The Mediatization of Education: Classroom Mediation as an Agent of Change in Middle Eastern Higher Education Systems

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1 Introduction

The majority of Arab first- and second-year university students in the Middle East have attended public schools and experienced large classes with traditional learning modes; most of them come from single-sex public schools that are segregated based on learner or teacher gender (Al-Zarah, 2008; Atia, 2018). In first-year university classrooms where students from private and public schools merge, this poses serious challenges for students and teachers alike, given their diverse cultural backgrounds, varying levels of personal and linguistic skills, and attitudes. Unlike public schools, private schools nurture a culture that emphasizes personal and linguistic skills equally to pedagogical achievements. Additionally, most reputable Arab universities adopt English as the

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auxiliary medium of instruction. Hence, the prolonged reduction of team-work and linguistic skills amongst heterogeneous groups of several back-grounds leads to emotional and rational limitations that are expected to hinder their ability to interact and reproduce knowledge (AlAhmad, 2021c; Wilkens, 2011). In such a heterogeneous Teaching and Learning (T&L) environment, there materialize numerous *T&L barriers* of subcul-tural, linguistic, emotional, and rational nature that hinder students' effec-tive learning. The chapter explores the indispensable relationship between the two different, albeit interrelated, and intersected fields of teaching-learning and media-communication. The aim is to identify teaching aids and best practices that might play a role in fostering an environment whereby "we understand education initially as a communicative system that is dedicated to the acquisition of new and future relevant knowledge in lifelong processes of appropriation" (Marci-Boehncke & Rath, 2020: p. 5). In treating the aforesaid T&L barriers, the concept of *a 'schooling model'*, or a '*school educational model*' encompasses the educational theo-retical approaches a school adopts and the approved teaching methods being used within its classrooms, which determine how the school oper-ates, also its curriculum's cognitive and behavioural focus, as well as its pedagogy in general (Fitriani & Istaryatiningtias, 2020; Ghani, 2013).

In an era of unprecedented mediatic turn, a promising solution in fos-tering a motivative, innovative, and productive T&L environment is '*class-room mediation*', a critical concept that emphasizes teachers' attempts to incorporate the two fields of communication and education in integrating heterogeneous and multi-cultural classrooms into a melting pot of interac-tive T&L milieu (AlAhmad, 2021b). In classroom mediation, teachers are seen as facilitators of T&L, providing their students with motivative, inno-vative, and productive media-aided T&L techniques and best practices (*classroom mediation dynamics*) that can powerfully engage them in authentic opportunities to learn from each other, think creatively, stimu-late novel learning skills, and enhance their ability to control themselves both rationally and emotionally in a healthy and democratic environment (Lundby, 2014; Rawolle, 2010; Rawolle & Lingard, 2014; Walsh & Apperley, 2014). Classroom mediation draws on '*Mediatisation'* as a metatheory that explores the interrelationship between the *media logic* and the *pedagogical logic* in order to understand its societal impact. The *Media logic* refers to the intended quest of the media dominance of infor-mation processing, presentation, and storytelling techniques in varied societal interaction processes to take advantage of its own mediums,

formats, and representations to become more competitive in the ongoing struggle to capture people's attention to designated issues and goals. The *Pedagogical Logic*, however, is most commonly understood as the systematic approach to understanding teaching and knowledge acquisition in light of the theory and best practices of T&L and how this might influence, or be influenced by, the cognitive and behavioural development of teachers and learners alike. Mediatization "incorporates a plurality of interrelating concepts and processes and suggests a complex interplay of media forces on and in education" (Rawolle & Lingard, 2014, p. 597). Classroom mediation is one key concept among these, which builds on classroom mediation dynamics as facilitators for class management and student engagement in a successful T&L (Forsler, 2020). In classroom mediation, a teacher's role goes beyond content expertise and traditional methods of lecturing to be student-centred, focused on excellence and critical skills, constantly exploring gaps among students in the T&L process, and adjusting their teaching methods accordingly.

2   Chapter Aims

The chapter emphasizes the importance of classroom mediation in T&L in Higher Education (HE) as a theoretical object of inquiry and conceptual elaboration. Emphasizing first- and second-year classrooms, the chapter inspects the application of these concepts as agents of change in the T&L process and their relation to the theory of education in terms of fostering effective education. The chapter also examines the premise that media facilitates "a priori" conditions for effective communication to promote cognition and knowledge acquisition, socio-cultural dimension, and instructional dimension in T&L (Breiter, 2014; Friesen & Hug, 2011; Hjarvard, 2014; Thompson, 2018). Ultimately the chapter aims at finding how all that might play a role in achieving T&L's desired *cognitive, pedagogical,* and *behavioural* goals or dimensions (henceforth T&L dimensions) and its societal impact and regional development.

