learning Experience

Theory (Feuerstein, Rand, & Hoffman, 1979), it expands on the characteristics of the model, the significance of mediation, and in particular the five components of mediation: intentionality and reciprocity, meaning, transcendence, a feeling of confidence, and regulation of behavior in distance learning and teaching. The research was based on qualitative and quantitative tools and used videos of the interactions between the mediating teacher in the classroom and the students to elucidate the five mediation components.

THEORETICAL BACKGROUND

The Information Technology (IT) Learning

Revolution in general, and distance learning in particular, has influenced teaching methods (Horizon Report, 2017; Milne, 2007; Moore & Kearsley, 2005). An approach of blended (Konja & Ben-Zvi, 2009) or hybrid learning (El Mansour & Mupinga, 2007), which combines distance learning with face-to-face learning by a lecturer, is becoming more prevalent in the academia. A combination of IT with education can assist in shaping teaching processes and methods, where the teacher serves as a mediator and promotes learning and is not necessarily the sole source of knowledge (Fullan, 2000; Harasim, 1993; Hayes, 2007; Muri-Herzig, 2004; Offir, 2010; Salomon, 2000). Theories of distance teaching and learning (Holmberg, 2007; Moore, 2007, 2013), as well as research findings (Blau & Barak, 2009; Florence & Michele, 2014; Huang, Aruna, Concetta & Lakisha, 2016; Nachmias, Mioduser, & Shemla, 2000; Offir, 2006, 2010; Rovai, 2002; Weimer, 2013) indicate that classical distance learning environments restrict important pedagogical factors such as student-teacher and student-student interactions.

The goal of the present study was to propose a change in the distance learning method and in the teachers' roles and to test a Mediating Teacher model for distance teaching and learning environments. The model proposes a collaboration between a teacher who is an expert in the content and gives the lesson in parallel to several classes, either synchronously or asynchronously through videotaped lectures, and a mediating teacher who is present in each classroom. The Mediating Teacher model is based on the Mediated Learning Experience Theory (Feuerstein, Rand, & Hoffman, 1979) that recommends working on two parallel tracks of teaching and learning to achieve a synthesis between them: the content track tailored to each subject and the mediator track, where the student acquires learning and thinking processes by means of mediation and support that connects the various subjects being studied. In the Mediating Teacher model, the content track is based on a teacher who teaches from afar, and the mediator track is based on a mediating teacher who teaches in the classroom. The general model for distance learning suggests integrating the three means of mediation that are available to the mediating teacher in the classroom:

I. the expert teacher, who teaches from a

distance via synchronization;

2. videotaped lectures from the expert teacher as an asynchronous mean of teaching and learning;
3. a companion Internet website of the course as an asynchronous method of distance learning.

These tools supply the infrastructure for the mediating teacher to empower their role (Hargreaves, 2005) and are important for the process of renewal and change. This study focuses on one of the means of mediating in this model: videotaped lectures of the expert teacher as an asynchronous environment for distance learning. In this study we used asynchronous learning to monitor the level of the course and its method of teaching in the intervention and comparison groups.

Not many studies have investigated the influence of using videotaped lectures on distance learning (Gafni & Filin, 2015; Nachmias & Ram, 2009). Studies that did so found that such learning may help students who, due to geographical limitations, are unable to participate in the lesson in the classroom (Wieling & Hofman, 2010). They also found a positive influence on the ability to increase the students' persistence in the distance teaching and learning environment by affording a sense of social interaction that is lacking in the asynchronous distance teaching and learning environment (Geri, 2012). Other studies (Brecht, 2012; Brecht & Ogilby, 2008) that examined classroom courses that are supported by videotaped lectures found that these lectures helped the students pass the course.