In the T&L process, the *cognitive dimension* encompasses the developing individual's mental skills through knowledge acquisition, comprehension, application, analysis, synthesis, and evaluation (Anderson et al., 2001). The *pedagogical dimension*, however, aims at implementing a well-organized set of methods, strategies, and approaches to promote student learning and enrich the overall system of education (Kapur, 2020). The *behavioural dimension* deals with learning activities as modifiers for

individual behaviour through an appropriate system of rewards and encouragement to achieve social interactions among students of varied backgrounds in a classroom (Leroy & Ramanantsoa, 1997; Milem et al., 2005). The organized and integrated interaction between these dimensions is nominated to foster *synergistic mechanisms* in the T&L process, primarily those intended to promote student' *engagement, motivation, productivity,* and *innovation.* These mechanisms are integrated in the T&L to mitigate socio-cultural and school-inherited disparities in students' learning styles (*T&L-inherited barriers*) that are likely to hinder levels of students excel in the T&L. Classroom mediation can boost the three main dimensions in the T&L process, primarily by raising teachers' awareness of the discrepancies among their students, endorsing alternative individualized learning styles, and fostering students' engagement in the T&L activities. As articulated by the Glossary of Education Reform, student engagement refers to "the degree of attention, curiosity, interest, optimism, and passion that students show when they are learning or being taught, which extends to the level of motivation they have to learn and progress in their education (Education Reform, 2016)."

3   QUERIES AND HYPOTHESES

The chapter examines whether and to what extent the incorporation of classroom mediation dynamics in T&L might play a role in mitigating T&L-inherited barriers. There is a prediction that there will be significant differences in Palestinian undergraduate students (henceforth undergraduates) *cognitive, pedagogical, and behavioural* learning achievements, attributed to school milieu/location, school type, and schooling model. This prediction will be tested as follows:

H₁: There is a significant main effect of school milieu/location on the cognitive, pedagogical, and behavioural learning achievements among undergraduates while controlling the effects of the covariate variable of classroom mediation level at an alpha level of 0.05.

H₂: There is a significant main effect of the undergraduate schooling model on their cognitive, pedagogical, and behavioural learning achievement while controlling the effects of the covariate variable of classroom mediation level at an alpha level of 0.05.

H₃: There is a significant main effect of school type on the cognitive, pedagogical, and behavioural learning achievement among university

students while controlling the effects of the variable of classroom mediation level at an alpha level of 0.05.

H_4: There is a significant difference in the degrees of cognitive, behavioural, and pedagogical achievements in undergraduates learning, in terms of undergraduates' levels of engagement, innovation, productivity, and motivation when classroom mediation is applied in T&L.

4   Literature and Theory

The word *educate* comes from Latin, indicating an active process of 'upbringing or training (Bennett, 2019).' The word *teach*, however, comes from German to convey the passive activity of showing, declaring, or persuading (ibid.). The difference between the terms has resulted in various instructional strategies, ranging from active to passive, from which teachers can choose to deliver designated content successfully. The core life skills are said to be better gained when appropriately incorporated into the education process. UNICEF, UNESCO, and WHO identified these skills as effective communication, self-awareness, critical and creative thinking, decision-making, problem-solving, interpersonal relationship, empathy, stress coping, and emotions (Singh, 2003). Classroom mediation is theorized to aptly foster these skills in T&L, maximizing its efficiency and also minimizing adverse effects on T&L quality and outputs (Felder & Henriques, 1995; Shabiralyani et al., 2015).

UNICEF (2016) identified a four-dimensional learning approach tailored to the Middle East and North Africa T&L needs: *'Learning to Know'* (Cognitive Dimension), *'Learning to Do'* (Instrumental Dimension), *'Learning to Be'* (Individual Dimension), and *'Learning to Live Together'* (Social Dimension). This approach expanded to encompass a set of twelve – built on evidence – life-long core skills that underline the importance of classroom mediation. Most of these skills can be acquired and sustained via designated forms of T&L that recognize multiple learning pathways. Reflecting on the effectiveness and inter/relatedness of these skills and concepts to classroom mediation and T&L in Palestinian undergraduate programs is relevant because, in T&L, gaps in acquiring these skills often occur between the learning styles of students and the teaching style/strategies of instructors (Rahal & Palfreyman, 2009). These gaps further reinforce within heterogeneous classrooms due to shortcomings related to various lingual, cross-cultural, and communication deficiencies among students (Wahyudi, 2018). Classroom mediation, which is

postulated to appropriately handle such gaps in T&L through the efficient application of media aids designed to improve learning and maximize efficiency (Felder & Henriques, 1995; Shabiralyani et al., 2015), also helps teachers minimize gaps between students with varied backgrounds, e.g., *active* learners, who learn better in situations requiring them to interact, and *reflective* learners, who learn better when teachers engage them in discussions (Felder, 1988).

Classroom mediation means more than communicating; it acts as an agent of change. "Change agency has become an integral and essential part of advancing learning, instruction, and performance (Savoy & Carr-Chellman, 2014, p. 618)." As change agents, the role of mediation in educational innovation is promising, with many teachers still dealing with content expertise as an essential ingredient they need for effective teaching (Backlund, 2008). For others, however, it is about relying merely on making traditional methods more accessible to facilitate T&L rather than exploring new techniques and technologies to support students' learning (Backlund, 2008). In addition, there is a demand for interactive T&L processes to motivate students' critical thinking and promote their in-class participation to engender *positive change* at the level of *attitudes* for teachers as facilitators of the educational system and students as its direct product (AlAhmad, 2021b; Ndongko & Agu, 1985).