This model enables the mediating teacher to find time for issues that are beyond the teaching contents, such as mediating a sense of efficacy and discipline, increasing the motivation to learn, expanding and developing learning and thinking skills, and regulating behavior (Klein & Sobleman, 2010), which were found to be essential in the distance learning environment. The study compared the interactions between teachers and students in high school classes that include asynchronous distance learning in which a mediating teacher is included in the classroom. The mediation components investigated in the study included:

- intentionality and reciprocity (two-way communication between students and the teacher);
- meaning (the way students understand

why they are learning in order to increase motivation);

- transcendence (moving the learning from its connection to the here and now to the material learned, the material to be learned, and metacognitive thinking);
- a feeling of confidence (affording encouragement and reinforcements to the students while explaining the reason for success); and
- regulation of behavior (imparting skills to the students for planning and controlling their learning).

The study was based mainly on Klein's Observing Mediation Interactions (OMI) method of analyzing mediating interactions between teachers and students (Klein, 1988; Klein, Raziel, Brish, & Birenbaum, 1987; Klein, Weider, & Greenspan, 1987).

The Mediating Teacher model proposes a learning and teaching process based on two channels: a content channel carried out from a distance and a mediation channel that is performed in the classroom where the mediating teacher, who is found in the classroom, bridges the two.

METHODS

The research involved both quantitative and qualitative data analysis. The independent research variable was training teachers in mediation. The dependent variables were the students' assessment of the mediated teaching, the frequency of the occurrence of the mediation components, and the communication chains in the mediated teacher-student interaction. The mediator variable was the teacher's sense of efficacy. The qualitative analysis was based on 48 videotapes of 24 lessons, according to three criteria:

1. adult-centered versus child-centered mediation;
2. cognitive versus emotional mediation; and
3. mediation for control versus mediation for autonomy.

Participants

The participants included 12 teachers and 116 tenth- to twelfth-grade students from an Asian country.

The students sample. The students sample included 116 students studying in tenth to twelfth grades. The students were divided into two groups:

an intervention group and a comparison group. The intervention group included 57 students (49.1%). Of these, 27 were boys (47.4%) and 30 were girls (52.6%). The comparison group included 59 students (50.9%). Of these, 25 were boys (42.2%) and 34 were girls (57.6%). Both groups were found to be similar in the distribution of the personal background variables that were collected in this study.

The teachers sample. The teachers sample included 12 teachers. Of these, four were men (33.3%) and eight were women (66.7%). Half of the teachers had an MA degree. The average seniority of the teachers was 12 years (SD = 7.16 years). Five of the teachers teach ninth and tenth grades (41.7%), four teach eleventh grade (33.3%), and three teach twelfth grade (25%). Most of the teachers are disciplinary teachers (75%). Six teachers were allocated to the intervention group and six to the comparison group. The teachers who were allocated to the intervention group received training for mediated teaching and used videotaped lectures in their lessons. The six teachers who were allocated to the comparison group did not receive such training and used videotaped lectures in their lessons. It should be noted that the study took place in classes that learned in an asynchronous manner where the students learn through the prerecorded lectures of an expert teacher. The study focused on the mediating teacher in the classroom and not the expert teacher whose lectures were used for teaching.

Research Tools

The research tools included a questionnaire for evaluating mediated teaching—the Mediating Interaction Evaluation Questionnaire (MIEQ), which was developed by the researcher. The reliability coefficients of the five mediation components in the postintervention stage ranged between .68 and .81. The questionnaire underwent Content Validity using three experts, face validity was done using a sample of 25 students, and Structural Validity was done using Confirmatory Factor Analysis. The OMI observation tool was used to analyze mediating interactions (Klein, Weider, & Greenspan, 1987). The reliability coefficients of the instrument for all five mediation components that were tested among the students are:

- intentionality and reciprocity: .91;
- meaning: .87;
- transcendence: .84;

- a feeling of confidence: .92; and
- regulation of behavior: .87 (Klein, 1996; Klein & Aloni, 1993; Klein, Wieder, & Greenspan, 1987).

The alpha reliability coefficient of the Teacher's Sense of Self-Efficacy Questionnaire (Rich, Lev, & Fischer, 1996) was .66.