For Savoy and Carr-Chellman (2014), "Communication has evolved […] to a more collaborative communication network that allows participants to be involved in the change decisions and development (p. 624)." Mediatization emerged as a concept with considerable promise for education research (Rawolle & Lingard, 2014). It broadly refers to how media are increasingly involved in change processes and ongoing societal interaction, including understanding media employment in education. Mediatization of education refers to the combination of sub-processes that are fundamentally concerned with how technological advances in the media might influence the way policy-making in other sectors operates, e.g., education, politics, religion, and more (AlAhmad, 2021a). As a process, mediatization is likely to happen by shaping/framing education forms, content, processes, and policy to fit other varied forms, techniques, and attributes of digital media, alternatively, by setting an educational media agenda, recruiting emerging communication technologies (Rawolle & Lingard, 2014). To frame, for Entman (1993), is "to select some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal

interpretation, moral evaluation, and/or treatment recommendation for the item described (Entman, 1993, p. 52)." For Raychuk as well: "A frame is an abstraction that works to organize or structure message meaning, it also refers to the way media as gatekeeper organizes and presents the ideas, events, and topics they cover (Raychuk, 2011)."

In this chapter, the analytical discussion draws on mediatization as its analytical lens in exploring the T&L process within a "*mediatized classroom,*" a classroom where diverse educational tasks and concrete and abstract instructional concepts are increasingly enacted, embedded, and performed through visual dynamics, semiotic expressions, and info-rich representations, facilitated by media auxiliaries and communication strategies in more effective and innovative models (Breiter, 2014). Classroom mediation draws on *Mediatization* as a metatheory that explores the interrelationship between the media logic and the pedagogical logic in order to understand its societal impact. The *Media logic* refers to the intended quest of the media dominance of information processing, presentation, and storytelling techniques in varied societal interaction processes to take advantage of its own mediums, formats, and representations to become more competitive in the ongoing struggle to capture people's attention to designated issues and goals. The *Pedagogical logic*, however, is most commonly understood as the systematic approach to understanding teaching and knowledge acquisition in light of the theory and best practices of T&L and how this might influence, or be influenced by, the cognitive and behavioural development of teachers and learners alike.

In vibrant systems like education, the mediatization of education gains additional importance when considering teaching as a sophisticated interactive process, where "teachers are constantly imparting new knowledge or transmitting information (Prozesky, 2000, p. 2)." This importance stems from the "growing dependence of education and education policy on the media and its new technologies, and the reduced autonomy of education from changes in the media and its logic (Lingard & Rawolle, 2014; Rawolle & Lingard, 2010)." The concept of the mediatized classroom also refers to "representations and images" (Rawolle & Lingard, 2014, p. 597), where teachers and students can effectively partake in an evocative learning process (Waldeck et al., 2001). In a mediatized classroom, students are likely to learn better through a multidimensional interactive and preferred approach "by seeing and hearing; reflecting and acting; reasoning logically and intuitively; memorising and visualising" (Felder, 1988, p. 674; see also: Breiter, 2014). In such a context, for the

media to set its agenda in support of the T&L process is paramount (Muste, 2016) and is likely to result in a variety of valuable outcomes, primarily improving interaction among students, between students and teachers, also among teachers, to decide on what is best for students to learn, and *how*. Relating to the recent advancements achieved in educational affairs, the mediatized classroom has gained more momentum and so extended to assimilate pivotal issues like the application of theories, principles, and paradigms of *mediated communication* in advancing the process of education (UKEssays, 2018). To this end, literature on mediatization links our understanding of the interrelationship between the media, its effects on the educational process and policy setting, to theories of teaching practice on one side, and research in media and communications studies (Benson & Nevue, 2005; Couldry, 2012) and media role in education on the other side (Blackmore & Thorpe, 2003). Batterham (2000) traced the patterns of interactions between media and other key societal players in an attempt to inspect how, also the degree to which such interaction might be dominated by '*agents*' in one field (like media experts and communicators) or another field (teachers, policymakers or politicians). Rawolle and Lingard (2014) expanded on Batterham's efforts to suggest a range of effects that mediatization normally engenders in society, to which they refer as '*mediatisation effects*.' These effects relate to patterns of *change* within the field of media and communication, also the field of education policy, as well as other effects related to the patterns of – or resulted from – interaction between the two fields (p. 604). For them, "the selection of particular technologies in classrooms, lecture theatres, and other sites of learning is a stake that normalizes future generations of technology users, and one that has cascading effects on the education of teachers and their students, including different dispositions required to be a part of an education system (p. 596)." Similarly, Friesen and Hug (2011) emphasize the significant shifts in education resulting from the emergence of new media techniques and communication technologies, accompanied by the purposeful and innovative application of technological platforms in universities and other educational institutions.