Procedure

An intervention based on Klein's (2004) Mediation Intervention for Sensitizing Caregivers (MISC) model was performed during the study. The goals of the intervention are to increase the adult's sensitivity to the child's behavior and to increase the adult's awareness of his or her ability to influence the learning ability of the child by improving the quality of the responses in the interaction with the child. When the child experiences mediated learning, he or she learns to focus on things; to search for meanings; to refer to past, present, and future experiences and connect them; to search for and find deeper and broader insights from immediate stimuli; to aspire to succeed; to appreciate himself or herself and his or her actions; to plan before doing, etc.

The teachers received instruction for mediated teaching that dealt in two dimensions of the model: the teaching dimension and the communication dimension. The study was carried out in three stages.

Prestage. All teachers in both groups (intervention and comparison) were videotaped at the beginning of the year in a lesson in which they included a videotaped lecture. The teachers chose a videotaped lecture that refers to the material learned in the class from a database of recorded lessons. The MIEQ for evaluating mediated teaching was administered to the students at the end of the lesson.

Intervention stage. The teachers in the intervention group received instruction for mediated teaching during the school year, which included a videotaped lecture in the lesson, whereas the comparison group received no instruction. The mediator teachers' training included five personal meetings.

1. Training in the Mediated Learning Experience Theory.
2. Conceptualizing the five components of mediation, including drilling its use in the

classroom.

3. Analyzing the video of the teacher in the classroom (Gartmeier, Bauer, Fischer, Karsten, & Prenzel, 2015), with a focus on how frequently the components of the mediation are performed by the teacher when interacting with the students in the classroom. This meeting included encouraging teachers to employ mediating behavior by using positive feedback and increasing their awareness of mediating behavior that appears less frequently in their interactions with the students.
4. Recognizing positive behavior, conceptualization, and encouragement, and how the teacher uses them. This ability is important for increasing the teacher's ability to incorporate these actions and to use them in various opportunities. Incorporating and internalizing these ideas ensures the long-term influence of the mediating program.
5. The teachers received instruction manuals that were written for the study and included a detailed description of the training program with examples of how to use the mediating components.

Poststage. All teachers in both groups (intervention and comparison) were videotaped at the end of the year in a lesson in which they included a videotaped lecture. The students were administered an MIEQ for evaluating mediated teaching at the end of the lesson.

Quantitative data were collected via MIEQ and qualitative data were collected through analysis of videotaped interactions in the classroom between the teachers and the students using the OMI tool.

The research goals were:

1. To examine from an instructional viewpoint possible differences in the prevalence of apparent mediation components between teachers who received mediated interaction training and teachers who did not receive such training.
2. To examine from a communication viewpoint possible differences in the measurement of communication chains in the mediational interaction between teachers and students and between teachers who received training and teachers who did not receive training.

3. To examine possible differences in the students' evaluation of mediational interactions between students whose teachers received training and students whose teachers did not receive training.
4. To examine possible connections between students' evaluation of the mediational interaction and the prevalence of apparent mediational components among students whose teachers received training.
5. To examine the role that the teacher's sense of self-efficacy plays in training the teacher to be a mediator and the students' evaluation of the mediational interaction and to examine whether it influences the prevalence of apparent mediational components and communication chains in mediational interactions.

RESULTS

Teachers who received training for mediated teaching in an asynchronous distance learning environment that includes videotaped lectures in their lessons were found to be better mediators than teachers who did not receive such training. This finding is expressed in three dimensions: the teaching dimension, the communication dimension, and the mediation dimension.

In the teaching dimension, the teachers who received training made greater use of the mediation components when teaching in the classroom. The results of a linear log test for the frequency of the mediation components are presented in Table 1. A significant difference was found in all five mediation components: intentionality and reciprocity, meaning, transcendence, feeling of confidence, and regulation of behavior. There was more mutual communication between teachers and students in the intervention group, and more teachers addressed the students' requests (mediation for focusing—intentionality and reciprocity). The teachers expanded the topic learned in the videotaped lesson and connected it to material that was learned in the past and to material that is relevant to the students' everyday life. These teachers also asked the students to reach conclusions and perform comparisons from the material learned in the videotaped lecture (mediation for transcendence). The teachers encouraged their students more and supported them when necessary (mediation for a

feeling of confidence).

The teachers in the intervention group maintained longer communication and discourse with the students. The results of a linear log test for the communication chains are presented in Table 2. The use of videotaped lectures had a significant positive effect on the length of the communication chains between the teachers and the students.

The students of the teachers in the intervention group evaluated the mediating teaching level higher. A significant difference was found in four of the five mediation components: intentionality and reciprocity, meaning, feeling of confidence, and regulation of behavior. The transcendence component was not found to be significantly different between the two groups. This is a very complex component that takes longer to internalize and to effect change in the students. Pearson correlations between the students' evaluation of the mediated teaching and the frequency of the appearance of the mediation components are presented in Table 3. It should be noted that in the context of this finding, the mediation components of mediation for meaning (motivation) and for regulation of behavior were found to be essential for students in distance learning environments (Heum & Joon, 2013; Hodges, 2005; Schunk & Zimmerman, 2007).

Thus, teachers who received training for mediated teaching in an asynchronous distance learning environment and used videotaped lectures of a teacher teaching from a distance were more attentive to the students, referred to their questions, and focused the students during the videotaped lecture (mediation for focusing—intentionality and reciprocity). The teachers held more discussions and enabled the students to participate in them by asking questions and giving an explanation from the videotaped lecture (mediation for meaning). The teachers used worksheets and asked the students to think before they answer questions, plan, and look at their answers critically with reference to the topic learned in the videotaped lesson (mediation for regulation of behavior).

Regarding the role that the teacher's sense of self-efficacy plays in training the teacher, the results showed changes in the dependent variables, which were a direct result of the training of the teachers and were not influenced by the teachers' sense of self-efficacy. It was found that the variance in the measure

Table 1. The Results of a Linear Log Test for the Frequency of the Five Mediation Components Including Standardized (Z) Values for Main Effects and the Effect of the Interaction between the Two Research Groups and the Three Research Stages

Type of Effect	Estimate	Standard Error	Z
Focusing (Intentionality and Reciprocity)			
Group X Research Stage	.20	.07	2.74**
Group	-.27	.07	-3.72***
Stage	.11	.07	1.49
Meaning			
Group X Research Stage	.11	.05	2.33*
Group	-.07	.05	-1.51
Stage	.04	.05	.74
Transcendence			
Group X Research Stage	.27	.06	4.58***
Group	-.26	.06	-4.46***
Stage	-.13	.06	-2.18*
Feeling of Confidence			
Group X Research Stage	.36	.14	2.61**
Group	-.53	.14	-3.88***
Stage	.17	.14	1.22*
Regulation of Behavior			
Group X Research Stage	.36	.14	2.59**
Group	-.33	.14	-2.34*
Stage	.20	.14	.12

* $p < .005$ ** $p < .01$, *** $p < .001$

Table 2. The Results of a Linear Log Test for the Communication Chains Including Standardized (Z) Values for Main Effects and for the Effect of the Interaction between the Two Research Groups and the Three Research Stages

Type of Effect	Estimate	Standard Error	Z
Number of Communication Chains			
Group X Research Stage	-.10	.10	-1.0
Group	-.05	.10	1.17
Stage	.11	.07	1.49
Length of the Communication Chains			
Group X Research Stage	.24	.07	3.50*
Group	.11	.07	1.60
Stage	-.35	.07	-5.14*
Length of the Videotaped Lecture			
Group X Research Stage	-.11	.07	-1.50
Group	.10	.07	.15
Stage	.05	.07	.66
Number of Times the Video was Halted			
Group X Research Stage	-.05	.12	-.37
Group	-.12	.12	-1.00
Stage	-.15	.12	-1.20