The mediatization of education – and other social processes – employs "media logics," including media norms and practices, primarily representations and pitching stories that fit within the media framing of issues and setting its *agenda*. In this direction, Stack (2016) argues that mediatization "is part and parcel of how universities brand themselves in hopes of improving their rankings (p. 4)." Bishop et al. (2004) explored the role of

communication and technology in the T&L process, integrating the works of renowned scholars like Hannafin (1984), Quintana et al. (2006), Stickler and Hampel (2010), Hannafin (2012). In the *Handbook of Research on Educational Communications and Technology*, Savelyeva (2015) offers a set of T&L approaches wherein teachers can *mediate* the T&L in the classroom. Their primary focus is to enable teachers to identify relevant communication resources and technology and foster an interactive T&L climate to boost students' understanding and participation in an innovative context, i.e., to mediatize practices, situations, and processes.

5 METHOD

To ensure a representative sample, a multistage probability sampling technique was applied; in the first stage, the population included twelve Palestinian universities in the West Bank (WB) (see Table 11.1), dividing universities into clusters based on their geographical location and ownership type (public, private, or NGO).

Table 11.1 Distribution of universities across ownership type, campuses, and geographical locations

Universities	Ownership types	Campuses	Geographical location
Arab American University	Private	Jenin	North WB
		Ramallah	Central WB
Palestine Ahliya University		Bethlehem	South WB
Al-Zaytoonah University of Science and Technology		Salfit	North-Mid WB
Dar al-Kalima University for Arts and Culture		Bethlehem	South WB
An-Najah National University	Public	Nablus	North-Mid WB
Hebron University		Hebron	South WB
Palestine Polytechnic University		Hebron	South WB
Quds University		Jerusalem	Central
Al-Quds Open University		Nationwide	Nationwide
Palestine Technical University–Kadoorie		Tulkarem	West-Mid WB
Birzeit University	NGO	Birzeit	Central WB
Bethlehem University		Bethlehem	South WB

Table 11.2 shows a subset of six campuses that belong to three universities, two of which have campuses nationwide, that were selected among the twelve Palestinian universities.

A systematic random sample of students from each university was drawn. Afterward, a random number was chosen – using the Excel RANDBETWEEN option – from each list of university students, and then the sample was selected according to a pre-specified regular interval, dividing population size "N" by sample size "n." Six hundred students from all clusters were approached through an online survey conducted using Google Forms over a period of three weeks between March 25 and April 15, 2023. An online survey was used for data collection because it is cost-effective and time-efficient, and a list of students with their e-mails was available. The proportion of students who responded to the survey was 427, with a reasonable response rate of 72.0%. Infographics presented in Fig. 11.1 summarize the characteristics of the sample.

For technical and contextual limitations, the sample excluded Al-Quds Open University and Al-Istiqlal University (a military and security sciences-oriented university) for their exclusive approaches in T&L. A particular focus of the inspection is on the available ingredients of classroom mediation and how teachers employ them in *mediating* the interaction (T&L activities) between teachers with varied instructional styles and their students with varied socio-cultural backgrounds and inherited learning styles. This is crucial in addressing gaps resulting from such mismatches and also in determining the extent to which available 'classroom mediation techniques and best practices' (hereinafter classroom mediation dynamics) are fit for mitigating/bridging resulting gaps in T&L, primarily those hindering teachers' efforts in creating and fostering a motivational, productive, and innovative climate that is necessary for optimizing T&L dimensions.

Table 11.2 Cluster selection of universities for research study

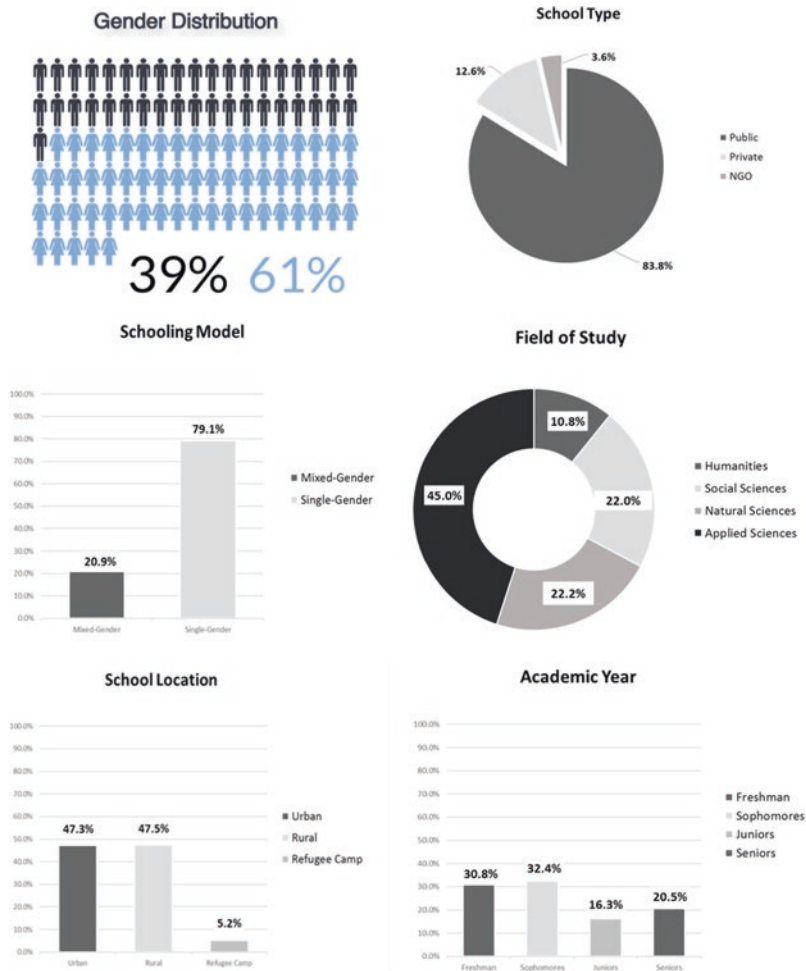| Universities	Ownership types	Campuses	Geographical location
Arab American University	Private	Jenin	North West Bank (WB)
		Ramallah	Central WB
Palestine Technical University–Kadoorie	Public	Tulkarem	West-Mid WB
Bethlehem University	NGO	Bethlehem	South WB