* $p < .001$

Table 3. Pearson Correlations and Frequency of the Mediation Components among Students whose Teachers Received Training in Mediated Teaching (N = 57)

Students' evaluation of mediated teaching	Frequency of the Appearance of the Mediation Components				
	Intentionality and Reciprocity	Meaning	Transcendence	Feeling of Confidence	Regulation of Behavior
Intentionality and Reciprocity	.36**	.42**	-.25*	.10	.39**
Meaning	.23*	.26*	-.11	-.04	.28*
Transcendence	.22	.29*	-.19	.02	.30*
Feeling of Confidence	.45**	.48**	-.26*	-.06	.35**
Regulation of Behavior	.26*	.29*	-.14	.06	.32**

* $p < .05$ ** $p < .01$

of sense of efficacy was very low (approximately 1%). Thus, the measure of the teacher's sense of self-efficacy did not comprise a mediator in the relation between training the teachers in mediation and improvement in the dependent variables of the research among all teachers. However, it should be indicated that significant positive correlations were found between the teacher's sense of self-efficacy and the scores of the change in the frequency of the mediation components (meaning, sense of efficacy, and regulation of behavior, range of the coefficients: .14 to .20).

The study also conducted a qualitative analysis of the videotapes taken of teachers teaching in their classrooms. Twenty-four lessons were recorded and analyzed. In the qualitative analysis, the mediation profile of the teachers was examined by comparing the intervention group and the comparison group. The mediation profile characterizes the relationship between the teacher and the students, which is characterized by the various ways the teacher organizes the mediation components while interacting with the students. The mediation profile is examined using six characteristics:

- a mediation profile that concentrates **on the teacher** or **on the student**;
- a mediation profile that is **emotional** or **cognitive**; and
- a mediation profile that is **autonomous** or **controlled**.

The analysis of the media profile using the videos of the teachers in the intervention group and the

comparison group shows that in the postmediation profile stage, the teachers in the intervention group underwent a change while the teachers in the comparison group did not. When observing the mediation profile that concentrates on the teacher or the student, three out of the six teachers portrayed a balanced mediation profile. In other words, the number of student initiatives and their participation with by teachers during the lesson increased. We also saw a balanced cognitive/emotional mediation profile in one out of six teachers from the intervention group. That is, both the teacher and the students shared more of their feelings in the course of the lesson. Two of the six teachers in the intervention group showed a mediation profile that leaned towards autonomy, which means that during the lessons when encouraged to ask questions as part of discussion management, there was more participation on the part of the students and the teachers were more responsive to student initiatives. In addition, teachers in the intervention group were more likely to use the exercise sheets accompanying the videotaped lecture of an expert content teacher. It is important to note that the results of this study are correct for the population participating in the study.

DISCUSSION

The findings of the present study are in agreement with the claim that the teacher can serve as a mediator and a promoter of learning in an IT environment, and not as just the sole source of knowledge (Harasim, 1993; Muri-Herzig, 2004;

Offir, 2010). The teacher can help bridge the physical and pedagogical gap (Moore, 2007, 2013; Moore & Kearsley, 2005; Offir, 2010) that is created due to the distance between teachers teaching from a distance and/or their videotaped lectures and the students. This may help overcome the pedagogical limitations of these environments (Blau & Barak, 2009; Nahmias, Mioduser, & Shemla, 2000; Offir, 2006, 2010; Rovai, 2002; Weimer, 2013).

Assuming that the students also acquire the content learned in the lesson through videotaped lectures (Kurtz, Tsimerman & Lavi, 2014), the findings indicate that teachers who are trained for mediated teaching can plan the framework of their teaching in the classroom so they can provide more individual and personal teaching. They can encourage the students to feel confident, and they can mediate for meaning and strengthen the motivation to learn. They can also regulate behavior, plan and control the learning process, and expand the thinking skills that were found to be important and essential for students in distance learning environments (Severino, Aileo, Cascio, Ficarra, & Messina, 2011; Cho & Kim, 2013; Garrison, Anderson, & Archer, 2001; Hodges, 2005; Wang & Wu, 2008; Zhang, Duan, & Wu, 2001).