Fig. 11.1 Key characteristics of the sample

The survey included multiple indexes/measurements reflecting the search queries and theoretical postulations. Students were asked to rate their agreement on a five-point Likert scale for these measurements. First, the questionnaire was face-validated by three experts in the field. Then it was tested on a convenient sample of 20 students to ensure that the items

were clear, relevant, and appropriate for the study population. Then, reliability tests of all scale items were assessed using Cronbach's alpha and revealed a good internal consistency, as presented in Table 11.3:

After collecting the data, discriminate and convergent validities were assessed for the Teaching and Learning (T&L) dimensions and mechanisms using a series of correlation analyses. Results indicate that the T&L Dimensions were highly correlated with each other ($r > 0.80$, $p < 0.001$), supporting their convergent validity. Additionally, the T&L Dimensions exhibited low to moderate correlations with the learning mechanisms ($r = 0.30$ to 0.60, $p < 0.001$), proving their discriminate validity. Each scale represents the mean values of all items pertaining to that scale.

In testing hypotheses, the MANCOVA statistical technique was employed, with the cognitive, pedagogical, and behavioural T&L dimensions as dependent variables and the school location, type, and schooling model as independent variables. In addition, the level of mediatization was included as a covariate variable to control for its potential effects on the dependent variables. Finally, Wilks' lambda test was used to assess the significance of the overall effect of the independent variable(s) on the dependent variable(s) while controlling for the effect of one or more covariates.

6   FINDINGS AND DISCUSSION

The main findings emphasize classroom mediation as an agent of constructive change and process development in T&L in undergraduate classrooms at the sampled universities. With the case of socio-cultural disparities and inherited barriers among students, the premise that classroom mediation facilitates students' engagement in a more motivative, innovative, and productive T&L process proved to be valid. This is conditioned to adequate employment of classroom mediation dynamics in fostering

Table 11.3 Summary of indexes reliability estimates

Scale		Number of items	Cronbach's alpha
T&L dimensions	Behavioural	3	0.880
	Cognitive	3	0.875
	Pedagogical	3	0.898
T&L mechanisms	Engagement	2	0.778
	Innovation	2	0.892
	Productivity	4	0.892

cognitive, behavioural, and pedagogical dimensions. The following discussion aims at verifying the hypotheses postulated earlier in the chapter.

6.1   *School Milieu and Its Pertinence to the Variances in Learning Achievements*

This section inspects the effects of the school milieu/location (urban, rural, or refugee camp) on the three T&L dimensions while controlling the classroom mediation level. It measures these dimensions on a 5-point scale and controls for the students' classroom mediation level while meeting the normality, linearity, and multicollinearity assumptions. The Box's M test for equality of covariance matrices was not significant (Box's M = 6.86, $F(12, 17774) = 0.14.38$, $p = 0.30$), indicating that the assumption of homogeneity of covariance matrices across groups was also met. Likewise, Wilks' criterion showed no significant differences in the learning dimensions based on school location (Wilks' $\Lambda = 0.99$, $F(6, 944) = 6.49$, $p = 0.55$, partial $\eta2 = 0.00$) once the level of classroom mediation was taken into account. However, the covariate variable had a significant effect on T&L's level of mediatization (Wilks' $\Lambda = 0.96$, $F(3, 472) = 0.83$, $p = 0.00$, partial $\eta2 = 0.04$) on the three key T&L dimensions. This indicates that the level of classroom mediation positively impacts undergraduates' learning experiences, regardless of their previous school location.

These findings also suggest that, when classroom mediation is appropriately employed, a school's location is not a significant factor in predicting learning outcomes and that educators should focus on implementing a variety of effective mediation dynamics in classroom activities and teaching practices rather than worrying about the presumed educational contexts. This is necessary to boost undergraduates' learning outcomes and improve all students' learning outcomes, regardless of their school location. Although there were no significant differences in learning outcomes pertaining to school location (see Fig. 11.2), the adjusted mean values indicate that undergraduates who studied in refugee camps performed better on the pedagogical and cognitive learning dimensions, while those who studied in urban areas scored higher on the cognitive dimension but lower on the behavioural dimension. Notwithstanding, these differences did not reach statistical significance.

This finding implies that the level of mediatization of the T&L process should be considered when implementing behavioural and pedagogical dimension improvements in various school locations. Furthermore,
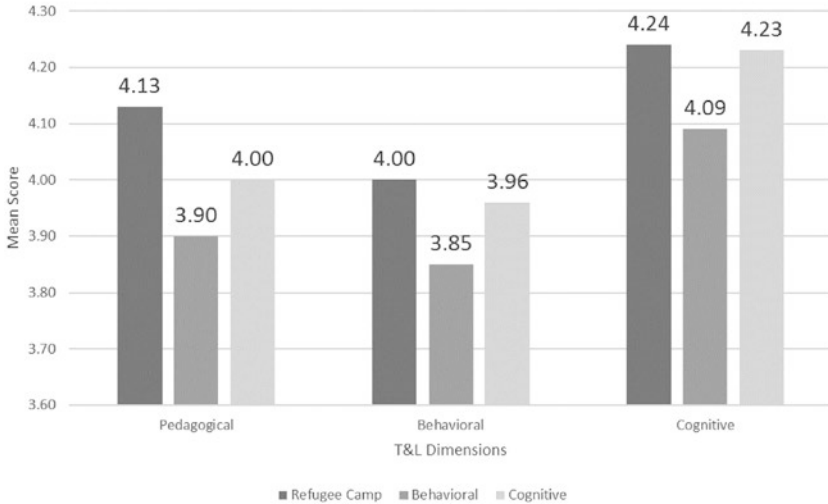
Fig. 11.2 Mean scores on T&L dimension by school location

educators and policymakers should prioritize integrating appropriate tech-
nological tools and teaching strategies to enhance levels of classroom
mediation, regardless of the school milieu.

6.2   The Impact of Segregated vs. Mixed-Gender Schooling Model on T&L Achievement

The inspection in this section focuses on how different schooling models
(single vs. mixed-gender) might affect the three learning dimensions while
factoring in the T&L's mediatization level. In addition, the analytical
model met the necessary assumptions for accuracy. Results show no sig-
nificant difference between the schooling models (Wilks' $\Lambda = 0.99$, $F(3,
473) = 2.23$, $p = 0.08$, partial $\eta2 = 0.01$), while the level of media aids
usage by students in classrooms had a significant impact on their learning
(Wilks' $\Lambda = 0.96$, $F(3, 472) = 0.83$, $p = 0.00$, partial $\eta2 = 0.04$) across all
three dimensions. This indicates classroom mediation as a crucial factor
for students' learning achievements, regardless of gender orientation in
their school.

Notwithstanding, a significant variance between the two schooling models was identified through the 'between-subjects effects' test in favour of the behavioural dimension ($F(1, 476) = 4.14$, $p = 0.043$, partial $\eta2 = 0.01$), implying that the schooling model may have an impact on the behavioural dimension, but not on the cognitive or pedagogical dimensions. Therefore, a univariate F-test using an alpha level of 0.05 was conducted to investigate the impact of each effect on the behavioural dimension. While controlling for the covariate effect of the mediatization level of the T&L process, the results favoured mixed-gender education (mean value = 3.89) more than single-gender education (mean value = 3.77), as indicated in the pairwise comparison (see Table 11.4).

6.3 The Impact of School Type and Mediatization Level on T&L Dimensions

The three learning dimensions were inspected in relation to public and private schools while controlling for media aids usage and ensuring the data met statistical assumptions. It was observed that NGOs and private schools were combined because only a small number of students ($n = 14$) attended the NGOs. This decision was supported by the commonalities in

Table 11.4 Pairwise comparison of schooling model across T&L dimensions

Dependent variable			Mean difference (I-J)	Std. error	Sig.[b]
Cognitive	Single-gender education	Mixed-gender education	-0.139	0.090	0.125
	Mixed-gender education	Single-gender education	0.139	0.090	0.125
Behavioural	Single-gender education	Mixed-gender education	-0.205[a]	0.101	0.043
	Mixed-gender education	Single-gender education	0.205[a]	0.101	0.043
Pedagogical	Single-gender education	Mixed-gender education	-0.055	0.105	0.599
	Mixed-gender education	Single-gender education	0.055	0.105	0.599

Based on estimated marginal means

[a]The mean difference is significant at the 0.05 level
[b]Adjustment for multiple comparisons: Bonferroni

their mission, values, and regulatory environments. However, there may be differences in their governance, funding sources, and accountability mechanisms that need to be taken into account.