The findings from the subjective perspective of the students and from the objective perspective of observing the filmed mediation interactions between the teachers and the students support the basis of using the Mediating Teacher model for distance learning environments. The findings show that all three factors—the teacher who teaches from a distance, the mediating teacher in the classroom, and the students in the classroom—contribute to learning.

According to the Mediated Learning Experience Theory (Feuerstein, Rand, & Hoffman, 1979), children's innate personal variables and their surrounding environmental variables are distal factors that do not directly predict their developmental ability. The influence of these distal factors on children's development occurs via the children's exposure to experiences that are provided by the adults who interact with them using mediated learning. Also according to this theory, these experiences are considered proximal factors on the children's development.

Mediated Learning Experience Theory posits that people, regardless of their personal or

environmental background, are capable of changing and progressing throughout their lifetime. Their ability to change is dependent on the quality of their social interactions. Interpersonal interactions that can advance children's development are based on the principles of mediation, whereby the adult who is relating to the child understands the child's needs, abilities, and fields of interests and is interested in conveying emotional messages and cognitive information during the course of their communication. Therefore, mediation is a mutually active process in which both the adult and the child participate, where the adult uses the environment in a way that is suitable to the child in order to broaden the child's knowledge and capabilities and to create curiosity that will deepen the child's learning (Klein, Weider, & Greenspan, 1987).

Today, given current technological advancements and developments, the importance of the teacher as mediator in molding the character of the student as a person in society and as a learner is greater than ever. The sources of information are numerous and varied and are not possessed solely by the teacher. Many technological tools are introduced into everyday life in general and into the field of education in particular. These tools, with all of their advantages and contributions to improving our quality of life, sometimes have a negative effect on pedagogical factors that are important for the success of teaching and learning. For example, they may have a negative effect on the interaction between teacher and students and on the interaction among students. Today's teacher must therefore have greater informational and pedagogical knowledge than in the past.

According to the Technological Pedagogical Content Knowledge (TPACK) framework (tpack.org), teachers who combine technology with their teaching require expertise in various types of knowledge, such as: content information, pedagogical information, pedagogical content information, technological content information, technological pedagogical information, and technological pedagogical content information (Mishra & Koehler, 2006). The proliferation of technology requires learners and teachers to have digital literacy, i.e., cognitive skills and capabilities that must constantly increase in order to perform efficiently in the digital and teaching environment. It is not just technical capabilities,

but rather a variety of skills that can be defined as survival skills, which include: building knowledge through surfing the net, decoding interface users, online instructions, search engines, reading digital material, and creating and sharing content using social networks (Eshet-Alklai, 2012; Hargittai, 2008). The model of the Mediating Teacher that is suggested in the present research will lessen the burden on the teacher. The educational challenge of the teacher will be to shape the learning environment to suit the students, facilitate learning and cognitive skills, and thereby train students to be both autonomous and better able to acquire social and cultural values. In light of this, the importance of the student in the learning process also increases. Use of the Mediating Teacher model will transfer some of the educational responsibility to the student and this will foster autonomous students who possess cognitive and learning skills.

CONCLUSION

The teaching and learning process includes the transmission of numerous components: information, skills, abilities, and values. We are convinced that the use of this model, while examining the role and contribution of each of the three factors (the teacher who teaches from a distance, the mediating teacher in the classroom, and the students in the classroom) will improve the teaching and learning process in distance learning environments.

Today we are operating and investigating a distance learning project that is based on the Mediating Teacher model. The project is taking place in the middle school framework in Genetics, Astrophysics, and Computer Sciences. Within this framework, the expert lecturers teach a number of classes simultaneously from a distance with a mediating teacher in each class.

The mediating teacher in the classroom decides at their discretion how to operate as a mediating teacher and how to assist the expert lecturer in a synchronized or nonsynchronized manner.

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