Findings indicate no significant difference in covariance matrices between the two groups ($F(12, 17774) = 0.14.38$, $p = 0.30$), demonstrating their similarity. In addition, the Box's M test for equality of covariance matrices was insignificant (Box's $M = 6.06$, $F(6, 105389) = 6.07$, $p = 0.43$), indicating the assumption of homogeneity of covariance matrices across groups was also met. Therefore, Wilks' criterion is applied to determine if there was a significant difference in learning mechanisms based on school type (Wilks' $\Lambda = 0.98$, $F(3, 473) = 2.45$, $p = 0.06$, partial $\eta2 = 0.02$). However, when the level of classroom mediation was taken into account, results were significant (Wilks' $\Lambda = 0.96$, $F(3, 472) = 0.62$, $p = 0.00$, partial $\eta2 = 0.04$). This assumes that the level of the mediatization of education process has an impact on learning outcomes, even when controlling for school type.

The Wilks' lambda test showed no significant differences between public and private schools for the three learning dimensions. However, the test of 'between-subjects effects' indicates a significant difference between the two types of schools for the cognitive dimension ($F(1, 473) = 6.03$, $p = 0.014$, partial $\eta2 = 0.01$). This suggests that school type may affect the cognitive dimension but not the behavioural or pedagogical dimension. To further investigate, a univariate F-test was conducted with an alpha level of 0.05 while controlling for the mediatization level of the T&L process. Again, the results favoured private schools over public schools in the cognitive dimension. These findings were reflected in the estimates and pairwise comparison tables, with a mean value of 4.37 for private school graduates and 4.13 for public school graduates.

Data analysis revealed that students who attended private schools had an advantage in the cognitive dimension (learning outcomes), but there were no significant differences between students from both types of schools regarding behavioural or pedagogical learning outcomes. This suggests that educators and policymakers should take a more holistic approach to education that considers a school's values, resources, community involvement, and cognitive learning outcomes. Improving cognitive learning outcomes in public schools should remain a focus, but it should not be at the expense of other vital aspects of education. Furthermore, data analysis proved that the degree of classroom mediation significantly affects all aspects of learning outcomes. Therefore, it is crucial

to consider the level of classroom mediation when creating educational programs and interventions. Educators can use technology and media in their teaching methods to improve learning outcomes. This also assumes that students become familiar with media aids to complement their learning beyond the classroom.

6.4 Classroom Mediation's Impact on Promoting T&L Dimensions and Mechanisms

This section analyses classroom mediation in relation to the realization and promotion of learning dimensions and mechanisms (T&L gaols) among Palestinian students. To determine if any significant differences materialize in the degrees of T&L dimensions (cognitive, behavioural, and pedagogical) and mechanisms (engagement, innovation, productivity, and motivation), a t-test was conducted, and Table 11.5 summarizes its results.

Results show that specific mediation techniques, such as Virtual Lab Solutions, Online Interactive Polls, Interactive Maps, and eLearning Moodle, were more effective in enhancing various learning aspects (dimensions/goals and mechanisms) than other techniques; improved ($p.< 05$), except for Virtual Lab Solutions and the engagement component. These tools can enhance the learning experience by providing interactive and engaging materials to help students better understand and retain information. Additionally, these tools may offer a more flexible and convenient way of learning that allows students to access educational materials from anywhere and at any time. Nonetheless, the study found that PowerPoint and Prezi, and LCD projectors had a significant ($p.< 05$) impact on productivity and motivation mechanisms only, while Smart Boards had a significant impact ($p.< 05$) on productivity. Such results stem from the fact that, while PowerPoint and Projector lack the interactive dynamics of mediation, many teachers in the sampled universities might not be willing to or capable of running Smart Boards tactfully and meaningfully.

The mean values in Table 11.5 identified Virtual Lab Solutions, Online Interactive Polls, and Interactive Maps as the most motivating tools. The two tools are also powerful for undergraduates in improving their productivity, engagement, and innovation. In addition, the study found that virtual lab solutions, online interactive polls, and interactive maps effectively enhance the pedagogical goals of their T&L. As for the behavioural and cognitive dimensions, both interactive polls and maps were also effective. This finding concurs with the theoretical discussion over the feasibility of

Table 11.5 Summary of T-Test results for the mean value of students answering "yes" to the media technique used

Dependent/independent variables		PowerPoint, Prezi	LCD projector	Smart board	Virtual lab solutions	Interactive maps	Online interactive polls	eLearning Moodle
T&L dimensions	Cognitive	4.17	4.17	4.15	4.26*	4.33*	4.32**	4.24**
	Behavioural	3.91	3.91	3.93	4.10*	4.15**	4.17***	3.97*
	Pedagogical	4.00	4.00	4.04	4.24***	4.21**	4.22***	4.04*
T&L mechanisms	Engagement	3.99	3.99	3.98	4.10	4.11*	4.17**	4.05**
	Innovation	4.04	4.04	4.05	4.23*	4.24*	4.24***	4.07**
	Productivity	3.91*	3.91*	3.97*	4.08*	4.16***	4.14***	3.95*
	Motivation	4.23*	4.23*	4.20	4.37*	4.35*	4.38*	4.27**

$*p < 0.05$, $**p < 0.01$, $***p < 0.001$

Note: Numbers in this table represent the mean value of students answering "yes" about the use of media technique in classrooms

classroom mediation dynamics as postulated by Ndongko and Agu (1985), Felder (1988), Felder and Henriques (1995), Shabiralyani et al. (2015), AlAhmad (2021c). It also supports Savoy and Carr-Chellman's (2014) theorization of classroom mediation as an agent for change in education systems and an essential ingredient in effective teaching (Backlund, 2008).

7 CONCLUSIONS

The chapter emphasizes classroom mediation as an agent in mitigating students' inherited barriers and fostering students' engagement in a more motivative, innovative, and productive T&L process to promote the cognitive, behavioural, and pedagogical dimensions in the T&L process. The chapter validates the premise that best practices in classroom mediation provide an avenue for educators and students alike to optimize these *dimensions* within undergraduate classrooms in the sampled Palestinian universities. In inspecting the effects of school location in the Palestinian community, the chapter utilized Box's M test for equality of covariance matrices, which was not significant, indicating that the assumption of homogeneity of covariance matrices across groups was also met. Wilks' criterion showed no significant differences in the learning dimensions based on school location, indicating the efficiency of classroom mediation when being considered. However, there was a significant effect of the covariate variable of T&L's level of mediatization on the three T&L dimensions, indicating that the level of classroom mediation positively impacts students' learning experiences, regardless of their previous school location. There is a call for educators and policymakers to consider the level of mediatization when implementing improvements in the T&L process at both behavioural and pedagogical dimensions, regardless of the school location.

Data recorded no significant difference between the schooling models at the school gender orientation level. In contrast, classroom mediation significantly impacted students' learning across all three T&L dimensions, indicating classroom mediation as a crucial factor in students' learning achievements, regardless of their school gender orientation. However, the significant variance between the two schooling models was identified through the 'between-subjects effects' test in favour of the behavioural dimension, implying that the schooling model may impact the behavioural dimension, but not the cognitive or pedagogical dimensions. No significant difference in covariance matrices between the two groups was

identified, demonstrating their similarity. The Box's M test for equality of covariance matrices was insignificant, indicating the assumption of homogeneity of covariance matrices across groups was also met.

At the level of T&L mechanisms, Wilks' criterion is used to determine if a significant difference in learning mechanisms relates to school type (private and NGOs vs. public); results were significant, assuming the level of the mediatization of the education process has an impact on learning outcomes. At the same time, the Wilks Lambda test shows no significant differences between public and private/NGO schools for the three learning dimensions; however, the test of 'between-subjects effects' indicated a significant difference between the two categories of schools for the *cognitive* dimension, suggesting school type may affect the cognitive dimension in favour of private/NGOs but not the behavioural or pedagogical dimension. F-test was conducted with an alpha level of 0.05 while controlling for the mediatization level of the T&L process; results favoured private schools over the public in the *cognitive* dimension, with no significant differences between students from both categories of schools regarding *behavioural* or *pedagogical* learning outcomes, suggesting the adoption of a more holistic approach to education that considers a school's values, resources, community involvement, and cognitive learning outcomes. As for the classroom mediation dynamics, t-test results indicated that Virtual Lab Solutions, Online Interactive Polls, Interactive Maps, and eLearning Moodle were more effective in enhancing both T&L dimensions and mechanisms than other dynamics. This finding concurs with the theoretical discussion over the feasibility of mediation dynamics as agent for change in education systems.

The above conclusions can be synthesized in a set of theoretical arguments as a 'mediatized classroom' model informed by the essential assumptions in the theory of mediatization of education. These arguments crystalize the *cognitive, pedagogical, and behavioural* dimensions in the T&L process, as well as their subordinate mechanisms of *motivation, innovation, and productivity*:

(a) Exposing students to information via varied resources, perspectives, and representations is expected to boost their cognitive capabilities, mental skills, and ability to detect, interpret, and synthesizing new knowledge.
(b) Engaging students in well-structured language tasks and sociocultural practices via media-aided knowledge acquisition and

application techniques is likely to help modify individual behaviour to achieve productive social interactions among students from varied socio-cultural backgrounds and inherited disparities between teaching and learning.

(c) As a staging process, classroom mediation incorporates a well-organized set of methods, strategies, and approaches that enable students to choose and pursue individual interests. It also exposes them to essential skills in decision-making, self-monitoring, checking attention, and taking responsibility for learning.

(d) The mediatization of T&L processes makes it more motivational (minimizes stress and increases students' participation and persistence of goal-directed behaviour), more productive (enables teachers to monitor students' understanding), more innovative (solving real problems in a genuine, simple, and economical way promotes students' autonomy and ownership of the learning process), and more productive (optimize the level of effort put into accomplishing academic excel).

Finally, the impact of school location, profit orientation, and gender orientation on learning outcomes may not be as significant as traditionally thought of, to the extent that other factors, such as 'level of mediatization,' may be of stronger prediction. Further research is needed to explore the relative importance of different predictors of learning outcomes in different contexts.

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